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# Digital Literacy Education in Welsh Primary and Secondary Schools from the 1960s to the Present: A Marcusian Analysis

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# Abstract

Digital technologies are imbued with ideologies that impact culture and society. These technologies are ubiquitous, pervasive, and central to how people communicate, consume information, and orchestrate their lives. Therefore, for people to fully understand the impact and influence of these technologies on their lives and engage with them and the digital environment in a critically informed way - digital literacy is an absolute and necessary requirement. However, we are not seeing digital literacy as standard. This study assesses: (1) Whether students are being sufficiently educated about how digital technologies use and affect them in a social, cultural, and ethical capacity; (2) Whether the programme content of digital literacy education (DLE) is primarily driven by neo-liberal economically driven government policies; and (3) How much influence private neo-liberal capitalistic enterprises have in determining the educational agenda of DLE? Qualitative data was collected via three focus group interviews and twenty-six semi-structured interviews which explored students, educational professionals, and government officials' views of DLE in Wales. The data was thematically coded using critical discourse analysis, and analysed using theories developed in Herbert Marcuse's 1964 publication *One-Dimensional Man.* The results indicated that DLE educational policy has broadened to include knowledge that extends beyond the teaching of purely mechanistic skills. However, a variety of factors were identified that impede their implementation. Additionally, it is argued that students' mechanistic digital skills have been declining since the introduction of touch screen technologies into primary and secondary schools. Findings also indicated that educators main DLE focus was on preparing students for employment purposes, and the influence private neo-liberal capitalistic enterprises have in determining not only the educational agenda of DLE, but education in general is profound, and has accelerated exponentially since the COVID-19 imposed lockdowns.

## Summary

This thesis examined digital literacy educational (DLE) provisions in primary and secondary schools in Wales. This takes the form of a case study that offers insights into whether current provisions adequately educate students in a critical way about the social, ethical, and cultural implications of living in the digital milieu, as well as identifying the factors that drive and influence digital literacy educational provisions in Wales today. The various theories of digital literacy and its allied disciplines, such as media and information literacy were critically reviewed and the debates and various positions within these debates were identified. The field was surveyed and the gap that this thesis addresses identified. A critical review was also conducted of the historical development of digital literacy educational provisions in the UK and Wales that identified and evaluated the academic literature available. The literature from both reviews was then evaluated to identify what aspects of digital literacy had been historically included and excluded within primary and secondary school education. In addition, the historical review also evaluated what the contributing factors were in determining digital literacy education provisions; from the introduction of computers into schools in the 1960s to the current day. The Welsh language agenda, and whether socio-economic status and gender has affected educational access and opportunities in this specific field were also considered. The literature review suggested that the main focus of DLE, from as early as the 1970s had been on teaching mechanistic digital skills for employment purposes. In addition, the mechanistic digital skills attained within this historical time frame were skills that were quickly outdated due to the speed that technology has advanced at. As Passey notes ‘frequent changes that occur with technologies themselves have not been something that has been taken up and addressed within educational policy’ (Passey, 2014: 146). The review of the literature also suggested that this mechanistic focus had been predominantly driven by government policies and neo-liberal capitalistic imperatives as part of an economic agenda. However, it is important to note that evidence surfaced has not been identified in any specific academic study, and as such, the conclusion of the literature review is an interpretation of what the evidence infers.

Therefore, what this study sought to understand was (1) Whether in addition to developing mechanistic digital skills, are students being sufficiently educated about

how digital technologies use and affect them in a social, cultural, and ethical capacity. (2) Whether the programme content of digital literacy education is still primarily driven by neo-liberal economically driven government policies. (3) How much influence do private neo-liberal capitalistic enterprises have in determining the educational agenda of digital literacy education? The results of this research are based on the findings of empirical qualitative data collected from three focus group interviews and twenty-six semi-structured interviews which explored students, educational professionals, and government officials' views of DLE in Wales.
The data was thematically coded using critical discourse analysis, and analysed using theories developed in Herbert Marcuse's 1964 publication *One-Dimensional Man.*

This thesis argues that the range of students' mechanistic digital skills has been declining since the introduction of touch screen technologies into primary and secondary schools which is further compounded by the pervasive social use of devices such as smart phones. The study also argues that although the policy focus of DLE has broadened to include elements that teach students digital skills that somewhat extend beyond the mechanistic, a variety of factors were identified that obstructed and limited the implementation of these elements; resulting in students not obtaining a sufficient education relating to how digital technologies use and affect them in a social, cultural, and ethical capacity. The findings regarding whether the content of digital literacy education was still primarily driven by neo-liberal economically driven government policies were not wholly conclusive. However, although this study was not able to offer a clear conclusion in relation to this question, it did surface findings that indicated there was a view held by educators that focused and prioritised their DLE pedagogical practices on preparing students for employment purposes. The findings also suggested that the influence private neo-liberal capitalistic enterprises have in determining not only the educational agenda of DLE, but education in general is profound, and that their increasing influence on curriculum content and educational pedagogies has been exponentially accelerated since the COVID-19 imposed lockdowns. Therefore, this thesis offers an original contribution to knowledge and provides an important insight and understanding of current educational provisions in relation to digital literacy education, as well as identifying some of the factors that drive and influence digital literacy educational provisions in Wales today.

# Declaration

This work has not been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Signed (Candidate) 

Date 29th April 2022

**Statement 1**

This thesis is the result of my own investigations, except where otherwise stated. Other sources are acknowledged by footnotes given explicit reference. A bibliography is appended.

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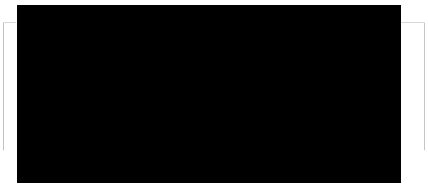
Signed Candidate 

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# 1 Chapter 1: Introduction

Digital technologies ‘lie at the heart of how people communicate, consume information, and organise their lives’ (Selwyn, 2016: 2). Digital technologies are pervasive, ubiquitous and permeate almost every aspect of our lives, from ‘health tracking apps, social media and learning management systems, to the Internet of Things, traffic surveillance, government services, dating, work and education’ (Sefton-Green and Pangrazio, 2022: n.p.). Consequently, much of our daily routines and practices are being recorded and analysed ‘somewhere in the world’ (Sefton-Green and Pangrazio, 2022: n.p.). A term that is being employed by scholars and technology experts to describe this imposing data collection and analysis is “datafication” (Sefton-Green and Pangrazio, 2022: n.p.).The consequences and implications of datafication are ‘immense, extraordinary and unprecedented’ (Sefton-Green and Pangrazio, 2022: n.p.) and the capitalistic underpinnings of this phenomenon of capturing and translating social phenomena into data ‘is integral to the business model and functioning of many digital platforms’ (Sefton-Green and Pangrazio, 2022: 3). Zuboff (2019) makes the argument that datafication enacts a new type of ‘‘instrumentarian power’ – a new form of power enacted by governments and corporations that can shape and manipulate people in subtle and incremental ways’ (Zuboff, in Sefton-Green and Pangrazio, 2022: 4). Therefore, for Zuboff datafication turns users into instruments that can be used in predictable ways to achieve the goals of corporations and governments. If the way we understand social phenomena is directly affected by datafication and data driven epistemologies then Sefton-Green and Pangrazio argue that this in turn ‘changes how we see our- selves and others, shaping the kinds of behaviours and interactions that we engage in’ (Sefton-Green and Pangrazio, 2022: 4). When specifically looking at digital literacy ‘it is of vital significance to increase both the basic digital skills and those skills by which people understand and use the online content’ (Danhua and Zhonggen, 2022: 2). However, Johnson and Adams suggest that despite the pervasive ubiquity of digital technologies ‘we are far from seeing digital media literacy as a norm’ (Johnson and Adams, 2011: 18). If, however, an understanding of datafication is to be gained that focuses on more than the ability to work with data and considers the more complex shifts brought about by datafication within today’s increasingly digitalised societies, then Pangrazio and Neil Selwyn argue that ‘it requires critical reflection on how datafication is changing the way we

live, learn and work' (Pangrazio and Selwyn, in Sefton-Green and Pangrazio, 2022: 7). Research suggests that the number of educational programmes working in the critical tradition are limited, and many of 'the current critical educational data programmes exist in a realm that is far removed from where education typically takes place (i.e., school)' (Sefton-Green and Pangrazio, 2022: 7). In addition, it is not easy to generalise about 'both normative practice in schools across the world (as captured in supra-national accounts like the (OECD) just as it challenging to generalise about theories of education' (Sefton- Green and Pangrazio, 2021: 2073).

The immediacy and importance of the issues surrounding digital and media literacy is critical. Every minute the Internet 'sees 500 hours of content uploaded to YouTube, 5,000 videos viewed on TikTok, and 695,000 stories shared on Instagram' (Jenik, 2021). On the 30th of March 2022 Ofcom published its annual study into media habits (Wendling, 2022). The study found that most children 'didn't use or understand the full range of safety features that are designed by platforms to keep them safe online' (Ofcom, 2022a: 60), and that 'more than a third of internet users are unaware that online content might be false or biased' (Ofcom, 2022b). Additionally, although 74% of the children in the study aged 12-17 said they were confident at identifying misinformation, only 11% were able to (Ofcom, 2022b). The report stated that 'having the right critical skills and understanding to decipher fact from fiction has never been more important' (Ofcom, 2022b). The immediacy and importance of developing the right critical skills is further compounded when you consider 'children as young as five use social media, despite most platforms having rules users must be over the age of 13' (Wendling, 2022). Moreover, 'some participants struggled to understand why platforms would need to know their age' (Ofcom, 2022a: 63). Many had joined sites stating they were over 18 but failed to make the connection that being registered as an adult could result in them being presented with inappropriate content, they did not like (Ofcom, 2022a: 63). In some cases, 'the children were so used to the idea of providing an incorrect date of birth that they had no idea what the actual minimum age requirement was' (Ofcom, 2022a: 63). In addition, digital literacy, has been identified as one of seven key areas of significant governmental concern as evidenced in the interim report, *Disinformation and 'fake news'* published on the 29th of July 2018 by the House of Commons Digital, Culture, Media and Sport Committee (House of Commons, 2018: 6). Therefore, in view of significant governmental concerns, and

evidence that suggests digital literacy is not as ubiquitous as the digital devices that lie at the heart of contemporary society, 'more than ever before, the issues and tensions that have grown up around education and technology merit close examination' (Selwyn, 2016: 2). Moreover, it is 'a topic that demands sustained analysis and critical thought' (Selwyn, 2016: 2). It is acknowledged that digital literacy is potentially a global issue due to the global ubiquity of the Internet and social media platforms, as evidenced by a recent BBC campaign that focused 'on global media literacy' (Financial Express, 2018). However, it is recognised that it is beyond the scope of this thesis to analyse digital literacy education on a global scale. Furthermore, research suggests and is calling for studies that focus on localised and individual educational curriculums and educators' conceptualisations of digital literacy responses, as educational responses vary significantly. For example, Livingstone et al., found disparities in educational institutions within the same country and stated that 'even the best available education is proving insufficient to support children's agency in a datafied world' (Livingstone et al., 2022: 196). By focusing on digital literacy education provisions in primary and secondary schools in Wales this thesis can offer an insight into how the educational curriculum in Wales is responding to and educating future citizens to navigate and fully understand their increasingly digitalised world. This research will therefore add to the studies that have been carried out in other geographical areas and contribute to our understanding of the disparities in DLE provisions found in educational institutions around the world. Additionally, by deploying a Marcusian analysis of the qualitative data collected in this study a further understanding can be offered in relation to two common themes surfaced in the literature review; a lack of criticality in relation to DLE and the influence that the capitalistic underpinnings 'integral to the business model and functioning of many digital platforms' (Sefton-Green and Pangrazio, 2022: 3) may be having on DLE provisions. Platforms which are not only used for social purposes, but which are being increasingly introduced into educational institutions (Sefton-Green and Pangrazio, 2022: 3).

A Marcusian analysis of the data collected in this study is pertinent as it will identify whether there is a critical education element to DLE provisions and evaluate the extent of influence neo-liberal capitalistic enterprises have on DLE provisions in Wales. Influences that can potentially turn educational institutions into instruments that can

be used in predictable ways to achieve the goals of corporations and governments. In brief, *One Dimensional Man* is 'a model analysis of the synthesis of business, the state, the media, and other cultural institutions under the hegemony of corporate capital' (Kellner in Marcuse, 2002: xxxvii). Herbert Marcuse argued that 'a "mechanics of conformity" spread throughout the society' (Kellner, in Marcuse, 2002: xx), and that the individual was so overpowered by the administrative efficiency and power derived from 'the way it has organized its technological base' (Marcuse, 2002: 5) that society and individuals 'gradually lost the earlier traits of critical rationality (i.e., autonomy, dissent, the power of negation), thus producing a "one-dimensional society" and "one-dimensional man"' (Kellner, in Marcuse, 2002: xx). In brief, Marcuse is suggesting that, critical rationality that 'posits the existence of another realm of ideas, images, and imagination' (Kellner, in Marcuse, 2002: xvii) has been lost to society as a result of a new form of control underpinned by the way in which the advanced industrial societies organised their technical base. To combat this one-dimensionality, critical and dialectical thinking is required to 'serve as a potential guide for a social transformation that would realise the unrealised potentialities for a better life' (Kellner, in Marcuse, 2002: xvii).

A variety of aspects have contributed and influenced digital literacy education, as noted by Selwyn who states that 'educational technology is intrinsically linked with the social, cultural, economic and political aspects of society' (Selwyn, 2016: 18). Due to the complexity, breadth and scope of these factors, and the extensive time period covered, the historical development of digital literacy discussed in the education chapter of this study includes a selection of sources. Academic literature, a variety of political, economic, and educational policy discourses surrounding the development of digital literacy, political statements and policies, education reports and media coverage are included. In addition, literature has been identified and evaluated that pertains to the Welsh language agenda, and whether socio-economic status, and gender have affected educational access and opportunities in this specific field. The initial critical background review found numerous studies regarding digital literacy, media literacy and information literacy in the UK and other territories. However, there is a significant and alarming lack of academic research into digital literacy education provisions in Wales both pre - and post-devolution. The literature review identified that while there is a growing body of research into educational responses to the

increasing digitalisation and datafication of our everyday lives; responses vary significantly from geographical region to region. Other scholars have also identified the lacuna of research in this area. For example, Hogan states that a publication by Williamson *Big Data in Education: the Digital Future of Learning, Policy and Practice* (2017) makes painfully obvious:

> The lack of academic research that currently exists in attempting to understand and characterise how the datafication of education is being imagined and enacted: from a global corporate level, a national government level, a local school level and so on. While the research and development capacities of corporate players— heavily backed by the venture capital of Silicon Valley and headed by those on a mission to revolutionise education and schooling as we know it—are racing ahead, it seems necessary to challenge the future imaginary that is being promoted and remind those with the power to make sweeping changes that education is more than the individual pursuit of knowledge and skills. There are also significant unresolved challenges that need to be debated amongst all key stakeholders to better understand privacy and data ownership concerns and the ways that the disruption being advocated for affects teaching, curriculum, and the entire school system as we know it. (Hogan, 2019: 561)

Therefore, this thesis offers an original contribution to knowledge in relation to the following: The impact of digital technologies on education, and the influence of digital technology companies in determining the educational agenda of DLE in Wales; DLE provisions that relate to how digital technologies use and affect individuals in a social, cultural, and ethical capacity; what the current focus of DLE provisions are, and how the DLE curriculum policy translates into practice. In addition, this thesis also offers an original contribution to knowledge in relation to: The Welsh-language agenda and digital technologies; gender bias and how it effects DL attainment and performance, and how socio-economic factors impact access to digital technologies and educational attainment. Furthermore, while scholars have identified and affirmed that with the increasing developments and intrusion of ICTs across all aspects of life, and the significance and need for individuals to develop and gain multidimensional skills to utilise these technologies, there is a growing importance in developing an understanding of the required ‘capabilities in terms of skills that are multidimensional’ (Choi et al., 2020: 1). However, ‘few empirical investigations are connected to sound

theoretical backgrounds' (Choi et al., 2020: 1). Therefore, this also substantiates the original contribution this study has made, by employing Marcuse's critical theory as a solid theoretical framework to critically analyse the empirical data.

*Key Area of Research*

The focus for digital literacy programmes from as early as the 1970s has been on teaching mechanistic skills that enable students to primarily use digital hardware and software to gain sufficient digital skills for employment. The mechanistic skills learned within the historical time frame for each initiative were skills that were quickly outdated due to the speed of technological advancement. The analysis of the literature surfaced evidence to suggest DLE provisions were devoid of elements that taught students about the social, cultural, and ethical aspects of digital technologies and the digital environment. The clear mechanistic focus in digital literacy education has been predominantly driven by government policies and neo-liberal capitalistic imperatives as part of an economic agenda. Therefore, this thesis will provide a critical insight and understanding of current educational provisions and identify the factors that drive and influence DLE in Wales today.

*Welsh Language Agenda*

In addition, a dearth of academic research regarding the Welsh language agenda and digital literacy was identified. It is interesting to note that the lack of research regarding the inclusion of the Welsh language in technology has also been identified by Eluned Morgan, who held the role of Minister for the Welsh Language and Lifelong Learning from 13th December 2018 to 13th May 2021 (Welsh Government, 2021e). Morgan not only identified a lack of research in this area but concluded that support for 'academic research and development in the field of Welsh language technology' should not only be provided but continually sustained (Welsh Government 2018a: 4). Morgan is quoted as saying:

> I use technology every day. It's central to all our lives, whether that technology is visible to us or not. Technology is everywhere, but I am seldom offered the opportunity to use it in Welsh. And if a Welsh Language option is available, it is not always visible without me making an effort to look for it. We all lead busy lives—who has time to go looking. (Morgan, in Welsh Government 2018a)

Therefore, there is a lack of academic research in relation to the Welsh language agenda and digital technologies evidenced by both the distinct lack of available literature, and the observations and views held by Eluned Morgan.

*Gender Bias*

The 2014 Estyn report concluded that in Wales a higher percentage of girls over boys achieve 'the expected level 5 or above in ICT' (Estyn, 2014: 6), but that this is also the case in all other non-core subjects. However, this achievement gap is less in ICT:

> Over the past five years, the gap between the performance of girls and boys has decreased from 10.2 percentage points in 2009 to 6.9 percentage points in 2013. The performance of boys has improved at a faster rate than that of girls. (Estyn, 2014: 7)

The report merely speculates as to why this may be the case by suggesting it 'could be due to the appeal of the subject to boys, and that it is acceptable for boys to do well in ICT' (Estyn, 2014: 6). Whilst the global body of research into gender bias and digital literacy education is extensive, this study has found that there is a lack of research that pertains specifically to Wales. Therefore, in view of the speculative assumptions cited in the Estyn report, coupled with the lack of research that pertains specifically to Wales, this is also an area identified as warranting further research.

*Socio Economic Factors*

Students from deprived socio-economic backgrounds have historically performed poorly in ICT and computing due to a lack of access to computers and digital technologies. However, literature was also identified that suggests this is no longer the case due to the ubiquity of digital technologies. Moreover, although there is a significant amount of research in this area, this review identified a lacuna of research that is specific to students in Wales regarding the impact of digital technology availability on performance.

*Aims, Objectives, Importance and Contribution*

To reiterate, the aim of this thesis is to research whether digital literacy education includes provisions that employ a critical multidimensional approach when educating students about the social, cultural, and ethical use of digital technologies and the digital

environment, or if the primary focus is teaching mechanistic skills driven by government policies as part of an economic agenda. This will be achieved by deploying a Marcusian analysis of the data collected. This thesis argues, that to educate and foster critical thinking in citizens in a post digital era, DLE provisions that teach students about the social, cultural, and ethical aspect of DLE are a necessary requirement. These provisions should be based on the principle that the use of digital devices and software is not limited solely to learning mechanistic skills for use in the employment arena, but for every aspect of an individual's life. Digital technologies 'lie at the heart of how people communicate, consume information, and organise their lives' (Selwyn, 2016: 2). Moreover, the pervasive ubiquity of digital technologies and devices are now integral to every aspect of an individuals' life, not just in Wales but globally. The literature suggests that historically digital literacy education curriculums have excluded content that educates students in a critical way about the ethical, social, and cultural impact of digital technologies. This omission is critically important as digital technologies are not neutral artefacts; they are imbued with ideologies that impact culture and society, as noted by Winner:

> To our accustomed way of thinking, technologies are seen as neutral tools that can be used well or poorly, for good, or evil, or something in between. But we usually do not stop to inquire whether a device might have been designed and built in such a way that it produces a set of consequences logically or temporally *prior* to any of its professed uses. (Winner, 1980: 125)

It is therefore suggested that, if DLE provisions exclude the notion and understanding that technologies are not neutral tools, then future citizens will lack the knowledge required to critically evaluate the social, ethical, and cultural influences of digital technologies and systems:

> If our moral and political language for evaluating technology includes only categorises having to do with tools and uses, if it does not include attention to the meaning of the designs and arrangements of out artifacts, then we will be blinded to much that is intellectually and practically crucial. (Winner, 1980: 125)

Furthermore, if, as Johnson and Adams suggest, 'digital literacy is less about tools and more about thinking' (Johnson and Adams 2011: 18), this thesis serves to assess whether this perspective is now considered as an integral aspect of digital literacy

education in Wales. In addition, it is noted that this study is not negating or diminishing the value or importance of learning mechanistic skills moreover it concurs that 'it is of vital significance to increase both the basic digital skills and those skills by which people understand and use the online content' (Danhua and Zhonggen, 2022: 2). What this study seeks to understand is:

(1) Whether in addition to the mechanistic skills being taught, students are being sufficiently educated about how digital technologies use and affect them in a social, cultural, and ethical capacity.
(2) Whether the programme content of digital literacy education is still primarily driven by neo-liberal economically driven government policies.
(3) How much influence do private neo-liberal capitalistic enterprises have in determining the educational agenda of digital literacy education?

Choi et al., identified that within this research area scholars have identified and affirmed that with the increasing developments and intrusion of ICTs across all aspects of lives (which has increased the significance and the need for individuals' to develop and gain multidimensional skills in order to utilise these technologies), there is a growing importance in developing an understanding of 'capabilities in terms of skills that are multidimensional, yet few empirical investigations are connected to sound theoretical backgrounds' (Choi et al., 2020: 1). Therefore, this reiterates another dimension of a void in the current academic literature that this study on DLE will address by employing Marcuse's critical theory as a solid theoretical framework. This approach represents another significant original contribution to knowledge offered by this study. It is also interesting to note that Choi et al., conducted a survey of random adults in the City of Austin, Texas in order to 'empirically examine multiplicities of technological capabilities' (Choi et al., 2020: 1). The theory employed in this particular study built on 'the literatures of Bourdieu's theory of capital, digital literacy, field, and participatory culture' (Choi et al., 2020: 1). They also analysed 'the influences of cultural and economic/financial capital reflected by key socioeconomic predictors on the different levels of techno- capital' (Choi et al., 2020: 1). They found that there were 'three sets of technological capabilities that constitute individuals' "techno-capital' (Choi et al., 2020: 1), and 'that acquiring basic technological capabilities is a key factor explaining advanced techno-capital, while effects of gender, race,

education, and income also persist' (Choi et al., 2020: 1). The research concluded that acquiring basic technological capabilities was affected by a variety of factors including gender, race, income, but the most significant was education (Choi et al., 2020: 1). Therefore, this thesis will probe the most significant factor cited in relation to the acquisition of basic technological abilities – education.

My personal interest in researching this subject was ignited as a result of several factors. As I am a mature student I am of an age where the emergence of the digital age is an intrinsic part of my lived experience. My interest in digital technologies began when I first used a computer programme to record and edit musical compositions over thirty years ago. As time progressed, I witnessed and embraced the rapid changes in digital technologies and the digital environment. However, during my studies for the PR, Media, and Communication MA at Swansea University my interest and understanding of digital technologies and the digital environment shifted from being a passive user, to being a critical researcher of the social, ethical, and cultural impacts of digital technologies and the digital environment. After many discussions with my children and their friends, it became increasingly apparent that their understanding of digital technologies and the digital environment was passive and user based, and the knowledge I was imparting to them about the social, cultural, and ethical impacts was new and shocking. This information encouraged them to critically evaluate their own use of digital technologies and the digital environment. As a mother, I already possessed knowledge about the limited and insufficient education my own children received in relation to DLE. A situation which meant that my own children were not equipped with sufficient knowledge to make fully informed decisions regarding their use of digital devices and the digital environment. As such, I felt compelled to investigate the suitability and adequacy of current DLE educational provisions in Wales.

## **1.1** Chapter Summaries

Chapter 2 offers a critical review of the various theories of digital literacy and allied disciplines such as media and information literacy. Academic literature relating to digital literacy, media literacy and information literacy and the various positions held within the debates surrounding these disciplines have also been surveyed. The review

found that datafication is a term increasingly used by scholars to describe the increasing datafication of virtually every aspect of our everyday lives. Therefore, an analysis of the literature pertaining to datafication and the three responses to this phenomenon namely: regulation, technical and tactical, and education was also conducted. Finally, the review surveyed literature that questioned criticality under datafication. In addition, this critical review identifies the gap in the literature that this thesis will address and elucidates why a Marcusian analysis of the qualitative empirical data collected in this study will further the current understanding of digital literacy and its allied disciplines. The selection of analysed sources includes the academic literature and work of major theorists in these disciplines such as: Julian Sefton-Green, David Buckingham, Julian McDougall, Renee Hobbs, Belinhau De Abreu, John Potter, Paul Gilster, Sonia Livingstone, Henry Jenkins, David Bawden, Tibor Koltay, Michele Knobel, Colin Lankshere, Paul Gilster, Jesus Lau and Douglas Belshaw. The review includes various studies regarding digital literacy and its allied disciplines and identifies common themes and the gap this thesis aims to fill in order to offer an original contribution to knowledge.

Chapter 3 provides a description of, and justification for, the methodological choices made to sustain a coherent methodological framework in support of the research undertaken in this thesis. To begin, an overview of the data collection methods, the research questions, and the aim, importance and contribution of the study are presented. Thereafter, the constructionist ontological stance, interpretivist epistemological position, inductive approach, multi method qualitative methodological choice, case study strategy and time horizon are detailed and discussed. The final section of this chapter focuses on the data collection methods employed, namely, focus group interviews and semi-structured interviews which are discussed in detail. Participant demographics are also included and presented in table form. Thereafter, the methods employed to code and thematically analyse the data and analyse the policy documents using Fairclough's ideas on Critical Discourse Analysis (CDA) are discussed and detailed. The conceptual framework referred to as the 'research onion' (Saunders et al., 2019: 130) which delineates the stages, considerations, and decisions a researcher needs to make to develop an effective and congruent research methodology informed the process of developing this framework.

Chapter 4 presents a critical review of the historical and current educational provisions of digital literacy education in Wales. The analysis focused on the literature that pertained to digital literacy education in primary and secondary schools from the 1960s to the current day. Therefore, as well as serving the purpose of identifying the current academic literature available, the review also evaluated what aspects of digital literacy had been historically included and excluded. A variety of aspects have contributed and influenced digital literacy education, as noted by Selwyn who states, 'educational technology is intrinsically linked with the social, cultural, economic and political aspects of society' (Selwyn, 2016: 18). In view of this, and due to the complexity, breadth and scope of these factors and the extensive time period covered, the selection of analysed sources includes, academic literature, a variety of political, economic, and educational policy discourses surrounding the development of digital literacy, political statements and policies, education reports and media coverage. In addition, literature was identified and evaluated that pertains to the Welsh language agenda, and whether socio-economic status, and gender have affected educational access and opportunities in this specific field. The review includes a large number of studies regarding digital literacy education in the UK and other territories. However, a lack of academic research regarding digital literacy education specifically in Wales was identified, both pre – and post-devolution. Therefore, this chapter identifies the common themes of the research and the gap this research aims to fill in order to offer an original contribution to knowledge.

The theoretical framework of this research is introduced in chapter 5 and is based on the theories developed in *One-Dimensional Man* (1964) by Herbert Marcuse, one of the main critical theorists of the Frankfurt School. In brief, *One-Dimensional Man* is 'a model analysis of the synthesis of business, the state, the media, and other cultural institutions under the hegemony of corporate capital' (Kellner in Marcuse, 2002: xxxvii). The theories developed in the publication are read as a 'dialectical text, which contrasts one-dimensional with multidimensional thought and behaviour' (Kellner, in Marcuse, 2002: xxvii). Kellner notes that Marcuse:

> Roots his critique of culture and ideology in an analysis of the socio-economic foundation of 'advanced industrial society'. Consequently, the book produces a theory of society that uses the Marxian method of analysis

> to produce a radical critique of contemporary capitalist and Communist societies, culture, and ideology. (Kellner 1984: 227)

Considering the questions posed in this research, coupled with the truism that 'educational technology is intrinsically linked with the social, cultural, economic and political aspects of society' (Selwyn, 2016: 18), the analysis and theories developed in *One- Dimensional Man* were deemed as appropriate to best satisfy the goals and aims of this thesis.

Chapter 6 presents the findings and the discussion of the empirical quantitative and qualitative data analysis of the responses from the focus group and semi-structured interviews. The initial coding of the responses was conducted independently of the chosen theoretical framework using Fairclough's ideas about CDA. The questions were designed and informed by the findings from the literature review, the focus group interviews, and the history of digital literacy education. The macro- and micro-themes that emerged from the initial coding of the qualitative data are presented and subsequently analysed through the lens of the theoretical concepts developed by Marcuse in *One-Dimensional Man.* In addition, the chapter presents, interprets, and contextualises the details of the qualitative research findings and results as analysed through the theoretical lens of the theories developed in *One-Dimensional Man*. The discussions detail how the research questions have been answered, what the larger implications of this study are, and how this research is positioned within the body of research currently available. This chapter justifies the original contribution to knowledge this study has made to the field and offers suggestions for future research. In addition, the limitations of this study are discussed and acknowledged. This chapter, therefore, presents the findings that offer an insight into whether DLE in Wales is sufficiently fostering an understanding of the social, cultural, and ethical implications of the digital milieu; and whether the current provisions are sufficiently orientated to produce and foster critically thinking future citizens.

Finally, Chapter 7 presents the answers to the main questions and clearly states and summarises the conclusions and findings which are exemplified and reflected upon. The significance of the important insights of the research are highlighted, and suggestions and recommendations for future work on the topic are made.

# 2 Chapter 2 Critical Background

## **2.1** Introduction

The following analysis has reviewed the academic literature relating to digital literacy, media literacy and information literacy and the various positions held within the debates surrounding them. In addition, it has identified the gap in the literature that this thesis will address and elucidated why a Marcusian analysis of the qualitative empirical data collected in this study will further the current understanding of digital literacy and its allied disciplines i.e., media literacy and information literacy. This review has found that as digital technologies continue to permeate more aspects of our lives, the boundaries between the afore mentioned literacies continue to lessen. Furthermore, datafication is a term increasingly used by scholars to describe the increasing datafication of virtually every aspect of our everyday lives. Therefore, this review has also included an analysis of the current responses to datafication which include regulation, technical and tactical, and education. While there is an increasing body of work focusing on educational responses to datafication the literature reviewed suggests that educational responses vary significantly, not only from country to country, but also from county to county. Therefore, while datafication is a global issue due to the ubiquity of digital technologies, the way in which educational institutions and individual educators respond to it vary significantly. As such, research into the DLE provisions in Wales, which is currently lacking, will add to this growing body of work and offer an insight into how Wales's educational provisions are responding.

In addition, a theme which continued to emerge throughout the analysis was an urgent need for the promotion of critical thinking within education to furnish students with the skills required to live in the digital milieu. Herbert Marcuse saw in the post-industrial era what he describes as, a demise of critical thinking – and a society that was one-dimensional in both their thought and behaviour. A key question for the Frankfurt school was why capitalism had survived. One probable reason identified was the Gramscian notion of hegemony while two others were commodity fetishism and rationality. The theories Marcuse developed in *One-Dimensional Man* (1964) include what Marcuse referred to as the mechanics of conformity, that is, the methods employed through which individuals were being directed in the realm of thought and behaviour. Marcuse theorised that technology played a significant role in creating one-

dimensional man. Marcuse argues that a world view prevails in modern capitalistic societies that eliminates everything but the facts from the purview of rationality, and that if the facts that make the facts are obscured people have no way of developing a critical relationship to their world. Therefore, a Marcusian analysis of DLE provisions in Wales would further our understanding of the content of these provisions and whether Wales's educational response is promoting critical thinking in relation to the use of digital technologies and the digital environment; aiding students to develop a critical relationship with the digital world they inhabit.

## **2.2** Digital Literacy

Paul Gilster introduced the concept of digital literacy in his 1997 publication *Digital Literacy* (Gilster, 1997: 36). However, as explained by Tibor Koltay, Gilster was not the first to employ the use of 'the phrase 'digital literacy' as it had been applied in the 1990s to denote the ability to read and comprehend hypertext' (Koltay, 2011: 215). When discussing Internet use, Gilster posited that if the overarching core competency of Internet use was critical thinking, then when applying critical thinking to online use, changes needed to be made that extended beyond the concepts taught and applied to other media forms (Gilster, 1997: 37). Koltay suggests that the list of competencies associated with digital literacy are often 'criticized for being restrictive' (Koltay, 2011: 216), and that 'digital literacy is an ability to understand and to use information from a variety of digital sources without concern for the different 'competence lists'' (Koltay, 2011: 216). Literature also suggests that definitions of digital literacy have been ambiguous and multiple as noted by Douglas Belshaw who in 2009 began researching digital literacy only to find that the literature 'seemed somewhat disparate and not at all cohesive, despite authors using similar terminology' (Belshaw, 2014: 21). Belshaw also notes that the term when used by one author did not mean the same when used by another (Belshaw, 2014: 21). Lankshear and Knobel concur that mainstream definitions vary in detail; however, they also note that despite this definitional variation 'digital literacy is increasingly being identified as a formal educational goal' (Lankshear and Knobel, 2015: 8). In addition, Koltay further suggests that 'the term 'digital literacy' is often used in a restricted meaning, denoting exclusively the effective use of information and communications technology (ICT)' (Koltay, 2011: 216) and adds that there are 'inconsistencies in the use of the term' (Koltay, 2011: 216). However, 'while mainstream definitions vary in detail, the scope

and meaning of digital literacy are rarely seen as problematic' (Lankshear and Knobel, 2015: 8). This is an interesting perspective as if the scope and meaning of digital literacy is rarely viewed as problematic, this lack of definition could not only lead to disparities in digital literacy educational curriculums, but also to a situation where relevant skills are omitted from DLE educational programmes.

Belshaw, in his efforts to evaluate and analyse digital literacy firstly unpacks the concept of literacy and begins with the common understanding that it is 'the ability to read and write' (Belshaw, 2014: 11). However, underneath this seemingly 'straightforward statement lies much depth' (Belshaw, 2014: 11). Some questions that are raised by Belshaw are, reading and writing for what purpose? Reading with what level of understanding? Writing with what degree of clarity? And this demonstrates the inherent ambiguity of the concept of literacy (Belshaw, 2014: 11). To explore the concept of literacy further, over 50 years ago in 1957 UNESCO found that it was virtually 'impossible to consider 'literate' and 'illiterate' persons as being part of two separate groups' (Belshaw, 2014: 12).

> Literacy is a characteristic acquired by individuals in varying degrees from just above none to an indeterminate upper level. Some individuals are more or less literate than others, but it is really not possible to speak of illiterate and literate persons as two distinct categories. (UNESCO 1957, in Belshaw, 2014: 12)

Therefore, literacy as a concept has its own definitional complexities and is not a binary concept of simply being able to read and write. In view of the varying degrees of literacy that a person can have Belshaw suggests that 'literacy should be considered on a spectrum - as individuals being 'more literate' or 'less literate' than others' (Belshaw, 2014: 12). To demonstrate this spectrum of literacy Belshaw offers the example that he is more literate than his seven-year-old son but adds 'age does not have a one-to one relationship with literacy' (Belshaw, 2014: 12). However, it can be indicative of how literate someone is likely to be and this he defines as a conceptual shorthand for ascertaining literacy degrees (Belshaw, 2014: 12). Belshaw then offers his own levels of literacy to exemplify that purpose must be considered when evaluating literacy levels. For example, for an academic to write an essay on a subject

of their choice it would be relatively easy, partly due to the years ‘spent as a learner in formal education’ (Belshaw, 2014: 12/13). However, Belshaw adds that ‘it is mostly to do with what society counts as ‘being literate’’ (Belshaw, 2014: 13). If what society deemed as being literate was using programming languages for example, then a person who was extremely capable of writing an essay but unable to use programming languages would be deemed less literate (Belshaw, 2014: 13). Literacy therefore is a social construct that must be understood in historical and contextual terms. Additionally, literacy has always been associated with technology, in the respect that ‘before books went digital, they were created either by using a pen or by using a printing press’ (Belshaw, 2014: 13). Both the printing press and the pen are technology and as such literacy ‘is inextricably linked with technology even before we get to digital literacies’ (Belshaw, 2014: 13). Belshaw then poses the question, does a ‘text’ have to be ‘written’? ‘Is there a literacy, a process of decoding and understanding, when it comes to dealing with images?’ (Belshaw, 2014: 13). For example, visual literacy can be traced back to the late 1960s when the First Annual National Conference on Visual Literacy was held in March 1969 from which ‘came the first major publication in the field’ (Williams and Debes, in Braden and Hortin, 2016: 37). However, Belshaw takes the position that ‘as soon as we allow non- written artefacts to be equated with ‘literacy’ we open Pandora’s box. Visual literacy? Health literacy? Information literacy? Gardening literacy? *Digital literacy?* [Own emphasis]’ (Belshaw, 2014: 13). Koltay suggests that Pandora’s box has already been opened in the respect that ‘the list of newer literacies does not seem to end’ (Koltay, 2011: 218) with reproductive literacy also being added, which is defined as ‘the creative re-use of existing materials and is embedded into digital literacy’ (Bawden 2008, in Koltay, 2011: 218). However, Koltay is of the opinion that reproductive literacy is reasonable ‘as communication increasingly involves not the creation of original texts but selecting, arranging, filtering and recombining pre-existing information’ (Geisler et al., 2001: 285–286, in Koltay, 2011: 218). While Koltay suggests that reproductive literacy is reasonable in its thinking ‘this is not a new phenomenon, even if it has been magnified by digital technologies’ (Koltay, 2011: 218). The example offered to support this notion is that many writings ‘involve reflection on written texts, because the thinking and research on the given subject has already been done and it has been published’ (Koltay, 2011: 218). Ferguson (2002) argued for multimodal literacy, stating that a literacy concept reliant on a ‘deficit model will not work, as literacy is

not the main goal of education, but a by-product of the educational process' (Ferguson, in Koltay, 2011: 218). Cordes (2009) explained multimodal literacy as 'a synthesis of multiple modes of communication that results in a transformation of the singular modes into forms that produce new or multiple meanings' (Cordes, in Koltay, 2011: 218). Belshaw argues that literacy as a concept is itself problematic before you start adding modifiers, such as digital, and that we see literacy as a cognitive, and individual activity, where there is an individual reader, reading the work of an individual writer and any social aspects are considered as a bolt-on, for example, reading groups, or poetry recitals (Belshaw, 2014: 14). Belshaw argues that 'literacy is inherently a social phenomenon' (Belshaw, 2014: 14) and further argues that 'in isolation, an individual cannot be literate at all' (Belshaw, 2014: 14). The following quote by Lemke is used to exemplify this notion:

> Even if we are alone, reading a book, the activity of reading — knowing which end to start at, whether to read a page left-to-right or right-to-left, top-down or bottom-up, and how to turn the pages, not to mention making sense of a language, a writing system, an authorial style, a genre forma (e.g. a dictionary vs. a novel) — depends on conducting the activity in a way that is culturally meaningful to us. Even if we are lost in the woods, with no material tools, trying to find our way or just make sense of the plants or stars, we are still engaged in making meanings with cultural tools such as language (names of flowers or constellations) or learned genres of visual images (flower drawings or star maps). We extend forms of activity that we have learned by previous social participation to our present lonely situation. (Lemke, 2002: 36-37, in Belshaw, 2014: 14)

Belshaw also suggests that 'literacy is closely aligned with both the knowledge and use of tools' (Belshaw, 2014: 14). In addition, literacy is also dependant on a different type of knowledge which Belshaw calls content- knowledge, meaning that something must be communicated through writing in addition to 'an ability to use tools to do that communicating' (Belshaw, 2014: 15). Belshaw also argues that while some would wish to equate literacy with the tool and content knowledge this is problematic in the respect that it does not consider that knowledge of content and tools is not a static conception, and indeed both forms of knowledge will change over time because of 'external factors out of our control such as societal norms and trends' (Belshaw, 2014: 15). For example, tool knowledge for hundreds of years has been static and centred

predominantly around the printing press and pen, and has to some extent been taken for granted, ergo we have 'come to accept that advances in content-knowledge affect literacy' (Belshaw, 2014: 15). Belshaw then highlights the changes that have come about since the introduction of electronic forms of communication and in particular the Internet quoting the educator and author George Siemens (2006) who spoke about how the Internet had created a situation where knowledge itself had been '"broken away from its moorings, its shackles"' (Siemens, in Belshaw, 2014: 15).

For Belshaw, 'there can never be a single literacy to rule them all' (Belshaw, 2014: 16), and suggests that the 'common- sense 'literacy' to which we refer would be better described as *traditional print literacy* as it depends upon the technology of the printing press' (Belshaw, 2014: 16). The new communication tools that have developed and been introduced into society such as email, social networking, video-sharing sites etc., require new forms of literacy to understand them (Belshaw, 2014: 16). These new forms of literacies are then referred to as 'micro-literacies' (Belshaw, 2014: 16). Belshaw suggests that there is a tendency to wrap them up into larger bundles and as such, when theorists talk about new literacies or when Belshaw refers to digital literacies this is in effect what they are talking about (Belshaw, 2014: 16). Furthermore, for Belshaw 'what underlies all of this is that being literate is not only an ongoing process, but necessarily a *social* activity' (Belshaw, 2014: 16). Belshaw adds that tools are used for the purpose of communicating with each other and as such both tool-knowledge and content knowledge are required, and that in the 21st century both of these aspects of knowledge are in flux 'meaning that, tomorrow's illiterate will not be the man who can't read; he will be the man who has not learned how to learn' (Belshaw, 2014: 16).

Lankshear and Knobel also propose that 'rather than conceiving digital literacy as some unitary phenomenon it is better to think in terms of diverse digital literacies' (Lankshear and Knobel, 2015: 8). They go on to suggest that there are two main types of definitions of digital literacy, either 'conceptual definitions or standardized sets of operations intended to provide national and international normalizations of digital literacy' (Lankshear and Knobel, 2015: 8). The conceptual definitions include those offered by Richard Lanham and Paul Gilster. Richard Lanham claims that 'literacy has extended its semantic reach from meaning the ability to read and write, to now

meaning the ability to understand information however presented' (Lanham, 1995: 198). Lanham places emphasis on 'the multi-mediated nature of digital information' (Lanham, 1995: 200) and argues that 'to be digitally literate involves being skilled at deciphering complex images and sounds as well as the syntactical subtleties of words' (Lanham, 1995: 200). Lanham adds to this by stating that, digitally literate people can quickly move from one type of medium to another and know 'what kinds of expression fit what kinds of knowledge' (Lanham, 1995: 200). Digitally literate people, also 'become skilled at presenting [their] information in the medium that [their] audience will find easiest to understand' (Lanham, 1995: 200). Therefore, 'digital literacy enables us to match the medium we use to the kind of information we are presenting and to the audience we are presenting it to' (Lankshear and Knobel, 2015: 9). Paul Gilster defined digital literacy in similar terms to Lanham:

> The ability to understand and use information in multiple formats from a wide variety of sources when it is presented via computers and, particularly, through the medium of the Internet. (Gilster, in Pool, 1997: 6)

Gilster stresses what he views as 'inherent differences between digital information media and conventional print media' (Gilster, in Pool, 1997: 6). For Gilster, digital literacy necessitates 'adapting our skills to an evocative new medium, [and] our experience of the Internet will be determined by how we master its core competencies' (Gilster, in Pool 1997: 6). Additionally, when Gilster describes these competencies, he adds that they 'are not merely operational or technical competencies' (Gilster, in Pool 1997: 6). For Gilster, 'digital literacy involves mastering ideas, not key- strokes' (Gilster, in Pool 1997: 6). The competencies that Gilster focuses on are 'digital literacy competencies: knowledge assembly, evaluating information content, searching the Internet, and navigating hypertext' (Gilster, in Pool 1997: 6). Ultimately, what Gilster does claim is that 'we need to teach and learn how to use the Web properly and how to be critical' (Gilster, in Pool 1997: 8). Interestingly, Gilster discusses what he describes as the 'familiar image of students using the Internet to find information that they simply cut and paste into a cobbled- together collection of quotes or multimedia items' (Gilster, in Pool 1997: 8). Based on students using the Internet in this way, where they are not assimilating or synthesising information, Gilster asserts that we

need to teach them ‘how to assimilate the information, evaluate it, and then reintegrate it’ (Gilster, in Pool 1997: 9).

The second definition attributed to digital literacy as noted by Lankshear and Knobel is described as typical standardised operationalisations of digital literacy. This refers to ‘attempts to operationalize what is involved in being digitally literate in terms of certain tasks, performances, demonstrations of skills, etc’ (Lankshear and Knobel, 2015: 9). This type of digital literacy has been described as mechanistic in this thesis as some of what is involved here are ‘little more than codifications of sets of specific operations at the level Gilster refers to as keystrokes’ (Lankshear and Knobel, 2015: 9). The challenges that digital literacies present to policy, pedagogy, and research in relation to education are in Lankshear and Knobel’s view significant (Lankshear and Knobel, 2015: 10). They suggest that to face and meet the challenges one should begin by ‘ensuring that digital literacy does not become the post- typographic equivalent of functional literacy from the world of print’ (Lankshear and Knobel, 2015: 10). Furthermore, they advocate for research that offers an insight into how children who are growing up in a digital world would like to learn, ‘and the extent to which, and ways in which current educational directions and emphases may negate such ways of thinking and desires for learning’ (Lankshear and Knobel, 2015: 10). The research in this thesis could contribute to knowledge regarding the current educational direction of digital literacy in Wales and offer insights into whether current provisions are influenced by the post-typographic equivalent of functional literacy from the world of print.

Danhua and Zhonggen conducted a literature review of digital literacy over two decades (2000 -2022) and found that ‘many people have put forward their different understandings of digital literacy in the past few years’ (Danhua and Zhonggen, 2022: 2). While definitions vary, they also suggest that they can be ‘roughly divided into two branches’ (Danhua and Zhonggen, 2022: 2). These two branches consist of people who either define the term in terms of focusing on technical skills or in terms of ‘the grasp of ideas’ (Danhua and Zhonggen, 2022: 2). It was as recently as 2017 that Chan introduced another definition of the term:

> The ability to understand and use information in various formats, highlighting the role of critical thinking rather than a simplistic grasp of Information and Communication Technology (ICT) skills. (Chan, in Danhua and Zhonggen, 2022: 2)

Danhua and Zhonggen summarised their review by stating that there is a consensus that some definitions of digital literacy 'only place emphasis on digital skills, while others focus on the multidimensional concept' (Danhua and Zhonggen, 2022: 2). The position taken by Danhua and Zhonggen is that 'it is of vital significance to increase both the basic digital skills and those skills by which people understand and use the online content' (Danhua and Zhonggen, 2022: 2). Lankshear and Knobel argue 'rather than conceiving digital literacy as some unitary phenomenon it is better to think in terms of diverse digital literacies' (Lankshear and Knobel, 2015: 8). The review of the literature in relation to digital literacy indicates that the term is difficult to define. However, overall, there are two common branches that consist of people who either define digital literacy in terms of focusing on technical skills or in terms of 'the grasp of ideas' (Danhua and Zhonggen, 2022: 2). Literature also indicates that there is an increasing recognition that digital literacy is a plurality of literacies or a constellation of micro-literacies that are increasing in concurrence and in parallel with the increasing datafication of our lives; facilitated by the increased use and adoption of digital technologies. Furthermore, there is also a recognition that both mechanistic and critical thinking skills need to be increased for people to 'understand and use the online content' (Danhua and Zhonggen, 2022: 2).

## **2.3** Media Literacy

Media literacy is described by Koltay as 'highly interdisciplinary, using the tools and methods of sociology, psychology, political theory, gender, and race studies, as well as cultural studies, art, and aesthetics' (Koltay, 2011: 212). In addition to these disciplines, Koltay notes that 'the work of Marshall McLuhan and others in communication studies is also important' (Duncan, in Koltay, 2011: 212). James Potter in *The State of Media Literacy* (2010) explains that 'media literacy is a term that means many different things to different people - scholars, educators, citizen activists, and the general public' (Potter, 2010: 675). Potter also notes that media literacy is a relatively knew topic that is 'popular not just among media scholars but among the

general public of educators, consumer activists, and parents concerned about their children's risk of media exposures' (Potter, 2010: 675). When Potter searched the term media literacy via Google it returned 765,000 hits, and when searching the same term in Google Scholar it returned 'more than 18,700 articles' (Potter, 2010: 675). In addition, most of the writings about media literacy had been 'published in the past three decades' (Potter, 2010: 675). Potter attributes this explosion of research and literature during this period to the notion that more scholars were attracted to the topic due to the 'digitization of information and convergence across channels of transmission' (Potter, 2010: 675). Potter adds that 'the body of literature about media literacy is a large complex patchwork of ideas, and the variety of interpretation of media literacy can be confusing to scholars' (Potter, 2010: 675). Potter's article cites twenty-three differing interpretations of media literacy, however, as it is far beyond the scope of this review to include them all, the following are offered as examples:

> Adams and Hamm (2001) say that ''media literacy may be thought of as the ability to create personal meaning from the visual and verbal symbols we take in every day from television, advertising, film, and digital media. It is more than inviting students to simply decode information. They must be critical thinkers who can understand and produce in the media culture swirling around them'' (p. 33). (Adams and Hamm, in Potter, 2010: 678)

> Anderson (1981): the ''skillful collection, interpretation, testing and application of information regardless of medium or presentation for some purposeful action''. (Anderson, in Potter, 2010: 678)

> Barton and Hamilton (1998) [cited in Mackey, 2002, p. 5–6] define literacy as ''primarily something people do; it is an activity, located in the space between thought and text. Literacy does not just reside in people's heads as a set of skills to be learned, and it does not just reside on paper, captured as texts to be analysed. Like all human activity, literacy is essentially social, and it is located in the interaction between people'' (p. 3). (Barton and Hamilton (1998) [cited in Mackey, 2002, p. 5–6], in Potter, 2010: 678)

> Hobbs (2001): ''Literacy is the ability to access, analyze, evaluate and communicate messages in a variety of forms'' (p. 7). Hobbs says

> this definition suggests the following characteristics: inquiry-based education, student-centered learning, problem solving in cooperative teams, alternatives to standardized testing, and integrated curriculum. (Hobbs, in Potter, 2010: 678)

Rene Hobbs responded to Potter's article *The State of Media Literacy* (2010), critiquing the paper for omitting a considerable amount of the work that had emerged since 2001 from 'scholars across the fields of communication, education, and public health' (Hobbs, 2011: 419). Hobbs also critiques the article for omitting to mention 'the development of numerous media literacy education initiatives by educational practitioners working in both formal and in informal education' (Hobbs, 2011: 419). Hobbs argues that Potter's conceptualisation of media literacy is reductive in the respect that it frames it as being a 'response to counteract the media and popular culture' (Hobbs, 2011: 419) and fails 'to capture the depth and complexity of the field' (Hobbs, 2011: 419). In addition, for Hobbs the differing definitions Potter offers of media literacy frames the field as 'an incoherent mess' (Hobbs, 2011: 419). Hobbs goes on to quote Buckingham when she reports that the field since at least the 1980s has been working on enabling 'people to recognize "the constructed nature of media texts, and thereby to show how media representations [reinforce] the ideologies of dominant groups in society"' (Buckingham, 2004: 8, in Hobbs, 2011: 427). For Hobbs the central aspect of media literacy education and indeed the goal is to promote a 'deep understanding of the concept of constructedness' (Hobbs, 2011: 427) rather than merely transmitting facts and information about media industries, audience, and effects (Hobbs, 2011: 427). Hobbs is of the opinion that even though media literacy educators may well explore varying interpretations of popular culture, and the texts of mass media '(feminist, Marxist, semiotic, critical, or other)' (Hobbs, 2011: 427). In general, they usually '"adopt a more student centered perspective, which begins from young people's existing knowledge and experience of media, rather than from the instructional imperatives of the teacher"' (Buckingham, 2004: 13, in Hobbs, 2011: 427). Hobbs adds that if education is used to promote a particular point of view whether positive or negative about the various forms of media such as news, advertising, the Internet, video games or entertainment media then this is 'a very slippery slope that verges on propaganda' (Hobbs, 2011: 427). Hobbs is of the opinion that 'such projects should not be considered a form of media literacy education'

(Hobbs, 2011: 427) and that a call should be made 'for the development of interdisciplinary programs in higher education to more deeply explore the connections between communication, media studies, and education' (Hobbs, 2010, in Hobbs, 2011: 427). Hobbs also emphatically suggests that:

> We must continue to examine the complex pedagogical practices that support civic engagement, critical and creative thinking, and the broad range of communication competencies that support a lifetime of learning with and about mass media, popular culture, and digital technology. (Hobbs, 2011: 428)

Media literacy is described as:

> An expanded conceptualisation of literacy that includes the ability to access and analyse media messages as well as create, reflect and take action, using the power of information and communication to make a difference in the world. (Hobbs, 2010: n.p.)

The integration of media literacy and digital literacy is evidenced by David Buckingham who recently wrote a media education manifesto that focuses on critical media education suitable for digital times. The question posed here is, 'is media education really enough?' (Buckingham, 2019: 114). Buckingham argues that 'media education is not a substitute for media regulation' (Buckingham, 2019: 115) and further suggests that media education should be linked to a broader remit for media reform (Buckingham, 2019: 115). Buckingham adds to this by stating that while we 'want a rich, diverse, and healthy media environment, we clearly need critical, discerning audiences. Yet audiences also deserve to be respected rather than merely exploited' (Buckingham, 2019: 115). For Buckingham, recognition also needs to be given to the limits of what education itself can achieve (Buckingham, 2019: 115). Buckingham recognises the vitalness of schools as public institutions but suggests that 'there are bound to be significant restraints on how they can operate' (Buckingham, 2019: 115). Essentially, Buckingham is of the opinion that education alone cannot 'provide sufficient solutions to the problems we face' (Buckingham, 2019: 115/116). He goes on to offer a variety of solutions, or a multipronged approach if you will that

includes considering the Internet as a basic public utility much ‘like clean water and air’ (Buckingham, 2019: 116). For Buckingham:

> If we are to have a non-commercial public space in which information can be truly shared, we need institutions and structures that will keep it so. When our key channels of communication are run (even partly) by private companies, there needs to be tight regulation and accountability, and commercial monopolies should be actively prevented and broken up. (Buckingham, 2019: 116)

While Buckingham acknowledges that this type of change is challenging, he offers the thought that at the very basic level of effecting this change and challenging this aspect of the Internet ‘digital companies should pay their taxes, many of which they currently manage to avoid’ (Buckingham, 2019: 116). In addition, Buckingham offers a suggestion for how these taxes along with levies on massive profits could be used to fund cultural initiatives and public information services that could create reliable online content (Buckingham, 2019: 116). Other suggested uses of these taxes include ‘the provision of access for excluded groups, and the development of tools, resources and training for media education’ (Buckingham, 2019: 116). The incredibly difficult challenge of effecting a change such as this is also highlighted by Jenkins who noted that what motivates digital media companies is ‘their own economic interests’ (Jenkins, 2006: 249). By conducting a Marcusian analysis of the data collected in this study the influence of digital media companies on education can be explored, especially in relation to whether their economic interests are perpetuating their inclusion and increasing influence and permeation into educational settings. Another suggestion offered by Buckingham to address the problem is for tech companies such as Google and Meta to be recognised as media companies rather than merely technology companies that provide services for others to create content, rendering them as ‘neutral intermediaries’ (Buckingham, 2019: 116). This change of status would not allow ‘them to escape any editorial responsibility for the material they publish and circulate’ (Buckingham, 2019: 116) or escape current and existing media regulations, ‘for example relating to political advertising, and to hate speech and harassment’ (Buckingham, 2019: 117). On this point it is noted that laws do exist, however, the issue is that there is ‘little coherence in how they are applied online’ (Buckingham, 2019: 117).

The use of personal data is another key area raised by Buckingham. For users to access and make use of digital platforms they must sign over 'the rights to their personal data, which is then sold on to third parties to use as they wish' (Buckingham, 2019: 117). Buckingham points out that what has become a normalised practice is little understood when 'few of us understand what is at stake in checking 'agree' on a terms of service agreement' (Buckingham, 2019: 117). Additionally, complex questions arise such as 'who is performing the 'labour' that is involved in creating social media content, and who owns what is produced' (Buckingham, 2019: 117). Buckingham views education playing a role here by informing individuals about social media content ownership and elucidating whose labour is being used. However, the caveat is added that even if users do develop an understanding of these aspects, and 'understand what is happening, they generally have few alternatives' (Buckingham, 2019: 117). This lack of alternatives could just as aptly be described as one-dimensional, therefore, conducting a Marcusian analysis of DLE provisions could further our understanding of this issue, especially in relation to DLE provisions in primary and secondary schools. Buckingham is of the opinion that at a minimum we should be 'entitled to greater transparency, and to much greater control over the collection and use of our personal data, both by companies and by governments' (Buckingham, 2019: 118). The complexity and difficulties surrounding the resolution of these problems are compounded by global technological companies evading any regulatory attempts by governments (Buckingham, 2019: 118). However, regulation also has the added complexity of potentially diminishing an individuals' right to freedom of speech which Buckingham cites as a difficult issue and suggests that consideration needs to be given to 'how much freedom we want and need' (Buckingham, 2019: 118). Buckingham then explores this notion further by questioning 'whether we actually have freedom at the moment in any case' (Buckingham, 2019: 118). Buckingham is questioning whether regulation will serve to diminish our freedom, especially in relation to free speech, a key tenet of western liberal philosophy and an individuals' unalienable right that all other rights are built on and extend from. In *One-Dimensional Man* Marcuse suggests that we are no freer in a democratic society than we are under a totalitarian regime, the only difference is that different methods are employed to diminish and limit our freedoms in a democratic society. Therefore, a Marcusian analysis could further our understanding of this issue in relation to DLE provisions and whether they

include provisions that enable a user to develop an understanding of their position within the digital space.

Buckingham also questions governments' capabilities in relation to regulation and suggests we could be 'forgiven for wondering whether governments are capable of regulating these media, or indeed whether they actually want to do so' (Buckingham, 2019: 118). This position is based on how thus far 'all we have seen are very piecemeal responses – superficial attempts to find a quick fix for the latest problem, but nothing substantial or coherent in the way of action' (Buckingham, 2019: 118). For Buckingham, while there is a clear acknowledgment that education has a role to play it alone cannot meet the challenges of the new media environment and should be a 'part of a wider strategy' (Buckingham, 2019: 118). What Buckingham suggests is that individualistic solutions cannot meet these challenges and the role of education should offer more than simply enabling 'us to understand and to cope with what already exists; it should also encourage us to explore alternatives, and to demand change' (Buckingham, 2019: 118). Therefore, it could be argued that Buckingham is advocating for a rallying against what could be described in Marcusian terms as a one-dimensionality to education that focuses on teaching students to understand and cope with what already exists rather than seeking alternatives. By deploying a Marcusian analysis of the data collected for this thesis, the current DLE provisions in Wales can be analysed to evaluate the extent to which they are firstly, teaching students to understand and cope with the existing digital environment by educating them in a critical fashion, and secondly, whether DLE education is encouraging them to question the status quo and seek alternatives. Essentially, evaluating whether current provisions are one-dimensional. Marcuse's critical theories developed in his analysis of the post-industrial society include theories that explore and offer an analysis of societies inability to imagine or even perceive alternatives let alone demand change, therefore a Marcusian analysis can further our understanding of this critical perspective.

To further exemplify how media literacy is increasingly considered within the digital context, McDougall et al., describe 'digital literacy in the context of media literacy' (McDougall et al., 2019: 203). In other words, media disseminated via digital means is where McDougal et al., suggest that digital literacy is needed as a companion to media literacy (McDougall et al., 2019: 203/4). This need is exemplified by analysing

the commonalities between the Brexit campaign and the US election campaign where it was impossible to identify who was doing what, or what their intentions or motives were (McDougall et al., 2019: 203/4). In this example McDougall et al., suggest that to attempt to discern what was algorithmically generated content, fake news created specifically for generating ad revenue, state action or propaganda was a futile endeavour (McDougall et al., 2019: 203/4) and where 'digital literacy is most needed' (McDougall et al., 2019: 203/4). In this instance digital literacy is not needed to distinguish what is true and what is false, or even to 'distinguish between the sub-categories of fake news or its motivations, but to read all digital media with the kinds of skeptical resilience generated by critical literacy' (McDougall et al., 2019: 203/4). While McDougall et al., cite these specific cases to exemplify the need for media literacy in the context of digital literacy Belinha De Abreu states that, educators are faced with platforms disseminating misinformation and disinformation 'on a daily basis' (De Abreu, 2021: 26). De Abreu sees the increase in misinformation and disinformation as 'a growing symptom of the lack of media and information literacy among the general public' (De Abreu, 2021: 26). The increasing spread of misinformation and disinformation seen 'over the past several years demonstrates the absolute imperative for critical thinking and critical discourse regarding media consumption and media literacy' (De Abreu, 2021: 26). Interestingly, a paper published in 2019 by Julian McDougall stated that in the UK the only subject area where questions of trust in information were located was Media Studies (McDougall, 2019: 39). McDougall also notes that there is a deeply ironic situation in the UK in the respect that Media Studies is a subject that 'is derided by politicians and academics in the higher ranked Universities for its lack of 'substance'' (McDougall, 2019: 39). The findings from McDougall's research indicated that:

> Across the stakeholder groups, participants tended to agree that (1) the fine balance between media education / literacy for critical resilience and the tipping point into distrust of all information was the place where we should be applying our energies and that (2) if the critical thinking fostered in Media Studies (in the UK context) were integrated into all the curriculum, then we would not need Media Studies, but currently, young people are at more risk without it as it is the only place in education where questions of trust in information are located. (McDougall, 2019: 39)

McDougall goes on to say that 'there was agreement that the problem is not only about information disorder but also the failure of education to create resilient, critical thinkers' (McDougall, 2019: 38). Henry Jenkins also argues for the promotion of media literacy to help 'all children to develop the skills needed to become full participants in their culture' (Jenkins, 2006: 248). Essentially, there is a consensus that 'with the advent of digital technologies, awareness of media is acquiring crucial importance' (Koltay, 2011: 211). Furthermore, Koltay suggests, 'media literacy, information literacy and digital literacy are the three most prevailing concepts that focus on a critical approach towards media messages' (Koltay, 2011: 211). However, for Koltay the nature of these literacies 'show both similarities to and differences from each other' (Koltay, 2011: 211), and Koltay outlines the various contexts of their functioning as well as giving special attention to 'the question of the blurring line between media consumers and producers' (Koltay, 2011: 211). Koltay takes the position that the only way to deal with the amount of datafied information being disseminated through a plethora of digital mediums is to 'employ more digital tools' (Koltay, 2011: 211). A common and recurring theme within the various positions held in relation to media literacy in the digital context is the notion that users need to develop critical literacy and critical thinking skills. Marcuse in *One-Dimensional Man* stated that critical rationality was on the retreat in a post- industrial society. Therefore, a Marcusian analysis of the data collected in this thesis could offer an insight into whether DLE provisions promote the type of critical literacy and critical thinking skills that literature suggests have previously only been included in Media studies.

## **2.4** Information Literacy

Information literacy (IL) has traditionally been seen as 'academic, with developments of standards since the 1990s at school level, and landmark standards at university level in the early start of the century' (Lau and Grizzle, 2020: 91/92). The term information literacy can be traced back to 1974 'but began developing in the 1980s and reached sizeable impact in the 1990s' (Lau and Grizzle, 2020: 91/92). As such, 'IL has been a key activity for libraries for at least three decades' (Lau and Grizzle, 2020: 91/92). The more traditional advocates of IL have 'focused on what can be called formal or perhaps academic information sources, such as journal articles, books, and other printed serial and monographic materials' (Lau and Grizzle, 2020: 94). However, the landscape is changing and now, even IL experts are calling for a focus change that allows IL to

‘exit the realms of higher education levels or research in formal workplace settings and, as with media and information literacy (MIL) to take on a more societal and community-based context’ (Grizzle, 2014, in Lau and Grizzle, 2020: 94). While literature suggests that the learning goals of IL and media literacy (ML) are shared that is, to foster ‘an information-literate citizen’ (Lau and Grizzle, 2020: 94), arguments ensue amongst some experts ‘that both fields differ to some extent in the information medium and the way media and information are accessed’ (Lau and Grizzle, 2020: 94).

> CILIP’s active Information Literacy Group in the UK states, in its newly released 2018 definition of IL, that ‘Information literacy is the ability to think critically and make balanced judgements about any information we find and use. It empowers us as citizens to develop informed views and to engage fully with society’. (CILIP, 2018, in Lau and Grizzle, 2020: 94)

Grizzle compares CILIP’s definition of IL to the definition of ML proposed by the National Association of Media Literacy in the USA:

> [ML] is seen to consist of a series of communication competencies, including the ability to access, analyze, evaluate, and communicate information in a variety of forms, including print and non-print messages. Media literacy empowers people to be both critical thinkers and creative producers of an increasingly wide range of messages using image, language, and sound. (NAMLE, 2019, in Grizzle, 2014a, 102, in Lau and Grizzle, 2020: 94)

Grizzle argues that both definitions on close textual analysis approximate to ‘very similar meanings’ (Grizzle, 2014, in Lau and Grizzle, 2020: 94). However, regardless of how general or comprehensive these definitions are, Lau and Grizzle argue that mass media lie at the heart of ML and cite the following as examples: ‘social networks, video, news, television, other multimedia content’ (Lau and Grizzle, 2020: 94). While ‘both fields do address all communication means’ (Lau and Grizzle, 2020: 94) their differences are ‘that the core media for one field is sometimes peripheral to the other, and vice versa’ (Lau and Grizzle, 2020: 94). The ML field tends to include media produced by ‘major industries, alternative media outlets, and individual producers’ (Lau and Grizzle, 2020: 94). In addition, the media produced can also ‘include pop culture as well as high culture ‘texts’ and can be evaluated by those working within

the industry, and by audiences' (Lau and Grizzle, 2020: 94). ML and IL also differ in the way they focus on and evaluate the content 'as well as in the way media and information are accessed or delivered to the end user' (Lau and Grizzle, 2020: 94). Further distinctions argued for as to the differences between the two literacies pertain to the origins of both literacies. IL's origins lie in the 'library and information science field, mainly in school and academic libraries' (Lau and Grizzle, 2020: 96). As such, IL tends to be more resource orientated in the respect that libraries have an interest in the effective use and higher demand 'of their collections and information services by their learning community' (Lau and Grizzle, 2020: 96). This community is predominantly made up of, students, teachers, professors, and researchers, and due to the nature of this community they tend to add more weight to primary information when teaching or researching (Lau and Grizzle, 2020: 96). In this respect the mass media tends to receive less attention in education in the world of libraries and this is more prevalent in higher education on the basis that, information gleaned from a mass media source is less reliable (Lau and Grizzle, 2020: 96). Therefore, it appears that IL seems to be distinct form ML in the respect that it is not entirely but is predominantly siloed to higher education institutions and targeted at a specific academic community (Lau and Grizzle, 2020: 96). On the other hand, Lau and Grizzle point out that ML 'has been part of the world of primary and secondary education' (Lau and Grizzle, 2020: 96), and that both primary and secondary school educators have provided 'students with the skills needed to assess and analyse the media that surrounds them, as well as develop media production and digital literacy skills' (Lau and Grizzle, 2020: 96). However, Grizzle (2015) along with other experts have demonstrated that 'when taken from definitional and competencies perspectives, IL, ML and even digital literacy converge' (Lau and Grizzle, 2020: 96). To arrive at this conclusion Grizzle conducted a review of, 'broad competencies of information literacy, media literacy and digital literacy as articulated by various experts' (Lau and Grizzle, 2020: 96). After a close analysis Grizzle concluded that:

> There is more agreement than departures on what are the key competencies. Symmetry exists across almost all the competencies though primarily from different viewpoints and standpoints with diverging yet converging emphases. These ever-converging emphases are often crowded out by 'noise channels' of

> communication on MIL. (Grizzle, 2015, in Lau and Grizzle, 2020: 96)

Lau and Grizzle go on to state that due to the current technological developments the boundaries between media literacy and information literacy, as formally defined by both fields are diminishing (Lau and Grizzle, 2020: 96). They also add that 'media is increasingly becoming part of formal academic studies' (Lau and Grizzle, 2020: 96), and that with the increase in digital production these boundaries and the differences between the fields of IL and ML will continue to lessen (Lau and Grizzle, 2020: 96). This convergence, and the increasingly diminishing boundaries between the fields is reflected in a comprehensive literature review (Koltay, 2011: 217). Various terms relating to information literacy have been employed in the literature, they include:

> information literacy; computer literacy: synonyms – IT/information technology/electronic/electronic information literacy; library literacy; media literacy; network literacy: synonyms – internet literacy, hyper-literacy; digital literacy; synonym-digital information literacy. (Koltay, 2011: 217)

Koltay suggests that media literacy and information literacy are similar in the respect that both require analytic skills, 'coupled also by the requirement of critical evaluation, regarded in both cases as a kind of default quality' (Koltay, 2011: 217). In relation to 'media literacy this can be an examination of the constructedness of media messages' (Koltay, 2011: 217), and in relation to information literacy this can be interpreted 'as a way of functioning within complex communicative situations' (Koltay, 2011: 217). As rightly pointed out by Koltay 'it seems to be hardly disputable that this is also valid for media literacy' (Koltay, 2011: 217). What is interesting is that the distinction that seems to be most prevalent between media literacy and information literacy is that even though information literacy includes a wide spectrum of issues 'the lack of information literacy has always seemed to be of more importance to information specialists' (Koltay, 2011: 217). To be more precise 'in particular to academic librarians, than to any other players in the information and education arena' (Koltay, 2011: 217). The convergence of media and information literacy was crystalised by UNESCO in 2007:

> UNESCO created the MIL concept in 2007 by merging two separate terms, stating that MIL '. . . empowers citizens to understand the functions of media and other information providers, to critically evaluate their content, and to make informed decisions as users and producers of information and media content.' (UNESCO, 2017c; see also Grizzle, 2013). The organisation prefers not to give a classic definition of MIL, focusing instead on delineating the key learning objectives, outcomes or competencies of MIL. The argument here is that it is hard to capture all the essentials of MIL in one short paragraph. Furthermore, when one considers the hundreds of definitions of media literacy and information literacy, with their myriad of entry points and emphases, nonexpert stakeholders may be confused. (Grizzle, 2013 and Grizzle, 2014a, in Lau and Grizzle, 2020:89)

The importance and significance of MIL skills are evidenced by their inclusion as elements crucial to the 'exercising of human rights, as established by Article 1 of the Universal Declaration of Human Rights, 'all human beings are born free and equal in dignity and rights . . .'' (United Nations 2006, in Lau and Grizzle, 2020:90). The promotion of MIL skills has been demonstrated by the great efforts made by UNESCO who advocate that these skills are vital in the exercise of human rights efforts (Grizzle, 2016, in Lau and Grizzle, 2020: 90). Additionally, the role that MIL skills play 'in democracy, participation and social, economic and political engagement, as well as in personal well-being, have also been a concern for UNESCO' (Lau and Grizzle, 2020: 90).

The United Nations Educational, Scientific and Cultural Organisation's headquarters in Paris where the Communication and Information Division is situated – is currently known as the 'Freedom of Expression and Media Development, and the Knowledge Societies Divisions' (Lau and Grizzle, 2020: 90). Within this division and under the umbrella of the Communication and Information Sector IL and ML were being worked on, 'on separate fronts' (Lau and Grizzle, 2020: 90). UNESCO realised that working on IL and ML independently 'did not benefit from synergies and compromised greater impact' (Grizzle and Wilson, in Lau and Grizzle, 2020: 90). This independent working approach of IL and ML had been in place for some years:

> In the case of IL, UNESCO began paying attention to the subject around 2003, when it co-sponsored the Information Literacy Meeting of Experts, organised by the United States National Commission on Library and Information Science, and the National Forum on Information Literacy (NFIL) in Prague, Czech Republic, where 23 countries from all continents were represented, releasing the seminal manifesto Towards an Information Literate Society (UNESCO, 2003). This was UNESCO's first meeting on IL and probably the first international meeting to discuss the importance and the role of IL in society, even though national and local conferences had taken place several years earlier, such as the ones in the USA in the 1980s. (Lau and Grizzle, 2020: 90)

At the same time IL standards were being established, developments were also taking place in media literacy and, 'UNESCO unified this IL tradition with similar practices to develop ML competency standards' (Lau and Grizzle, 2020: 92). For teachers it would be 'UNESCO's Freedom of Expression and Media Development Division that oversaw the development of Media and Information Literacy' (Wilson, Grizzle, Tuazon, Akyempong and Cheung, 2011, in Lau and Grizzle, 2020: 92). Lau and Grizzle describe this as pioneering work that was looking to the future and considering the 'convergence of radio, television, Internet, newspapers, books, digital archives and libraries into one platform – thereby, for the first time, presenting MIL in a holistic manner' (Grizzle and Wilson, 2011, in Lau and Grizzle, 2020: 92). Experts were gathered from various subject areas such as 'media and communication, information and library sciences, technology, education and curriculum development' (Lau and Grizzle, 2020: 92) to advise on the drafting of the guidelines. This was facilitated by a 'series of expert group meetings in Paris as well as validation meetings with other experts in Africa, Asia and the Caribbean' (Lau and Grizzle, 2020: 92). However, Lau and Grizzle note that 'it was not easy for experts to accept the merging of the terms 'IL' and 'ML'' (Lau and Grizzle, 2020: 93). The argument put forward by IL experts was that 'information is a much broader term that includes media as a sub-component an argument still made by IL experts' (Lau and Grizzle, 2020: 93). For example, Whitworth (2009) who maintains that 'IL is itself a concept that integrates multi-literacies including ML' (Whitworth, 2009, in Lau and Grizzle, 2020: 93). However, Lau and Grizzle suggest that 'the argument is best summarised by the statement that all media can convey information but not all information is media' (Lau and Grizzle, 2020: 93). On the flip side, 'media experts, emphasised that information is a part of

ML, and that the field of ML is broader than that of IL' (Lau and Grizzle, 2020: 93). Media experts base their argument on the notion that in addition to incorporating an analysis of media and information messages and their audiences, media literacy also 'includes an analysis of the production, ownership, distribution, regulation and control of media and information' (Lau and Grizzle, 2020: 93). In effect, media experts saw IL as a sub-component of ML rather than the other way around. To afford strength to the two concepts UNESCO was careful to ensure a holistic approach giving both IL and ML equal prominence, and as such 'the acronym MIL was adopted without a sematic order but with the aim of creating an abbreviation that sounded good phonetically' (Lau and Grizzle, 2020: 93). The MIL concept was created by UNESCO in 2007 by merging two separate terms:

> stating that MIL '. . . empowers citizens to understand the functions of media and other information providers, to critically evaluate their content, and to make informed decisions as users and producers of information and media content'. (UNESCO, 2017c; see also Grizzle, 2013, in Lau and Grizzle, 2020: 89)

The key point to be taken note of is that 'there is varying convergence across these characteristics of IL and ML' (Lau and Grizzle, 2020: 96). The work of S.R. Ranganathan 'known as the father of information and library science in India' (Lau and Grizzle, 2020: 97) was brought to significance by Grizzle and Singh when they 'proposed the Five Laws of MIL as a way to offer further bases and principles to unify information, media and technological competencies' (Lau and Grizzle, 2020: 97). The authors note that their proposal emulates what Ranganathan would have wanted to see (Lau and Grizzle, 2020: 97). Although Lau and Grizzle do not discuss these five laws due to the brevity of their article, they do note that emphasis should be placed on the notion that a collaboration of these fields can strengthen and fortify 'their actions, because each one of them makes its own outstanding contribution to the rapidly converging disciplines of information studies and media communication studies' (Lau and Grizzle, 2020: 98). While there are numerous benefits to an approach that incorporates the unification of information, media, and technological competencies, what Lau and Grizzle see as being the key among them is the 'potential impact of MIL on sustainable development and human rights' (Lau and Grizzle, 2020: 98). Lau and

Grizzle suggest that it will be partly through the improvement of 'critical information, media, and technological competencies that people can enjoy the full benefits of their rights' (Lau and Grizzle, 2020: 98).

> A rights-based approach to media and information literacy and to sustainable development . . . can play a crucial role in perceptions of the 'other' by encouraging reporting, research and analysis as well as the design and implementation of development interventions that are objective, evidence based, inclusive, reliable, ethical and accurate, and by encouraging individuals to take sound actions based on their rights and the rights of other. (Grizzle, 2016, in Lau and Grizzle, 2020: 98)

Since UNESCO coined the term MIL in 2007 the road to its current status and acceptance has been steep, and the call to pragmatically merge these terms required the respective 'disciplines of media and information literacy, as well as technological literacy, to join their professional efforts so as to more effectively reach their shared goals' (Lau and Grizzle, 2020: 102). Goals which include, the development of citizens' skills in relation to accessibility and evaluation as well as 'wise use of information, so that they benefit from and contribute to knowledge and to the increasingly digital society' (Lau and Grizzle, 2020: 102). Lau and Grizzle bestow praise for the great contribution IL has made to MIL prior to and 'during the time span of this compound concept' (Lau and Grizzle, 2020: 102), and highlight the differences between ML and IL in the respect that they have both 'displayed differences in their focus on the communication medium, whose production and distribution characteristics shape the way users access and use information' (Lau and Grizzle, 2020: 102). For Lau and Grizzle at the centre 'of this conceptual merging are the individual users and the mass audiences – the same ones who need MIL' (Lau and Grizzle, 2020: 102), and note that, 'building synergies through co-operation and collaboration benefit such populations' (Lau and Grizzle, 2020: 102). Progress has also been made which has resulted in 'some collaboration, cooperation, and recognition from both fields at least at UNESCO events and within its publications' (Lau and Grizzle, 2020: 102). However, there is still 'a long way to go before there is full acceptance of the MIL concept' (Lau and Grizzle, 2020: 102). To promote acceptance more interdisciplinary links need to be developed to 'achieve greater progress in fostering MIL skills within schools, the

family, the workplace and in people's daily lives' (Lau and Grizzle, 2020: 102). Lau and Grizzle also impress the 'urgent need for media and information literacy (MIL) or information and media literacy revolution (whichever juxtaposition is preferred by the reader)' (Lau and Grizzle, 2020: 93). Since the inception of the term MIL in 2007 and as a result of the ongoing 'efforts of UNESCO and its partners to expand the MIL agenda globally, the MIL concept is slowly taking hold in academic spheres and in local communities globally' (Lau and Grizzle, 2020: 93). Literature indicates that there is an increasing need for a multi-dimensional approach that promotes competencies in IL, ML and digital literacy as evidenced by Lau and Grizzle and other experts who state that 'when taken from definitional and competencies perspectives, IL, ML and even digital literacy converge' (Lau and Grizzle, 2020: 96). A Marcusian analysis of DLE provisions in Wales would offer an insight into whether a multidimensional approach is being employed that includes the competencies associated with media and information literacy as opposed to a one-dimensional approach that focuses on a narrower set of skills or competencies. A Marcusian analysis could also offer an insight into the influence of private neo-liberal technological companies on DLE provisions in Wales. In the same way that IL and ML converge, literature shows that ML and digital literacy DL and other literacies also converge as evidenced in the following section.

## **2.5** The Merging of literacies in the digital era

While media literacy has its own intellectual history associated with different bodies of scholarship and practice, there is a substantial amount of literature that suggests the need to merge media literacy as well as other literacies that have been emerging over the last fifty years with digital literacy. Hobbs notes that 'when people think of the term "literacy," what generally springs to mind is reading and writing, speaking, and listening' (Hobbs, 2010: 16). However, in today's world Hobbs argues that the different types of expression and communication people use in their daily lives is continuously expanding and, 'the concept of literacy is beginning to be defined as the ability to share meaning through symbol systems in order to fully participate in society' (Hobbs, 2010: 16). In a similar way "text" is also beginning to be understood in different ways and could be 'any form of expression or communication in fixed and tangible form that uses symbol systems' (Hobbs, 2010: 17). This can include

‘language, still and moving images, graphic design, sound, music and interactivity’ (Hobbs, 2010: 17). New kinds of text and ‘new types of literacies have been emerging over a period of more than 50 years’ (Hobbs, 2010: 17). As a result, ‘many closely interrelated terms describe the new set of competencies required for success in contemporary society’ (Hobbs, 2010: 17). The terms to describe these competencies include ‘information literacy, media literacy, media education, visual literacy, news literacy, health media literacy, and digital literacy, among others’ (Hobbs, 2010: 17). Each of these terms has its own intellectual heritage and is associated with different bodies of scholarship and practice ‘with some ideas stretching back to the middle of the 20th century and other ideas emerging in the past couple of years’ (Hobbs, 2010: 17). The terms therefore ‘reflect both the disciplinary backgrounds of the stakeholders and the wide scope of the knowledge and skills involved’ (Hobbs, 2010: 17). Hobbs is emphatic that ‘these concepts must not be treated as competitors’ (Hobbs, 2010: 17). Taking this position Hobbs suggests that ‘we can consider different types of literacy to be part of the same family’ (Hobbs, 2010: 17). For example, while information literacy has traditionally been thought of, or associated with research skills, media literacy ‘has been associated with critical analysis of news, advertising and mass media entertainment’ (Hobbs, 2010: 17). Likewise digital literacy has been associated with its own competencies such as ‘the ability to use computers, social media, and the Internet’ (Hobbs, 2010: 17), while health literacy includes ‘exploring media’s impact on making positive choices related to nutrition, exercise, body image, violence and substance abuse prevention’ (Hobbs, 2010: 17). For Hobbs, despite their differences and the distinct and important theoretical positions and values derived ‘from different disciplinary traditions and historical contexts, effective programs in all of the “new media literacies” reveal many similarities’ (Hobbs, 2010: 17). The report written by Hobbs in 2010 *A White Paper on the Digital and Media Literacy Recommendations of the Knight Commission on the Information Needs of Communities in a Democracy* states that:

> the term “digital and media literacy” is used to encompass the full range of cognitive, emotional, and social competencies that includes the use of texts, tools and technologies; the skills of critical thinking and analysis; the practice of message composition and creativity; the ability to engage in reflection and ethical thinking; as well as active

> participation through teamwork and collaboration. (Hobbs, 2010: 17)

The recommendations of the report have drawn on the wide range of similarities that unify the work from several fields and disciplines which include public health, education, reading and literacy as well as 'literature and the humanities, sociology, human development and psychology, cultural studies, library and information science, journalism, communication, and new media studies' (Hobbs, 2010: 17). Digital and media literacy involve people not only being able to recognise 'personal corporate and political agendas' (Hobbs, 2010: 17), but also to feel 'empowered to speak out on behalf of the missing voices and omitted perspectives in our communities' (Hobbs, 2010: 17). Hobbs adds that 'by identifying and attempting to solve problems, people use their powerful voices and their rights under the law to improve the world around them' (Hobbs, 2010: 17). Hobbs' position is that 'for all aspects of daily life, people today need a constellation of well-developed communication and problem-solving skills that include these competencies' (Hobbs, 2010: 18).

Hobbs also notes that critical thinking skills are not acquired by children or adults in relation to 'mass media, popular culture, or digital media just by using technology tools themselves' (Hobbs, 2010: 25). A common complaint made by educators is that there are a 'generation of children who cannot distinguish between standard English grammar and spelling and the discourse of text messaging' (Hobbs, 2010: 25). Other issues include many teenagers' inability to use 'appropriate keywords for an online search activity, and many young adults cannot identify the author of a web page' (Hobbs, 2010: 25). However, these same teenagers are commonly self-assured that 'they are expert researchers because they can find information "on Google."' (Hobbs, 2010: 25). While they may not have the appropriate skills for the aforementioned tasks, many of them are able to carry out other tasks such as, producing and uploading their own videos of them dancing to their favourite songs, or collaborating to find solutions to obstacles in video games (Hobbs, 2010: 25). In addition, they can effectively 'use mobile phones to show up for impromptu local events and make their own fictional newspapers about their favourite fantasy-novel characters' (Hobbs, 2010: 25). Hobbs advocates that 'although young people are using digital media, we should not assume they are digitally literate' (Hobbs, 2010: 25). For example, 'people who play Farmville

on Facebook may (or may not) have the skills they need to search for information about jobs, education and health care' (Hobbs, 2010: 25). In terms of the benefits of digital technologies in education Hobbs notes that educators have long been cautious of unsubstantiated benefits of digital media in education (Hobbs, 2010: 51). This caution is due to their lived 'experience spending six hours a day with children and teens whose lives are more or less infused with cell phones, iPods and laptops' (Hobbs, 2010: 51). Educators 'know that simply using digital media tools is no educational panacea' (Hobbs, 2010: 51). For example, a 'study of students in grades 5–8 showed that those from disadvantaged families got lower math and reading scores once the Internet arrived in the home' (Hobbs, 2010: 51). Test scores of over 150,000 students from North Carolina were analysed by Duke University researchers who 'compared children's reading and math scores before and after they acquired a home computer' (Vigdor and Ladd, 2010, in Hobbs, 2010: 51). These scores were then compared to the scores of children who had 'never acquired a home computer' (Vigdor and Ladd, 2010, in Hobbs, 2010: 51). They found that, 'the test scores of low-income kids who got computers at home declined more than children who did not get computers' (Hobbs, 2010: 51). These scores indicate that 'for middle-school students, social networking, YouTube videos and online games can be a potent distraction from homework and other activities' (Hobbs, 2010: 51).

## **2.6** Datafication

It is a truism that digital technologies are pervasive, ubiquitous and permeate almost every aspect of our lives, from 'health tracking apps, social media and learning management systems, to the Internet of Things, traffic surveillance, government services, dating, work and education' (Sefton-Green and Pangrazio, 2022: 1). Consequently, much of our daily routines and practices are being recorded and analysed 'somewhere in the world' (Sefton-Green and Pangrazio, 2022: 1). A term that is being employed by scholars and technology experts to describe this imposing data collection and analysis is "datafication" (Sefton-Green and Pangrazio, 2022: 1). Mayer-Schoenberger and Cukier, (2013) describe datafication as 'the transformation of digital interactions into a record that can be collected, analysed and commodified' (Mayer-Schoenberger and Cukier, 2013, in Sefton-Green and Pangrazio, 2022: 3). To further add to this delineation:

> Datafication refers to the process in which actions and behaviours are translated into data that can be recorded, sorted, or indeed commodified by governments and private companies. (Sefton-Green and Pangrazio, 2022: 2)

Sefton-Green and Pangrazio describe the consequences and implications of datafication as being 'immense, extraordinary and unprecedented' (Sefton-Green and Pangrazio, 2022: 2) and highlight the capitalistic underpinnings of this phenomenon by stating that the capture and translation of social phenomena into data 'is integral to the business model and functioning of many digital platforms' (Sefton-Green and Pangrazio, 2022: 3).

There is a growing body of research regarding the datafication of education in primary and secondary schools as well as FE and HE. Julian Sefton-Green and Luci Pangrazio have recently published *Learning to Live with Datafication* (2022). The publication is a curation and commentary on educational studies and initiatives from across the world that focus on varying 'educational responses to datafication as well as critical analysis' (Sefton-Green and Pangrazio, 2022: 2). The case studies are grounded in empirical research, some are conducted in schools, 'while others look beyond the school to consider issues of regulation, policy analysis and cultural politics' (Sefton-Green and Pangrazio, 2022: 10). Some chapters focus specifically on datafication in education, others look at datafication more broadly but within an educational setting. Regardless of the differences within the case studies the common theme that can be found in all of them is datafication and education, and each chapter explores and looks for 'innovative strategies to counter the various ways these two concepts intersect' (Sefton-Green and Pangrazio, 2022: 10). The case studies examine how:

> Educators conceptualise the social implications of datafication and what is at stake for learners and citizens as educational institutions try to define what datafication will mean for the next generation. (Sefton-Green and Pangrazio, 2022: 1)

When looking at where and how students' data is captured research suggests that their 'personal data and metadata is generated through the school- based platforms and

social media platforms that they use throughout their day' (Sefton-Green and Pangrazio, 2022: 3). Research also suggests that in some instances students are acutely aware of their data being generated and captured, for instance 'when creating a profile on the school's learning management systems (LMS), but in many others, they are not' (Sefton-Green and Pangrazio, 2022: 3). The example offered to illustrate a situation where a student may not be aware of this data capture is 'if they have visited a site that has a Facebook 'like' button embedded, this third-party cookie can be used to track their online movements' (Sefton-Green and Pangrazio, 2022: 3). While it is acknowledged that data capture has been used for some time to regulate and monitor populations it is also pertinently noted that 'digital technologies have greatly expanded what can be turned into a data points' (Sefton-Green and Pangrazio, 2022: 3).

Literature suggests that the use of data collection in schools 'may be marketed around optimising performance and managing risk, however, the reality involves new school logics based upon the dataveillance of teachers and students' (Sefton-Green and Pangrazio, 2022: 3). The result is that new regimes and routines are created which both staff and student must follow. This is often 'characterised by a high degree of manual labour and the emergence of new power dynamics' (Selwyn et al., 2021, in Sefton-Green and Pangrazio, 2022: 3). Sefton-Green and Pangrazio, suggest that it is not difficult to see the appeal of optimising performance and managing risk as it offers the school the opportunity to give reassurance to the teachers and parents (Sefton-Green and Pangrazio, 2022: 3). However, there are implications when collecting data about individuals, for example 'statistics leads to the construct of a 'norm' and mathematical notions of deviance, as well as the ability to predict risk' (Sefton-Green and Pangrazio, 2022: 3). This situation both intensifies and reinforces 'the reliance on data-driven epistemologies based upon comparison, pattern recognition, prediction, and analytics' (Sefton-Green and Pangrazio, 2022: 3). With this increasing reliance on artificial intelligence and automation, human skills such as, 'interpretation, reflection and evaluation are displaced' (Sefton-Green and Pangrazio, 2022: 3). In most cases digital systems automatically generate feedback (i.e., metrics) in addition to curating and personalising content '(i.e., recommendations and search)' (Sefton-Green and Pangrazio, 2022: 3). It is suggested that a consequence of this is that 'individuals are directed towards particular behaviours and practices, as 'the self is mobilised and activated in response to the calculation to which it is exposed'' (Sefton-Green and

Pangrazio, 2022: 3). The literature here discusses how individuals can be directed and influenced towards particular behaviours and practices. A Marcusian analysis of DLE provisions in schools in Wales could offer a further understanding of this phenomenon. Marcuse's theories developed in *One-Dimensional Man* suggest that behaviour and thought in a post-industrial society were driven and influenced by the technological base, creating individuals and societies that were incapable of behaving or thinking in any other than a one-dimensional way. In other words, a norm was created that rendered an individual incapable of thinking or behaving in a way that transcended or negated that norm.

As noted by Sefton-Green and Pangrazio, datafication is an integral and important process for digital platforms and systems in the respect that it allows them to offer the user content that has been curated specifically for their interests, which in turn enables 'digital systems to provide an experience that will keep the individual user engaged with the platform longer' (Sefton-Green and Pangrazio, 2022: 4). Longer engagement perpetuates and increases the datafication of the user which in turn leads to more accurate curation of content keeping the user engaged with the platform for longer periods of time, and the cycle continues. Zuboff (2019) makes the argument that 'datafication is a key tool in enacting 'instrumentarian power' – a new form of power enacted by governments and corporations that can shape and manipulate people in subtle and incremental ways' (Zuboff, in Sefton-Green and Pangrazio, 2022: 4). Therefore, for Zuboff datafication turns users into instruments that can be used in predictable ways to achieve the goals of corporations and governments. Sefton-Green and Pangrazio also note that datafication has political implications as 'processing data is dependent on the creation of categories and norms, which are often based upon particular social and cultural assumptions' (Sefton-Green and Pangrazio, 2022: 4). These assumptions have long and problematic histories, for example, in the US predictive analytics are employed to help with 'child protection and support with particular racial groups being unfairly targeted as a consequence' (Sefton-Green and Pangrazio, 2022: 4). Therefore, if digital tools are embedded with old systems of power and privilege, social inequalities can be intensified and amplified, for instance if a family cannot afford to pay for a high-speed broadband connection 'their children's participation in school activities is constrained' (Sefton-Green and Pangrazio, 2022: 4). Therefore, datafication 'does not affect individuals equally with people of a

particular race, religion, income, gender, and social status' (Sefton-Green and Pangrazio, 2022: 4). As such, they can be 'unfairly targeted through data processing' (Sefton-Green and Pangrazio, 2022: 4). Literature suggests that as data-driven epistemologies are viewed 'as more objective and reliable, datafication changes how we understand social phenomena' (Sefton-Green and Pangrazio, 2022: 4). If the way we understand social phenomena is directly affected by datafication and data driven epistemologies then Sefton-Green and Pangrazio argue that this in turn 'changes how we see our- selves and others, shaping the kinds of behaviours and interactions that we engage in' (Sefton-Green and Pangrazio, 2022: 4). It is further argued that the realms datafication has infiltrated are continuously increasing, for example datafication has 'become a new arena for long-standing social justice issues, with implications for decision-making, governance and power in civil society' (Sefton-Green and Pangrazio, 2022: 4).

## **2.7** Responses to Datafication – Regulation- Technical and Tactical – Educational

Literature suggests that thus far there have been three main responses to datafication 'regulation; technical and tactical; and educational' (Sefton-Green and Pangrazio, 2022: 4). In relation to regulation Sonia Livingstone has been particularly responsive in advocating for the rights of children and has made a strong case 'for bringing the 1989 UN Conventions on the Rights of the Child (UN CRC) to the digital context' (Livingstone, in Sefton-Green and Pangrazio, 2022: 5). Livingstone et al., argue that 'the internet is typically thought of as a resource for adults and is reflected as such in policy, regulation and ideology' (Livingstone et al., 2022: 196). Livingstone et al., also make the case that legislation and education in relation to digital literacy are commonly viewed as 'mutual alternatives, to be traded off against each other in public debates as a matter of political expediency' (Livingstone et al., 2022: 196). Viewing education and legislation as mutually exclusive creates a situation where legislators can off the responsibility to educators on the supposition that if children understood 'the data ecology, they could take responsibility for their personal data and exercise wise judgement regarding the ways in which it is processed' (Livingstone et al., 2022: 196). Livingstone et al., state that this is a very convenient position to take especially when you consider that 'children constitute a group commonly deemed too immature to be

consulted as a stakeholder' (Livingstone et al., 2022: 196). Therefore, the effect of making this assumption is that it relieves regulators 'of the requirement to address children's specific vulnerabilities' (Livingstone et al., 2022: 196). In this instance, the burden of responsibility to provide digital literacy skills and understanding to children is firmly placed and 'outsourced to the educational systems, especially the teachers and, indirectly, the parents 'responsible' for their children's upbringing' (Livingstone et al., 2022: 196). Livingstone et al., view literacy as a 'matter of civic empowerment and participation meant to operate side by side with other provisions, such as public services and public interest journalism' (Livingstone et al., 2022: 196). However, in reality when policies are debated, they 'only seek to redress the damage already inflicted by private and public bodies on citizens' privacy by burdening the individual with their own protection' (Livingstone et al., 2022: 196). Livingstone et al., further argue that if a child's best interests were effectively considered in relation to regulation, educators' roles would not be limited or restricted to cautioning children about 'the potentially abusive actions of public and private organisations, for these would offer children meaningful choices that respect their evolving capacities and needs' (Livingstone et al., 2022: 196). Additionally, if regulation acted effectively, educators would not be merely passing on information, they would be free to create 'knowledgeable participatory pathways for children to intervene in the technologies they use' (Livingstone et al., 2022: 196). Livingstone et al., probe this regulatory aspect a little further and argue that regulation is reliant on the kind of government in power and the degree of intervention they are inclined to implement, essentially regulation is dependent on 'an effective and interventionist state' (Livingstone et al., 2022: 196). Problems therefore arise that are affected by this as 'there are many commercial and political interests that lobby to keep regulation weak' (Livingstone et al., 2022: 196). Interestingly, even in the wealthiest countries studied Livingstone et al., found disparities in educational institutions within the same country stating that 'even the best available education is proving insufficient to support children's agency in a datafied world' (Livingstone et al., 2022: 196). The common practice of polarising education and regulation serves as a distraction 'from assigning responsibility to all actors involved each according to their negotiating power' (Livingstone et al., 2022: 196). This education versus regulation or even education as regulation is viewed as a discursive construction that 'does not work either in principle or in practice' (Livingstone et al., 2022: 196). Although digital literacy is seen as crucial Livingstone

et al., argue that it ‘cannot be a match for multi-country, multi-billion, oligopolistic companies that control digital platforms’ (Livingstone et al., 2022: 196). Livingstone et al., identify what is essentially a power disparity that surfaces the notion that digital literacy, though crucial, is no match for the behemoth of the ‘multi-country, multi-billion oligopolistic companies that control digital platforms’ (Livingstone et al., 2022: 198). It is suggested that a Marcusian analysis that explores the influence that neo-liberal technological companies have in relation to DLE curriculums and provisions in primary and secondary schools in Wales and the extent to which the critical understanding of datafication is taught could offer a further insight into the regulation vs education debate. Additionally, although the concerns surrounding children and datafication are global, what has been identified by Livingstone et al., is the disparities between educational institutions within the same country. Wales is currently implementing a new curriculum that as Jones notes, differs in its approach ‘from England at every key point’ (Jones, 2016: 206). Therefore, the research in this thesis could offer an insight into how Wales’s curriculum and DLE provisions in particular are responding to what has been described as the increasing datafication of education. Additionally, if commercial and political interests lobby to keep regulation weak, a Marcusian analysis could further our understanding of the influence multimillion neo-liberal technology companies have in relation to DLE curriculums and indeed on the increasing datafication of education more generally.

Livingstone et al., do not just offer their critique of the current situation they also propose a solution which is to invest in ‘appropriate resources in both educational institutions and regulatory authorities’ (Livingstone et al., 2022: 198). This they argue would ensure that children’s rights are respected, protected, and fulfilled in the digital environment. For Livingstone et al., placing the responsibility of mitigating harms with educators, ‘harms due in large part to the structural problem of unfair or exploitative data processing is surely to misdirect scarce educational resources’ (Livingstone et al., 2022: 198). |However, they add that:

> While children have the right to be informed in an honest and age-appropriate way about the nature and consequences of the processing of their personal data, it is equally or perhaps more important to implement regulation that imposes and enforces requirements for data processing in children’s best interests. (Livingstone et al., 2022: 198)

What Livingstone et al., are ultimately calling for are online digital architectures that are rights-respecting and that offer genuine choices to users, though they also add the caveat that users should be 'fully informed about these choices' (Livingstone et al., 2022: 198). In addition, these architectures should be designed to prevent 'privacy violations and commercial exploitation of children around the world' (Livingstone et al., 2022: 198). Furthermore, to achieve this, children need to be given a voice 'to guarantee that their best interests are taken into account in shaping and evaluating both educational and regulatory initiatives, and to recognise their interdependencies' (Livingstone et al., 2022: 198).

### 2.7.1 Technical and Tactical

The technical and tactical response to datafication attempts to redress privacy issues and information asymmetries 'by disrupting the smooth flow of data into the digital economy' (Sefton-Green and Pangrazio, 2022: 5). However, this response is reliant on individuals having a sufficient understanding of their position and participation as users to be able to take the necessary action to counter the situation (Sefton-Green and Pangrazio, 2022: 6). This tactical response does not view users as compliant 'data 'subjects' within the digital economy, and instead positions them as having the capacity and agency to enact change' (Sefton-Green and Pangrazio, 2022: 6). This response has prompted some technology companies to offer 'tactical resistances either as a mode of self-regulation or as goods in the software marketplace' (Sefton-Green and Pangrazio, 2022: 6). An example of this would be 'safe' or 'private' browsing modes and/or dashboards that can display to the user what the platform 'knows' about them (Sefton-Green and Pangrazio, 2022: 6). Thus, technology companies are aiming to alleviate the users' concerns by increasing the transparency of data collection. However, Sefton-Green and Pangrazio suggest that 'in many ways, this is a rather cynical 'soft' response to data privacy concerns' (Sefton-Green and Pangrazio, 2022: 6). Regardless, tactical responses stress that protection be acquired through an individuals' knowledge and action as opposed to 'regulatory responses that tend to focus on forms of protection being held by society at large' (Sefton-Green and Pangrazio, 2022: 6). It is recognised and noted here that this response is evidentially

linked to education in the respect that knowledge must be acquired by an individual user to be able to enact this technical and/or tactical response.

### 2.7.2 Educational Responses

The analysis of the responses to datafication thus far indicate that educational responses to datafication are rudimentary to both tactical and regulatory responses, as both responses are reliant 'on the fact that the individual will have enough awareness and understanding to act – i.e., to claim their individual rights or develop technological responses' (Sefton-Green and Pangrazio, 2022: 7). Sefton-Green and Pangrazio suggest that 'in general terms, educational responses posit the idea that people should have knowledge about the way that datafication works' (Sefton-Green and Pangrazio, 2022: 6). However, when it comes to the actual ways or mechanisms of how this knowledge may be attained 'what it might consist of, and how the possession of it would affect a whole range of behaviours, is often vague' (Sefton-Green and Pangrazio, 2022: 6). One of the questions posited in this thesis is: Are current DLE provisions sufficiently educating students about how digital technologies use and affect them in a social, cultural, and ethical capacity? In effect, what this question is asking is whether provisions are educating students about the effects of datafication on our everyday lives and what level of critical education is employed in this respect. In view of Sefton-Green and Pangrazio's suggestions that how this knowledge is acquired is often vague, the research conducted in this thesis can offer an insight into whether this knowledge about datafication is included in DLE educational provisions in Wales and whether it is being imparted to students by educators.

Educational responses are often described in terms of 'literacy' what Sefton-Green and Pangrazio describe as a catch all term employed to describe an individual's capacity or ability 'to understand information and the social norms and conventions that surround it, as well as demonstrate this knowledge through writing and/or activity' (Sefton-Green and Pangrazio, 2022: 6). However, they note that currently the main 'way of learning about datafication today tends to be in the data science tradition, which is dedicated to skill building and information management' (Sefton- Green and Pangrazio, 2020). The programs that are popular include 'the Data Literacy Project by Qlik, the Data Literacy Foundation's Toolkit and the Data Carpentries work- shops'

(Sefton-Green and Pangrazio, 2022: 7), all of which 'focus on building fundamental skills for working and researching with data' (Sefton-Green and Pangrazio, 2022: 7). Sefton-Green and Pangrazio add that:

> These pose more complex and difficult questions for education as they require not only awareness and understanding of datafication processes, but also the time, space, and interpersonal support to reflexively examine personal data practices. (Sefton-Green and Pangrazio, 2022: 7)

If, however, an understanding of datafication is to be gained that focuses on more than the ability to work with data and considers the more complex shifts brought about by datafication within today's increasingly digitalised societies, then Pangrazio and Neil Selwyn argue that 'it requires critical reflection on how datafication is changing the way we live, learn and work' (Pangrazio and Selwyn, 2019, in Sefton-Green and Pangrazio, 2022: 7). Research suggests that the number of educational programmes working in the critical tradition are limited, and many of 'the current critical educational data programmes exist in a realm that is far removed from where education typically takes place (i.e., school)' (Sefton-Green and Pangrazio, 2022: 7). Examples of such programmes offered are 'programmes that have been used with community groups (such as the 'Our Data Bodies' project's *Digital Defense Playbook*)' (Sefton-Green and Pangrazio, 2022: 7). However, it is noted that 'incorporating them into school programmes and curricula is another matter entirely' (Sefton-Green and Pangrazio, 2022: 7).

Marcuse developed in *One-Dimensional Man* theories that analysed and critiqued the post-industrial society of the 1960s. The theories developed explained the mechanisms employed to create what Marcuse described as a one-dimensional society. Marcuse theorised that technology played a significant role in the creation of one-dimensional man. A Marcusian analysis of the data collected in this study could analyse the role of technology in education and whether there is a critical and reflective aspect to DLE provisions in Wales that considers how datafication is changing the way we live, learn and work. Marcuse argued that in a post-industrial society the ability to think critically

was declining and as such the realm of thought and behaviour was subjected to what he described as one-dimensionality. By employing Marcuse's theories to analyse the data collected in this study the current DLE provisions in primary and secondary schools in Wales can be analysed to evaluate whether current DLE provisions offer a critically reflective aspect, or whether there is, in Marcusian terms a one-dimensionality to these provisions. This thesis aims to explore what current DLE provisions include in relation to knowledge imparted by educators about datafication and whether these provisions include a critically reflective aspect. Literature suggests that there is a dearth of information in relation to this aspect of DLE, and as such the research conducted in this thesis can further what are currently vague understandings.

Sefton-Green and Pangrazio suggest that it is not surprising that educational responses have struggled to keep up with what are essentially complex datafication processes, and one of the complexities identified is 'the opaque, black-boxed nature of datafied systems' (Sefton-Green and Pangrazio, 2022: 9). Under these complex circumstances 'it is difficult to materialise a text for deconstruction and critical analysis – as the tradition of criticality demands' (Pangrazio and Sefton-Green, 2020, in Sefton-Green and Pangrazio, 2022: 9). Additionally, 'most of the current educational programmes are based on the idea that awareness and understanding will compel the individual to act' (Sefton-Green and Pangrazio, 2022: 9). However, a point they make in relation to this is:

> if one *were* motivated to act then what would acting or resisting actually mean? Given the network effects of mainstream digital platforms typically resistance tends to mean opting out or compromising use, rather than finding viable alternatives. (Sefton-Green and Pangrazio, 2022: 9/10)

Interestingly they go on to say that any alternatives are so few that 'it is difficult for a critical education *not* to invoke paranoia given it means compromising social experiences in some way' (Sefton-Green and Pangrazio, 2022: 10). A Marcusian analysis of this phenomenon of so few alternatives would offer an invaluable insight into what is in effect a one-dimensional situation in the respect that Marcuse maintains that one-dimensional man is incapable of seeing alternatives due to the degree to which he has been subsumed into the system. Therefore, a Marcusian analysis could further

the current understanding of this phenomena. What is clearly set out in Sefton-Green and Pangrazio's analysis of the current educational approach to datafication and education is that:

> Teachers, policymakers, and educational bureaucrats need to see the importance of critical data education and provide adequate time and resources to support its design and integration with current curriculum if it is to be effective. (Sefton-Green and Pangrazio, 2022: 10)

It is suggested that the research conducted in this thesis would offer an insight into the degree of importance placed on this critical dimension advocated for in much of the literature identified in relation to digital literacy, media literacy, information literacy and more recently critical data education. By conducting qualitative empirical research with educational stakeholders such as past students, teachers, policy makers, digital literacy experts and policy advisors as well as government officials a wide range of perspectives can be analysed. In addition, a Marcusian analysis would allow the data to be analysed from a dialectic and critical perspective and offer an insight into whether teachers, policy makers and bureaucrats hold a critical perspective themselves and to what degree they place importance on providing the critical element to DLE educational provisions. Sefton-Green and Pangrazio are advocating for research that offers an understanding and insight into:

> How different educators conceptualise the social implications of datafication and what is at stake for learners and citizens as educational institutions try to delineate what datafication will mean for the next generation. (Sefton-Green and Pangrazio, 2022: 10)

Therefore, the research conducted in this thesis could contribute to this current and ongoing debate by offering an insight into different educators' conceptualisations of the social implications of datafication and the degree to which they both understand it and include it within DLE provisions.

## **2.8** Criticality Under Datafication

While there is a call to provide critical digital literacy in educational provisions Sefton-Green and Pangrazio argue that in the age of datafication the reliance on the

deconstruction and analysis of text is increasingly becoming redundant due to the automated and hidden production of information (Sefton-Green and Pangrazio, 2021: 1). As a result, there will be a 'slow death of the critical 'educative subject'' (Sefton-Green and Pangrazio, 2021: 2072). Various reasons are offered as to why this demise of the critical 'educative subject' will occur, for example 'the consequence of the recalibrations in human agency that arise from the data-driven model of digital governance in the social world' (Sefton-Green and Pangrazio, 2021: 2072).

> Fundamental notions of the sovereign liberal subject – in respect of rational, decision-making individuals with a private sense of self or interiority, who enjoy rights within a democracy where individual actions as citizens have bearing on collective action – are challenged by new forms of digital governance. (Sefton-Green and Pangrazio, 2021: 2073)

What is at the heart of 'the sovereign subject is the notion of a critically reflective person whose capacity to think has been formed by a process of education' (Sefton-Green and Pangrazio, 2021: 2073). The keystone example offered to exemplify how datafication processes challenge the educative subject is how social media platforms such as WhatsApp and Facebook have manipulated or controlled 'individual judgement and opinion-forming in respect of the rise of populism and the new right in the last few years' (Sefton-Green and Pangrazio, 2021: 2073). The argument Sefton-Green and Pangrazio make is that digital systems are having an impact on and changing the way individuals think and behave, which is indicative of extensive manipulation at play. Marcuse's critical theory developed in *One-Dimensional Man* posits that in the post-industrial society there was a demise of critical thinking and a rise of one-dimensional thought and behaviour which Marcuse theorises was brought about by the mechanics of conformity and technological rationality. Sefton-Green and Pangrazio are suggesting that in today's digital world fundamental notions of individual sovereign liberal subjects are being challenged. The demise of individual sovereign liberal subjects is what Marcuse theorised was happening in the 1960s in the respect that critical rationality and the free and creative subjectivity of individuals was diminishing as a result of their subsummation into the technological system in place at the time. Therefore, a Marcusian analysis would offer a different theoretical insight into the notion that in a post digital world there is a new form of control enacted

by digital governance that is potentially even more effective at producing what Marcuse would refer to as one-dimensional man.

The main focus of the argument made by Sefton-Green and Pangrazio is that 'datafication challenges traditional assumptions about how people learn to learn and learn to think – perhaps leading to the need for a new kind of education' (Sefton- Green and Pangrazio, 2021: 2073). This argument is primarily addressed 'to school-based education' (Sefton-Green and Pangrazio, 2021: 2073). Inherited assumptions about what it means to be critical and what purposes education serves are explored and the mechanisms by which individuals and digital technologies are currently entangled are analysed to 'suggest that some of our cherished assumptions about learning to become critical are shifting in significant ways' (Sefton-Green and Pangrazio, 2021: 2073). Sefton-Green and Pangrazio set about describing 'the spread of datafication and automation and the existential threat this presents to the educative subject' (Sefton-Green and Pangrazio, 2021: 2073). Attention is also given to 'the creation of data-driven subjectivities and the impact of these on both individual learners and educational processes' (Sefton-Green and Pangrazio, 2021: 2073). Their 'conclusion draws attention to deficits in current data education programs and outlines directions for future research' (Sefton-Green and Pangrazio, 2021: 2073). A significant point made is that it is not easy to generalise about 'both normative practice in schools across the world (as captured in supra-national accounts like the OECD) just as it challenging to generalise about theories of education' (Sefton- Green and Pangrazio, 2021: 2073). For example:

> The 19th century treatise, Emile (Rousseau, 2010) is often taken as a foundational argument for a mode and purpose of education that emphasises the development of the individual and his (and her) intellectual life as being of intrinsic existential value. By contrast, educational theory and sociology has dealt with the impact and effect of mass schooling as a product of industrialisation with an attention to the function of schooling as a mode of socialization (Durkheim, 2012). John Dewey (2016) made the case for educating for democracy while radical educationalist Paulo Freire (2017) distinguished between what he called education as a mode of 'banking' and 'conscientization' – a route to critical reflexive thinking through the individual's understanding of the way that power operates in her or his society. (Sefton-Green and Pangrazio, 2021: 2073)

Sefton-Green and Pangrazio state that their position is ‘that datafication reshapes the learner and learning processes’ (Sefton-Green and Pangrazio, 2021: 2074). Marcuse theorised that the system and technology of the post-industrial era reshaped society, therefore employing a Marcusian analysis can offer an alternative analytical perspective in relation to how datafication is reshaping the learner and the learning process.

Sefton-Green and Pangrazio suggest that for critical education to be effective a position that has ‘been most clearly argued by Rancière (1991) in his discussion of radical critiques of social reproduction of inequality through education, critical education requires a paradigm of deficit’ (Sefton- Green and Pangrazio, 2021: 2074). Essentially, central to this argument is that:

> Without a presumption of misunderstanding, or ‘ignorance’, which can only be rectified by formal teaching, (thus reinforcing a form of epistemological inequality in a perpetual infinity loop), schooling is doomed to constantly reproduce yet more exclusion and lack of understanding. (Sefton-Green and Pangrazio, 2021: 2074)

Essentially, what is being argued here is that formal teaching is required to make a person, student or individual aware of their ignorance or misunderstanding, only then can it be addressed. Marcuse saw a similar situation in relation to post-industrial society and stated that for an individual to employ critical thinking they firstly had to transcend the one-dimensionality of their thought and behaviour to be able to employ a critical view. Essentially, to employ criticality, you firstly need to recognise that you are not seeing things critically. Marcuse held the opinion that society has lost the ability to rationally criticise because it has been subsumed into the system to such a degree that it is unable to make the presumption of misunderstanding. Therefore, a Marcusian analysis could further out understanding of whether this type of criticality is included in DLE provisions.

## **2.9** Current and Recent Research

A strand of research that has emerged recently has taken a 'critical approach to data policies, governance, and implications of digital technologies in schools' (Sefton-Green and Pangrazio, 2022: 7/8).

> This approach includes research that examines digital technologies from within the school setting through ethnographic accounts of how students, teachers and administrators engage with digital infrastructures. (Selwyn et al., 2018; Selwyn et al., 2021, in Sefton-Green and Pangrazio, 2022: 7/8)

Research that has looked outside of the school local has also been conducted through critical analysis of the data policies and governance of these technologies (Manolev et al., 2019; Perrotta et al., 2020; van Dijck et al., 2018). Another similar critical approach has been recently employed by Kerssens and van Djick (2021) who expanded 'the analytical frame to consider the tensions that arise when commercially owned digital platforms are inserted into national public-school systems' (Kerssens and van Djick, in Sefton-Green and Pangrazio 2022: 7/8). A variety of methodologies have been used 'to do this multi-disciplinary work from digital ethnography, infrastructural mapping, digital 'walkthrough' methods (Light et al., 2018) and critical policy analysis' (Sefton-Green and Pangrazio 2022: 7/8). However, Sefton- Green and Pangrazio suggest that:

> Educational research into the effects of datafication has tended to take a distanced perspective on the phenomena, researching policies or terms and conditions. This is perhaps inevitable given how the recent and ongoing pandemic drew attention to the role of educational technologies as societies desperately tried to grapple with enforced changes to the institution of schools. (Sefton-Green and Pangrazio, 2022: 8)

More recently (Williams and Hogan 2020) conducted a comprehensive overview and analysis of the 'EdTech' ecosystem (Williams and Hogan 2020, in Sefton-Green and Pangrazio, 2022: 8). The focus of this analysis was:

> The relationship between big business, national and international education policy and the complex ways that forms of surveillance and datafication provide a commercial rationale for the penetration

> of Silicon Valley based industries into the hitherto more regulated and accountable school systems. (Sefton-Green and Pangrazio, 2022: 8)

Sefton-Green and Pangrazio are of the opinion that while this kind of analysis is required and contributes to the current public debates 'as a mode of enquiry, it benefits from a top-down "platform gaze"' (Sefton-Green and Pangrazio, 2022: 8). Additionally, Sefton-Green and Pangrazio further suggest that analysis of the platform 'following David Beer's (2018) idea of the "data gaze", and his analysis of social imaginaries' (Sefton-Green and Pangrazio, 2022: 8), has 'rather overwhelmed and preoccupied research in this area, perhaps at the exclusion of alternative and complimentary approaches' (Sefton-Green and Pangrazio, 2022: 8). As such the critical perspective has a tendency of looking 'downwards as it were from the point of power analysing the ripple effect of high-level decisions made by national governments and supranational corporations' (Sefton-Green and Pangrazio, 2022: 8). Although the debate regarding the usefulness of this perspective is supported and espoused, Sefton-Green and Pangrazio argue that in general the debate 'needs to be able to account for the effects of take-up, use and meaning making' (Sefton-Green and Pangrazio, 2022: 8). Therefore, they suggest that the debate should include a 'much wider range of social actors to show how policy decisions are actually implemented in practice' (Sefton-Green and Pangrazio, 2022: 8). Research that employs a more comprehensive approach rather than 'only looking at the effects from a single privileged perspective' (Sefton-Green and Pangrazio, 2022: 8) can show what the 'impact of modes of surveillance and forms of datafication are on young people, their families, teachers and schools and schooling in general' (Sefton-Green and Pangrazio, 2022: 8).

There is a recent collection that exemplifies this more comprehensive approach entitled '*COVID-19 from the margins*' (Sefton-Green and Pangrazio, 2022: 8). Within this collection comprehensive approaches are employed to show how 'forms of datafication are negotiated and resisted in a range of everyday settings by diverse populations in local contexts' (Sefton-Green and Pangrazio, 2022: 8). Sefton-Green and Pangrazio acknowledge the necessity and importance of the contribution to scholarship that the platform gaze offers but argue that 'platformisation should be

contextualised through study of vernacular practices, tactical interventions, and local interpretations' (Sefton-Green and Pangrazio, 2022: 8). Indeed, one of the ambitions and aims of their publication *Learning to Live with Datafication* and the collection of studies curated within it 'is that it should stimulate further research into the actual *practices* of datafication by diverse communities' (Sefton-Green and Pangrazio, 2022: 8). While there are some encouraging signs regarding more recent educational research 'both *into* and *about* datafication' (Sefton-Green and Pangrazio, 2022: 8), the suggestion is that 'there is clearly a need for a more sustained and focused response from the field of education' (Sefton-Green and Pangrazio, 2022: 8). As educational research into datafication has, as stated previously tended 'to adopt the "platform gaze", where the focus is on legal and technical discourses around "Terms of Agreement" and policy' (Sefton-Green and Pangrazio, 2022: 8); it is also essential to gain an understanding of 'how educational stakeholders respond to the realities of datafication – that is living, teaching and learning in datafied systems' (Sefton-Green and Pangrazio, 2022: 9).

It appears there is a limited amount of research that employs this more comprehensive approach. Therefore, by conducting case studies with a variety of stake holders that focuses on Wales educational response to datafication at both policy, curriculum, and school practice level; this thesis can offer a more comprehensive insight. Furthermore, this thesis will offer unique insights and add to the currently available research by furthering the current understanding of what is essentially a global issue being responded to in a variety of different ways on local levels. In addition, the increasing platformisation of education would be contextualised by the vernacular practices, tactical interventions, and local interpretations. By employing a Marcusian analysis educational provisions can be analysed to explore whether they are one-dimensional in content, and whether these provisions include a critical perspective of digital technologies, the digital environment and impact of the increasing datafication of our everyday lives.

## **2.10** How Datafication Introduces New Regimes in Education

Sefton-Green and Pangrazio also note that 'datafication introduces new regimes, routines, and hierarchies into schools' (Sefton-Green and Pangrazio, 2022: 9). The

result of their introduction is that they not only ‘change values and beliefs of teachers and staff, but also the focus and priorities of curriculum and assessment’ (Sefton-Green and Pangrazio, 2022: 9). Schools and educational institutions rely on a host of digital technologies and platforms to conduct a plethora of their everyday activities. This includes such things as content delivery to students, processing attendance data, the management of staffing requirements – indeed ‘there is an educational platform designed to address all schooling needs’ (Sefton-Green and Pangrazio, 2022: 9). What is important to remember is that just like other digital platforms educational platforms are powered by data, the more these platforms are employed and used ‘the more data is generated collected and used by technology companies’ (Sefton-Green and Pangrazio, 2022: 9). A Marcusian analysis could offer an insight into the degree to which this data collection aspect is understood by the educational stakeholders who advocate for the increasing use and employment of digital educational platforms in education, and who use these technologies in their everyday educational practices. Marcuse suggested that the post- industrial society was subsumed into the technological system of the time to such a degree that they were unable to critically evaluate their position within that system. Therefore, the same theoretical analysis of educational stakeholders understanding could offer a further insight and contribute to current debates offering an additional and alternative insight. It is worth noting that some of the data generated within a school setting may be very personal or sensitive, for example, it could be data relating to a students’ health and wellbeing. However, this data is open to being ‘mined under the guise that it will customise learning and streamline schooling processes’ (Sefton-Green and Pangrazio, 2022: 9). As noted by (Yu and Couldry, 2020) ‘commercial access to student data by educational platforms is therefore discursively constructed as integral to efficiency, knowledge production, and even good citizenship’ (Yu and Couldry 2020, in Sefton-Green and Pangrazio, 2022: 9). Essentially, educational institutions are increasingly employing systems that are provided by private neo-liberal enterprises that are able to access and mine students’ personal and sensitive data as a trade-off for increased efficiency, convenience, and knowledge production.

## **2.11** Conclusion

The term digital literacy is difficult to define but overall, literature shows there are two common branches that consist of people who either define the term in terms of focusing on technical skills or in terms of 'the grasp of ideas' (Danhua and Zhonggen, 2022: 2). This review has shown that 'when taken from definitional and competencies perspectives, IL, ML and even digital literacy converge' (Lau and Grizzle, 2020: 96) and there is an increasing recognition that digital literacy is a plurality of literacies or a constellation of micro-literacies that are increasing in concurrence and in parallel with the increasing datafication of our lives; facilitated by the increased use and adoption of digital technologies. Therefore, although there are differing positions taken by various scholars in relation to digital literacy, media literacy, information literacy and indeed many other literacies, such as visual literacy; the overall view is that in an increasingly datafied world digital literacy, media literacy and information literacy share more similarities than differences. As such, it is becoming increasingly difficult to extrapolate them from each other in any meaningful way when they are situated within a digital context. Furthermore, there is also a recognition that both mechanistic and critical thinking skills need to be increased for people to 'understand and use online content' (Danhua and Zhonggen, 2022: 2).

There is also a consensus that the complex shifts brought about by datafication within today's increasingly digitalised societies, require critical reflection on how datafication is changing the way we live, learn and work (Pangrazio and Selwyn, 2019). Research suggests that the number of educational programmes working in the critical tradition are limited, and many of 'the current critical educational data programmes exist in a realm that is far removed from where education typically takes place (i.e., school)' (Sefton-Green and Pangrazio, 2022: 7). Research is being called for that includes a wide 'range of social actors to show how policy decisions are actually implemented in practice' (Sefton-Green and Pangrazio, 2022: 8). As well as calls for research that employs a more comprehensive approach rather than 'only looking at the effects from a single privileged perspective' (Sefton-Green and Pangrazio, 2022: 8). As suggested by Sefton-Green and Pangrazio a more comprehensive approach can show what the 'impact of modes of surveillance and forms of datafication are on young people, their families, teachers and schools and schooling in general' (Sefton-Green and Pangrazio, 2022: 8). Furthermore, the

literature also showed the essential necessity to gain an understanding of 'how educational stakeholders respond to the realities of datafication – that is living, teaching, and learning in datafied systems' (Sefton-Green and Pangrazio, 2022: 9), and that for critical education to be effective a 'critical education requires a paradigm of deficit' (Sefton- Green and Pangrazio, 2021: 2074). Essentially, central to this argument is that formal teaching is required to make a person, student, individual aware of their ignorance or misunderstanding, only then can critical education be addressed. Interestingly, while this issue is a global problem literature showed that even in the wealthiest countries studied Livingstone et al., found disparities in educational institutions within the same country indicating that 'even the best available education is proving insufficient to support children's agency in a datafied world' (Livingstone et al., 2022: 196). It is therefore not easy to generalise about 'both normative practice in schools across the world (as captured in supra-national accounts like the OECD) just as it challenging to generalise about theories of education' (Sefton- Green and Pangrazio, 2021: 2073). One of the ambitions and aims of the publication *Learning to Live with Datafication* and the collection of studies curated within it 'is that it should stimulate further research into the actual *practices* of datafication by diverse communities' (Sefton-Green and Pangrazio, 2022: 8). Literature also surfaced the concern that digital literacy though crucial is no match for the behemoth of the 'multi-country, multi-billion oligopolistic companies that control digital platforms' (Livingstone et al., 2022: 198). Concerns were also raised by numerous scholars regarding the influence of private neo-liberal technology companies and, 'the tensions that arise when commercially owned digital platforms are inserted into national public-school systems' (Sefton-Green and Pangrazio, 2022: 7/8).

Educational responses to the increasing datafication of our lives vary not only from country to country but also within different areas within these countries, and from one curriculum to another. In view of the disparities found within DLE curriculums within the same country it is suggested that research into DLE provisions in primary and secondary schools specifically in Wales would contribute to the understanding of how different communities and educational curriculums are responding to the increasing datafication of our everyday lives. This would constitute an original contribution to knowledge and help further our understanding in this field. In addition, by conducting

qualitative interviews with a selection of educational stakeholders' insights can be offered as to how educational policies are implemented in practice - another area this review has identified as requiring further research.

In addition, neo-liberal technological companies are increasing their reach into every facet of public and civic life. This thesis would also contribute and offer an insight into Wales's educational system regarding the growing concerns around the increasing introduction of commercially owned platforms into national public-school systems. A Marcusian analysis would be able to offer an insight into the degree of understanding currently held by educationalist and policy makers that are tasked with moulding the curriculum and educating future citizens. The empirical data will offer an insight into the lived experiences of these stakeholders and the Marcusian analysis will be able to evaluate the data in terms of their levels of criticality in relation to the digital systems they employ to educate and teach. Essentially, do the stakeholders consider this aspect or are they absorbed into the system to such a degree that they are unable to identify and recognise the social, ethical, and cultural impact of digital technologies.

Furthermore, a lack of critical education in relation to DLE has been one of the core themes to emerge from this review. Marcuse saw a similar situation in relation to post-industrial society and stated that for an individual to employ critical thinking they firstly had to transcend the one-dimensionality of their thought and behaviour to be able to employ a critical view. Essentially, to employ criticality, one firstly needs to recognise that they are in a state of ignorance. Marcuse believed individuals had lost their ability to rationally criticise because they had been subsumed into the technological system to such a degree that they were unable to make the presumption of misunderstanding. Therefore, a Marcusian analysis of the data collected would further our understanding of the degree to which critical education is included in DLE provisions that goes beyond teaching mechanistic or technical skills and includes a multi-dimensional plurality of literacies that this review has shown are increasingly required to navigate and fully understand the digital world we live in.

# 3 Chapter 3: Methodology

## **3.1** Introduction

This chapter will provide a description of, and justification for, the methodological choices made to sustain a coherent methodological framework in support of the research undertaken in this thesis. To begin, an overview of the data collection methods, the research questions, and the aim, importance and contribution of the study are presented. Thereafter, the ontological stance, epistemological position, inductive approach, multi method qualitative methodological choice, case study strategy and time horizon are detailed and discussed. The final section of this chapter focuses on the three data collection methods employed, and Fairclough's ideas on Critical Discourse Analysis. The process of developing this framework is informed by the conceptual framework referred to as the 'research onion' (See Figure 1) (Saunders et al., 2019: 130) which delineates the stages, considerations, and decisions a researcher needs to make to develop an effective and congruent research methodology.

## **3.2** Overview of Data Collection Methods

The question design for the three focus group interviews was based on the findings of the literature review and were conducted with participants between the ages of 21 and 25. The decision to interview participants between these ages was made due to two factors. Firstly, due to the timescale restrictions of the research period i.e., 9 to 12 months, obtaining ethical approval to interview participants under the age of 18 could have potentially posed ethical issues and time constraints. Secondly, younger participants may not have been in a position to offer considered reflections on their ICT education and discuss their experiences and opinions in a measured and deliberative manner. Therefore, by interviewing participants above the age of 18, the data collected would represent the respondents' reflective thoughts and opinions about their ICT lessons throughout their time in compulsory education. Thirdly, twenty-six in-depth interviews were conducted with a variety of educational professionals, digital literacy experts and government officials. These interviews were conducted to gain an in-depth understanding and insight into the current DLE provisions. The question design for these interviews was informed by the literature review, and focus group interviews.

## **3.3** Aims, Objectives, Importance and Contribution

The aims, objectives, importance, and contribution of this study is to offer an insight into current digital literacy education provisions. To reiterate, what this study seeks to understand is. (1) Whether in addition to mechanistic skills being taught, are students being sufficiently educated about how digital technologies use and affect them in a social, cultural, and ethical capacity? (2) Whether the programme content of digital literacy education is still primarily driven by neo-liberal economically driven government policies. (3) How much influence do private neo-liberal capitalistic enterprises have in determining the educational agenda of digital literacy education? Therefore, the findings from the analysis of the data aim to offer an understanding and insight into what drives and influences DLE policy, and how sufficient current digital literacy education provisions are in a post digital era. The pervasive ubiquity of digital technologies and devices are now integral to every aspect of an individuals' life, not just in Wales but globally, and 'advanced information societies are more and more heavily dependent on ICTs for their normal functioning and growth' (Floridi, 2014: 23). Moreover, the online digital world and the analogue-offline world are merging together and 'this recent phenomenon is variously known as 'Ubiquitous Computing', 'Ambient Intelligence', 'The Internet of Things', or 'Web-augmented things' (Floridi, 2014: 43). In the future, this merger will become even more magnified, further erasing any 'distinction between online and offline' (Floridi, 2014: 43). In view of this impending amalgamation, it is crucial that 'we understand how ICTs are significantly affecting us, our identities, and our self-understanding' (Floridi, 2014: 58). The evidence of the literature review indicated that digital literacy education has historically omitted to educate students about the ethical, social, and cultural impact of digital technologies; in the respect that, digital technologies are not neutral artefacts, or tools that one has to learn how to use, but rather; they are artefacts that are imbued with ideologies that impact culture and society (Winner, 1980). Therefore, this study can offer an insight into whether current digital literacy education is sufficiently educating, and enabling current, and future citizens to relate their digital literacy education to the realities of the social and cultural world they now, and will live in. This being said, it is important to note that this study is not negating or diminishing the value or importance of learning mechanistic digital skills.

## 3.4 Specific Research Questions

1. Is digital literacy education still focusing on mechanistic skills only?
2. What does the term digitally literate mean to the education sector?
3. Does digital literacy education prepare students for the social and cultural aspects of living in the digital milieu.
4. How well has, or does, digital literacy education prepare students to adapt the skills gained so that they are able to secure employment when changes occur in technologies?
5. Is the content of digital literacy still primarily driven by economically driven government policies?
6. How much influence do private neo-liberal capitalistic enterprises have in determining the educational agenda of digital literacy education?

## 3.5 Philosophy

Saunders et al., developed the research onion, which at the simplest level describes the different decisions a researcher needs to make when developing a research methodology (See Figure 1).

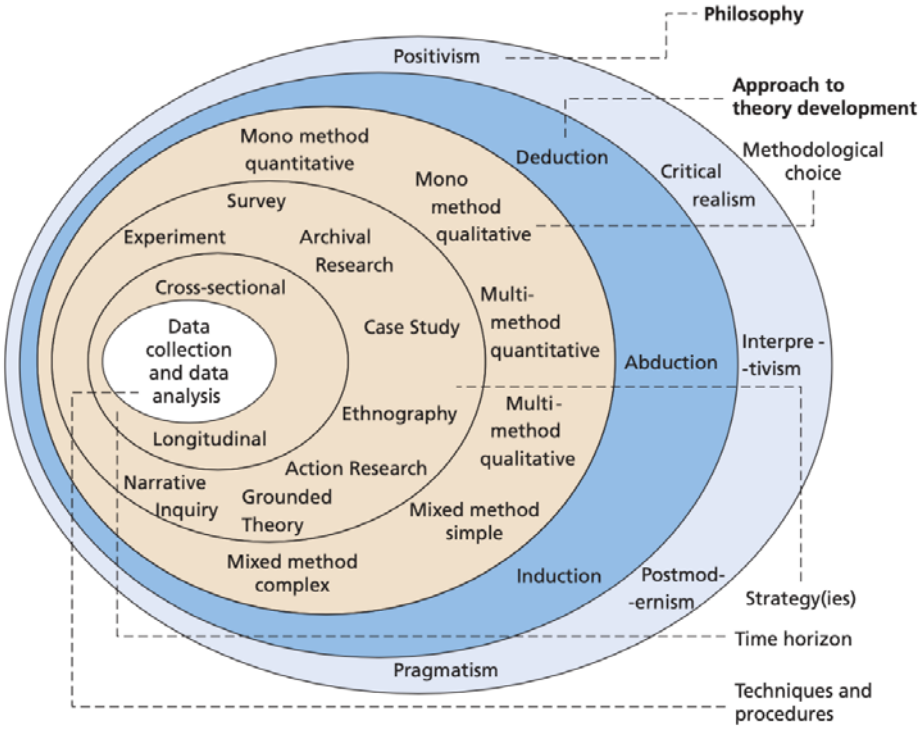


*Figure 1The 'research onion' (Saunders et al. 2019: 130)*

As demonstrated in Figure 1 the data collection and data analysis methods belong 'in the centre of the research 'onion' (Saunders et al., 2019: 128). However, in coming to this central core, it is necessary to explain and justify the choices made, as 'at every point in our research, in our observing, our interpreting, our reporting, and everything else we do as researchers, we inject a host of assumptions' (Crotty, 1998: 17). The assumptions made are 'assumptions about human knowledge and assumptions about realities encountered in our human world' (Crotty, 1998: 17). The significance of these assumptions is profound as they 'shape for us the meaning of research questions, the purposiveness of research methodologies, and the interpretability of research findings' (Crotty, 1998: 17). Without clarifying or unpacking these assumptions 'no one (including ourselves!) can really divine what our research has been or what it is now saying' (Crotty, 1998: 17). Crotty explains that 'far from being a theorising that takes researchers from their research, it is a theorising embedded in the research act itself. Without it, research is not research' (Crotty, 1998: 17).

In order to develop a credible research philosophy that underpins the methodological choice, research strategy, data collection techniques and analysis procedures; consideration was firstly given to the ontological position and epistemological rationale (Saunders et al., 2019: 131). Tuli states that:

> The research paradigm chosen by individual researchers appears to be dependent on their perceptions of "what real world truth is" (ontology) and "how they know it to be real truth" (epistemology). A researcher's choice of research paradigm can also be determined by the kinds of questions that help them to investigate problems or issues they find intriguing. (Tuli, 2010: 103)

Therefore, the 'justification of our choice and particular use of methodology and methods is something that reaches into the assumptions about reality that we bring to our work' (Crotty, 1998: 2). When asking about these assumptions we are not only asking about our theoretical perspective, but also our understanding of:

> What human knowledge is, what it entails, and what status can be ascribed to it. What kind of knowledge do we believe will be attained by our research? What characteristics do we believe that knowledge to have? (Crotty, 1998: 2)

Ontology ‘is the study of being. It is concerned with ‘what is’, with the nature of existence, with the structure of reality’ (Crotty, 1998: 10). Ontology relates to the nature of reality and broadly speaking there are two ‘contrasting positions: objectivism that holds that there is an independent reality, and constructionism that assumes that reality is the product of social processes’ (Neuman, 2003 in, Tuli, 2010: 101). While ontology is concerned with the study of being and the nature and structure of reality, epistemology poses the questions ‘what is the relationship between the knower and what is known? How do we know what we know? What counts as knowledge?’ (Tuli, 2010: 99). Broadly speaking there are two ‘epistemological positions: positivism and interpretivism - constructivism’ (Tuli, 2010: 99). Ontology sits ‘alongside epistemology informing the theoretical perspective’ (Crotty, 1998: 10). Moreover, ‘each theoretical perspective embodies a certain way of understanding what is (ontology) as well as a certain way of understanding what it means to know (epistemology)’ (Crotty, 1998: 10). Therefore, ‘ontology and epistemology influence the type of research methodology chosen, and this in turn guides the choice of research design and instruments’ (Tuli, 2010: 105). In essence, ‘the ontology informs the methodology about the nature of reality and what social science is supposed to study’ (Tuli, 2010: 105). Whereas ‘the epistemology informs the methodology about the nature of knowledge or where knowledge is to be sought’ (Tuli, 2010: 105).

An interpretivist’s ontological position is constructionism in the respect that they ‘cannot accept the idea of there being a reality ‘out there’, which exists irrespective of people’ (Mutch, 2005, in Tuli, 2010: 101). Reality from an interpretivist’s perspective is viewed ‘as a human construct’ (Mutch, 2005, in Tuli, 2010: 101). Moreover, ‘it holds that people make their own sense of social realities’ (Mutch, 2005, in Tuli, 2010: 101). An interpretivist perspective ‘sees the world as constructed, interpreted, and experienced by people in their interactions with each other and with wider social systems’ (Maxwell, 2006; Bogdan & Biklen, 1992; Guba and Lincoln, 1985; Merriam, 1988, in Tuli, 2010: 100). The interpretivist paradigm holds that ‘the nature of inquiry is interpretive and the purpose of inquiry is to understand a particular phenomenon, not to generalize to a population’ (Farzanfar, 2005, in Tuli, 2010: 100). As such, an interpretivist position favours ‘qualitative research methodologies to investigate, interpret and describe social realities’ (Bassey, 1995; Cohen, Manion & Morrison, 2000, in Tuli, 2010: 101) and the ‘research findings in qualitative methodology are

usually reported descriptively using words' (Mutch, 2005, in Tuli, 2010: 101). As Munkvold and Bygstad state, 'in principle, the object of study in interpretive research is understanding (Weber's "verstehen"), i.e., the subjective meaning that social actors create and share about their life world' (Munkvold, and Bygstad, 2016: 31). To elaborate on the interpretivist position further:

> Interpretive researchers place strong emphasis on better understanding of the world through first-hand experience, truthful reporting and quotations of actual conversation from insiders perspectives (Merriam, 1998) rather than testing the laws of human behaviour (Bryman, 2001; Farzanfar, 2005), they employ data gathering methods that are sensitive to context (Neuman, 2003), and which enable rich and detailed, or thick description of social phenomena by encouraging participants to speak freely and understand the investigator' s quest for insight into a phenomenon that the participant has experienced. Owing to this, interview, focus group discussion and naturalistic observation are the most widely used data gathering methods. (Tuli, 2010: 100)

The aim of the research conducted in this thesis is not to generalise to a population but to seek insights and a better understanding of current DLE provisions. This will be achieved by conducting inductive, multi method qualitative research case studies using data collection methods such as focus group and in-depth interviews. These qualitative methods enable participants to speak freely about their first-hand experience and offer an insider perspective of DLE provisions and policy in Wales. Therefore, the epistemological rationale of the research methodology of this thesis is congruent with interpretivism which sits alongside the ontological position of the researcher i.e., constructionism. In contrast, 'the nature of social reality for positivists is that: empirical facts exist apart from personal ideas or thoughts; they are governed by laws of cause and effect; patterns of social reality are stable and knowledge of them is additive' (Crotty, 1998; Neuman, 2003; Marczyk, DeMatteo and Festinger, 2005, in Tuli, 2010: 100). As such, 'the positivist research paradigm underpins quantitative methodology' (Tuli, 2010: 102).

The multi method qualitative research methodological choice of this research also included an online questionnaire which posed a combination of qualitative and quantitative questions. It is noted that questionnaires are more often aligned with

quantitative methods, and often employed as a data collection method for a study that holds a positivist epistemological position and a realist or objectivist ontological position; 'researcher(s) within the positivist paradigm is/are guided to employ questionnaires' (Tuli, 2010: 105). However, the questionnaire employed within this study was for exploratory purposes, to gain "verstehen", an understanding of the phenomenon being studied (Munkvold, and Bygstad, 2016: 31). As the aim of the questionnaire was to gain knowledge that would inform the question design for the subsequent qualitative research data collection methods, the epistemologically interpretivist rationale, and the ontological constructionist position of the research paradigm was maintained.

Research quality and outcomes for positivist and interpretivists are also judged and based on different criteria, for example, 'positivists use validity, reliability, objectivity, precision, and generalisability to judge the rigor of quantitative studies' (Tuli, 2010: 101). Their intention is 'to describe, predict, and verify empirical relationships in relatively controlled settings' (Tuli, 2010: 101). However, if you are conducting 'qualitative research that aims to explore, discover, and understand' (Tuli, 2010: 101), you cannot use the same criteria, 'to judge research quality and outcomes' (Tuli, 2010: 101). The interpretivist perspective is concerned with 'issues of trustworthiness and credibility, as opposed to the positivist criteria of validity, reliability and objectivity' (Tuli, 2010: 101). Therefore, to ensure that research is 'considered credible and authentic, investigations should be based on a sound rationale that justifies the use of the chosen methodology and the processes involved in data collection and analysis' (Tuli, 2010: 101). Moreover, it is well established that 'the traditional quality criteria for assessing positivist research are not suited for evaluating interpretive research' (Guba and Lincoln, 1989; Klein and Myers, 1999; Walsham, 1995a, in Munkvold and Bygstad, 2016: 33). Essentially, the aforementioned parallel, or alternative 'criteria have been developed, including trustworthiness, authenticity, credibility, transferability, dependability, and confirmability' (Guba and Lincoln, 1989; Oates, 2006, in Munkvold and Bygstad, 2016: 33). In addition, one of the distinguishing characteristics of interpretive research is 'recognizing that researchers are not and can never be neutral, and thus not striving for a neutral, objective stance as prescribed by the positivist paradigm' (Munkvold and Bygstad, 2016: 32). Patton notes that:

> One finds many instances where closeness to sources of data made key insights possible- Piaget's closeness to his children, Freud's proximity to and empathy with his patients, Darwin's closeness to nature, and even Newton's intimate encounter with an apple. In short, closeness does not make bias and loss of perspective inevitable; distance is no guarantee of objectivity. (Patton, 2002: 49)

As previously stated, the methodology chapter of this thesis has been informed by the research onion as developed by Saunders et al., and thus far has discussed the methodological choices of this research in relation to the philosophical approach, and methodological choice and strategy. In relation to the temporal or time horizon aspect of this research, the qualitative data collected spans a time period of approximately fifty years from the 1980s to 2025-2030. This time frame has been arrived at as the various participants of this study were able to offer insights of DLE in Wales from the 1980s to 2025-2030. For example, one of the participants commenced his teaching career in the 1980s. The government officials and DLE experts were able to offer knowledge that pertained to the next five to ten years of DLE policy plans in Wales. The next section of this chapter will now discuss the data collection methods and data analysis, what Saunders et al., refer to as the core of the research onion (Saunders et al., 2019).

## **3.6** Focus Group Interviews

The focus group interview is a ‘collectivistic rather than an individualistic research method’ (Patton, 2002: 388). Focus group interviews were originally used in the 1950s by market researchers (Patton, 2002: 385). From an academic perspective ‘sociologist Robert K. Merton and associates wrote the seminal work on research-orientated focus group interviews in 1956’ (Patton, 2002: 385). It is noted that, the focus group interview is not a discussion or a method of solving a problem but is primarily an interview ‘with a small group of people on a specific topic’ (Patton, 2002: 385). However, it differs from one-on-one interviews in the respect that ‘participants get to hear each other’s responses and make additional comments beyond their own original responses as they hear what other people have to say’ (Patton, 2002: 386). In any given study, several different focus group interviews will be conducted in order to ‘get a

variety of perspectives and increase confidence in whatever patterns emerge' (Patton, 2002: 385). It is noted that, 'participants need not agree with each other or reach any kind of consensus, nor is it necessary for people to disagree' (Patton, 2002: 386). The objective of the focus group interview 'is to get high-quality data in a social context where people can consider their own views in the context of the views of others' (Patton, 2002: 386). Focus group expert Richard Krueger suggests that 'a focus group should be "carefully planned" to obtain perceptions "on a defined area of interest in a permissive, nonthreatening environment"' (Krueger, in Patton, 2002: 386). Krueger employs the term moderator rather than interviewer in relation to focus group interviews because:

> This term (moderator) highlights a specific function of the interviews -that of moderating or guiding the discussion. The term interviewer tends to convey a more limited impression of two-way communication between an interviewer and an interviewee. By contrast, the focus group affords the opportunity for multiple interactions not only between the interviewer and the respondent but among all participants in the group. The focus group is not a collection of simultaneous individual interviews, but rather a group discussion where the conversation flows because of the nurturing of the moderator. (Krueger, 1994: 100)

When conducting qualitative inquiries, the advantages of employing focus group interviews as a data collection method are that data collection is cost effective, and you can increase your sample size by gathering information from more than one participant in the designated time period allotted to a qualitative interview; usually an hour (Krueger, 1994: 8). Focus group interviews are widely accepted within market research as a qualitative data collection method, 'because they produce believable results at a reasonable cost' (Krueger, 1994: 8). Additionally, data quality is enhanced by interactions among participants as they 'tend to provide checks and balances on each other, which weeds out false or extreme views' (Krueger and Casey 2000, in Patton, 2001: 386). Furthermore, the 'extent to which there is relatively consistent, shared views or great diversity of views can be quickly assessed' (Patton, 2002: 386). Focus group interviews have the tendency 'to be enjoyable to participants, drawing on human tendencies as social animals' (Patton, 2002: 386).

Like all forms of data collection, the focus group interview also has its limitations, for example, there are restrictions to how many questions can be asked, as well as restraints on the available response time afforded to any particular individual 'in order to hear from everyone' (Patton, 2002: 386-387). Therefore, consideration has to be given to this aspect when planning questions. As a rule of thumb, if a focus group consists of eight people and the interview time is an hour, you should 'plan to ask no more than 10 major questions' (Patton, 2002: 386-387). Therefore, the facilitation and conduct of a focus group interview requires 'considerable group process skills beyond simply asking questions' (Patton, 2002: 387). To manage and avoid the interview becoming dominated by one or two people the moderator must manage the interview so that 'participants who tend not to be highly verbal are able to share their views' (Patton, 2002: 387). Other limitations include situations where a participant may realise that they hold a viewpoint that is a minority perspective, this may dissuade them from speaking, as they may feel this could produce 'negative reactions' (Patton, 2002: 387). From an analytical perspective, 'the focus group is beneficial for identification of major themes but not so much for the micro-analysis of subtle differences' (Patton, 2002: 387).

The strengths and limitations of focus group interviews suggests that 'the power of focus groups resides in their being focused' (Patton, 2002: 388). For example, the topic should be narrowly focused and would 'usually be seeking reactions to something (a product, program, or shared experience) rather than exploring complex life issues with depth and detail' (Patton, 2002: 388). The groups themselves 'are focused by being formed homogeneously' (Patton, 2002: 388), and the facilitation of the group should be focused and keep 'responses on target' (Patton, 2002: 388). Additionally, the interactions among the participants should be focused and stay on topic, and focus should also be maintained on the use of time 'because the time passes quickly' (Patton, 2002: 388). However, 'despite some of the limitations introduced by the necessity of sharp focus, applications of focus groups are wide-spread and growing' (Krueger and Casey 2000; Madriz 2000; Fontana and Prey 2000; Academy for Educational Development 1989; Morgan 1988, in Patton, 2001: 388). Furthermore, 'the feedback from focus groups is typically more specific, meaningful, and animated than what can be obtained from individually filled out consumer questionnaires and surveys' (Patton, 2002: 388). Focus group interviews are increasingly used 'with client and staff groups

in program evaluation to identify a program's strengths, weaknesses, and needed improvements' (Patton, 2002: 388).

Three focus group interviews were conducted for this inquiry. Focus group one was conducted in person as per the COVID-19 social distancing guidelines on the 2nd of August 2020. The method employed to record the interview was audio only and this was facilitated by using a Dictaphone. Due to further COVID-19 restrictions focus group two was conducted via Zoom on the 6th of November 2020 and focus group three via Zoom on 19th of November 2020. The Zoom online conferencing platform offers a recording function, this was the chosen method employed to record the interviews with focus group two and three. All of the recordings were saved and stored in an encrypted file. Written participant permissions to quote extensively from their interviews was obtained in advance of the interviews (Brinkman and Kvale, 2015: 138). For participant consent forms (See Appendix 3). The participants were recruited using the networking and snowballing techniques. For details of participant demographics (See Table 1).

## **3.7** Data Quality and Validity

Although there are clear instructions and precise requirements on how to conduct focus group research, there is a lack of studies on the methodological aspects, more precisely on the problems of validity and reliability (Chioncel et al., 2003: 496). When conducting the focus group interviews extensive consideration was given to the reliability and validity of the qualitative data provided by the focus group participants in relation to their reflections on their experience of DLE in both their primary and secondary school education. The participants' ages ranged between 21 and 25. Focus group one was comprised of three participants, two of which were 22 years old, and one 23-year-old, group 2 was also comprised of three participants all of whom were 21 years old, and group three comprised of four participants three of whom were 22 years old, and one twenty-five-years-old (See Table One). The participants would have been recalling memories of their experience of DLE in primary and secondary school from their past. As such, the following was considered in relation to the validity and reliability of the participants responses during the focus group interviews.

Firstly, this study acknowledged that the validity and reliability of research is crucial especially when conducting qualitative research, 'meticulous attention to these two aspects can make the difference between good research and bad research' (Brink, 1993: 35). There are multiple factors that can pose risks to the validity of findings (Brink, 1993: 35). For example, when eliciting responses from participants via questionnaires or interviews 'the truth of responses is a key concern' (Brink, 1993: 36). Responses could be affected by a variety of factors such as biases because of the 'characteristics of the informants' (Brink, 1993: 36). Interviewees may for whatever reason 'want to make things seem better or worse than they are' (Brink, 1993: 36). For example, if a participant is in hospital and is being questioned about the quality of care they are receiving, they may not answer truthfully and 'indicate that the care is wonderful because they fear reprisal of staff' (Brink, 1993: 36), on the other hand they may say 'their care is awful' (Brink, 1993: 36). Responses may also be given by an informant that they think would please the researcher, or in a way they believe the researcher expects (Brink, 1993: 36). Another reason identified as to why a respondent may give an untruthful answer is that they may 'fear that by giving negative responses, they will be placed in a devalued position by the researcher' (Brink, 1993: 36). Respondents 'may also be unwilling to share certain information with the researcher and deliberately withhold or distort information' (Brink, 1993: 36). The reliability of participants memories can also be problematic when conducting qualitative research, however Blakey et al., state that 'memory, as a concept, is rarely discussed or described in qualitative research' (Blakey et al., 2019: 27). The reliability of participants memories can be problematic and assuring that they are reliably recalling events accurately is problematic as 'no one can access the original events to examine the veracity of a human experience in everyday situations' (Mori, 2008: 291). It is further acknowledged that 'contrary to popular belief, memory does not work like a video-recorder, faithfully capturing the past to be played back unerringly at a later time' (Roediger, 2001: 12844).

From a psychological perspective human memory is viewed as a fundamental condition of consciousness and psychologists have developed various complex models of individual memory (Parkin, 1993: 3-25). For example, the methodological approach into human memory research was developed by Hermann Ebbinghaus (1885). His approach 'still dominates experimental work on memory (e.g., Young 1985)' (Parkin,

1993: 3). Ebbinghaus employs a method of memory recollection based on using 'nonsense syllables as target stimuli in memory experiments' (Parkin, 1993: 3). However, not all psychologists are convinced by his methods, their objections being that using 'meaningless stimuli to investigate memory lacks ecological validity' (Parkin, 1993: 3). This is based on the idea that in real life human beings never 'have to learn nonsense, so theories derived from experiments using this method have little or no value' (Parkin, 1993: 3). It was Bartlett (1932) who put forward an alternative approach that 'human memory can be properly understood only by getting subjects to recall material that means something to them' (Parkin, 1993: 3). However, this approach is problematic as it introduces 'many of the extraneous factors that Ebbinghaus tried to avoid' (Parkin, 1993: 4). These extraneous factors being predominantly the prior knowledge that the subjects bring to an experiment (Parkin, 1993: 3). Mori posits that remembering is 'an emergent activity (often communicative) that is restricted by both rememberers' duration of experience and the present situation in which it is performed' (Mori, 2008: 291). Research indicates that our cognitive processes are active and 'we perceive and encode events in the world, we construct (rather than copy) the outside world as we comprehend the events' (Roediger, 2001: 12844). Therefore, if memories are constructed then remembering an experience from the past is a reconstruction of the original experience (Roediger, 2001: 12844). When reconstructing a memory Roediger states that the memory will be based on traces of the past events but in addition it will also be based on 'our general knowledge, our expectations, and our assumptions about what must have happened' (Roediger, 2001: 12844). As a result, recollections may be full of errors especially when 'our assumptions and inferences, rather than traces of the original events, determine our recollections' (Roediger, 2001: 12844). Therefore, it is acknowledged that:

> Errors—false memories—constitute the prime evidence for reconstructive processes in remembering. Several different sources of error (inferences during encoding, information we receive about an event after its occurrence, our perspective during retrieval) exist. (Roediger, 2001: 12844)

In view of the reconstructed nature of memory and that 'no one can access the original events to examine the veracity of a human experience in everyday situations' (Mori, 2008: 291) other measures such as 'trustworthiness, credibility, transferability,

dependability, and confirmability' (Lincoln and Guba, in Chioncel et al., 2003: 496) must be considered when looking at the validity and reliability of qualitative data.

The Focus group method of interviewing participants has been used in various fields such as 'applied sociology and communication studies' (Chioncel et al., 2003: 496). When discussing the truth value of their findings 'Lincoln and Guba (1985) proposed the concepts of trustworthiness, credibility, transferability, dependability and confirmability' (Lincoln and Guba, in Chioncel et al., 2003: 496). To break these concepts into their constituent parts they propose that, 'credibility means that the results of qualitative research are credible or believable from the perspective of the participant in the research' (Chioncel et al., 2003: 496).

> Transferability refers to the degree to which the results of qualitative research can be generalized or transferred to other contexts or settings. Dependability is based on the assumption that for replicability control of changes that occur in the research context is needed. Confirmability refers to the degree to which the results could be confirmed by other research findings. (Chioncel et al., 2003: 496)

Kirk and Miller (1986:19) suggest that the partitioning of objectivity into the two components of validity and reliability is 'adequate for qualitative research' (Kirk and Miller, in Chioncel et al., 2003: 501). While Hammersley (1987) suggests that 'research results are valid or true if they represent accurately those features of the phenomena that it is intended to describe, explain or theorize' (Hammersley, in Chioncel et al., 2003: 501). Silverman (2001) when making his plea for validity or 'truth status of qualitative research' (Silverman, in Chioncel et al., 2003: 501) takes the position that reliability can be measured by the extent to which a 'procedure produces the same answer however and whenever it is carried out' (Chioncel et al., 2003: 501). Winter (2000) conducted 'a meta-analysis of the key words related to validity and reliability, in both quantitative and qualitative research' (Winter, in Chioncel et al., 2003: 501). He argued that 'the aggregated definition of validity could be accuracy and that of reliability might be replicability' (Winter, in Chioncel et al., 2003: 501). There are other positions taken in relation to validity such as Hammersley and Atkinson who state that 'data in themselves cannot be valid or invalid; what is at

issue are the inferences drawn from them' (Hammersley and Atkinson, in Chioncel et al., 2003: 502). While there is no certain way of knowing if an individual participant of a focus group is reconstructing their memories in a truthful and accurate way there are methods that can be employed to validate the reliability and accuracy as discussed. Therefore, to evaluate the quality of the data from the focus group interviews the validity and reliability will be assessed based on whether the data is accurate and replicable i.e., the extent to which the data produces the same answers across the focus groups.

## **3.8** Participant Demographics

(W/M = Welsh Medium School) (E/M = English Medium School):

| Focus Group: | Number of participants: | Name and age of participants: | Age range of participants: | Primary School: | Secondary School: |
|---|---|---|---|---|---|
| Group 1 | 3 | Tara<br>Fran<br>Fred | 22<br>22<br>23 | Wales<br>W/M<br>Wales<br>W/M<br>Wales<br>E/M | Wales<br>W/M<br>Wales<br>W/M<br>Wales<br>E/M |
| Group 2 | 3 | Grace<br>Daisy<br>Francesca | 21<br>21<br>21 | Wales<br>E/M<br>Serbia<br>England<br>E/M | Wales<br>E/M<br>Serbia<br>England<br>E/M |
| Group 3 | 4 | Libby<br>Tracy<br>Janet<br>Matilda | 22<br>22<br>25<br>22 | Wales<br>W/M<br>Wales<br>W/M<br>Wales<br>E/M | Wales<br>W/M<br>Wales<br>E/M<br>Wales<br>E/M |

| | | | | | |
|---|---|---|---|---|---|
| | | | | Wales<br>E/M | Wales<br>E/M |

*Table 1 Focus group demographics*

The interviews were transcribed verbatim and uploaded to NVivo qualitative software for analysis. The thematic analysis of the transcripts was informed by Fairclough's ideas of Critical Discourse Analysis (CDA) (Fairclough, 2001) and conducted inductively and independently of the chosen theoretical framework (CDA is discussed in detail at later point in this chapter). For macro and micro themes/codes (See Table 2). The focus group question design was informed by the findings of the literature review. For example, participants were asked to discuss what type of hardware and software was available to them throughout their education in primary and secondary school. Their analysed responses fitted into the macro theme digital devices and software, and two micro themes: hardware and software they learned to use; hardware to pupil ratio. Thereafter, the thematically coded data was analysed using theoretical concepts developed in Herbert Marcuse's 1964 publication *One-Dimensional Man.* The theoretical framework is discussed in detail in the following chapter and the analysis can be found in the findings chapter of this thesis.

## 3.9 Codes/Themes

| Macro Themes/codes | Micro Themes/codes |
|---|---|
| Digital Devices and Software | Hardware and software available<br>Hardware to pupil ratio |
| ICT Lesson Content | Lack of discipline and student focus<br>Teachers' ICT abilities and interest<br>Coding/programming<br>Digital skills learned outside ICT lessons<br>Independent learning<br>DLE relating to preparation for employment |
| Educational Provisions regarding Social use of Digital Devices and the Digital Environment | ABCh/PSE<br>Knowledge of digital environment |

*Table 2 Focus group qualitative data analysis macro and micro codes/themes*

## 3.10 In-depth Interviews

Twenty-six in-depth interviews were conducted between July 2020 and July 2021. The question design was informed by the findings from the literature review and focus group interviews. These in-depth interviews gathered data from educators, government officials and digital literacy experts. The participants were recruited via three methods, networking, snowballing and cold calling. The following exemplifies the various elements and aspects that informed the plan and design of the in-depth interviews conducted in this inquiry.

## 3.11 Participant Demographics

26 semi-structured interviews were conducted between July 2020 and July 2021. 16 of the participants identified as male and 11 as female. The participants' ages ranged

from 22 – 60+. 18 of the participants taught in English medium schools and 3 in Welsh medium schools. (See Tables 3 and 4) for further demographic information.

The new curriculum in Wales aims to not only change how subjects are taught, but also how digital literacy will be included within it. Therefore, at the time of this study there were various subject areas within the curriculum that were delivering different aspects or elements of digital literacy. These subject areas include Information and Communication Technology (ICT) which was scheduled to be replaced by Digital Technology in September 2021 (Powell, 2021); Computer Science; PSE/ABCh days, and the Digital Competence Framework (DCF) which is a cross curricula framework made available in September 2016 (Welsh Government, 2018c: 3). The DCF became statutory in September 2021 and crosses all the curriculum areas offering students digital skill development from the age of 3 to 16. Thus, every educationalist in primary and secondary schools in Wales would need to include the various strands of the DCF into their lessons. It should be noted that although the DCF was the first element of the new curriculum to be released for implementation in 2016, not all schools had adopted this cross-curriculum framework at the time of this research. However, it should also be noted that the DCF becoming statutory in September 2021 meant that educators would require the relevant knowledge and skills to enable them to implement this cross-curricular framework. It is also noted that regarding the digital aspect of the new curriculum for Wales, the DCF was a key recommendation. As the aim of this study is to offer an insight into the current DLE provisions in Wales in order to offer a holistic insight, it was important to not only include ICT and Computer Science teachers, but also teachers and teaching assistants that were either already including the DCF in their lessons or in the process of preparing to include it from September 2021. Therefore, the participants were chosen based on these criteria.

Essentially, it was imperative that a broad selection of educators from teaching assistants in both primary and secondary schools to designated computer science and ICT teachers in secondary schools be interviewed. The research in this study aimed to offer an insight into educators' experience of digital technologies in education and their current digital skill levels and understanding of the digital environment. The participants' experience and length of time teaching also varied from some who had recently qualified to one computer science teacher who had recently retired. This range

and diversity of teachers and teaching assistants included in this study ensured that a wide range of observations and insights were offered based on their own experiences, observations, skills, and knowledge.

The two digital experts included in this study are from academic backgrounds and have been key advisors to the Welsh Government regarding the digital aspects of the new curriculum since 2013. Therefore, they have distinct knowledge about how digital literacy/competency has been included in the curriculum in Wales over the last ten years. They have also been significantly instrumental in how digital literacy/competency will be included, implemented, and evaluated within the new curriculum for Wales.

The government officials included in this study include one participant who is a senior member of the digital application for schools' team in a local council, this interview was conducted via email. The other participant is an anonymous government official from Pembrokeshire County Council's digital application for schools' team whose responses were issued under the freedom for information act. These participants were chosen to offer an insight into how the government owned virtual learning environment for all schools in Wales Hwb functions in tandem with educators, and how it is structured and linked to commercial entities such as Microsoft. The third government official is a Welsh politician who has been actively involved in Welsh politics since 1984. He is a local councillor and was a Welsh Assembly Member for a period of time. As a Welsh Assembly member, he worked closely with the former educational minister Kirsty Williams in securing funding for various initiatives in Welsh Schools. He was chosen as a participant as he was able to offer an insight into how the financial aspects of school funding allocation functions in relation to the distribution of digital resources. Consideration was given to the possibility that his responses could be politically biased.

| | Name | Primary TA | Primary Teacher | Secondary Teacher | Learning resources manager FE college |
|---|---|---|---|---|---|
| 1 | Anna | P/TA | | | |
| 2 | Ava | | P/T | | |

| | | | | | |
|---|---|---|---|---|---|
| 3 | Alice | P/TA | | | |
| 4 | Angela | | | S/T | |
| 5 | Adam | | | S/T | |
| 6 | Amanda | | P/T | | |
| 7 | Arya | P/TA | | | |
| 8 | Susan | | | S/T | |
| 9 | John | | | S/T | |
| 10 | Betsy | | HEAD TEACHER | | |
| 11 | Barbara | | P/T | | |
| 12 | Alison | P/TA | | | |
| 13 | Edward | | | S/T Computer Science and ICT | |
| 14 | Colin | | | S/T ICT teacher | |
| 15 | Richard | | | S/T and Digital lead pioneer school | |
| 16 | Charlie | | | S/T ICT teacher | |
| 17 | Debbie | | | S/T Computer Science teacher | |
| 18 | Tony | | | | FE |
| 19 | Thomas | | | | FE |
| 20 | Daniel | | | | FE |
| 21 | James | | | | FE |

*Table 3 Participant demographics, primary, secondary schools, and FE college educators*

| Name | Government Official | Digital Expert | |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Carlton | Government official | | Local Councillor and former Assembly Member Liberal Democrat- able to offer insight into governmental decision-making processes |
| Nicholas | Government official | | Senior position in local council responsible for all digital supplies to schools in that area |
| Anon | Government official | | Senior position in local council responsible for all digital supplies to schools in that area |
| Stephen | | Digital Expert | Key participant -One of the main advisors for the new digital qualifications of the new curriculum for Wales |
| Oliver | | Digital Expert | Key participant - One of the main advisors for the digital aspect of the new curriculum |

*Table 4 Participant demographics government officials and digital experts*

The purpose of the qualitative interview is to try to 'understand a person's world and worldview' (Patton, 2002: 379). While 'no standard procedures or rules exist for conducting a research interview, or an entire interview investigation' (Brinkman and Kvale, 2015: 125; Patton, 2002: 379), there are 'standard choices of approaches and techniques at different stages of an interview investigation' (Brinkman and Kvale, 2015: 125). Brinkman and Kvale suggest that there are seven stages of an interview inquiry '(1) thematizing an interview project (2) designing, (3) interviewing, (4) transcribing, (5) analysing, (6) verifying, and (7) reporting' (Brinkman and Kvale,

2015: 23). The ‘nature of the report is decisive for decisions at earlier stages such as ethical issues and informing the interviewees about later use of what they say’ (Brinkman and Kvale, 2015: 138). For example, written permission may be required if you intend to ‘quote extensively from their interviews’ (Brinkman and Kvale, 2015: 138). Time can also be an issue during an interview so maintaining control and enhancing the quality of responses is something that needs to be considered (Patton, 2002: 375). This can be facilitated by:

> (1) Knowing what you want to find out, (2) asking focused questions to get relevant answers, (3) listening attentively to assess the quality and relevance of responses (4) giving appropriate verbal and nonverbal feedback to the person being interviewed. (Patton, 2002: 375)

The question design for the in-depth interviews was informed by the findings of the literature review, and the focus group interviews. The in-depth interviews were also reflected upon, as participants raised various themes about the topic of investigation that served to inform subsequent in-depth interview questions. Written participant permissions to quote extensively from their interviews were obtained in advance (Brinkman and Kvale, 2015: 138). For participant consent forms (See Appendix 3). In addition, by posing focused and clear questions more control was maintained during the interview process to ensure that interview time limits were adhered to.

There are ‘three basic approaches to collecting qualitative data through open-ended interviews’ (Patton, 2002: 342), the informal conversational interview, the general interview guide approach, and the standardized open-ended interview (Patton, 2002: 342). The format of the open-ended interviews conducted in this study took the general interview guide approach where the issues to be explored with each respondent were outlined before the interviews began. However, as Patton notes the three contrasting approaches ‘are by no means mutually exclusive’ (Patton, 2002: 347). For example, ‘a conversational strategy can be used within an interview guide approach’ (Patton, 2002: 347). As such, at certain points during the interviews conducted for this inquiry a conversational strategy was integrated into the general interview guide approach. These approaches offered the participants ‘the opportunity to respond in their own

words and to express their own personal perspectives' (Patton, 2002: 348). All efforts were made to ensure that the questions asked were genuine open-ended questions where the respondents were able to 'express their own understandings in their own terms' (Patton, 2002: 348).

Prior to the interviews a loose guide script that contained a list of topics to be covered was formulated (Brinkman and Kvale, 2015: 156). However, in view of the varying professional roles held by the participants, for example, teachers, vs governmental officials, judgements were made as to how and when to alter the guide scripts so that the topics covered were appropriate to the various interviewee's expertise and knowledge (Brinkman and Kvale, 2015: 157). The questions asked focused on participants opinions, feelings, and knowledge about the various topics covered (Patton, 2002: 351). Follow up questions were also posed where the participants were asked to compare their current and past views regarding some of their responses. The use of academic language was kept to a minimum, and only employed when appropriate. Every effort was made to ensure that questions were, 'open-ended, neutral, singular, and clear' (Payne, in Patton, 2002: 353).

Due to the COVID-19 restrictions the primary method for both conducting and recording the in-depth interviews was Zoom and Microsoft Teams. In addition, a Dictaphone was also used as a secondary recording device to ensure there was a back-up recording available in case of any technological malfunctions. Four of the semi-structured interviews were recorded in person, in these instances, a Dictaphone was the chosen recording method. Additionally, one of the interviews was conducted via e-mail and one of the interview responses from a local council was issued under the freedom for information act. Notes were taken during the in person and video platform interviews. The notes allowed for the formulation of follow up questions as the interview progressed as well as offering valuable early insights that helped to inform subsequent interview questions while still in the field (Patton, 2002: 383).

Patton notes that 'the period after the interview or observation is critical to the rigor and validity of qualitative inquiry' (Patton, 2002: 383). Conducting an immediate reflection on the interview and making process notes of potential problems or issues whilst the interview is fresh in your mind is critical (Patton, 2002: 384). 'It is a time

of quality control to guarantee that the data obtained will be useful, reliable, and authentic' (Patton, 2002: 384). As Patton suggests 'these process notes will inform the methodological section of your research report, evaluation, or dissertation' (Patton, 2002: 384). Patton also notes that to ignore or forgo this post interview ritual 'is to seriously undermine the rigor of qualitative inquiry' (Patton, 2002: 384). The interview recordings would be checked immediately after the interviews had been conducted to ensure that no malfunction had occurred. The recordings would then be saved as an encrypted file and the notes taken during the interview would be reviewed. Conducting an immediate reflection on the interview and making process notes allowed for identification of potential problems or issues with the topics covered, or the questions asked (Patton, 2002: 384).

There is one basic rule in transcription which is to 'state explicitly in the report how the transcriptions were made' (Brinkman and Kvale, 2015: 207). While 'there is no universal form or code for transcription of research interviews, there are some standard choices to be made' (Brinkman and Kvale, 2015: 207). For example:

> Should the statements be transcribed verbatim and word by word, retaining frequent repetitions, noting "mmh"s and the like, or should the interview be transformed into a more formal, written style? (Brinkman and Kvale, 2015: 207)

The interview recordings for this study were transcribed verbatim by the researcher. Transcription is not just a straightforward clerical task but an interpretative process, 'where the differences between oral speech and written texts give rise to a series of practical and principal issues' (Brinkman and Kvale, 2015: 203). In essence 'a transcript is a translation from one narrative mode – oral discourse –into another narrative mode written discourse' (Brinkman and Kvale, 2015: 204). Therefore, 'transcribing interviews from an oral to a written mode structures the interview conversations in a form amenable to closer analysis and is in itself an initial analytical process' (Brinkman and Kvale, 2015: 206). As Brinkman and Kvale argue 'there are no standard methods, no *via regia,* to arrive at the meaning of what is said in an interview' (Brinkman and Kvale, 2015: 218) a perspective which is congruent with the interpretivist rationale of this study. However, the method of analysis should be decided or at least considered before the interviews have taken place, informing 'the

preparation of the interview guide, the interview process, and the transcriptions of the interviews' (Brinkman and Kvale, 2015: 216).

The transcripts of the in-depth interviews conducted in this study were uploaded to NVivo qualitative software for analysis. The thematic analysis was informed by Fairclough's ideas of Critical Discourse Analysis (CDA) (Fairclough, 2001) and conducted inductively and independently of the chosen theoretical framework. CDA is discussed in detail in the following section of this chapter. Participants were asked a variety of questions about the topic of inquiry such as what their opinions were about the Digital Competency Framework (DCF). Their analysed responses produced the macro theme DCF, and six micro themes: teachers' knowledge, teacher training, lack of importance, digital poverty, and citizenship strand. For all macro and micro themes/codes (See Table 5). Thereafter, the thematically coded data was analysed using theoretical concepts developed in Herbert Marcuse's *One-Dimensional Man.* The theoretical framework is discussed in detail in chapter 4 of this thesis and the detailed analysis can be found in chapter 5. The following section of this chapter will discuss the appropriateness of employing CDA in the methodological framework of this research study.

## **3.12** Codes/Themes

| Macro Theme | Micro Theme |
|---|---|
| DCF | Teachers' knowledge<br>Teacher training<br>Lack of importance<br>Digital poverty<br>Citizenship strand<br>Mechanistic skills |
| Personal and Social Education (PSE) | |
| Impact of digital technologies | Attention span<br>Aspirations<br>Constantly connected |
| Skills Impact | Critical thinking<br>Telling time |

| | |
|---|---|
| | Grammar<br>Communication<br>Distractions<br>Phones and apps |
| Digital Native skills | Demise of mechanistic digital skills<br>Impact of touch screen technologies<br>Research skills |
| Digitised Educational Resources- | Hardware<br>Software<br>iPads to Chromebooks<br>VLE and Hwb<br>Schools use of digital platforms<br>Why hardware and software changes matter |
| COVID-19 Impact | Upskilling of teachers and students<br>Acceleration of the use of digital technologies<br>Digital Poverty awareness<br>Increase in digital resources<br>Pedagogical changes<br>Narrowing of the curriculum |
| Socio-economic | Educational establishments' digital resources<br>Students' digital resources<br>Finding issues<br>PTA funding<br>Government funding |
| Gender | Lack of interest<br>Gaming<br>Initiatives to combat gender disparity<br>Latency of intervention |
| Welsh language | Welsh language digitised resources<br>Hwb and the Welsh language |
| DLE Definition | |

| | |
|---|---|

*Table 5 Semi-structured interviews - qualitative data analysis macro and micro codes/themes*

## **3.13** Critical Discourse Analysis

The broad objective of Fairclough's work in CDA is 'to develop ways of analysing language which address its involvement in the workings of contemporary capitalist societies' (Fairclough, 2010: 1). Fairclough is 'working within a tradition of critical social research which is focused on better understanding how and why contemporary capitalism prevents or limits, as well as in certain respects facilitating, human well-being and flourishing' (Fairclough, 2010: 1). For Fairclough, 'the character of the economic system affects all aspects of social life' (Fairclough, 2010: 1), and 'because of the dominance of the economy in contemporary societies its effects are particularly strong and pervasive' (Fairclough, 2010: 1). Moreover, CDA is 'an approach "which is in a dialogical relationship with other social theories and methods, which should engage with them in a transdisciplinary rather than just interdisciplinary way"' (Fairclough, 2001: 121). CDA also 'takes an inductive approach (Wodak and Meyer, 2009), but can also proceed through abductive or transductive inference in the sense that analysis oscillates between a focus on structure and a focus on action' (Fairclough, 2001, in Mullet, 2018: 118). Additionally, the analysis procedures 'in CDA are generally hermeneutic or interpretative and produce meaning' (Wodak and Meyer, 2009, in Mullet, 2018: 118). The principles of CDA according to Wodak are as follows:

> The approach is interdisciplinary; Approach is problem-oriented rather than focused on specific linguistic items; Theories as well as methodologies are eclectic, that is, theories and methods are integrated, which are adequate for an understanding and explanation of the object under investigation; Study always incorporates fieldwork and ethnography to explore the object under investigation as a precondition for further analysis and theorising. (Wodak, 2009:15)

Selwyn notes that 'educational technology is intrinsically linked with the social, cultural, economic and political aspects of society' (Selwyn, 2016: 18). Therefore, 'in order to understand any educational phenomenon, one needs to also look at the larger social, economic and political contexts within which that phenomenon is embedded'

(Mogashoa, 2014: 104). Language is a social and cultural instrument, and as such ‘our sense of reality is socially and culturally constructed’ (Fulcher, 2010:2). Language is also at ‘the heart of critical discourse analysis and can be seen as a political intervention with its socially transformative agenda’ (Mogashoa, 2014: 104).

For Fairclough, language is both discourse and ‘social practice’ (Fairclough, 1989: 26). When viewing language in this way one has to commit ‘oneself not just to analysing texts, nor just to analysing processes of production and interpretation, but to analysing the relationship between texts, processes, and their social conditions’ (Fairclough, 1989: 26). Fairclough states that this should include both the immediate situational conditions ‘and the more remote conditions of institutional and social structures’ (Fairclough, 1989: 26). Essentially, Fairclough is describing a ‘relationship between texts, interactions, and contexts’ (Fairclough, 1989: 26). Fairclough distinguishes ‘three dimensions, or stages, of critical discourse- analysis’ (Fairclough, 1989: 26), that correspond to the three dimensions of discourse (Fairclough, 1989: 26). Description - ‘is the stage which is concerned with formal properties of the text’ (Fairclough, 1989: 26). Interpretation - ‘is concerned with the relationship between text and interaction - with seeing the text as the product of a process of production, and as a resource in the process of interpretation’ (Fairclough, 1989: 26). Explanation - ‘is concerned with the relationship between interaction and social context - with the social determination of the processes of production and interpretation, and their social effects’ (Fairclough, 1989: 26).

The analysis differs as you shift from one stage to the next, ‘in particular, analysis at the description stage differs from analysis at the interpretation and explanation stages’ (Fairclough, 1989: 26). For example, ‘in the case of description, analysis is generally thought of as a matter of identifying and ‘labelling’ formal features of a text in terms of the categories of a descriptive framework’ (Fairclough, 1989: 26). The text is often viewed as the object of description and ‘often seen as unproblematically given’ (Fairclough, 1989: 26). However, for Fairclough this is misleading, as spoken discourse has to be transcribed to produce a text and there ‘are all sorts of ways in which one might transcribe any stretch of speech, and the way one *interprets* the text is bound to influence how one transcribes it’ (Fairclough, 1989: 26). The stages of analysis that involve the interpretation and explanation ‘cannot be seen in terms of

applying a procedure to an object' (Fairclough, 1989: 27) as what a researcher 'is analysing is much less determinate' (Fairclough, 1989: 27). Therefore, when it comes to interpretation 'it is the cognitive processes of participants, and in the case of explanation, it is relationships between transitory social events (interactions), and more durable social structures which shape and are shaped by these events' (Fairclough, 1989: 27). Essentially, at the interpretation and explanation stages 'the analyst is in the position of offering (in a broad sense) interpretations of complex and invisible relationships' (Fairclough, 1989: 27). Fairclough presses the point further about the interpretivist nature of CDA and states that even when the first stage of analysis i.e., description is being conducted it, 'is ultimately just as dependent on the analyst's 'interpretation' (Fairclough, 1989: 27). Moreover, what an analyst sees in a text and deems worth describing or emphasising is 'dependent on how one interprets a text' (Fairclough, 1989: 27). Fairclough points out that 'there is a positivist tendency to regard language texts as 'objects' whose formal properties can be mechanically described without interpretation' (Fairclough, 1989: 27). However, for Fairclough no matter how determined an analyst is, they 'cannot prevent themselves engaging with human products in a human, and therefore interpretative, way' (Fairclough, 1989: 27). The interpretivist, inductive, flexible, and versatile characteristics of CDA, complies synergistically with the ontological stance, epistemological rationale, and qualitative and inductive nature of this research. As such the CDA informed analysis of the data is viewed as an appropriate analytical method that contributes to the coherence of the methodological framework. The theoretical framework of this study, based on theories developed by Herbert Marcuse in *One- Dimensional Man* (1964) is discussed in detail in the following chapter.

## **3.14** Critical Discourse Analysis – Policy Documents

Critical discourse analysis (CDA) was also employed to critically read and use the policy documents cited within this study. These documents were examined ideologically. CDA focuses on 'the relationship between discourse and other elements of social practices, such as policymaking' (Cummings et al., 2020: 99). It is a type of discourse that aims to 'understand, expose, and ultimately resist social inequality' (van Dijk, 2005: 352). According to Fairclough:

> Social practices networked in a particular way constitute a social order. As Fairclough argues, 'one aspect of this ordering is dominance: some ways of making meaning are dominant or mainstream in a particular order of discourse, others are marginal, or oppositional, or alternative' (Fairclough 2012: 2)

Because CDA can be used 'to identify dominant, marginal, oppositional or alternative discourses within policy texts, such as policy documents and speeches' (Cummings et al., 2020: 99), it has been widely used by academics for policy analysis (Cummings et al., 2020: 99). When analysing policies CDA can be employed in two ways 'addressing a social issue or exploring a social issue' (Cummings et al., 2020: 100). Parker sates that discourse is a 'system of statements which constructs an object' (Parker,1990: 187). He then argues that:

> Discourses do not simply describe the social world, but categorize it, they bring phenomena into sight… discourses allow us to focus on things that are not 'really' there, and that once an object has been circumscribed by discourses it is difficult not to refer to it as if it were real. They provide frameworks for debating the value of one way of talking about reality over other ways (Parker, 1990: 187)

Additionally, discourses are 'also subject to institutions, power relations and ideology (Parker 1990). In this process, discourse can also be used to manipulate and obscure:

> … the will to exercise...control in society and history has also discovered a way to clothe, disguise, rarefy and wrap itself systematically in the language of truth, discipline, rationality, utilitarian value, and knowledge. And this language in its naturalness, authority, professionalism, assertiveness and antitheoretical directness is....discourse. (Said, 1983: 216)

The initial step in undertaking CDA is to look more closely at the concept or semiosis (Cummings, 2020: 101). While semiosis relates to written, sign or vocal language when analysing policy documents the focus will be on the texts (Cummings, 2020: 101). As discussed by Fairclough policy documents are not created or formed by mere chance, but rather they are '… formed, disseminated and legitimised within complex

chains and networks of events (committee meetings, reports, parliamentary debates, press statements and press conferences, etc.)' (Fairclough 2013: 244-245). This is explained further by Freeman and Maybin:

> Policy documents, through their writers and editors, may state truths - or they may suppress, elide or embellish them. The process of writing a statement or briefing, for example, is often a matter of sorting - selecting and ordering - the many truths it might contain. It matters very much, therefore, just who is allowed or tasked to write what and by whom - and this testifies again, above all, to the real or assumed power of the document itself. (Freeman and Maybin, 2011: 7, in Cummings, 2020: 101)

For example, Briant Carant considers that 'both the ['Millennium Declaration'] and ['Transforming our world'] are branded as agreed-upon documents representative of the UN as a whole' (Briant Carant, in Cummings et al., 2020: 102). However, alternative programs exist other than these which are the UN's approach to poverty abatement, but these other programs are 'under-represented as a result of particular power configurations and voting patterns within the organisation' (Carant, 2016: 16). Therefore, what finally appears in policy documents are impacted by 'power configurations and voting patterns' (Cummings et al., 2020: 102). In addition to the contents of policy documents being subject to political processes when being written they can according to Hornidge (2011) 'be used to legitimize already existing government policies by presenting a vision of the future' (Hornidge, 2011: 4, in Cummings et al., 2020: 102). When making this point Hornidge considers the discourses around the knowledge society:

> The vision of a self-emerging knowledge society therefore acted as basis for legitimising government programmes and activities towards the realisation of the envisioned future stage of development. (Hornidge, 2011: 4, in Cummings et al., 2020: 102)).

It is in this way that policy documents can be employed to offer inspiring visions that can persuade or convince stakeholders of the requirement for action 'while ultimately also preserving the status quo, enshrined in the dominant discourse' (Cummings et al., 2020: 102).

> Fairclough argues that ‘dominant construals of the “new global order” have certain predicable linguistic categories’ (2013: 247), namely that processes of change are divorced from social actors, history, time and place; that statements are presented as truths; and that they are normative. This divorce from social actors, history, time and place, the normative nature, and the presentation of a truth are also aspects of policy documents which can be given attention during CDA. (Fairclough, in Cummings et al., 2020: 102)

When undertaking CDA of the policy documents the following exemplifies the phases employed in the process. The first phase is identifying the social question in relation to the research topic. The question focused on whether the educational policy documents included aspects of DLE that included the social and cultural elements within the educational programme or whether the main focus was on preparing students for economic and employment purposes. This question could then be ‘productively approached by a focus on language and, specifically, texts’ (Cummings et al., 2020: 103). The second step or phase is to identify suitable texts ‘as well as an analysis of pre-existing discourses in the policy or academic literature’ (Cummings et al., 2020: 103). Therefore, the appropriate text was identified and then analysed. The third step is to consider how the text has been developed and in which way it relates to the identified discourses. For instance, ‘which actors were involved in developing the policy and how this relates to the discourses’ (Cummings et al., 2020: 103). The final step of CDA ‘uses words in texts and speech to identify social questions and then considers how words in texts and speech could be employed to contest the discourses which have been identified’ Cummings et al., 2020: 103). The nature of the policy documents in this study are that of mainstream policy documents that relate to educational policy and as such the dominant discourses were identified and analysed.

# 4 Chapter 4 – History of Digital Literacy Education

## **4.1** Introduction

The following analysis has focused on the literature that pertains to digital literacy education in primary and secondary schools in Wales from the 1960s to the current day. As stated previously, 'educational technology is intrinsically linked with the social, cultural, economic and political aspects of society' (Selwyn, 2016: 18). Therefore, in view of the complexity, breadth and scope of these factors, and the extensive time period covered, the selection of sources identified and evaluated include, academic literature, a variety of political, economic, and educational policy discourses surrounding the development of digital literacy, political statements and policies, and education reports and media coverage. These sources reflect the various aspects that have contributed to and influenced digital literacy education. Literature has also been identified that pertains to the Welsh language agenda, and whether socio-economic status, and gender have affected educational access and opportunities in this specific field. The following review has surfaced a large number of studies regarding digital literacy education in the UK and other territories. However, an absence of academic research regarding digital literacy education specifically in Wales has been identified, both pre - and post-devolution.

## **4.2** Historical Development of Digital Literacy Education

***1960s -1980***

Evidence indicates 'much of the early development of computer technology had taken place in university settings' (Selwyn, 2016: 59), and throughout the1960s and 1970s computers were predominantly used in tertiary education 'in terms of technologies in education' (Passey, 2014: 132). Essentially, during this time isolated computers could be found in some tertiary educational institutions (Passey, 2014: 132). These computers were large machines with limited capabilities, and 'students and teachers in schools only visited such premises to 'gape in awe' at the sight of processing power handled through valve-operated systems' (Passey, 2014: 132). Selwyn also notes that during this period, the initial use of technologies in education were in some tertiary educational institutes and the educational focus was on 'what were termed the 'numeric' uses of computers for engineering, math, and computer programming' (Selwyn, 2016: 59). Furthermore, evidence suggests any introduction of computers

into secondary schools in the early 1960s and throughout the 1970s depended predominantly on ‘the efforts of individual, mathematics teachers’ (Barker, 1971: 9; Capel, 1992: 38). For example, Fothergill suggests ‘the first school to own its own computer was probably the Royal Liberty School in Romford in 1965 when Bill Broderick successfully installed an Elliot 920A’ (Fothergill, 1988: 9). However, Capel also points out ‘the stimulation for the introduction of computer education was not only in connection with the practise and development of ‘new’ or ‘modern maths’’ (Capel, 1992: 38). It was also, in many ways an ‘an instrumental one’ (Capel, 1992: 38), as evidenced by a report from the ‘working party of the British Computer Society Schools Committee that stated’ (Capel, 1992: 38):

> By the early 1960s any introduction of computing techniques into schools was partly stimulated by the growing career potential in the industry. It was soon realised that there would be a considerable staff requirement in the industry and 'computers' as a 'career subject' was introduced into some schools. (BCS, in Capel, 1992: 38)

Jackson notes industry support initially came from two initiatives (Jackson, 1970: 68). The computer manufacturer I.C.L. who ‘created the ‘Computer Education in Schools Appreciation Package’ at a basic cost of £250 plus £7 for a student’ (Jackson, 1970: 68), and the National Computing Centre also ‘created a course with the title ‘Computing and its Impact on Business and Society’’ (Jackson, 1970: 68). However, it is noted these initiatives were targeted at 16- to 18-year-old sixth form students only, and the subject was considered as a ‘sixth form minority subject involving approximately forty hours of study’ (Jackson, 1970: 68). Therefore, as evidence suggests, the introduction and early growth of computers in schools was sporadic and influenced by a combination of ‘the efforts of individual, mathematics teachers, the rise of ‘new mathematics’, and collaboration with industry’ (Barker, 1971: 9; Capel, 1992: 38).

It is interesting that concerns were beginning to grow ‘for all students to have different amounts and forms of knowledge about computers’ (Capel, 1992: 38). This was taking ‘place against the background of what was happening in universities, colleges, the computer industry, and more general educational and political developments’ (Capel,

1992: 38), and a 1969 ‘review of computers in secondary education by the Centre for Educational Research and Development for the OECD’ (Capel, 1992: 41) is identified as one of the earliest indications there would be a ‘move towards a broader concept of computer education’ (Capel, 1992: 41). The report listed the main reasons to include computer education in schools as being:

> Firstly, a preparation for university work, semi-professional, vocational training, or for employment. Secondly, computer education should be a vital element in any social studies programme. Thirdly, according to the review, computer education ‘provides a way to stimulate the interest of pupils who cannot be reached otherwise’. Fourthly, it enables a better understanding of traditional topics and creates opportunities to extend the school curriculum to include areas which would otherwise be treated satisfactorily. (CERI; OECD, in Capel, 1992: 42)

Capel also suggests ‘much of the above would go on to characterize the development in debates about computer education in schools over the next two decades’ (Capel, 1992: 42), and further states ‘one of the most important aspects of both this review and a Department for Education and Skills (DES) report published two years earlier (DES, 1967) in terms of the developments in computer education in schools’ (Capel, 1992: 42) was the way in which the both reports differentiated ‘individuals in terms of interest, ability and aptitude’ (Capel, 1992: 42). The Newsom report in 1963 and the creation of the Schools Council in 1964 coupled with ‘the preparation for the rising of the school leaving age in 1972, meant that attention had begun to be paid to the ‘needs of the majority of the school population’ (Capel, 1992: 44). At the time, these students were commonly referred to ‘as ‘average’ and ‘below average’’ (Capel, 1992: 44). These students were mainly educated ‘in secondary modern schools, and they were the section of the school population who were going to make up the majority of the ‘future citizens’’ (Capel, 1992: 44-45). Capel states that it was then determined they ‘would need to be provided with some type of non-specialized computer appreciation course’ (Capel, 1993: 44). Capel further suggests that ‘it was in this context that the first real attempts at expanding computer education to a larger amount of the school population in the form of computer appreciation took place’ (Capel, 1992: 44-45). Attentions were now being turned to ‘the main use of computers in society’ (Capel, 1992: 43). This would result in computer education placing ‘an increasing emphasis on information

processing, especially within computer appreciation' (Capel, 1992: 43) which increasingly became the focus of courses (Capel, 1992: 43). This was also a response to the changing work environment 'being brought about by the application of computer technology to production and administration at all levels' (Capel, 1992: 45). However, 'in common with other curriculum development and support, most computer appreciation by the end of the 1960s was directed at sixth form level' (Hutchinson, 1970: II/61; Capel, 1992: 46), and there was still a distinct lack of 'curriculum materials available for the 'average' or 'below average' child in the third, fourth or fifth forms' (Capel, 1992: 46).

Throughout the 1970s, a variety of initiatives were implemented, for example, the National Computing Centre developed a package 'Computer Appreciation for the Majority' (Capel, 1992: 46). The syllabus began to expand computer appreciation to below sixth-form level; it moved away from 'technical specifics to include information processing and computer applications' (Capel, 1992: 48). It is also interesting to note Longworth was of the opinion that, because the British education system was exam-orientated it 'affected the means by which innovations such as computer education were accepted, and the slow pace of the curriculum change that accompanies it' (Longworth, in Capel, 1993: 49). Longworth also noted that mathematics teachers 'dominated the teaching of computer studies and appreciation' (Capel, 1993: 49), and humanities teachers were reluctant 'to be involved in what they saw as a science subject' (Longworth, in Capel, 1993: 50). Essentially this evidence suggests that whilst computers were still in their technological infancy, the focus of computer education for the majority of future citizens who were deemed average, or below average, was limited to furnishing them with basic computer skills to gain employment in production and administration roles.

***1981 – 1989***

Several papers note that 'in the early 1980s the BBC Micro was introduced to schools throughout the UK as part of the BBC's Computer Literacy Project; before long they were in 80% of UK class- rooms' (Vasko and Dicheva, in Crick and Moller, 2015: 121). Crick and Moller suggest that due to the nature of this technology young learners from the 1980s were encouraged to experiment with computers, and as a result, 'a generation of creative (and computational) talent was spawned' (Crick and Moller, 2015: 121). By 1989, when 'the PC was only nine years old' (Smith, 2014), the National Curriculum was created and placed 'basic IT skills at the heart of the curriculum' (Dearing, 1993: 28; Selwyn, 2010: 433). However, 'though the Technology National Curriculum had just been made law, there was still disagreement about how it should be implemented' (Mulberg,1993: 302). The controversy was both on a micro and macro level. For example, as well as varying and diverse opinions that struggled to reach a consensus, there was also a detailed analysis 'of which 'technical' components to teach in the classroom, to selecting the best management structure to deliver the curriculum' (Mulberg,1993: 302). There were also discussions 'on the reasons for teaching technology in the first place' (Mulberg,1993: 302). Moreover, Griffin and Davies said that '"the National Curriculum makes explicit for the first time that each pupil has an entitlement to a curriculum which includes information technology (IT)"' (Griffin and Davies, in Passey, 2014: 135). An immediate result was that 'teachers were suddenly not able to choose whether or not to consider the uses of computers' (Griffin and Davies, in Passey, 2014: 135). Smith states that throughout the decade the increasing appearance of computers in schools was, 'much to the bemusement of most teachers, many of whom were quite hostile to their introduction' (Smith, 2014). The proposals for what IT education should include were formalised in the National Curriculum in 1990 and the programme of study was rephrased as:

> Communicate and handle information; design, develop, explore and evaluate models of real or imaginary situations; measure and control physical variables and movement. (Passey, 2014: 135)

However, Mulberg states that when educationalists were asked to define technology in the context of its newly found status in the curriculum, they struggled (Mulberg, 1993: 302).

It is interesting to note that Capel believed the main focus of IT and computer education in the National Curriculum 'was technocentric' (Capel, 1992: 56) in the respect that, its central focus was 'the computer and its associated technologies, with little regard for the wider human relations which produce it and on which it has an effect' (Capel, 1992: 56). Furthermore, he states that between the period of 1983 and 1993 'a view of the computer as a 'tool' with which children can 'think' and work had become the dominant view of the role of IT in education' (Capel, 1992: 57). This, he suggests, did not move us 'much further away from a focus on the technology, it merely attempted to render it neutral and not in need of explanation' (Capel, 1992: 57). Capel also raises the point that such a view 'hides the technological framework within which anyone using a computer is obliged to work and think' (Capel, 1992: 57). Streibel made an interesting point when he stated that, in view of the direction IT education had taken, 'personal intellectual agency had thereby been limited to the technological framework' (Streibel, in Capel 1992: 57).

***1990 - 2000***

Further technological developments ensued, and the 1990s saw 'the emergence of pre-installed software - specifically office productivity software such as word processors and spreadsheet programme' (Moller and Crick, 2018: 125). Therefore, 'computers were no longer predominantly machines that needed to be programmed in order to do anything useful or interesting' (Moller and Crick, 2018: 125). The result of this, as argued by Moller and Crick, was that a decreasing amount of 'time was being spent in the computer studies classroom on thinking about and writing programmes' (Moller and Crick, 2018: 125). The educational priority was now focused on 'basic digital literacies and IT user skills' (Moller and Crick, 2018: 125). Moller and Crick also argue that interest in the creative aspects of the computer had waned, and because it had been increasingly used for mundane tasks 'various problems were being created, which were highlighted in two independent enquiries in 1997' (Stevenson 1997; McKinsey & Company 1997, in Moller and Crick, 2018: 125). The reports concluded that 'Information Technology in UK schools was in a primitive state and in need of attention and major investment' (Crick and Moller, 2015: 123). 'In line with the Stevenson Report, computer studies evolved into a new subject' (Smith, 2014: Moller

and Crick, 2018: 125), and IT was renamed 'Information and Communications Technology (ICT)' (Smith, 2014; Moller and Crick, 2018: 125).

A major development during this decade was the birth of the Internet, and the Stevenson report's main recommendations regarding its role in ICT education are as follows. Firstly, Internet access would allow students and teachers access to 'the range of software and educational content becoming available on dedicated web sites' (Stevenson, 1997: 28). Secondly, access would enable students and teachers to 'communicate with their counterparts in other countries and with outside experts, e.g. academics in further education, people in business and industry, etc' (Stevenson, 1997: 28). Thirdly, access would allow students and teachers to 'make contributions to the content on the Internet themselves and have an audience, both worldwide and within the local community, for their work' (Stevenson, 1997: 28). At this point in time, one of the main problems identified in realising schools' connectivity to the Internet was the prohibitive 'costs of use' (Stevenson, 1997: 28). The report also recommended that 'no school student should pass into secondary education without being allocated a unique e-mail identity' (Stevenson, 1997: 28). It is interesting to note that the report only raises one social concern regarding students' newly found access to the Internet whether at school, or at home, and this was that they 'might be able to access unsuitable material on the Internet, such as pornography' (Stevenson, 1997: 28). The report recommended that this was a matter 'worth further consideration at central Government level' (Stevenson, 1997: 28) but that 'in practice, teachers and/or parents had been able to identify and implement their own solutions' (Stevenson, 1997: 28). Essentially, the evidence from the Stevenson report indicates that the birth of the Internet was viewed from an educational perspective as a teaching and learning materials resource; a tool to facilitate communication with both teachers and students' counterparts, and experts, thus suggesting that communication of this nature before the Internet was outside of their communicative abilities. In addition, the Internet was viewed as a place where both students and teachers could showcase their own work to new audiences. It is interesting to note that the one potential social issue identified, i.e., students accessing unsuitable material such as pornography was swiftly dismissed as an issue that would not be addressed in ICT education, on the basis that it was already being dealt with sufficiently. Thus, further indicating that the social and cultural impact of the Internet was not being considered as a part of ICT education. In

addition, it is also interesting to note that the report states its long-term objective was to get 'to the point where ICT becomes like electricity – "invisible"' (Stevenson, 1997: 18), and that its vision was:

> To see a society within ten years where ICT has permeated the entirety of education (as it will the rest of society) so that it is no longer a talking point but taken for granted - rather as electricity has become. (Stevenson, 1997: 4)

***2000 – 2022***

ICT had, by 2000, 'permeated both primary and secondary school curricula, not least in the newly-devolved nations' (Crick and Moller, 2015: 3). A report conducted by Neil Harries published in November 2000 and commissioned by the National Assembly for Wales's Education and Lifelong Learning Committee stated that, 'during the 1990s after the creation of the National Curriculum the development of ICT education in schools throughout Wales was, largely driven by central government' (Harries, 2000: 7-8). Therefore, for a newly devolved Wales, any reforms of this subject would be from this inherited starting point. Evidence suggests that Harries report in 2000 was the first to evaluate ICT education in Wales. The report advised that, ICT in schools required a strategy based on 'connectivity, competence and content' (Harries, 2000: 8). Internet connectivity was identified as a problem to be addressed, as Wales was not 'equally served by the availability of systems across the Principality' (Harries, 2000: 15), and this would impede 'the proposed Public Services 'backbone' for Wales and the LEA networks' (Harries, 2000: 15).

In addition, there was a wide disparity between schools regarding the number of PCs in the classroom - the report states that 'a variation between LEAs of 1:10 to 1:30 in the Primary Sector and 1:8 to 1:20 in the secondary sector' (Harries, 2000: 17). Competence was focused on the professional development of teachers; identified 'internationally as the single most important factor in enabling effective integration of ICT into schools' (Harries, 2000: 17). Regarding content, the report stated that the situation in Wales was in common with that of the UK, in the respect that, curriculum content providers were 'largely commercial companies' (Harries, 2000: 19), and many were from the USA, which raised a 'culture issue' (Harries, 2000: 19). The report

noted that UK and Welsh broadcasters such as 'BBC, ITV and S4C had limited commissioning roles in terms of digital content' (Harries, 2000: 19). The report also recognised that there was a 'critical shortage of Digital Learning content in the Welsh Language' (Harries, 2000: 19). In addition, Harries' report stated that ''any schools' ICT policy in Wales should, by definition, be a key sub-set of a much larger agenda' (Harries, 2000: 8). This larger agenda adopted the values of ICT education development that had been implemented in other countries such as the 'USA, Ireland, Finland, New Zealand, and Singapore' (Harries, 2000: 9). In these countries 'the education agenda had been a key function of a national strategy aimed at the economic regeneration of the area' (Harries, 2000: 9). Harries further states that in these countries, 'the development of ICT skills in schools had been correctly perceived as a key driver in the economic regeneration of the country' (Harries, 2000: 9). Essentially, Harries' report was looking at the development of ICT education in direct relation to the 'economic implications for Wales' (Harries, 2000: 9).

Harries' (2000) report *Information and Communication Technology in Education*, in The National Assembly for Wales Pre 16 Education and Life-Long Learning Committee was included in the CDA analysis of educational policy documents as this report directly informed policy and was the basis of a conference of a broad range of invited people in Wales who would be involved in implementing the content of the report into reality for teachers in Wales. The document includes an executive summary, five chapters titled; Introduction, Where Are We Now? Where Should We Be, How Should We Get There, Conclusions, and Appendices. The selected extracts presented here are taken from the executive summary and conclusions sections of the document which serve as summary statements within the document. Both the executive summary and conclusions sections of the document follow a discussion on recent economic and social changes that have implications for education:

Interdiscursive analysis: The rhetoric of globalization is dominant and educational reform and neoliberal discourses interpenetrate each other.

> Many countries throughout the world are launching initiatives in response to the challenges of the global information society and its knowledge economy – the integration of ICT into the school

> curricula is invariably a key element of such initiatives. (Harries, 2000: 4)

> Current evidence indicates that Wales is now treading the same path as the nations that are now perceived to be leading the way in terms of the development of ICT in schools. The wider implications of such a policy are key to the locus sought by the Assembly in terms of placing Wales in the 'knowledge economy'…this programme must be seen as a key component of a larger policy drive towards a new shape to the Welsh economy. (Harries, 2000: 32)

Evident in these extracts is what Fairclough refers to as 'the neo-liberal discourse of economic change which represents "globalization" as a fact which demands "adjustments" and "reforms" to enhance "efficiency and adaptability" in order to compete …'. (Fairclough, 2003: 100). The discourse of the learning society is often linked with economic globalization (Edwards & Nicoll, 2001), as is the discourse of flexibility (Edwards et al., 1999). Indeed, Edwards et al., refer to flexibility, with its valuing of change and adaptability, along with 'lifelong learning' and 'a learning society', as an 'important metaphorical resource in current policies' (Edwards et al., 1999: 620). A consistent way in which texts from all genres aim to establish the legitimacy of their claims, 'their 'common sense' assumptions and their world views, is through reference to other texts, genres, discourses, and individuals' (Hyatt, 2013: 840). Interdiscursivity and intertextuality are two key ideas here. The interdiscursive analysis of the text evidences the way in which the neo-liberal economic discourses and the discourses of educational reform interpenetrate each other. The moral evaluation indicates that there is an appeal to a value system of what is desirable, which is ideologically linked to neoliberal discourses that assert the desirability of educational reform.

In 2003 the National Curriculum in Wales defined ICT as '"the range of tools and techniques (telecommunications, networking, hardware, and software) that supports teaching and learning"' (Estyn, 2014: 42). Thus, indicating that ICT was not a subject but a term to describe the tools that supported teaching and learning. IT was the term that delineated 'the National Curriculum subject' (Estyn, 2014: 42), and this was described as dealing 'with the knowledge, understanding and skills that pupils need in order to make effective use of ICT in contexts across the school curriculum' (Estyn,

2014: 42). After the curriculum review 'that led to the 2008 National Curriculum, the subject information technology (IT) was renamed information and communication technology (ICT)' (Estyn, 2014: 42). This change created a problem as now 'both the subject and the key skill confusingly shared the same title' (Estyn, 2014: 42). A report to the Welsh Government in March 2008 by the Schools' ICT Strategy Working Group 'attempted to define ICT capability as follows' (Estyn, 2014: 42):

> The ICT capability involves demonstrating skills in the processes of gathering, searching, exploring, analysing, presenting, communicating, and sharing information, underpinned by an understanding of key concepts related to the nature of information and of technology. It includes a set of technical competences together with a confidence in learning to use new tools; a disposition to solve problems and enhance results with ICT in unfamiliar contexts; a knowledge of the potential and limitations of familiar tools; an awareness of the opportunities and dangers inherent in the use of ICT; and a willingness to reflect on the use of ICT in the world beyond one's immediate experience. (Estyn, 2014: 42)

However, the 2014 Estyn report on ICT education in Wales found that, despite the reforms of the 2008 curriculum and the definition offered by the Schools' ICT Strategy Working Group, 'The National Curriculum for ICT was not fully relevant to the technological needs of today's society or engaging enough for pupils' (Estyn, 2014: 4). It was in 1999 that Trend et al., would coin the phrase ''rhetoric-reality gap' to denote the difference between what was being claimed for the use of computers in education, and what was current practice' (Trend et al., in Haydn, 2004: 67). Therefore, based on these reports that overview the development of ICT education in Wales between 2003 and 2014, it can be suggested that there was a 'rhetoric-reality gap', and a lag in updating ICT education provision to accommodate the societal needs that rapidly developing technologies were creating.

In January 2013, ICT education in Wales would be reviewed again when 'the Welsh Government established an independent ICT Steering Group' (Estyn, 2018: 1). Their role was 'to consider the future of computer science and information and communication technology (ICT) in schools in Wales' (Estyn, 2018: 1). The recommendations from this report were incorporated into Professor Graham

Donaldson's *Successful Futures* report published in 2015 that 'outlines proposals for a new curriculum' (Estyn, 2018: 2). Donaldson's report set out the need for a Digital Competency Framework (DCF) and, in June 2015 'the Minister for Education and Skills announced that a DCF should be 'fast-tracked' for availability in schools by September 2016' (Estyn, 2018: 2). The Welsh Government is now in the midst of delivering what they term as, 'a reformed and successful education system' (Estyn 2018: 2), and 'central to this mission is ensuring that learners in Wales have relevant high-level digital skills and are digitally competent' (Estyn 2018: 2). They define digitally competent as 'the set of skills, knowledge and attitudes that enable the confident, creative, and critical use of technologies and systems' (Welsh Government, 2018b: 22). This they state, 'is essential for learners if they are to be informed, capable and have the potential to be successful in today's society' (Welsh Government, 2018b: 2). However, it is important to note that 'digital competence should not be confused with information and communication technology (ICT)' (Welsh Government, 2018b: 2). Digital competence has been identified as:

> One of three cross-curricular responsibilities, alongside literacy and numeracy; it focuses on developing digital skills which can be applied to a wide range of subjects and scenarios that are transferrable to the world of work. However, it is not intended that digital competence should be artificially imposed into all subject areas. The DCF therefore includes examples of classroom task ideas that can be used to develop skills in naturally occurring, meaningful ways. (Welsh Government, 2018b: 2)

The Hwb website sets out the six areas of learning (AOLE) that are transforming the formerly subject based curriculum. However, in Wightwick's report she states that the Welsh Government says this 'doesn't mean an end to traditional subjects, the aim is to break down traditional subject boundaries' (Wightwick, 2019). The six (AOLE) are defined as Expressive Arts; Humanities; Health and Well-being; Science and Technology; Mathematics and Numeracy; Language, Literacy and Communication (HWB, 2019). Technology is situated within the Science and Technology AOLE, and digital competence is cited as one of the cross curricular responsibilities along with numeracy and literacy (HWB, 2019). Wightwick further reports that 'the new curriculum will be taught in all schools up to Year 7 from September 2022'

(Wightwick, 2019), after which ‘it will then roll out year by year until it includes Year 11 by 2026’ (Wightwick, 2019).

There have been a variety of comments regarding the creation of the new curriculum in Wales. For example, the Association of Directors of Education in Wales (ADEW) and the Welsh Local Government Association are quoted as saying, ‘“In too many cases, not enough of what actually matters has been included in the Areas of Learning and Experience”’ (Wightwick, 2019), and ‘The NASUWT teachers' union said the profession has not been properly consulted’ (Wightwick, 2019). In addition, the Estyn 2018 report has identified current issues and challenges for schools in preparing for the DCF vision, for example:

> Secondary school ICT departments are generally poor in liaising with other departments and do not provide them with relevant contexts across the curriculum to apply the skills they developed in discrete ICT lessons. As a result, teachers have not often been asked to include purposeful ICT tasks in their subject area and the experience of doing this will be new for many. (Estyn 2018: 10)

Jones notes that the new curriculum approach differs ‘from England at every key point’ (Jones, 2016: 206), and that ‘policy makers recognised that it was not only curricula that had to change, but also the capacities of those who interpreted and developed them’ (Jones, 2016: 206). England dealt with this problem by introducing a ‘tight system of regulation and management which had driven teachers along the paths preferred by policy’ (Jones, 2016: 206). However, Jones states that Wales will be adopting a ‘more collegial approach’ (Jones, 2016: 206), and he added; whether this will have more productive results in Wales ‘is a vital, and still unanswered question’ (Jones, 2016: 206). In January 2020 the Welsh Government published ‘the new bilingual Curriculum for Wales (Cwricwlwm i Gymru)’ (Crick, 2021). On March 23rd, 2020, the UK government announced that the whole of the UK would go into a nationwide lockdown to try and stop the rapid spread of the COVID-19 virus, and the Welsh Government announced that from the 20th of March, ‘all educational establishments in Wales would close’ (Welsh Government, 2021a). Thereafter, schools in Wales opened and closed a number of times (Welsh Government, 2021a). The Curriculum and Assessment (Wales) Act 2021 was given Royal Assent on the 29th of April 2021 (Crick, 2021). The new curriculum for Wales will be phased in

from September 2022 (Crick, 2021). However, Crick notes that COVID-19 ‘clearly impacted the preparation for the new Curriculum’ (Crick, 2021).

## **4.3** Political and Economic Discourses

***1960s – 1988***

Jones states that ‘understanding changes in the British state and the British economy is essential to understanding educational change’ (Jones, 2016: 3), and adds that ‘economic and political factors have helped configure education’ (Jones, 2016: 5). Therefore, this section of this review has focused specifically on the political, economic, and educational policy developments to identify if, and how, they could have affected the historical development of digital literacy education in Wales. Furthermore, it is noted that up until devolution in 1999, these developments apply to both England and Wales, as there is a dearth of literature that pertains to the development of digital literacy education specifically in Wales.

Evidence indicates that during the 1960s and 1970s political discourses surrounding technological competencies began to emerge ‘in a number of developed countries’ (Jones, 2016: 77; Leaning, 2019: 2). The general themes focused on ‘economic growth through state intervention, economic and technological innovation and social and cultural modernisation’ (Jones, 2016: 77) instigated by a ‘fear of ‘falling behind’ developing nations’ (Leaning, 2019: 2). However, in addition to this impetus ‘the impact of the world oil crisis of the mid 1970s in western, industrialised democracies’ (Ker, 1999: 205) would result in western democracies radically restructuring ‘economics, welfare and education’ (Ker, 1999: 205). Passey determines that it was these circumstances that led to a growing concern in the UK ‘for greater awareness between a potential alignment of education with industry’ (Passey, 2014: 132). Jones also suggests that the economic slump of the 1970s affected ‘education at every level, from national policy to the micro-processes of the classroom and lecture room’ (Jones, 2016: 74). Jones and Ker concur that the ‘education revolution of the 1980s and 1990s had its origins in the conflicts, crisis and realignments of the 1970s’ (Jones, 2016: 75; Ker, 1999: 205).

Harold Wilson became Prime Minister in October 1964 (Parr, 2005: 13). Wilson's first speech as party leader would be in October 1963 at the Labour Party's Conference in Scarborough (Fielding, 2013). This speech became known as the 'white heat' speech and would make Wilson the first party leader to address education reform and the alignment of technology with education (Jones, 2016: 77). It is worth noting that the education curriculum at this point in time was regarded as 'the territory of teachers and local education authorities' (Daugherty and Owens, 2000: 1; Wrigley, 2014: 20). Wrigley, Daugherty, and Owens further note that 'for decades education ministers had avoided any direct involvement' (Daugherty and Owens, 2000: 1, Wrigley, 2014: 20). However, this issue was raised again in the Ruskin College lecture in 1976 when the then Prime Minister James Callaghan challenged the 'idea that the curriculum was a 'secret garden'' (Wrigley, 2014: 20). In addition, he denounced the 'new informal methods of teaching' (Wrigley, 2014: 20), and argued for a 'core curriculum and basic knowledge' (Wrigley, 2014: 20), in which 'schools had to become more cost effective, necessitating tighter quality control' (Wrigley, 2014: 20). Callaghan also claimed that education reform was necessary because, 'schools were letting down the economy' (Wrigley, 2014: 20; Jones, 2016: 75). After James Callaghan's Ruskin speech in 1976, the focus on the implementation and use of technology education in schools was 'linked to improved industrial and economic performance' (Mulberg, 1993: 301), as evidenced by McCulloch et al., who note that 'the Manpower Services Commission's school-based initiatives related technology in schools to employment issues' (McCulloch et al., in Mulberg, 1993: 301). Wrigley and Jones concur and suggest that this 'was the beginning of neoliberal logic which has continued to dominate education policy' (Wrigley, 2014: 20; Jones, 2016: 75).

It is interesting to note that Reed states sociologists of technology identified the end of the 1970s 'as a significant milestone in the history of computer technologies' (Reed, in Selwyn, 2002: 429). They note that at this time, computer technology was 'still in the process of formation and had yet to be stabilised or naturalised into the daily lives of the general public' (Reed, 2000, in Selwyn, 2002: 429). However, the end of the 1970s would mark 'a distinctive 'turning point' in the UK's relationship with the computer' (Selwyn, 2002: 429) and its subsequent journey to becoming established, and entrenched, within British societies' 'popular perception of the computer as inherently 'educational'' (Selwyn, 2002: 429). Evidence suggests that this turning

point was due to the following factors. Margaret Thatcher's Conservative government was elected to power in 1979 and at the same time the UK was in the early development stages of producing computers (Selwyn, 2002: 429). In addition, in January 1981, Kenneth Baker, who had substantial business interests in IT, was appointed as 'Minister of State for Industry and Information Technology' (Selwyn, 2002: 431). At the same time, the Information Technology Advisory Panel was established, 'as an independent business-orientated body to steer the Conservative's reforms' (Selwyn, 2002: 431). This political reorganisation allowed the government to 'produce a policy agenda to support the beleaguered British IT industry' (Selwyn, 2002: 431). Selwyn states that it was here that, 'education was identified by the Conservatives as playing a vital role in achieving this aim' (Selwyn, 2002: 431). Baker's outline of a National Strategy for Information Technology stated that:

> Schools should be provided with small and low-cost microcomputers and software systems. To give a boost to our own hardware industry they should be asked to design and supply these quickly. (National Strategy for IT 1980, in Baker, 1993: 476)

This discursive focus was followed 'by a series of high profile centrally funded initiatives' (Selwyn, 2002: 431). For example, 'the *Micros for Schools* scheme launched in 1981 by the DTI' (Selwyn, 2002: 431; Arthur, 2012). This was a central government fund that offered '50% of the cost of a microcomputer to every computer less school in the country - with the school financing the remainder' (Selwyn, 2002: 431). However, in line with the policy to revitalise the UK IT industry, the schools' choice of which machine they could purchase was restricted to 'one of two British-made machines and it quickly made an impact on the UK educational system' (Selwyn, 2002: 431). For example, 'in 1980 there were only around 700 microcomputers in UK schools' (Selwyn, 2002: 431). However, 'by 1982 over 4000 secondary schools had ordered microcomputers' (Selwyn, 2002: 431). To further support and reinforce the new governments' Micros for Schools scheme, a £12-million Microelectronics in Education Programme (MEP) was created with a dual brief: 'to promote the use of microcomputers in schools and to develop the teaching of IT' (Selwyn, 2002: 431). Government discourse and policy were making explicit, 'the need, if not the reason, for schools, teachers and students to 'get on board' with the IT revolution' (Selwyn,

2002: 431). Throughout the 1980s IT was being aggressively embedded in educational institutions and the government continued to 'focus on IT, the young and education' (Selwyn, 2002: 433). At the same time, Thatcher's new right-wing government were also demanding that:

> Schools return to the supposed rigours of disembedded knowledge and skills, and all attempts to relate learning to the life of the child or their society were seen as deficient. (Wrigley, 2014: 21)

Wrigley argues that 'it was through such rhetorical gestures as much as any legislation that the battle against progressive or critical curriculum was pursued' (Wrigley, 2014: 21). Further evidence suggests that there was a decisive move to steer away from the idea that the curriculum should provide a child with an education that allowed them to 'relate learning to the life of the child or their society' (Wrigley, 2014: 21). In view of this, it is reasonable to suggest that IT education would also have been subjected to this rigorous educational framework that derided educational provisions that would allow a child to 'relate learning to the life of the child or their society' (Wrigley, 2014: 21). It could be argued that this reductive approach to education only several years before the emergence of the ubiquitous digital media environment, contributed to the exclusion of social, cultural, and ethical perspectives in DLE provisions.

In 1987 the governments' agenda and focus on education and IT shifted (Selwyn, 2002: 433). A policy document *New Technology for Better Schools* (Department of Education and Science, 1987) (Selwyn, 2002: 433) centrally stated aim was 'to harness the potential of IT for enhancing the quality of teaching and learning across the curriculum' (Selwyn, 2002: 433). Essentially, 'after 7 years of encouraging computer use for future economic benefit' (Selwyn, 2002: 433) the government rhetoric changed, and it was 'now boldly promoting computer use largely for its perceived educational benefits' (Selwyn, 2002: 433). This new narrative described the computer as 'a powerful tool for teaching and learning and 'improving education'' (Selwyn, 2002: 433). This became 'an explicit part of government discourse' (Selwyn, 2002: 433). Selwyn argues that 'in practice the *New Technology for Better Schools* document outlined a 5-year plan based on Education Support Grant money' (Selwyn, 2002: 433). Local education authorities were to bid for the promised '£8.5 million for more hardware and £10.5 million for the training of a corps of advisory teachers' (Selwyn,

2002: 433). However, government policy continued to restrict 'schools' choice of hardware to British-made machines' (Selwyn, 2002: 433). Thus, suggesting that, even with this change of focus, the economic imperative to reinvigorate the UK IT industry remained, further indicating that *New Technology for Better Schools* was 'a continuation of the original economically driven agenda pursued via the *Micros in Schools* and MEP initiatives' (Selwyn, 2002: 433). However, now it was 'couched in explicitly educational rather than economic terms' (Selwyn, 2002: 433). Boyd suggests that although this argument was not unassailable, it was at least an educational argument that had 'a better chance of convincing teachers' (Boyd, 1990: 175; Selwyn, 2002: 433).

***1989 - 1999***

The creation of the National Curriculum in 1989 served to reaffirm 'the government's commitment to making IT an integral part of education' (Selwyn, 2002: 433) by placing 'basic IT skills at the heart of the curriculum' (Dearing, 1993: 28), and it was to be 'taught across conventional academic subjects' (Selwyn, 2002: 433) as one of the 'so called 'cross curricular themes'' (Selwyn, 2002: 433). The National Curriculum served to continue 'the now dominant government discourse about the use of IT to 'enhance and enrich' pupils' learning and 'extending the scope of pupils' learning potential' (Selwyn, 2002: 433). In essence, by the end of the decade the government policy had shifted from its introduction of the *Micros in Schools* scheme which had been 'loosely justified in terms of benefiting industry and the economy' (Selwyn, 2002: 433) to a policy that explicitly enshrined 'the educational capabilities of IT into legislation that every school in England and Wales had to follow' (Selwyn, 2002: 433). Therefore, by the end of the 1980s 'the notion of the 'educational' computer had been affirmed in UK schools' (Selwyn, 2002: 433), and in 1989 IT would be introduced 'as a Foundation subject for all pupils from 5 - 16 years of age' (Lewin, 1989: 1). This was a significant policy development as it marked 'the first time, subject content was specified for all sectors of compulsory education' (Passey, 2014: 134). Further evidence also highlights that in 'the specified national curriculum, IT was not presented as a separate subject area; it was contained within design technology' (Passey, 2014: 135; Smith, 2014).

Historically, the next major political discourse regarding IT and education came in 1996 when Tony Blair was in opposition to John Major's Conservative government (Smith, 2014). Confident that Labour would win the next general election, Blair 'commissioned a study to look into the use of computers in schools in order to plan what actions to take' (Smith, 2014). Ultimately, two studies were commissioned: 'the McKinsey Report and the Stevenson Report' (Crick and Moller, 2015: 123). Both reports concluded that Information Technology in UK schools was in a primitive state and in need of attention and major investment. In line with the Stevenson Report, computer studies evolved into a new subject whose name was coined in that same report: Information and Communications Technology (ICT) (Smith, 2014; Crick and Moller, 2015: 123).

In addition, government ministers were openly discussing how IT could be linked to the 'wider concerns with learning, attainment, effectiveness, and the raising of standards' (Passey, 2014: 145). This indicated that a clear shift had arisen 'from a concern about raising awareness about the potential of computers and IT, to raising attainment in subject terms' (Passey, 2014: 145). Over the next decade 'the UK Government invested over £3.5 billion in ICT in schools through various initiatives' (Crick and Moller, 2015: 123). Two of which were 'the National Grid for Learning (NGfL) and the New Opportunities Fund (NOF)' (Crick and Moller, 2015: 123). The end of the 1990s saw the creation of the National Assembly for Wales, created by the Government of Wales Act 1998 (OECD, 2014: 14). Successful negotiations with Westminster and Whitehall meant that powers were soon placed through (the Education Act of 2002) for the Welsh Assembly Government to 'vary any or all of the curriculum provisions of the 1988 Education Act' (Daugherty and Elfed-Owens, 2003: 251; OECD, 2014: 14), and 'adapt the curriculum to the learning needs of their schools' (OECD, 2014: 14). As such, over the last twenty years 'Wales has pursued distinct education policies that have resulted in a gradual differentiation from those of England' (OECD, 2014: 14).

***2000 - 2022***

By 2000, ICT had 'permeated both primary and secondary school curricula, not least in the newly devolved nations' (Crick and Moller, 2015: 123). Heavy industry had been obliterated in Wales, and the 'desire to create a knowledge-based economy'

(Jones, 2016: 154) was widespread in Welsh politics (Jones, 2016: 154). ICT education was identified as a priority for reform, and in July 1999 the PRE 16 Education, Schools and Early Learning Committee undertook 'a review of the process of procuring Information and Communication Technology (ICT) for schools in Wales by the Local Education Authorities (LEAs)' (Harries, 2001: 3). The report, conducted by Neil Harries and published in November 2000 stated that:

> During the 1990s after the creation of the National Curriculum the development of ICT education in schools throughout Wales was: Largely driven by central government in a series of "equipment provision" exercises, where specific sums of finance have been allocated, either through Grants for Educational Support and Training (GEST) or through appropriate capital budgets. These funding initiatives have either been allocated to the LEAs on a per capita basis as earmarked funding, or managed on behalf of the Welsh Office and, more recently the National Assembly for Wales, by the National Council for Educational Technology (NCET) and its successor body the British Education Communications and Technology Agency (BECTA). These initiatives have not always been perceived as forming part of any coherent pattern or overall strategy. (Harries, 2000: 7-8)

As a result of this report an educational information and communication technology strategy was to be implemented, and the political rhetoric and rationale for this policy initiative was threefold (Welsh Government, 2001: 8). Firstly, that its implementation would afford children 'the best start in life' (Dafis, 2001: 1) which would result in children and young people attaining a 'firm foundation upon which they would be able to compete for high quality highly paid jobs' (Dafis, 2001: 1). Secondly, that if Wales had a skilled workforce 'then the National Economic Strategy for Wales would have a sound platform on which to build economic enterprise and wealth' (Dafis, 2001: 1). This could not only lead to attracting 'high calibre companies to Wales, but it should also provide the skills base for young people to become the entrepreneurs of the future' (Dafis, 2001: 1). Thirdly, it would contribute to raising educational standards (Dafis, 2001: 1).

The economic imperative of the ICT Schools' strategy made reference to the National Economic Development Strategy (Welsh Government, 2001: 8). This strategy called

for the creation of a 'high-skill, high-value added economy' (ibid.) that would 'increase GDP and help bridge the wealth gap within Wales and between Wales and the rest of the United Kingdom' (ibid.). Within this strategy, skills development was seen as 'having a crucial part to play in moving Wales firmly into the knowledge-based economy' (ibid.), and the ICT in Schools strategy would contribute 'to this vision by ensuring that pupils had the ICT skills that were needed to enable them to contribute to developing in Wales a highly skilled, world-class economy' (ibid.).

Harries' 2000 report *Information and Communication Technology in Education* in The National Assembly for Wales Pre 16 Education and Life-Long Learning Committee informed the following policy document, (2001) *Information and Communication Technology in Education*, in The National Assembly for Wales Education and Lifelong Learning Committee Final Report. This document includes a Foreword by Cynog Dafis AM chair to The Education and Life-Long Learning Committee established under the Government of Wales Act 1998 (Welsh Government, 2001: 3). The policy document consists of an introductory chapter, followed by six chapters: Background to Report, The Experience of Other Countries, Committee's Consideration and Conclusion, Funding, Monitoring and Evaluation, Conclusion and Anex A. The selected extracts are taken from the analysis of the foreword by Cynog Dafis AM (which serves as summary statement within the document that encapsulates the policy initiatives), and also from the Objectives of the Strategy section in the Background to the report chapter. The analysis also extended to the document title as it included the name of the committee 'lifelong learning' which as Edwards et al., note is increasingly seen, as an 'important metaphorical resource in current policies' (Edwards et al., 1999: 620). As stated previously, this discourse of flexibility and the learning society is often linked with economic globalization (Edwards & Nicoll, 2001). In turn this is linked to what Fairclough refers to as 'the neo-liberal discourse of economic change which represents "globalization" as a fact which demands "adjustments" and "reforms" to enhance "efficiency and adaptability" in order to compete …'. (Fairclough, 2003: 100). The following extracts further exemplify how the discourses of economic neo-liberal imperatives and educational reform interpenetrate each other interdiscursively:

> The benefits that children and young people will reap from this will give them the firm foundation upon which they will be able to compete for high quality highly paid jobs. If we have the people with skills, then the National Economic Strategy for Wales will have a sound platform on which to build economic enterprise and wealth. (Dafis, in Welsh Government 2001: 1)

> Not only should it be possible to attract high calibre companies to Wales but it should also provide the skills base for young people to become the entrepreneurs of the future. It brings the links between education and training closer, leading to greater flexibility in its delivery and supporting individualised forms of learning and accreditation. (Dafis, in Welsh Government, 2001: 1)

The information in the Objectives of the Strategy section in the Background to the report chapter further impresses the significance and importance of the National Economic Development Strategy and interdiscursively link this neoliberal ideological value to the need for educational reform by not only stating its significance but by highlighting this text in red type, as per the following extract:

> The Committee was also aware during its consideration of other strategies and reports that considered the need in Wales for skills development, especially in information and communication technology. In particular it made reference to the National Economic Development Strategy which calls for the creation of a high-skill, high-value added economy that will increase GDP and help bridge the wealth gap within Wales and between Wales and the rest of the United Kingdom…Skills development is seen as having a crucial part to play in moving Wales firmly into the knowledge-based economy. The vision the National Economic Development Strategy has for Wales is 'A prosperous Welsh economy for the 21st century that is dynamic, inclusive and sustainable, based on world-class competitive business and skilled, motivated people'. The ICT in Schools strategy will contribute to this vision by ensuring that pupils have the ICT skills that are needed to enable them to contribute to develop in Wales a highly skilled, world class economy. (Welsh Government, 2001: 8).

Evident in this extract are the neo-liberal discourses Fairclough refers to as the 'neo-liberal discourse of economic change which represents "globalization" as a fact which demands "adjustments" and "reforms" to enhance "efficiency and adaptability" in

order to compete …' (Fairclough, 2003: 100). Fairclough (2003) refers to modes of legitimation, in this extract the 'moral evaluation' mode of legitimation which is an appeal to a value system around what is good or desirable is evidently ideologically linked to the neoliberal discourse that asserts the desirability of educational reform for Wales to compete on a global economic basis.

Therefore, a CDA analysis indicates that the policy makers' attentions with regard to the reforms required for ICT education in Wales were directed 'to the problems of linking education to economic development in a society heavily marked by deindustrialisation' (Jones, 2016: 204). As discussed by Fairclough policy documents are not created or formed by mere chance, but rather they are '… formed, disseminated and legitimised within complex chains and networks of events (committee meetings, reports, parliamentary debates, press statements and press conferences, etc.)' (Fairclough 2013: 244-245).

> The vision of a self-emerging knowledge society therefore acted as basis for legitimising government programmes and activities towards the realisation of the envisioned future stage of development. (Hornidge, 2011: 4, in Cummings et al., 2020: 102).

It is in this way that policy documents can be employed to offer inspiring visions that can persuade or convince stakeholders of the requirement for action 'while ultimately also preserving the status quo, enshrined in the dominant discourse' (Cummings et al., 2020: 102).

However, Crick and Moller state that despite 'government funded ICT initiatives, various reports throughout the decade identified problems with implementing government policy on ICT educational reform' (Crick and Moller, 2016: II). Wales' ICT curriculum was 'generally viewed to be more flexible and less prescriptive than the equivalent subject in England' (Crick and Moller, 2016: II). However, Wales was experiencing many of the same issues as England, and Younie summarises the problems identified by these reports into five key areas which include, management, teacher training and competence, as well as impact on pedagogy (Younie, in Crick and Moller, 2016: II). Crick and Moller note that:

> Computer studies in school – since the late 1990s generally named *Information and Communications Technology (ICT)* has evolved into IT studies with an emphasis on digital literacy and "office productivity" skills – significantly more mundane than the social networking and gaming for which many pupils use their personal digital devices. (Crick and Moller, 2015: 121)

From 2009 to 2014 computer science education in the UK was subjected to substantial scrutiny (Crick and Moller, 2015: 121). In 2012 Leighton Andrews, the Welsh Government's Minister for Education, and skills, 'publicly acknowledged the importance of computer science for all' (Crick and Moller, 2015: 122) and 'expressed understanding of the wider educational and socio-economic impact that the government can make with educational reform in Wales' (Crick and Moller, 2015: 122). It was in 2012 that Andrews announced a new initiative 'the creation of a government oversight panel – the National Digital Learning Council (NDLC)' (Crick and Moller, 2016: VII). The panel would 'work on scoping the way forward for his department's ICT strategy' (Crick and Moller, 2015: 123). In addition, Andrews also launched the bilingual learning platform 'Hwb', on December 12th, 2012 (Hook, 2012). However, Jones is of the opinion that Andrews' programme to raise standards, 'taken largely from an English model, was seen to have brought with it many of the problems encountered in England' (Jones, 2016: 205). The problems identified by the (OECD) The Organisation for Economic Co-operation and Development review team were that:

> For Wales to measure learning up to the age of 14 on the basis of narrow and standardised forms of assessment was to risk bringing into being a student population with limited capacity for wider kinds of learning, as well as a teaching force focused on 'getting students through tests' at the expense of more creative outcomes. (OECD 2014, in Jones, 2016: 205)

The message from 'the OECD team was clear: moving away from these emphases meant rethinking curricula and pedagogy' (Jones, 2016: 205). Jones suggests that Andrews had:

> Disparaged the progressive educational traditions which had often enabled such rethinking, validating his position with frequent references to his own version of grammar-school- inflected "Welsh

> Tradition", that saw in inherited forms of educational practice the best means of achieving radical social purposes. (Jones, 2016: 205)

From this evidence, it could be suggested that Andrews' influence on education in Wales could have contributed to limiting the curriculum content of ICT education. Essentially this was a curriculum based on attainment and not one that would widen the education experience of learners.

In January 2013 in view of the 'significant focus on ICT education in the UK' (ICT Steering Group, 2013: 7) a seminar was held at the National Assembly for Wales after which, the 'Welsh Government established an independent ICT Steering Group' (Estyn, 2018: 1). The independent group were asked 'to consider the future of computer science and information and communication technology (ICT) in schools in Wales' (Estyn, 2018: 1). The report was then published in September 2013 and amongst the recommendations was one to produce 'a statutory framework for ICT from foundation phase to post-16 and review the National Curriculum subject orders to reflect current developments in technology' (Estyn, 2018: 1).

In March 2014 Professor Graham Donaldson was asked by the then Minister for Education and Skills to 'conduct a fundamental review of curriculum and assessment arrangements in Wales' (Estyn, 2018: 2). As a result of this review, the curriculum in Wales is currently undergoing a major transformation. *Prosperity For All: The National Strategy', in Taking Wales Forward* is a document that is cited and referred to in the Ministerial Foreword of the *Education in Wales: Our national mission, action plan 2017-2021* document (Welsh Government, 2017a: 1). *Prosperity For All: The National Strategy', in Taking Wales Forward* was selected for analysis based on its key role in the design of the revised plan of action as stated by Kirsty Williams the Education secretary for Wales at the time in the Ministerial Foreword of the *Education in Wales: Our national mission, action plan 2017-2021* document:

> The revised plan of action is designed to support the delivery of 'Ambitious and Learning', one of the key themes as set out in Prosperity for All: the national strategy (2017). It is through the implementation of the actions in this plan that we will support all of our young people to make the most of their potential (Welsh Government, 2017a: 1).

*Prosperity For All: The National Strategy', in Taking Wales Forward* is an electronic document that has no index or content page but rather sets out the key themes of the document which are Prosperous and Secure, Healthy and Active, Ambitious and Learning and United and Connected (Welsh Government, 2017b: 27). In addition, it also sets out the priority areas which include Early Years, Social Care, Mental Health and Skills and Employability. This is an electronic document and is not strictly text based as it also includes an infographic. The following extracts are taken from the priority area, Skills and Employability:

> Good skills make Wales a more attractive destination for investors, bringing with them the higher-end, higher-paying jobs we need. Better and more transferable skills help people to move more easily between jobs, progressing from lower- paying roles with limited prospects. The higher the skill levels, the more resilient our economy will be, and better able to ride out economic shocks. (Welsh Government, 2017b: 27)

> We will deliver a school curriculum which meets the skills needs of individuals and the wider Welsh economy. We will ensure that our skills provision through schools, further and higher education and work-based learning reflects current employer needs and keeps pace with the economy of the future (Welsh Government, 2017b: 27)

This policy rhetoric was identified as being discursively similar to the policy rhetoric in the foreword of the policy document (2001) *Information and Communication Technology in Education,* in The National Assembly for Wales Education and Lifelong Learning Committee Final Report, as evidenced by the following extract:

> The better people's skills, the better their chances of getting fair, secure and rewarding employment, and the stronger the skills base is in Wales, the more chance we have of attracting new businesses and growing existing ones to improve prosperity. (Dafis, 2001: 1)

The interdiscursive analysis of the texts from 2017 and 2001 evidences the way in which the neo-liberal economic discourses and the discourses of educational reform interpenetrate each other. The moral evaluation also indicates that there is an appeal

to a value system of what is desirable which is ideologically linked to neoliberal economic discourses. These discourses continue to assert the desirability of educational reform and establish legitimacy for their claims.

The political rhetoric regarding digital literacy education is still focused, and intrinsically linked with the vocational and economic imperative for Wales as a nation and the individual learner. Therefore, the neo-liberal ideology that was introduced into the education system during Thatcher's time in government, was still, the fundamental basis and purpose of digital literacy education, and moreover, education in general. The contents of policy documents being subject to political processes when being written can according to Hornidge (2011) 'be used to legitimize already existing government policies by presenting a vision of the future' (Hornidge, 2011: 4, in Cummings et al., 2020: 102). It is in this way that policy documents can be employed to offer inspiring visions that can persuade or convince stakeholders of the requirement for action 'while ultimately also preserving the status quo, enshrined in the dominant discourse' (Cummings et al., 2020: 102).

*2020-2022*

As stated previously, all schools in Wales closed On March 23rd, 2020, in an attempt to stop the rapid spread of the Coronavirus. Thereafter, schools in Wales closed and reopened several times (Welsh Government, 2021a). The disruption within the education sector 'clearly impacted the preparation for the new Curriculum' (Crick, 2021). However, the new curriculum will be phased in from September 2022 (Crick, 2021). DLE in the new curriculum for Wales has 'diverse societal and cultural drivers' (Crick, 2021: 16). However, there are also 'clear economic imperatives in raising the profile and prominence of digital competence, underpinning aspirations for the future economy of Wales' (Crick, 2021: 16). However, Crick suggests that consideration is also being given to diverse societal and cultural aspects. Crick further adds that:

> There are still issues in reconciling these significant changes to digital education policy and practice in Wales (and indeed, across the UK and internationally), especially in the emerging societal context of online harms, fake news, and increased awareness of the impact of digital poverty. (Crick, 2021: 16)

This evidence indicates that while DLE policy is changing there are disparities and issues that need to be reconciled between policy and practice.

The COVID-19 imposed lockdowns moved learning online and Williamson et al., state that the educational technology industry ramped up their marketing of ‘products to support online learning considerably’ (Williamson et al., 2020: 108). Some of the biggest global technology companies ‘also expanded their educational services rapidly, including Google, Microsoft, Amazon and Zoom’ (Williamson et al., 2020: 108). Williamson et al., suggest the pandemic presented these companies ‘remarkable business opportunities for profit-making, as well as enhanced influence over the practices of education’ (Williamson et al., 2020: 108). Expanding on their analysis they suggest that some edtech businesses have viewed the crisis as a business opportunity that could have ‘long-term consequences for how public education is perceived and practised long after the coronavirus has been brought under control’ (Williamson et al., 2020: 108). Hillman et al., (2020) speculate that the increasing ‘‘platformisation of schooling’, in a context where ‘schooling as an institution has already been broken-up, decentralised and marketised’’ (Hillman et al., 2020: 7) could lead to a situation where state government of education will be reduced (Hillman et al., 2020: 7). Further speculation suggests that this would be as a result of dominant technical platforms being amongst the ‘few centralising powers uniting schools as a national school system’ (Hillman et al., 2020: 7). Furthermore, they view the incorporation of global commercial platforms into public education as potentially posing a risk to ‘education as a public good’ (Hillman et al., 2020: 7-8). This political economy analysis ‘of educational platformization suggests the need for serious caution regarding the expansion of edtech and other platform companies during the coronavirus pandemic’ (Williamson et al., 2020: 108). Furthermore, ‘many edtech businesses have in fact been seeking to finesse the model of ‘distance’ education for years’ (Williamson et al., 2020: 109). What they term as the ‘pandemic pedagogy’ was put in place as an emergency response, however, they suggest this may be seen by some businesses ‘as a rapid prototype of education, as a private service and an opportunity to recentralize decentralized systems through platforms’ (Williamson et al., 2020: 109). In view of these concerns, the decentralised nature of the Welsh

education system and the speculative nature of this research this is an area that warrants further research.

## **4.4** The Welsh Language Agenda and Digital Literacy Education

To contextualise the Welsh language agenda regarding digital literacy, an historical overview of the introduction of the language into education has been initially conducted. There were increasing legislative developments from 1944 up to the current day regarding, not only the provision of Welsh medium schools, but also for Welsh to become a compulsory subject of study in English medium schools throughout Wales (Jones, 2014: 6). Jones notes that it would only be after many long and hard campaigns that victories were won (Jones, 2014: 8). For example, 'The 1967 Welsh Language Act provided the right for Ministers of Government to prescribe statutory forms in Welsh' (Jones, 2014: 8). This was the first time 'that individuals in Wales would have a choice of using Welsh or English in the courts as they preferred' (Jones, 2014: 8). However, it would be 1993 before the 'legal basis for equality between Welsh and English in Wales was enshrined in the 1993 Welsh Language Act' (Jones, 2014: 9). Education was included in this act under section 5 which stated that 'local education authorities (LEAs) were required to produce and implement a Welsh Language Scheme, dealing specifically with education, for approval by the WLB' (Jones, 2014: 9). Further autonomy would be afforded when The National Assembly for Wales was established in 1998 and 'assumed power in 1999' (Jones, 2014: 10). Initially the Assembly 'had powers for secondary legislation (known as Measures) over certain areas devolved to Wales, of which education was one' (Jones, 2014: 10). In addition, 'the Act also gave the National Assembly the power to "do anything it considers appropriate to support ... the Welsh language"' (Jones, 2014: 10). However, it would be 2012 before 'the National Assembly for Wales obtained the right to pass Acts (rather than Measures) on devolved matters' (Jones, 2014: 10).

Jones points out that, it is important to note that 'the legislation which deals with Welsh- medium education is separate from that relating directly to the language' (Jones, 2014: 10). In view of this, it is interesting to note that it was not until the 1944 Education Act 'that pupils were given the right to be educated in accordance with the wishes of their parents' (Jones, 2014: 11). This provision 'allowed LEAs to consider

establishing Welsh-medium schools' (Jones, 2014: 11), and 'LEAs began opening Welsh-medium schools at primary and secondary level' (Jones, 2014: 14). By 2014 there were '403 Welsh-medium and bilingual primary and 54 Welsh-medium and bilingual secondary schools throughout Wales' (StatsWales, 2014, in Jones, 2014: 15).

A report commissioned by the Welsh Assembly - published in 2000, and conducted by Harries, has been identified as the first to raise the issue of the use of the Welsh language in IT education. The report advises that an examination should be undertaken to discover 'ways to establish greater co-operation across Wales in the development of bilingual educational software that supports the national curriculum' (Harries, 2000: 7). A further document published in 2012 *A Living Language: A Language for Living (the Welsh language Strategy for 2012-17*), technology and digital media served to further the inclusion of the Welsh language in technology and digital media education (Welsh Government 2018a: 27). From recommendations within the document, work was undertaken in conjunction with 'the Welsh Language Partnership Council and other specialist groups and stakeholders' (ibid), which led to the creation of 'an ICT Action Plan for the Welsh language in 2013' (ibid). The plan's purpose was to 'build on work done in this area by the former Welsh Language Board' (ibid). The Welsh Language Board's most notable success is cited as, 'the work undertaken with Microsoft Corporation to secure Welsh-language interfaces for Windows, Office and SharePoint' (ibid). Emphasis was also placed on the 'importance of the localisation, content creation and development work that had been done, and that is still being done by a small, enthusiastic community of volunteers' (ibid). Another initiative by the Welsh Government to embed the Welsh language within digital literacy education was the launch of the bilingual learning platform for Wales 'Hwb', on December 12th, 2012, by Leighton Andrews, the Welsh Minister for Education and Skills (Hook, 2012). It was introduced in the hope that it would 'connect every student and teacher across Wales' (Hook, 2012) and was a 'part of a broader Welsh government agenda called "Digital Wales"' (Hook, 2012).

Further information procured from government documents indicates that there have been increasing initiatives focusing on the inclusion of the Welsh language in the digital milieu. For example, the *Welsh Government 2018/Welsh Language Technology Action Plan* states that, to ensure that the Welsh language thrives digitally, the Welsh

language technology action plan has been formulated and is derived 'from the Welsh Government's strategy Cymraeg 2050: A million Welsh speakers (2017)' (Welsh Government 2018a). Its primary goal is to ensure that through technological developments 'the Welsh language can be used in a wide variety of contexts, be that by using voice, keyboard or other means of human-computer interaction' (Welsh Government 2018a). There are three specific areas that the plan addresses which are, 'Welsh Language Speech Technology, Computer-assisted translation, Conversational Artificial Intelligence' (Welsh Government 2018a: 4). With regards to education and skills, the plan proposes to address this by implementing the following:

> Take advantage of the new curriculum and the Hwb website, to develop children's and young people's skills in digital literacy, coding, digital content creation, etc. in Welsh. Examine the potential of developments such as e-sgol for increasing Welsh- medium educational provision. Promote wide and proactive use of Welsh-language interfaces and software on devices for Welsh-speaking learners and staff at Welsh-medium schools, colleges, and universities in Wales. Promote Welsh-language coding and other relevant resources. (Welsh Government 2018a: 4)

The 2018 document also identifies the 'need to make sure that academic research and development in the field of Welsh language technology receives long-term support' (Welsh Government 2018a: 4). Further evidence indicates that, although the initiatives to include the Welsh language in education have increased since the initial inclusion of its use was addressed in the 2000 report, a great deal of work is yet to be done. This is exemplified by Eluned Morgan, (Minister for Welsh language) in her ministerial foreword of the Welsh Government's action plan for the Welsh language she states that:

> I use technology every day. It's central to all our lives, whether that technology is visible to us or not. Technology is everywhere, but I am seldom offered the opportunity to use it in Welsh. And if a Welsh Language option is available, it is not always visible without me making an effort to look for it. We all lead busy lives—who has time to go looking. (Morgan, in Welsh Government 2018a)

## **4.5** Gender And Digital Literacy Education

A report by Li and Kirkup published in 2007 stated that 'gender differences in the use of computers have been well documented in the last two decades' (Brosnan, 1998; Comber; Colley; Hargreaves, & Dorn, 1997; Durndell, Macleod, & Siann, 1987; Kirkpatrick & Cuban, 1998; Kirkup, 1995; Meredith, Helen, & Woodcock, 1998; Scragg, Smith, & Geneseo, 1998; Shashaani, 1993, 1997, in Li and Kirkup, 2007: 302), and that, 'where researchers have looked for gender differences in the use of computers they have found them' (Li and Kirkup, 2007: 302). They further note that the body of research is extensive and that 'findings seem to suggest certain consistent trends' (Li and Kirkup, 2007: 302). The literature reviewed in this study found that a combination of factors has contributed to gender differences in computer education. For example, the nature of technology education; socialisation; computing self-efficacy; teachers' attitudes; boy's dominant behaviour; educational choices; software production; sexist discrimination and misconceptions. To cite all of these factors, and the accompanying literature is beyond the scope of this review. Therefore, it is noted that although they have been researched, only some of these factors have been included.

*The Nature of Technology Education*

Head was of the opinion that technology education was 'presented too often as intensively narrow and divorced from human concerns' (Head, in Harding, 1997: 21) and that 'within this framework girls had been defined as deficient' (Head, in Harding, 1997: 21). To explore this point further, the following exemplifies the different ways in which male and females vary in their approach to technologies and their uses. Over a three-year period, an analysis was conducted of 'girls' and boys' entries to a National Design Prize Competition' (Grant and Harding, in Harding, 1997: 22). The analysis 'showed that while they worked on similar devices, the problem they had identified differed' (Grant and Harding, in Harding, 1997: 22). Grant and Harding state that the 'boys were working to improve the device (a technical problem)' (Grant and Harding, in Harding, 1997: 22). However, in direct contrast, they state that 'for the majority of girls the problem was perceived to be one of human need which could be met by use of the device (the social context)' (Grant and Harding, in Harding, 1997: 22). Thus, suggesting that, the intensively narrow nature of technology education devoid of the social context has contributed to the lack of female participation.

*Socialisation*

The socialisation of men and women is also cited as a contributing barrier of female inclusion, in the respect that society 'maps different roles onto men and women and expects different behaviours from them' (Harding, 1997: 21; Van der Vleuten et al., 2016: 183). As a result, 'males and females tend to develop different value systems and world views' (Harding, 1997: 21). For example, typical values and world-views associated with males are 'achievement, leadership, control, and independence' (Harding, 1997: 21), and for females, 'care, nurturance, relatedness and personal responsibility' (Harding, 1997: 21). Several authors have argued 'that ICTs are racially white, Western, male artefacts' (Chen & Collis, 1999; Chen, Mashhadi, Ang, & Harkrider, 1999; Collis, 1999; Joo, 1999, in Li and Kirkup, 2007: 303). Harding suggests that as such, it is the male world view that is 'more usually presented in the practice of technology and in its presentation for learning' (Harding, 1997: 21). Harding offers the stark warning that if women do not work within technology their world views and the 'values associated with them will not be strongly represented in technological development, which puts people and the planet at risk' (Harding, 1997: 21).

*Software and Teachers*

Millen et al., and Heemskerk state that 'historically, software was designed by males for males, and its development since has continued along gendered lines' (Millen et al., 2018: 26; Heemskerk et al., 2005: 2). Research indicates that children's predominant interaction with computers 'particularly in their leisure time, is through using various pieces of software' (Millen et al., 2018: 26). However, research has also shown that 'the gendering of software even penetrates education software' (Millen et al., 2018: 26; Baker, 1983; 1985 in Beynon, 1993: 8). A study conducted by Huff and Cooper in 1987 'asked teachers at all levels of schooling to design educational software for their students' (Huff and Cooper, in Millen et al., 2018: 26). The results of the study found that 'the teachers followed gendered stereotypes and designed tool software for the females, and software involving competitive violence for the males' (Huff, 2002: 519). The experiment was repeated 15 years later and the results were exactly the same, thus, Huff concluded that, 'it is not the computer, or even the software, that is at the root of the sex bias in software, but the expectations and stereotypes of the designers of the software' (Huff, 2002: 519). This indicates that the

influence of cultural stereotypes is so pervasive ‘that even teachers can fall foul of them’ (Millen et al., 2018: 26). In addition, evidence suggests that many teachers had different ‘expectations of girls than of boys’ (Whyte 1986: 28; Harding, 1997: 24). Whyte found ‘that teachers participating in in-service training on equity issues’ (Whyte 1986: 28) consistently counselled ‘Denise differently from Denis, using the same pupil profile’ (Whyte 1986: 28), and the ‘GIST Project found the same outcome for the exercise’ (Whyte, 1986: 28). Furthermore, the GIST project found that classroom interactions in laboratory and workshop settings ‘seemed to have the effect of ‘edging girls out’’ (Whyte, 1986: 25; Harding, 1997: 24).

*Misconceptions*

There is a relative consensus, ‘that the decision-making process of females (and males) when it comes to careers in computing is imbued with a range of popular misconceptions’ (Millen et al., 2018: 26). For example, one of the most prevalent is ‘that computing (and specifically, programming) is a solo activity’ (Margolis & Fisher, 2002; Zimmerman & Sprung, 2008, in Millen et al., 2018: 26), and as such it would not suit ‘females who prefer team-based jobs involving greater social interaction’ (Margolis & Fisher, 2002; Zimmerman & Sprung, 2008, in Millen et al., 2018: 26). This has been identified as ‘a popular reason females give for not participating in computing or pursuing careers within the field’ (Carter, in Millen et al., 2018: 26). Millen et al., suggest that it is crucial these misconceptions are dispelled ‘by stressing to females early in their school careers that roles within the computing and digital technology sector are malleable both in type and skill-requirement’ (Millen et al., 2018: 26). This is also borne out in evidence cited by the ‘ICT Steering Group’s report to the Welsh Government published in September 2013 which states that, ‘by the time girls get to secondary school and are selecting GCSE subjects, a poor perception of the discipline has already developed’ (The ICT Steering Group, 2013: 19).

It is interesting that the 2014 Estyn report stated that in Wales, a higher percentage of girls over boys achieved ‘the expected level 5 or above in ICT’ (Estyn, 2014: 6), but that this is also the case in all other non-core subjects. However, this achievement gap is less in ICT and the report merely speculates as to why this may be the case by suggesting that it ‘could be due to the appeal of the subject to boys, and that it is acceptable for boys to do well in ICT’ (Estyn, 2014: 6). Whilst the body of research is

extensive in this area, this study has found that there is a dearth of literature that pertains to the situation in Wales specifically. Therefore, in view of the 2014 Estyn report's speculative assumption, and the dearth of literature identified, it is suggested that this is an area that warrants further research.

## **4.6** Socio-economic Status and Digital Literacy Education

There is a considerable amount of literature regarding socio-economic status and digital literacy education, and it is noted that it is beyond the scope of this review to include a comprehensive analysis. However, this study has identified a dearth of research that pertains to socio-economic status and digital literacy education specifically in Wales. Therefore, the following is a brief analysis, and is considered as a representative overview of the research findings conducted in this area.

Weiner's 1997 paper on gender class and education suggests that 'most UK debates about the impact of social class on education draw on the nineteenth-century theories of Marx and Weber' (Weiner, 1997: 1). Essentially based on the principle that:

> Class should be viewed in relation to ownership (or lack of ownership) of capital and the means of production and according to the range of capacities of different male social class groupings arising from their ability to manipulate the employment market as property owners, intellectuals, administrators and managers, and members of the working class. (Weiner, 1997: 1)

It is noted that these ideas are evident in the analysis of the literature identified in relation to how socio-economic class can impact digital and computer literacy as follows. In 1993 Michael Apple suggested that 'the expense of microcomputers and software in schools, and the pressure to introduce technology may increase the already wide social imbalances' (Apple, 1993: 115). He argued that imbalances would increase because 'private schools to which the affluent send their children and publicly funded schools in more affluent areas will have more ready access to the technology' (Apple, 1993: 115), and that 'schools in inner cities, rural, and poor areas will be largely priced out of the market' (Apple, 1993: 115).

Apple's analysis then explores and critiques the introduction of computers into schools specifically in the USA, and firstly suggests that the computer companies themselves geared 'much of their advertising to the educational possibilities of computers' (Apple, 1993: 115; Selwyn, 2010: 435). There was, he states, frantic competition to drive a link with particular computers to schools, for example: Apple 'in a highly touted scheme proposed to 'donate' an Apple to every school in America' (Apple, 1993: 115). Whilst there is a seemingly philanthropic intent to this action Michael Apple suggests that:

> The clear market strategy is to couple particular computer usages to schools where parents – especially middle-class parents with the economic wherewithal and keen motivation (to insure mobility) – purchase machines compatible with those in schools. (Apple, 1993: 115; Selwyn, 2010: 433)

These marketing strategies worked on the basis that they aimed to manipulate parents by making them feel compelled to purchase computers in order to 'enhance and augment their children's education' (Apple, 1993: 115). This combination of marketing strategies aimed at the school and home markets could not 'fail to further disadvantage large groups of students' (Apple, 1993: 115). Essentially, this was a divisive issue of access to technologies directly influenced by the socio-economic status of either the school or household, and as such, with the burgeoning technology market apparent; the more affluent the school, or the student, then the greater the 'social stratification of life chances' (Apple, 1993: 115). Life chances that would be greatly improved not due to naturally ability, 'but to wealth' (Apple, 1993: 115).

In a further analysis of literature published twenty-six years later, it is interesting to note that the issue of socio-economic factors influencing access to digital technologies is still discussed. For example, Millen et al., state that, 'children living in more economically deprived areas have been shown to have more limited access to computer resources at school' (Millen et al., 2018: 24), and they are often 'less likely to have computers at home' (Millen et al., 2018: 24). This limited access 'is a particular issue for children, both male and female, coming from households of lower socio-economic status' (Millen et al., 2018: 24-25), and this lack of access can contribute to 'low self-efficacy' (Millen et al., 2018: 24). However, they further state that as

currently ‘around 88% of UK households contain a computer and most schools have sufficient hardware, this complaint has retreated’ (Millen et al., 2018: 24). This they state is due to the ubiquity of digital technologies and as such ‘socio-economic concerns are now overshadowed by the stronger influence of parental attitudes’ (Shashaani, 1994; See also Downes & Looker, 2011; Álvarez, et al. 2013; Symons et al., 2017, in Millen et al., 2018: 25). This being said, Williamson et al., note that since the outbreak of COVID-19 ‘education policy makers are beginning to realize that the rhetoric around young people is incorrect, and now some young people are excluded from much of their education’ (Williamson et al., 2020: 109). They add that ‘not all young people are the well connected, digitally savvy, ‘digital natives’ that the rhetoric around young people and technology would have us believe’ (Williamson et al., 2020: 109).

## **4.7** Summary

From the evidence presented in this evaluation, it is clear that whilst there is a large body of research that has been conducted into digital literacy education in the UK, and other territories, there is a lack of academic research regarding digital literacy education that pertains specifically to Wales, both pre- and post-devolution. In addition, in view of the new curriculum that schools in Wales are currently preparing to phase in from September 2022, and the already identified disparities between policy and practice, it is suggested that further research be conducted into what the curriculum content of current and future digital literacy education in Wales includes. Furthermore, it is evident that the main focus, from as early as the 1970s, has been on teaching the mechanistic skills that enable students to primarily use digital hardware and software to gain sufficient digital skills for employment. Evidence indicates that digital literacy education has not aimed to educate students about the ethical, social, and cultural impact of digital technologies, in the respect that; digital technologies are not neutral artefacts, or tools that one has to learn how to use, but rather; they are artefacts that are imbued with ideologies that impact culture and society. Therefore, it is suggested that by excluding these aspects, digital literacy education is unable to sufficiently educate, and enable current, and future citizens to relate their digital literacy education to the realities of the social and cultural world they now, and will, live in. This analysis has also surfaced evidence to suggest that this mechanistic focus and direction has

been predominantly driven by government policies, as part of an economic agenda. However, literature was also identified that speculated online pedagogies during COVID-19 lockdowns may have created an opportunity for neo-liberal private technology companies to dominate education after the crisis (Hillman et al., 2020: 7–8). Additionally, they suggest that as technical platforms are amongst the 'few centralising powers uniting schools as a national school system' (Hillman et al., 2020: 7–8), this could lead to a situation where state government will be reduced. Therefore, in view of the speculative nature of these concerns and the decentralised nature of the Welsh education system, this is an area that warrants further research. It is noted that 'frequent changes that occur with technologies themselves have not been something that has been taken up and addressed within educational policy' (Passey, 2014: 146). In view of the evidence presented, and if, as Johnson and Adams suggest, 'digital literacy is less about tools and more about thinking' (Johnson and Adams 2011: 18), it is suggested that research be conducted to assess whether this aspect is now being included, or considered, as an integral aspect of digital literacy education in Wales.

In addition, a lack of academic research has also been identified regarding the Welsh language agenda, gender bias, and socio-economic status and digital literacy education. Therefore, it is proposed that these are also areas that require further attention. The requirement for ongoing research regarding the inclusion of the Welsh language in technology has also been supported by Eluned Morgan, who has identified the need for sustained support for 'academic research and development in the field of Welsh language technology' (Welsh Government 2018a: 4).

As stated previously, the 2014 Estyn report concluded that in Wales a higher percentage of girls over boys achieve 'the expected level 5 or above in ICT' (Estyn, 2014: 6). Furthermore, the report merely speculated as to why this may be the case by suggesting that it 'could be due to the appeal of the subject to boys, and that it is acceptable for boys to do well in ICT' (Estyn, 2014: 6). Whilst the global body of research into gender bias and digital literacy education is extensive, this study has found that there is a dearth of research that pertains specifically to Wales. Therefore, in view of the Estyn report's speculative assumption, and the dearth of literature identified, it is suggested that this is also an area that warrants further research.

Finally, the literature reviewed regarding socio-economic status and digital literacy education surfaced evidence that suggested students from poorer backgrounds have historically suffered in this subject, mainly due to a lack of access to digital technologies. However, literature was also identified that suggested this is no longer the case due to the ubiquity of digital technologies. Moreover, a study written after the outbreak of COVID-19 negated the notion that digital technologies were ubiquitous and that access to these technologies was no longer an issue. In view of the disparate views identified in the literature, and the lack of research into this area that pertains specifically to students in Wales, it is suggested that further research be conducted to assess the levels of digital poverty.

To conclude, there is a need for ongoing research into digital literacy education in Wales, especially when you consider that digital technologies 'lie at the heart of how people communicate, consume information, and organise their lives' (Selwyn, 2016: 2). Moreover, now that palm-sized computing devices are our constant companions, carried with us at all times, enabling billions of users the ability to access popular online platforms at any given moment of the day (Selwyn, 2016: 2) 'more than ever before, the issues and tensions that have grown up around education and technology merit close examination' (Selwyn, 2016: 2) and it is 'a topic that demands sustained analysis and critical thought' (Selwyn, 2016: 2).

# 5 Chapter 5: Theoretical Framework

This chapter discusses, explicates, and validates why Herbert Marcuse's critical theory of advanced industrial societies developed in his 1964 publication *One-Dimensional Man* have been identified as the appropriate theoretical lens through which the data will be analysed. In addition, the contemporary relevance of Marcuse's theories deployment in the analysis of the data are discussed, and the significance of this research and its contribution to this specific academic field are identified.

## **5.1** Critical Social Theory of Advanced Industrial Societies (Herbert Marcuse)

As stated previously the theory that will form the theoretical framework of this study will be that of Herbert Marcuse, one of the main theorists from the Frankfurt School of Critical Theory. The main questions this study seeks to answer were informed by the evaluation and analysis of the literature review and the historical development of digital literacy education in Wales. A theory needed to be identified that would allow the data collected to be analysed to evaluate whether digital literacy education provisions still focused on teaching a narrow set of skills in its educational programme content. Additionally, the theory also had to be appropriate to evaluate to what extent DLE provisions were influenced by the economic neo-liberal capitalistic system of the private business sector, and the economic imperatives of the public governmental sector. The theories developed by Herbert Marcuse in his (1964) book *One-Dimensional man* are read as a 'dialectical text, which contrasts one-dimensional with multidimensional thought and behaviour' (Kellner, in Marcuse, 2002: xxvii). Kellner notes that Marcuse:

> Roots his critique of culture and ideology in an analysis of the socio-economic foundation of 'advanced industrial society'. Consequently, the book produces a theory of society that uses the Marxian method of analysis to produce a radical critique of contemporary capitalist and Communist societies, culture, and ideology. (Kellner 1984: 227)

In brief, *One Dimensional Man* is 'a model analysis of the synthesis of business, the state, the media, and other cultural institutions under the hegemony of corporate capital' (Kellner in Marcuse, 2002: xxxvii). Therefore, these theoretical concepts were selected as the most appropriate to satisfy the goals and aims of this study. The following sections will now offer an in-depth evaluation of Herbert Marcuse's critical theory of advanced industrial societies and explicate how his theories are appropriate for the analysis of the data.

## **5.2** One-Dimensional Man: Studies in the Ideology of Advanced Industrial Societies

*One-Dimensional Man* was a publication developed after what was essentially decades of work influenced by a variety of academic, ideological, social, and economic factors that all contributed and influenced Herbert Marcuse. Kellner summarises the culmination of these influences in the following statement:

> *One-Dimensional Man* contains a synthesis of theories and ideas which Marcuse had been developing for several decades. He combines aspects of the theories of contemporary civilisation developed by Hegel, Marx, Freud, Weber, Heidegger, and Lukacs with theories of advanced industrial society developed by contemporary German and French social theorists and American social scientists and critical journalists. (Kellner, 1984: 229)

Marcuse's critical theory of 'advanced industrial society' serves to explain how the changes in production, consumption, culture, and thought produced an 'advanced state of conformity' (Kellner, in Marcuse, 2002: xii). This conformity was due to the way in which the aspirations and needs of individuals had been created by the prevailing societal structures so that individuals were subsumed or integrated 'into the established societies' (Kellner, in Marcuse, 2002: xii). In this critique, Marcuse is essentially describing and analysing what is often termed as the 'technological society that is, a society which has been restructured by technology, not only in terms of labour and leisure, but also 'modes of thought' (Kellner, in Marcuse, 2002: xii). It is interesting and pertinent to note here that Jacques Ellul's publication *The Technological Society* also focuses on technology, but more specifically tackles how technology has restructured society. Ellul roots and centres his analysis in technique as opposed to

one-dimensionality. For Ellul technique is something that extends beyond machine technology and refers to 'any complex of standardized means for attaining a predetermined result' (Merton, in Ellul 1954: 5). Ellul suggests that our society is 'a progressively technical civilization' (Merton, in Ellul 1954: 5), and that 'the ever-expanding and irreversible rule of technique is extended to all domains of life' (Merton, in Ellul 1954: 5).

> The term technique, as I use it, does not mean machines, technology, or this or that procedure for attaining an end. In our technological society, technique is the totality of methods rationally arrived at and having absolute efficiency (for a given stage of development) in every field of human activity. Its characteristics are new; the technique of the present has no common measure with that of the past. (Ellul 1954: 16)

'The important questions concerning the technological society rarely turn for Ellul on how or why things came to be so, but rather on whether his description of them is a true one' (Wilkinson, in Ellul 1954: 12). In this respect Ellul's analysis differs from Marcuse quite significantly. Marcuse develops a detailed analysis of, the how and why things came to be throughout *One-Dimensional Man* focusing on what he terms as, the mechanics of conformity, or the factors of the facts. Ellul states, 'it is not the business of this book to describe the various techniques which, taken together, make up the technological society' (Ellul, 1954: 22). Marcuse in comparison is not just diagnosing the disease he is exploring the cause of the disease. Another significant difference is that Ellul does not draw on classical philosophical ideas to critically analyse the tendencies that contribute to the technological society as Marcuse does. Ellul sees the plasticity of societies as being significant in the advances of technique. Essentially, Marcuse sees the technological base as instigating the change in society, whereas Ellul sees the change in society as instigating the development of technique:

> The machine is now not even the most important aspect of technique (though it is perhaps the most spectacular); technique has taken over all of man's activities, not just his productive activity. (Ellul, 1954: 25)

Ellul's analysis does not view capitalism as having the influence that Marcuse's analysis does, as illustrated by Ellul's suggestion that 'it is useless to rail against capitalism. Capitalism did not create our world; the machine did' (Ellul, 1954: 25).

For Ellul, ‘the machine took its place in a social milieu that was not made for it, and for that reason created the inhuman society in which we live. Capitalism was therefore only one aspect of the deep disorder of the nineteenth century’ (Ellul, 1954: 25). Additionally, ‘unlike Ellul, Marcuse does not believe that technology is autonomous and beyond the control of humans’ (Van Vleet, 2014: 119). Marcuse’s analysis takes the position that ‘technology is controlled by the elite and powerful within society’ (Van Vleet, 2014: 119).

Marcuse’s analysis explains and dissects the mechanisms through which ‘consumer capitalism integrates individuals into its world of thought and behaviour’ (Kellner, in Marcuse, 2002: xii), and views the developments of advanced industrial society and consumer capitalism as unbeneficial advancements for individuals within this society. He sees these advancements as a threat to individuals’ human freedom and individuality in what he perceives to be a ‘totally administered society’ (Kellner, in Marcuse, 2002: xii). To justify these claims, Marcuse developed in *One-Dimensional Man* a critical philosophical perspective which enabled him to critique the contemporary ‘forms of thought, behaviour, and social organization’ (Kellner, in Marcuse, 2002: xiii). Thus, as Kellner states ‘*One-Dimensional Man* is also Marcuse’s major philosophical work’ (Kellner, in Marcuse, 2002: xiii), in which he was able to articulate:

> His Hegelian-Marxian concept of philosophy and critique of dominant philosophical and intellectual currents: positivism, analytic philosophy, technological rationality, and a variety of modes of conformist thinking. (Kellner, in Marcuse, 2002: xiii)

Therefore, in this text, he succeeds in both explicating his ‘conception of dialectical philosophy’ (Kellner, in Marcuse, 2002: xiii), and in producing an analysis of ‘society and culture which exemplify his dialectical categories and method’ (Kellner, in Marcuse, 2002: xiii). As such, *One-Dimensional Man* serves as a model of Marcuse’s

‘critical social theory and of his critical philosophy inspired by his philosophical studies and his work with the Frankfurt School’[1] (Kellner, in Marcuse, 2002: xiii).

Herbert Marcuse was primarily known as a neo-Marxist philosopher and throughout his critique he evaluates the state of society in advanced industrial civilisations under the capitalist system of the time - the 1950s and early 1960s. Marcuse introduces the idea that technology and consumerism created a social situation whereby a new form of control and oppression had arisen. For Marcuse this was a different kind of totalitarianism achieved by different methods to those that had been employed previously to create this type of social control. Marcuse further suggests that we are no freer in a capitalist society than we are in a totalitarian regime. However, under this new regime of control we are not subjected to violence in order to be controlled. We are instead entertained and distracted by consumerism and mass media that have become the focus and also act as an ideological apparatus, which in turn, promotes conformity and ensures the prevention of resistance. Marcuse is of the view that ‘freedom is on the retreat—in the realm of thought as well as in that of society’ (Kellner, in Marcuse, 2002: xxiv) and that ‘technological rationality was producing a system of totalitarian social control and domination’ (Kellner, in Marcuse, 2002: xix). Furthermore, Marcuse suggests that ‘technology serves to institute new, more effective, and more pleasant forms of social control and social cohesion’ (Marcuse, 2002: xlvi). However, it is noted that Kellner proposes *One-Dimensional Man* be read as a ‘dialectical text, which contrasts one-dimensional with multidimensional thought and behaviour’ (Kellner, in Marcuse, 2002: xxvii). In the following sections a variety of the concepts and mechanisms dissected within Marcuse’s analysis of his theory of advanced industrial society will be explicated in order to demonstrate why and how they will inform the analysis of the data gathered in this research study.

Marcuse and Totalitarianism in *One-Dimensional Man*

[1] On the Frankfurt School, see Martin Jay, *The Dialectical Imagination* (Boston: Little, Brown and Company, 1973) and Douglas Kellner, *Critical Theory, Marxism, and Modernity* (Cambridge and Baltimore: Polity Press and Johns Hopkins University Press, 1989).

It is perhaps pertinent to firstly explore what Marcuse meant by totalitarianism in the context of *One-Dimensional Man.* In an interview conducted in 1965 Marcuse explains how and why he employed the term totalitarianism to describe the tendencies he saw emerging in advanced industrial societies (Marcuse, in Biophily2, 2016). Firstly, he states that he is fully aware of the provocative nature of the term when used within his work in the respect that, the connotations of what totalitarianism means, is very often linked firstly to the Fascist and Nazi society and then the communist society. In essence, Marcuse is of the view that the term totalitarianism evoked connotations of societies 'under a more or less terrorist dictatorship with a one-party system with a more or less terroristic elimination of all opposition' (Marcuse, in Biophily2, 2016). For Marcuse this connotation of the word in such a restricted and confined context, is itself ideological and problematic in the respect that, it can potentially conceal what Marcuse views as the totalitarian tendencies beginning to emerge in democratic societies. Tendencies that would not be recognised for their totalitarian characteristics due to what he views as these restricted ideological connotations. The totalitarian tendencies that Marcuse identifies in advanced industrial societies and how he describes his use of the term in *One-Dimensional Man* is that 'individuals and the societies private and public existence of man and of the individual is controlled, is exposed to, standardised required ways of behaviour standardised imposed use' (Marcuse, in Biophily2, 2016). In addition, he believes that individual's needs are being controlled in the respect that they are expected to behave in a certain standardised way. This control for Marcuse can be enacted by private as well as public bureaucracy and it can be done via the perfectly democratic media of mass communication. It is in a way, to quote Marcuse verbatim from the radio interview:

> A consequence of 'technical progress' which implies mass production and mass distribution which in turn requires a significant and considerable degree of standardisation and a considerable degree of the submission of the individual to pre given superimposed values aspirations goals and so on. (Marcuse, in Biophily2, 2016)

The tendencies of the one-dimensional society are in Marcuse's view totalitarian but illusionary and yet they serve to make traditional methods of protest ineffective as the "the people" who were viewed as the instruments of change have now become the instruments of cohesion (Marcuse, 2002: 260).

## **5.3** The Mechanics of Conformity – A New Form of Control

Marcuse argues that 'a "mechanics of conformity" spread throughout the society' (Kellner, in Marcuse, 2002: xx), and that the individual was so overpowered by the administrative efficiency and power derived from 'the way it has organized its technological base' (Marcuse, 2002: 5) that society and individuals 'gradually lost the earlier traits of critical rationality (i.e., autonomy, dissent, the power of negation), thus producing a "one-dimensional society" and "one-dimensional man"' (Kellner, in Marcuse, 2002: xx). In brief, Marcuse is suggesting that, critical rationality that 'posits the existence of another realm of ideas, images, and imagination' (Kellner, in Marcuse, 2002: xvii) has been lost to society as a result of a new form of control underpinned by the way in which the advanced industrial societies organised their technical base. In order to combat this one-dimensionality, critical and dialectical thinking is required to 'serve as a potential guide for a social transformation that would realise the unrealised potentialities for a better life' (Kellner, in Marcuse, 2002: xvii). In addition, Marcuse also suggests that technical progress has created a social situation that on the surface appears to be reasonable and comfortable, and that the democratic freedom that society perceives is not true freedom but a perception of freedom that has been created by the suppression of individuality and a mechanization of social necessities (Marcuse, 2002: 6). In order to combat this, 'new modes of realization are needed, corresponding to the new capabilities of society' (Marcuse, 2002: 6).

By drawing on these theoretical concepts of the factors that Marcuse argues contribute to the 'mechanics of conformity', the data from both the students and the educators' experiences of DLE can be analysed to evaluate whether the current provisions of DLE expediate the demise of critical or dialectical thinking. In addition, the evidence surfaced in the literature review demonstrated that digital literacy educational provisions have historically focused on teaching mechanistic skills, with paramount importance being placed on a student's ability to use these skills to become employable. Therefore, the data collected from the students, the educators and the educational policy makers can be evaluated to analyse whether critical rationality and dialectical thinking has been overpowered by administrative efficiency; creating a situation where 'mechanics of conformity' play a significant role in determining the current digital literacy educational provisions. Thus offering, an insight and understanding of the circumstances that shaped and informed these provisions.

Moreover, Marcuse suggests that, in order to realise these new modes of realisation the prevailing modes need to be negated. Therefore, the data can also be analysed with this concept in mind. In other words, this concept will be deployed to evaluate whether the prevailing modes of DLE have been subjected to negation so that current provisions consider new perspectives and new modes of realisation that include and correspond to the new capabilities of society.

## **5.4** Society of Reification

It is Marcuse's view that 'the distinguishing features of a human being are free and creative subjectivity' (Kellner, in Marcuse, 2002: 291-292), and that it is essential to 'understanding the essential features of the human being, to illuminate the potentialities that can be realized by individuals and the social conditions that inhibit or foster their development' (Kellner, in Marcuse, 2002: 126-127). Marcuse's key concept is that social conditions have a profound impact on an individual's development as a human being and that these social conditions can both foster and inhibit their development**.** Marcuse wrote an essay in 1963, *Obsolescence of the Freudian Concept of Man* (Kellner,1984: 238). It is in this essay that Marcuse tackles Freud's theoretical concept with regard to personality structures. Marcuse does this by situating Freud's theory within an historical context explaining that in light of the transition of a new social order:

> The father is no longer a dominant economic figure in the world of 'organized capitalism' and is replaced at home by the authority of the 'mass media, school and sports teams, gangs, etc' (5L, p. 47). The self immediately identifies with social ego-ideals and role models, and no longer forges its identity through battling its id impulses and superego parent figures. 'The ego shrinks to such an extent that it seems no longer capable of sustaining itself, as a self' (5L, p. 47). The result is a 'one dimensional static identification with the others and with the administered reality principle' (5L, p.47). Social controls are no longer internalized through the ingression of society into the mental structure of individuals' (5L, p. 54ff). but are embodied in the social apparatus and ideology which requires submission to its rules, dictates and institutions (5L, pp. 54ff). The result is 'a society of total reification' (ibid) where the individual's very gratifications, thoughts and behaviour are socially administered. (Kellner,1984: 239)

When you consider this concept and apply it to the contemporary social conditions, if we firstly accept that there is a new social order today, as there was when Marcuse wrote *Obsolescence of the Freudian Concept of Man*, one could apply the same thinking and theoretical perspective to the current social conditions and the effect the new social conditions have had on the development of the individual. For example, it can be suggested that the digital milieu and the digital technologies that are ubiquitous and pervasive have heralded a new era of civilisation. Digital tools or devices and the behemoth of the capitalistic system that we access through them have, one could argue, become an integral part of our socialisation. Moreover, digital technologies and the digital realm that they connect us to, has become the embodiment of the 'the social apparatus and ideology which requires submission to its rules, dictates and institutions' (Kellner,1984: 239). If, as argued by Marcuse, the transition has been made from the self no longer forging 'its identity through battling its id impulses and superego parent figures' (Kellner, 1984: 239) to the self now identifying with 'social ego ideals and role models', then this theoretical perspective could be aptly applied to the current social apparatus and ideologies that are imbued in digital technologies and the digital era. Essentially, the self is now subject to being forged by the rules, dictates and institutions of the digital era, and if this is the case it could be argued that there is now a new more pervasive influence to be considered; a new socially administered system that also dictates 'individual's very gratifications, thoughts and behaviour' (Kellner,1984: 239). Employing this theoretical perspective when analysing the data will allow for the analysis to evaluate whether DLE includes this perspective in relation to the social and cultural use of digital technologies. In other words, are students being taught about the undue influence digital technologies can have with regard to their own individual socialisation.

## **5.5** One-Dimensional Thought

Marcuse roots his concept of one-dimensional thought in Hegel's dialectical philosophy, in the respect that Marcuse is insistent that differentiating between existence and essence, fact and potential, and appearance and reality is of paramount importance. Marcuse argues that:

> One-dimensional thought is not able to make these distinctions and thus submits to the power of the existing society, deriving its view of the world and mode of behaviour from existing practices and modes of thought. (Kellner, in Marcuse, 2002: xxviii)

For Marcuse one-dimensional man and one-dimensional society are what he sees as a decline or erosion of individuality and that with this decline there is a cognitive price to pay which is, the inability 'to perceive another dimension of possibilities that transcend the one-dimensional thought and society' (Kellner, in Marcuse, 2002: xxviii). It could be argued that Marcuse is essentially reworking the Hegelian-Marxian theme of reification and alienation in the respect that, the individual is losing 'the power of comprehending and transforming subjectivity as it becomes dominated by alien powers and objects' (Kellner, in Marcuse, 2002: xxviii). For Marcuse, the discerning characteristics of a human being are free and creative subjectivity. Therefore, if an individuals' economic and social life is dominated by the apparatus of administered technical labour and one conforms to what are perceived as the presiding social norms, then any potentialities of individuality or self-determination are lost. Thus, for Marcuse one-dimensional man is 'alienated from the powers of being-a-self, one-dimensional man and thus becomes an object of administration and conformity' (Kellner, in Marcuse, 2002: xxviii-xxix).

The concept of 'one-dimensional thought' and the inability to differentiate between existence and essence, appearance and reality is of particular interest to the theoretical framework of this study. This concept will enable the data to be evaluated and analysed to explore whether DLE provisions provide students with the ability to differentiate between the essence and existence, appearance, and reality of digital technologies and the digital environment. Historical evidence suggests that DLE has focused on the mechanistic use of digital technologies and the digital environment. For Marcuse this mechanistic and superficial perspective would align with the concept of 'one dimensional thought' because DLE provisions would only be focusing on the existence and appearance of digital technologies and the digital environment, and not on the reality or essence of it. For example, digital technologies are not neutral artefacts, or tools that one has to learn how to use, but rather; they are artefacts that are imbued with ideologies that impact culture and society (Winner, 1980). As such,

by their very design they are imbued with the ideologies of their creators. Without this type of understanding about digital technologies an individual can only view and think about them in a one-dimensional way. Ergo, they do not have the ability to differentiate between existence and essence, appearance, and reality. The same principles can be applied to the digital environment. If an individual is only able to view the digital environment in a mechanistic or superficial way without understanding for example, that algorithms 'seal people into 'echo chambers' that close off access to alternative perspectives' (Hogan, 2019: 560). The power of the echo chamber or filter bubble is that when technology's role is to 'show you the world, it ends up sitting between you and reality, like a camera lens' (Pariser, 2011:13) this offers a multitude of opportunities to distort 'your perception of the world' (Pariser, 2011:13). Therefore, by using the concept of one-dimensional thought for the interpretivist analysis of the data it will allow for an evaluation that explores whether DLE is subjected to Marcuse's concept of one-dimensionality, devoid of dialectical thought, created by the submission to the 'existing society, deriving its view of the world and mode of behaviour from existing practices and modes of thought' (Kellner, in Marcuse, 2002: xxviii). In addition, this concept can be used to evaluate the extent administration, and superimposition has on the current provisions of DLE, and how influential the economic imperatives that have historically driven DLE provisions are. In addition, this concept will allow the data to be analysed to evaluate whether DLE is an object of administrative conformity that in turn teaches content that perpetuates and imbues this administrative conformity within students' perceptions of digital literacy. In other words, this concept will allow for the data to firstly be analysed to evaluate to what extent DLE has been influenced by the administrative conformity imposed by the creators of the digital devices, and secondly, whether this conformity permeates into teaching practices that foster and imbue the same perceptions of digital literacy within students.

## **5.6** Technical Apparatus of Production – Technological Rationality – Political Rationality

Marcuse's analysis focuses on advanced industrial societies where he views what he terms as 'the technical apparatus of production and distribution (with an increasing sector of automation)' (Marcuse, 2002: xlv). For Marcuse the 'technical apparatus of

production and distribution' are not viewed as separate instruments that can be secluded from social or political effects. They determine in a totalitarian fashion 'not only the socially needed occupations, skills, and attitudes, but also individual needs and aspirations' (Marcuse, 2002: xlv-xlvi). Marcuse is of the view that technology institutionalises more effectual and 'pleasant forms of social control and social cohesion' (Marcuse, 2002: xlvi), and suggests that these forms of control are in effect totalitarian in their characteristics. As such, technology can no longer be viewed as "neutral", and it cannot be separated or isolated from its use; 'the technological society is a system of domination which operates already in the concept and construction of techniques' (Marcuse, 2002: xlvi). In addition, Marcuse also suggests there is always a choice when a society organises the lives of its members, and the choices made are selected over other alternatives available within that particular historical timeframe. The choices are determined by 'the inherited level of the material and intellectual culture' (Marcuse, 2002: xlvi). Therefore, the dominant interests determine the choices, as Marcuse states: 'it anticipates specific modes of transforming and utilizing man and nature and rejects other modes' (Marcuse, 2002: xlvi). The powers that be, decide how man will be utilised and the decisions are usually arrived at in their favour:

> In the medium of technology, culture, politics, and the economy merge into an omnipresent system which swallows up or repulses all alternatives. The productivity and growth potential of this system stabilize the society and contain technical progress within the framework of domination. Technological rationality has become political rationality. (Marcuse, 2002: xlvii)

If you were to consider the digital capitalistic private companies as the technical apparatus in this scenario and recognise its untenable links with the social and political, then this theoretical concept can serve to analyse whether the digital capitalistic system dominates and determines the type of provisions currently in place for DLE.

## **5.7** Metaphysics Superseded by Technology

> In this technological world, Marcuse claims that metaphysics is superseded by technology, in that the previous metaphysical concept of subjectivity, which postulates an active subject confronting a controllable world of objects, is replaced by a one-dimensional technical world where "pure instrumentality" and "efficacy" of

> arranging means and ends within a pre-established universe is the "common principle of thought and action." (Kellner, in Marcuse, 2002: 252-253)

It is suggested that this view could be used to investigate whether metaphysics has indeed been superseded by technology, and to what degree DLE provisions encompass the metaphysical perspective or analysis of the essence of technology. This is very similar to the Heideggerian viewpoint in the respect that, we view technology superficially in the anthropological and instrumentalist way, as a means to an end and a human activity without exploring it in a metaphysical way and considering what the essence of technology is (Heidegger, 1977: 5). This concept could be deployed to inform an analysis of digital literacy education to establish whether digital literacy is only viewed in the context of learning how to proficiently use digital technology as a means to an end. This perspective has been surfaced in the research conducted in the literature review that indicated that digital literacy educational provisions have focused heavily on purely mechanistic skills. By drawing on this theoretical concept the data can be analysed to evaluate whether digital literacy educational provisions teach students to evaluate and critically analyse their relationship with digital technologies and the digital environment.

## **5.8** False Needs

In Marcuse's analysis and critique, he makes distinctions between true and false needs and suggests that false needs are 'superimposed upon the individual by particular social interests in his repression' (Marcuse, 2002: 7). The 'prevailing needs to relax, to have fun, to behave and consume in accordance with the advertisements, to love and hate what others love and hate, belong to this category of false needs' (Marcuse, 2002: 7). Marcuse expands on this further and states that 'such needs have a societal content and function which are determined by external powers over which the individual has no control' (Marcuse, 2002: 7). Marcuse determined that in the 1950s and 1960s these false needs were created by external powers so that individuals and society could be repressed not only unwittingly but also devoid of any control. If you were to take the position that digital literacy is a necessary requirement, and that it has become an essential need, albeit a false need in Marcusian terms. In the digital milieu individuals have to achieve a basic level of digital literacy in order to fully function

within the society that the digital era has created. It is further suggested that this need has become more intensified and necessary since the 2020 COVID-19 crisis. If we are to look at this further, it can be argued that external powers have created the digital era, and as such, in Marcuse's view created this false need that has a societal content and function. Marcuse describes "false needs" in the following terms:

> We may distinguish both true and false needs. "False" are those which are superimposed upon the individual by particular social interests in his repression: the needs which perpetuate toil, aggressiveness, misery, and injustice. (Marcuse, 2002: 7)

Marcuse offers the following examples that demonstrate how effective and to what extent the ruling social establishments are at preserving the hegemony of the needs and satisfaction within the population:

> If the worker and his boss enjoy the same television program and visit the same resort places, if the typist is as attractively made up as the daughter of her employer, if the Negro owns a Cadillac, if they all read the same newspaper, then this assimilation indicates not the disappearance of classes. (Marcuse, 2002: 10)

Marcuse is demonstrating that there is no conflict or contradiction in individuals needs and satisfaction, that what has happened is conflict and contradiction have been eliminated so that the population share the same needs and satisfactions. Marcuse is of the opinion that, in the most advanced contemporary societies the social needs are so effectively transplanted into the individual needs 'that the difference between them seems to be purely theoretical' (Marcuse, 2002: 10). Marcuse offers this question to exemplify this: 'Can one really distinguish between the mass media as instruments of information and entertainment, and as agents of manipulation and indoctrination?' (Marcuse, 2002: 11). For Marcuse one of the troublesome aspects or recognised tendencies of advanced industrial civilisations is 'the rational character of its irrationality' (Marcuse, 2002: 11). These are productive and efficient societies, with an enormous capacity to increase and disseminate comforts, where destruction is viewed as construction, waste is turned into need. In this respect, the object world becomes an extension of one's mind and body, and as such alienation or the very idea of alienation becomes questionable, Marcuse states that:

> The people recognize themselves in their commodities; they find their soul in their automobile, hi-fi set, split-level home, kitchen equipment. The very mechanism which ties the individual to his society has changed, and social control is anchored in the new needs which it has produced. (Marcuse, 2002: 11)

Therefore, it is suggested that today in the digital era the individual is tied to society by digital devices, and this is the mechanism by which social control can be anchored in the new need that always being connected via digital devices has produced in society. Zuboff references Jean Paul Sartre's play when she states that the digital era has plunged 'us into an intolerable world of "no exit"' (Zuboff, 2019: 446). Essentially inferring that we spend so much time in the digital world wondering whether someone approves of us that we do not even realise we have become an object and lost our subjectivity. As such, we have lost our freedom to think, to act, which reduces us to an object that needs someone else's stamp of approval. What Sartre means in his play is not that other people are bad *per se*, but that a person requires validation from others to such an extent that they are no longer a subject but an object. Is this awareness factored into digital literacy educational provisions? Studies have shown the degree of anxiety that is experienced by users when they are unable to connect to the digital environment. For example, an international study was conducted with a thousand teenagers throughout ten countries and five continents, the participants were 'asked to abstain from all digital media for a mere twenty-four hours' (Zuboff, 2019: 445). The results of the study found that the level of anxiety experienced by the teenagers during this period of abstinence was found to be alarming, a level that 'even the study's directors found disquieting' (Zuboff, 2019: 445). One American student whimpered the following, '"I went into absolute panic mode"' (Zuboff, 2019: 445). One of the directors of the project stated, 'even the youngest girls in this cohort feel pressure to create a "personal brand" the ultimate in self objectification, as they seek reassurance "in the form of likes and shares"' (Zuboff, 2019: 448). When exploring the awareness of the parents, a UK medical specialist commented on the young people she dealt with in her practice: '"people are growing up to want to be influencers and that is now a job role...I am not sure if parents are fully aware of the pressure people face..."' (Zuboff, 2019: 448). Digital technologies and the digital environment have become an integral need for society and individual happiness yet embedded in this is a form of control,

controlling our time our attention for others to benefit, even though we believe it to be a benefit to ourselves.

Therefore, deploying this concept of "false needs" in the analysis would serve to identify whether the current provisions of DLE are only satisfying "false needs" that have been superimposed by certain social interests in order to perpetuate toil. In other words, it will allow the analysis to evaluate the data to explore whether the current DLE provisions primary focus is on preparing students for toil i.e., employment, essentially "false needs" and not for the social and cultural aspects that are obviously so impactful on an individual's minute to minute life.

To explore the concept of "false needs" further, Marcuse is of the notion that in order to achieve liberation then one has to firstly recognise that one is in a position of servitude. However, the ability to achieve this recognition is 'always hampered by the predominance of needs and satisfactions which, to a great extent, have become the individual's own' (Marcuse, 2002: 9). It can be argued that within the digital society we are all in a state of servitude to the economic needs of the digital apparatus. For example, a '2018 Pew Research reported that nearly 40 percent of young people ages 18-29 report being online "almost constantly"' (Zuboff, 2019: 447) while '95 percent of Generation Z use smartphones, and 45 percent of teens say they are online "on a near constant basis"' (Zuboff, 2019: 447). Essentially, it is the forces of capital that dictate and perpetuate what has become a compulsion to being constantly online (Zuboff, 2019: 551). In order to recognise this situation and become liberated, not in terms of physical freedom from the system itself, but in terms of the freedom that is attained in our recognition that we are enslaved within the system; a position which is currently masked by the way in which the system provides satisfaction of the "false needs" it has created within us. It is argued that these "false needs" that are now integral to the smooth functioning of our everyday lives are perceived as our own individual needs. As Marcuse suggests, just because we perceive these needs to be our own does not negate the position of servitude that we are in. Therefore, by adopting this concept and viewing the data collected in this study through this lens, it will allow the analysis to explore whether this understanding of our position of servitude in reference to the digital environment is recognised and included within DLE provisions.

## **5.9** From Negative to Positive thinking - Technological Rationality and the logic of domination

Negative thinking, which has been central to logic and Reason for centuries, has been changed significantly in advanced industrial societies. For Marcuse, the link that still remains between the pre-technological and the technological society through the historical continuum is the domination of man by man. However, in technological societies the means or methods by which man dominates man has changed. In technological societies this domination has generated a higher rationality – and the result is a society where the hierarchal structure remains intact and the exploitation of natural and mental resources is increased and has become more efficient. In addition, the distribution of the benefits of this exploitation has expanded and is apparent on an even-larger scale. Marcuse cites the productive apparatus as the instigation for this new enslavement of man, and notes that rather than offering more freedom to the working classes, the technological era has created a productive apparatus that has perpetuated man's struggle for existence. Marcuse then questions this situation and poses the notion that the rationality of this system is not just flawed, but wrong, wrong in the way that men have organised societal labour. For Marcuse this wrong organisation of society warrants further explanation especially 'in view of the situation of advanced industrial society' (Marcuse, 2002: 148). For Marcuse, the negative and transcending social forces present in a pre-technological society have been integrated into this newly established system which in turn has created a new social structure. It is this transformation of negative into positive that Marcuse identifies as a contributing factor to the problem of what he terms as the wrong organisation of society. Furthermore, Marcuse views this wrong organisation of society and social labour as becoming totalitarian in nature but not from external forces of might and oppression but on internal grounds where any alternatives are refuted. Marcuse acknowledges that this acceptance is quite natural due to the tangible benefits of this system, and the only historical alternative would be communism – a system that was seen as repellent. However, Marcuse also states that this sense of naturality attributed to accepting the rationality of this system is only possible if thought and behaviour is either unwilling or:

> Perhaps incapable of comprehending what is happening and why it is happening, a mode of thought and behaviour which is immune

> against any other than the established rationality. (Marcuse, 2002: 148)

If this concept is applied to analysing the data about DLE then it would allow for an analysis that considers whether there is an accepting mode off thought that is incapable or unwilling to look beyond the established rationality of the current provisions of DLE; this could go some way to explaining and understanding why certain aspects are included in DLE provisions and others are not. This concept could also apply to the digital environment itself – and the data could be analysed from the perspective of both student and educator to assess their understanding of the digital productive apparatus and the system it has established. That is, the digital world that in many ways mirrors the tendencies and rationality that Marcuse saw emerging in advanced industrial societies where individuals failed to comprehend what was happening or why. Marcuse attributed this loss of comprehension and understanding to the loss of negative thinking and the integration into the system which rendered thought and behaviour immune to any other than the established rationality. For Marcuse, this was what he termed as a "false consciousness" which had 'become embodied in the prevailing technical apparatus which in turn produces it' (Marcuse, 2002: 148).

Marcuse goes on to analyse how the scientific mind plays a role in this scenario from the perspective that society had reproduced itself 'in a growing technical ensemble of things and relations which included the technical utilization of men' (Marcuse, 2002: 149). Scientific management and division of labour resulted in far greater productivity of the economic political and cultural enterprises. As well as producing a higher standard of living, it also managed to manipulate or indoctrinate modes of thought and behaviour that justified the most destructive and oppressive features of the enterprises; resulting in scientific rationality, and as such this manipulation of thought and behaviour melded together to form a new type of social control. Thus, 'the struggle for existence and the exploitation of man and nature became even more scientific and rational' (Marcuse, 2002: 149). This rationale was then able to justify and absolve 'even the most destructive and oppressive features of the enterprise' (Marcuse, 2002: 149). Marcuse poses the notion that scientific rationale which quantified nature and explicated it 'in terms of mathematical structures, separated reality from all inherent

ends and, consequently, separated the true from the good, science from ethics' (Marcuse, 2002: 149).

Therefore, if scientific rationality separated true from good and science from ethics as Marcuse suggests, this concept could be deployed in the analysis. Firstly, to ascertain whether DLE provisions include an ethical dimension. Secondly, to evaluate whether the omission of ethics from DLE is in part due to the notion that computers and technology have been seen from a scientific rational perspective. Thus, if you consider this concept and apply it to the analysis of the data, it could go some way to explaining the historical lack of social, cultural, and ethical aspects in the development of IT, ICT, and in turn determine whether these aspects are now included in DLE provisions:

> An electronic computer can serve equally a capitalist or socialist administration; a cyclotron can be an equally efficient tool for a war party or a peace party. This neutrality is contested in Marx's controversial statement that the "hand-mill gives you society with the feudal lord; the steam-mill society with the industrial capitalist." [2]And this statement is further modified in Marxian theory itself: the social mode of production, not technics is the basic historical factor. However, when technics becomes the universal form of material production, it circumscribes an entire culture; it projects a historical totality—a "world." (Marcuse, 2002: 157 -158)

Neil Postman also discusses the notion that at the start of a new technology's journey, the creators of the technology are more often than not unable to foresee the future cultural and societal implications or consequences that may arise. Postman offers the example of the monks who invented the clock in order to 'devote themselves more rigorously to God; it ended as the technology of greatest use to men who wished to devote themselves to the accumulation of money' (Postman, 1992: 232-234). Postman notes that 'Thamus understood well the limitations of inventors in grasping the social and psychological—that is, ideological—bias of their own inventions' (Postman, 1992: 241-242). Therefore, it is difficult to argue and contest the notion that technology is not neutral. Moreover, it is suggested that this is particularly significant

[2] The Poverty of Philosophy, chapter II, "Second Observation"; in: A Handbook of Marxism, ed. E. Burns, New York, 1935, p. 355.

in the digital era and pertinent to this study as it demonstrates the applicability and contemporary relevance of Marx and Marcuse's theories. Furthermore, if you view the digital world and recognise its global ubiquity, then it is difficult to argue that this particular means of production, (data production) which is essentially the raw material of man's experiences, desires etc, has in many ways circumscribed an entire culture, and projected its historical totality to create a new world. Therefore, when this concept is deployed within the analysis of the data, it will serve to evaluate whether DLE includes provisions that teach students to recognise that digital tools and devices are not neutral artifacts, but technologies that are imbued with ideologies that have created a new world and a different type of society.

## **5.10** Dialectical Thinking – Negative Thinking – Positive Thinking

'The world of immediate experience—the world in which we find ourselves living—must be comprehended, transformed, even subverted in order to become that which it really is' (Marcuse, 2002: 127). In essence, this concept when applied to the digital environment supports the notion that, we cannot fully understand or comprehend what the realities of our immediate experiences are without transforming, subverting, and comprehending what the digital world really is, and how it affects our social and cultural experiences. Therefore, this concept can be applied to the analysis in order to evaluate whether DLE provisions include this perspective of the digital world. In other words, do DLE provisions offer students a subverted perspective of the digital environment that allows them to see the digital world as it really is?

Marcuse argues that the classical model of dialectic thought, a conflict that can be traced back to the very origins of philosophical thought itself 'in the contrast between Plato's dialectical logic and the formal logic of the Aristotelian Organon' (Marcuse, 2002: 128), may serve to ready the way and lay the foundations for 'an analysis of the contrasting features of technological rationality' (Marcuse, 2002: 129). Classic Greek philosophy poses that the predominant cognitive faculty required to distinguish what is true and what is false is Reason, as evidenced by Marcuse in the following:

> In classical Greek philosophy, Reason is the cognitive faculty to distinguish what is true and what is false insofar as truth (and falsehood) is primarily a condition of Being, of Reality—and only on this ground a property of propositions. (Marcuse, 2002: 129)

Marcuse argues that 'true discourse, logic, reveals and expresses that which really is—as distinguished from that which appears to be (real)' (Marcuse, 2002: 129) and that 'if man has learned to see and know what really is, he will act in accordance with truth' (Marcuse, 2002: 129). This concept can be used to inform an analysis of the discourses surrounding DLE and therefore, evaluate to what extent these discourses reveal the reality of the digital world as opposed to that which appears to be real. To further elaborate on this concept, Marcuse argues that ordinary discourse has been affected by the language used by the media, the political realm, and advertisements. As a result, language too has become one-dimensional. Marcuse also argues that linguistic analysis has been affected by this one-dimensionality by explaining that the philosophical analyses are not considered. Therefore, for Marcuse the deeper meaning is not surfaced. The therapeutic aspect that he discusses relates to the notion that ordinary discourse, or the everyday language has been constricted. Therefore, the limitations of this everyday discourse serve to act as an antidote to possible variations of meaning so that there is a universal understanding of terms and words that help to maintain and constrict their meaning. To interpret the meaning of words to mean anything other than meanings prescribed by the system through mediation, such as media, politics, and advertisements, is seen by the system as a type of sickness that can cause confusion. Therefore, there is a therapeutic element to this limitation and redefinition of thought through language as Marcuse states:

> linguistic analysis claims to cure thought and speech from confusing metaphysical notions—from "ghosts" of a less mature and less scientific past which still haunt the mind although they neither designate nor explain. (Marcuse, 2002: 174)

Marcuse then cites Hegel's analysis of the '"here" and "now" in Hegel's Phenomenology, or (*sit venia verbo!*)' (Marcuse, 2002: 185). Marcuse states that this analysis 'uncovers the *history* in everyday speech as a hidden dimension of meaning – the rule of society over its language' (Marcuse, 2002: 186). Within these analyses the discovery is made that surfaces the limitations that are imposed on the definition and meaning of 'the terms which society imposes on discourse, and on behaviour' (Marcuse, 2002: 186). For Marcuse, the historical dimension cannot be elucidated by analyses that are orientated on the 'reified universe of everyday discourse' (Marcuse,

2002: 186). By analysing discourse in this way, the analysis is only able to function and evaluate 'in terms of the established usage' (Marcuse, 2002: 186). Therefore, the classification and distinguished meanings remove contradictions, illusions, and transgressions from thought and speech. Once these codes or conventions are accepted 'it constitutes an empirical *a priori* which cannot be transcended' (Marcuse, 2002: 187). By deploying this concept in the analysis of the data collected in this study the discourses surrounding DLE can be evaluated to assess whether they are bound by accepted codes and conventions based on knowledge that is independent of experience. Marcuse expands on the result of this radicle acceptance in terms of how this translates into behavioural and experiential impact arguing that, if an individual can only experience and express that which is literally given to him and is therefore in possession of only the facts and not factors, then this constitutes a mutilation of the individual and the 'acceptance of the empirical violates the empirical' (Marcuse, 2002: 187). In this scenario an individual's behaviour is one-dimensional as a result of this manipulation. Applying this concept to the analysis of the data could serve to elucidate whether DLE provisions offer only facts and not factors resulting in an individual's behaviour becoming one-dimensional manipulated behaviour:

> By virtue of the factual repression, the experienced world is the result of a restricted experience, and the positivist cleaning of the mind brings the mind in line with the restricted experience. (Marcuse, 2002: 187)

In the same respect, if there is a factual repression of the digital environment that is perpetuated through DLE provisions then this would, in effect, restrict and constrict the experience of a student so that they only experience and view their world in this restricted way:

> In this expurgated form, the empirical world becomes the object of positive thinking. With all its exploring, exposing, and clarifying of ambiguities and obscurities, neo-positivism is not concerned with the great and general ambiguity and obscurity which is the established universe of experience. And it must remain unconcerned because the method adopted by this philosophy discredits or "translates" the concepts which could guide the understanding of the established reality in its repressive and irrational structure—the concepts of negative thinking. (Marcuse, 2002: 187)

Marcuse argues that positivism has essentially discredited and eliminated negative thinking (Marcuse, 2002: 187). The demise of negative thinking results in the individual being only able to think or speak in what Marcuse terms as a one-dimensional manner (Marcuse, 2002: 187). Marcuse goes on to discuss and defend negative thinking and criticise positive thinking. Marcuse views positive thinking as the therapeutic character of philosophical analysis. For Marcuse this aspect has been strongly emphasised so that the patient is cured from 'illusions, deceptions, obscurities, unsolvable riddles, unanswerable questions' (Marcuse, 2002: 187). Marcuse then poses what is essentially a rhetorical question: Who is the patient? Which he immediately answers by stating that the patient is 'apparently a certain sort of intellectual whose mind and language do not conform to the terms of ordinary discourse' (Marcuse, 2002: 187). Marcuse is of the opinion that:

> The philosopher is not a physician; his job is not to cure individuals but to comprehend the world in which they live— to understand it in terms of what it has done to man, and what it can do to man. (Marcuse, 2002: 188)

Essentially Marcuse is criticising the neo-positivist critique and argues that it is focused on a notion of exactness that is 'either that of formal logic or empirical description' (Marcuse, 2002: 188). For Marcuse this critique directs its efforts against metaphysical notions and states that:

> The objects of philosophic thought are related to a consciousness for which the concrete qualities enter into the concepts and into their interrelation. The philosophic concepts retain and explicate the pre-scientific mediations (the work of everyday practice, of economic organization, of political action) which have made the object-world that which it actually is—a world in which all facts are events, occurrences in a historical continuum. (Marcuse, 2002: 190)

Marcuse's explanation of how philosophical thought aids an individual in comprehending and understanding the world in which they live in, 'in terms of what it has done to man, and what it can do to man' (Marcuse, 2002: 188) demonstrates why Marcuse's theory of advanced industrial societies (developed by merging critical philosophy and critical theory) is appropriate for the study. The philosophical concepts that explicate the world of everyday practice, of economic organisations and of

political action that make the world what it actually is - a world in which all facts are events, occurrences, in a historical continuum. These are concepts that can be used to analyse the data gathered in this study in a way that transcends the empirical and explicates the findings of the data from a critical philosophical perspective. That is, how the everyday practice of economic organization, and political action has made the object world what it is, or in the case of this study, has made DLE what it is.

For Marcuse, the philosophic universe still 'continues to contain "ghosts," "fictions," and "illusions"' (Marcuse, 2002: 190). The acceptance of these characteristics is more rational that their denial from the perspective that these concepts are able to 'recognize the limits and the deceptions of the prevailing rationality' (Marcuse, 2002: 191). Marcuse further notes that the process of civilization has resulted in the invalidation of the myth, and this he states, could almost be a definition of progress. In addition, the process of civilisation 'the myth of the Golden Age and the Millennium is subjected to progressive rationalization' (Marcuse, 2002: 193). Marcuse explains this by stating that in the 19th century:

> The theories of socialism translated the primary myth into sociological terms—or rather discovered in the given historical possibilities the rational core of the myth. (Marcuse, 2002: 193)

However, in the contemporary society of the 1960s a reverse movement had occurred. For example:

> The reality of the labouring classes in advanced industrial society makes the Marxian "proletariat" a mythological concept; the reality of present-day socialism makes the Marxian idea a dream. (Marcuse, 2002: 193)

Marcuse argues that this reversal is as a result of contradictions between theory and facts. Critical theory is speculative and unscientific and derives its specific characteristics from its concepts. It is these concepts 'that designate and define the irrational in the rational, the mystification in the reality' (Marcuse, 2002: 193). It is this mythological quality of these concepts that is able to reflect the mystifying qualities 'of the given facts – the deceptive harmonization of the societal contradictions' (Marcuse, 2002: 193). Furthermore, the technical achievements of

advanced industrial society and the 'effective manipulation of mental and material productivity have brought about a shift in the locus of mystification' (Marcuse, 2002: 193). Marcuse further suggests that it is now the rational where he sees this mystification being most effective rather than the irrational, and the 'growth of repression in contemporary society manifested itself, in the ideological sphere' (Marcuse, 2002: 194). Regimes rejected their 'irrational "philosophies" by the all-out technical rationalization of the apparatus' (Marcuse, 2002: 194), and 'it was the total mobilisation of the material and mental machinery which did the job and installed its mystifying powers over the society' (Marcuse, 2002: 194). The impact of this on the individual was that they were unable to see beyond or behind the facade of the machinery – 'those who used it, those who profited from it, and those who paid for it' (Marcuse, 2002: 194). This concept is very apt when looking at the digital environment as it could be argued that this notion of individuals being incapable of seeing behind the machinery is more prevalent today than it was in 1964 when Marcuse wrote *One-Dimensional Man.* When applied to the digital environment and more specifically to DLE, this concept will allow the data to be analysed to evaluate whether DLE equips students to see beyond the digital façade; to see those who profit from it, and those who pay for it.

Marcuse also suggests that in the 1960s mystifying elements could also be identified in publicity, propaganda, and politics, and that what he terms as magic and witchcraft 'and ecstatic surrender are practiced in the daily routine of the home, the shop, and the office, and the rational accomplishments conceal the irrationality of the whole' (Marcuse, 2002: 194). This in turn promotes and even demands what Marcuse views to be irrational behaviour which accepts this irrationality. For Marcuse truly rational behaviour would be to refuse to go along with this, the Great Refusal. This new mystification, or the new location of mystification, has for Marcuse turned the irrational into the rational. Marcuse then criticises empirical sociology and political science for not being rational enough as they are for him divorced from the 'truly concrete context which makes the facts and determines their function' (Marcuse, 2002: 195). The context of the theory Marcuse has developed in his analysis of *One-Dimensional Man* is far greater than for example, 'the plants and shops investigated, of the towns and cities studied' by empirical sociology and political science (Marcuse, 2002: 195). Marcuse's analysis has a function that is more real in the sense that what

he is evaluating is what ‘creates and determines the facts investigated, polled and calculated’ (Marcuse, 2002: 195), and he states that, in order to give real context; to establish; to evaluate; how and why ‘particular subjects obtain their real significance is definable only within a *theory* of society’ (Marcuse, 2002: 195). This explanation of Marcuse’s theory of society further substantiates the suitability of the theories developed in *One-Dimensional Man* as the theoretical framework for this study. Marcuse’s ‘theory of society’ is able to identify the factors that make the facts which goes beyond any analysis that theories such as political science, or empirical sociology can offer, and give real context to establish or evaluate a situation as Marcuse states:

> The factors in the facts are not immediate data of observation, measurement, and interrogation. They become data only in an analysis which is capable of identifying the structure that holds together the parts and processes of society and that determines their interrelation. (Marcuse, 2002: 195)

## **5.11** Marcuse - Historical Academic Influences

German philosopher Herbert Marcuse was born in Berlin in 1898 and his academic life began in 1918; he attended four semesters in Berlin and four in Freiburg where he studied German literary history as his main subject, and ‘philosophy and political economy as subsidiaries’ (Marcuse, 1922: 344). Marcuse was from a Jewish family and his early education was based on the ‘humanistic, civic, and religious ideas of the Prussian and Jewish cultures’ (Katz, 1979: 12). Although Marcuse’s early public Gymnasium education focused on the German classics, their relevance was increasingly undermined by Marcuse who was attracted ‘to the writers of the French avant-garde (especially Gide, the esoteric works of Stefan George and his circle, and the early novels and stories of Thomas and especially Heinrich Mann)’ (Katz, 1979: 12). Marcuse’s interests had essentially surpassed that of the content presented to him in the formal educational system - to satiate these interests he negotiated a deal with his father whereby he was ‘permitted to forego his place at the family’s sumptuous supper table in return for money with which to buy books’ (Katz, 1979: 12). Katz describes this scenario as an early link for Marcuse with the ‘Marxian proletariat: he was indeed driven to his work “by the lash of hunger”’ (Katz, 1979: 12). Marcuse’s father Carl Marcuse had come from modest beginnings, and it is interesting to note

that his name ‘is genealogically identical to that of Karl Marx’ (Katz, 1979: 12). Carl Marcuse had managed to raise his economic status by flourishing in the German textile industry, and ‘prudently transferred his holdings to real estate before the war’ (Katz, 1979: 12). All indications were that Marcuse would be able to continue to enjoy the promise of a secure and comfortable upbringing, however, the impact of the war meant that Marcuse’s Gymnasium studies were brought to an abrupt end in 1916 (Katz, 1979: 12). Marcuse was swiftly drafted, and Katz suggests that ‘his late-night readings of the European avant-garde’ (Katz, 1979: 12) affected his eyesight to such an extent that he spent ‘his entire military service in the homeland, mostly in Berlin where he managed to secure permission to attend lectures at the university, while still on active duty’ (Katz, 1979: 12). During his time in service, Marcuse witnessed the obscenely visible difference and privileges enjoyed by the upper strata of the military, and the profiteering in the elite civilian circles, both being conditions cited as the predominant catalysts for the ‘the wave of soldiers’ and sailors’ revolts which swept across Germany from the North Sea to Bavaria in the first week of Nov 1918’ (Katz, 1979: 13). A year before this, Marcuse ‘joined the conservative “Majority” wing of the Social Democratic Party’ (Katz, 1979: 13). They were not the most radical of parties, and it is noted that Marcus’s initiation into politics was a gradual one, as Katz states, coming from a middle-class family Marcuse had to break away from his middle-class roots to be able to identify with a working-class political party. Marcuse’s family showed disdain for working class political positions, not because of the politics that they stood for, but ‘more out of class snobbery’ (Katz, 1979: 13). Marcuse, however, did break away from his middle-class past; he read *Vorwarts* a newspaper published by the Social Democratic Party of Germany but, ‘he was not anything like a party activist’ (Katz, 1979: 13). Katz suggests that Marcuse’s political position indicated that he could no longer ‘see his experience in purely individual terms’ (Katz, 1979: 13), and as such increasingly engaged in political discussions with fellow soldiers and was soon elected ‘to represent the newly-formed Soldiers' Council in the northern working-class suburb of Berlin-Reinicke’ (Katz, 1979: 13). It is noted that, Marcuse’s election was not so much due to his political sophistication or experience, but more because of the naivete of his comrades. However, the fact remains that Marcuse found himself ‘as a soldier, a socialist, and an elected delegate to the Berlin Soldatenrat’ in the political storm-centre of the country (Katz, 1979: 13).

This German Revolution, ‘or, as Max Weber put it, “the enormous collapse which is customarily called the Revolution,” was a short-lived affair for Marcuse’ (Katz, 1979: 14). Although he did attend meetings, rallies, and street demonstrations he was discharged in the September (Katz, 1979: 14). Marcuse was becoming disillusioned, and the abortive Revolution did not encourage Marcuse into political life but propelled him out of it (Katz, 1979: 14). Katz also notes that there was one episode that resonated with Marcuse, and it would be one that would continue to do so throughout his life. The circumstances surrounding this episode are as follows: There was an Independent Socialist faction in Munich led by a ‘visionary poet and political idealist Kurt Eisner’ (Katz, 1979: 14). Eisner stepped into a temporary ‘political vacuum and proclaimed a Bavarian Socialist Republic’ (Katz, 1979: 14). Eisner was eventually assassinated and eulogized as a ‘“dreamer,” and at the same time a tireless student of reality’ (Katz, 1979: 14). Marcuse became an admirer of the Bavarian Socialist Republic and linked them and their ideals with the ‘most progressive of the tendencies he saw during the May-June events of Paris, a half-century later’ (Katz, 1979: 14).

The events that had transpired during his time in the military had caused Marcuse to develop quite a radical stance in his questioning ‘of the social and cultural foundations of bourgeois society, but he was less certain of how this was to be translated into political action’ (Katz, 1979: 14), and by March 1919 when 1,200 people were left dead in the streets of Berlin after the last desperate rising of the opposition, Marcuse ‘had already quit the party in disgust’ (Katz, 1979: 14). It was at this point that Marcuse returned to his studies and ‘allowed the question of political practice to lapse’ (Katz, 1979: 14). Initially, he spent two years at the Humboldt University in Berlin, however he found that this institution was ‘too politically and intellectually confining’ (Katz, 1979: 14). Marcuse ended his studies with Humboldt University and enrolled with the ‘Albert- Ludwigs University in Freiburg’ (Katz, 1979: 14).

*University Education and Academic Influences*

Marcuse’s first love was modern European literature, and he prepared his doctoral dissertation within this faculty. The focus of his dissertation was on the German Kunstlerroman (artist’s novel) and ‘the possible accommodation between the artistic existence and the mundane life-forms of the surrounding world’ (Katz, 1979: 14). The theories he would draw on when conducting this work were ‘early (pre-Marxist)

literary studies of Lukacs and, above all, the aesthetics of Hegel' (Katz, 1979: 14). The dualism that existed here Marcuse interpreted in two ways, he saw the existence of this dualism as a 'symptom of a reality estranged from its own potentialities' and as a 'a concrete anticipation of the negation and transcendence of this estrangement' (Katz, 1979: 14). It is in the detailed textual studies of Marcuse's dissertation that he identified two literary methods of wrestling with the friction or antagonism of 'Kiinstlertum and Biirgerl the "realistic" and the "subjectivistic," the practical and the poetic transformation of the prosaic reality of everyday life' (Katz, 1979: 14/15). Marcuse's intellectual development and the influences that inspired him to write his later works can be seen in his doctoral thesis (Katz, 1979: 15). For example, Marcuse's dissertation implicitly critiques the "bourgeois way of life" and although this critique is not 'an explicit critique of the capitalist mode of production that sustains it' (Katz, 1979: 15), Marcuse's idea of the 'aesthetic as a transcendent standard of criticism already suggests the course of his later intellectual development' (Katz, 1979: 15).

Late in 1922 Marcuse returned to Berlin and it was here 'he began to follow Lukacs' path out of Hegelian literary criticism to Marxist political criticism' (Katz, 1979: 15). However, this was not a linear shift but one that was arrived at by his experience of Berlin's experimental culture and his publishing venture '*Das Dreieck*, a three-cornered expressionist monthly with a diffusely leftist stance' (Katz, 1979: 15). During these years he supported himself and his wife through his partnership in a Berlin Antiquariat, (A second-hand bookstore). He voted communist and privately studied 'Marx, Freud, phenomenology, and Gestalt psychology' (Katz, 1979: 15). In 1927 Heidegger's *Being and Time* was published, and this work proved to be significant to Marcuse's intellectual development. Marcuse studied Heidegger's publication line by line and identified what he believed to be the 'missing dimension of Marxism' (Katz, 1979: 15). *Being and Time* had such a profound effect on Marcuse that he left Berlin in 1928 to work with Heidegger in Freiburg (Katz, 1979: 15).

Marcuse's time with Heidegger was to be short lived, as only four years later in 1934 Marcuse and his family found themselves in exile; Germany's experiment in democratic rule lay in ruin and Hitler had been sworn in as Chancellor on 30th January 1933 (Katz, 1979: 15). It is suggested that the confusion and uncertainty experienced during the late years of the Weimar Republic was reflected in the German intellectual

milieu. ‘Marxism appeared to have reached an impasse’ (Katz, 1979: 15), from the perspective that it had failed to offer ‘theoretical guidance to German socialism in the post-war decade’ (Katz, 1979: 15), and at the same time ‘academic philosophy appeared to be equally immobilized’ (Katz, 1979: 15). It is also suggested that a contributing factor to the immobilisation of academic philosophy was the superfluous success of the natural sciences which resulted in academic philosophy aspiring:

> Either toward scientific rigor (logical empiricism) or engaged in a head long flight from it (Lebensphilosophie and certain obscurest currents of neo-idealist metaphysics). (Katz, 1979: 15)

Katz notes that elements of the dominant neo-Kantian schools served both tendencies (Katz, 1979: 15). However, it would be the publication of Marx’s 1844 Manuscripts that revealed to Marcuse that Marx had ‘constructed the critique of political economy upon ontological foundations’ (Katz, 1979: 16). This revelation served to provide Marcuse with the confirmation that he was vindicated in ‘his belief that philosophy could indeed provide the basis for a truly radical theory of revolution’ (Katz, 1979: 16).

Marcuse went on to write *Hegel’s Ontology and the Theory of Historicity* (1932) a work that as far as Marcuse was aware Heidegger never read (Katz, 1979: 16). However, it was read by Theodore Adorno, who at the time, rebuked Marcuse and expressed the view that he believed Marcuse should not have included this ontological perspective in this work. Despite this critique, Marcuse’s work had served to catch the attention of Adorno and his colleagues at the Institute of Social Research; and their interest in him would prove to be favourable for Marcuse’s academic career (Katz, 1979: 16). The Institute’s interest in Marcuse came at the same time as the Nazi’s were preparing to take over and determine the fate of Germany. Marcuse being both Jewish and a Marxist had no future as an academic in Germany. The Institute of Social research ‘had been preparing its evacuation since 1931’ (Katz, 1979: 16) and ‘Marcuse and his family joined them in New York- via Zurich, Geneva, and Paris’ (Katz, 1979: 16), and took out American Naturalization papers on Independence Day 1934 (Katz, 1979: 16). Marcuse’s relationship with Heidegger, was not as personal as the relationship Marcuse had fostered with Husserl, so when Heidegger joined the Nazi

Party in 1933, Marcuse and his family had already been in safe exile for several months. Katz suggests that when Marcuse received the news that Heidegger had joined the Nazi party it came as a shock to him (Katz, 1979: 16). Marcuse retained a formal and cordial relationship with Heidegger, but as his relationship with Husserl was more personal it was likely that Husserl would have 'interceded on Marcuse's behalf to secure his appointment to the inter-disciplinary Frankfurt Institute for Social Research' (Katz, 1979: 16).

The exiled Institute found its new home at Columbia University and their focus 'was on the relation between totalitarianism and its liberal past in the passage of European capitalism into its monopolistic stage' (Katz, 1979: 16). Marcuse's focus as a philosopher concentrated on the question '"did intellectual culture prepare its own liquidation"' (Katz, 1979: 16). His investigation of the:

> Distinguished tradition of Enlightenment liberalism indeed revealed its defencelessness: "Ideas such as essence, happiness, or theory bore evidence of inner disunity. In an authentic way they revealed the genuine potentialities of man and nature; thus, they were eminently critical concepts. At the same time, however they invalidated this contradiction by giving it ontological stability." (Katz, 1979: 16)

The disunity identified in the ideas of essence, happiness and theory revealed to Marcuse that this disunity would allow man and nature to negate these ideas and through this negation they would be able to reveal their genuine potential, and as such, they were critical concepts. However, this notion of disunity and contradiction invalidated this critical concept of disunity because this disunity from an ontological perspective became a stable ontological theory. Disunity is essentially the inner negation of what essence happiness or theory is, and by questioning what these things are affirms that this inner disunity is inherent and can serve to reveal genuine potentialities. However, from a metaphysical perspective this notion of disunity in relation to essence, happiness etc., serves to provide ontological stability, in the respect that this is the nature of being. In arriving at this conclusion Marcuse again turned to Hegel to look 'for clarification of the link between the most progressive part of the idealist legacy and the materialistic goals of the European labour movement' (Katz, 1979: 17).

Marcuse would spend the majority of the 1940s living in Washington and working for various agencies in the 'U.S. government in a (then) unprecedented "united front" of anti-fascist scholars within the Departments of War and of State' (Katz, 1979: 17). Katz suggests that, based on official reports and 'philosophical writings on art and politics in the totalitarian era' (Katz, 1979: 17) it can be stated quite unequivocally that Marcuse's 'leftward movement continued unabated during this period' (Katz, 1979: 17). In addition, it is also worth noting that Marcuse's move towards the left was far more radicle than 'his intellectual allies Horkheimer and Adorno' (Katz, 1979: 17). Katz also notes that 'throughout the period dominated by the Spanish Civil War, the Moscow Purge Trial, fascism, and war' (Katz, 1979: 17), Marcuse was haunted by what he saw as a paradox. Marcuse's observations led him to believe that increasing potentials for unprecedented freedom also increased the potential for an increasing array of mobilised forces of political and psychological repression. On the one hand, there was the potential for unprecedented freedom, but on the other, this potential freedom was being counteracted by political and psychological repression - hence a paradoxical situation was at play. Marcuse allowed himself to explore this paradox and Katz notes that he pressed his thoughts:

> To the margins of the established society in his search for an "anticipatory memory" of future liberation, for a political base from which to resist totalitarian controls: surrealism, but also the classical art of the bourgeois era, hedonism but also the distant removes of idealist philosophy. (Katz, 1979: 17)

Marcuse drew on his insights from the post-war era and concluded that 'peace did not substantially lift totalitarian controls' (Katz, 1979: 17). During Marcuse's time at Columbia, Harvard, and Brandeis he pursued the 'notion of a transcendent refuge "of the liberation that failed, of the promise that was betrayed"' (Katz, 1979: 17). However, even though this perspective or stand-point was increasingly seen as an "aesthetic dimension" Katz suggests that Marcuse:

> Never abandoned the concrete ground of social critique and political praxis: *Eros and Civilisation* (1955), the great interpretation of "the hidden trend in psychoanalysis," Soviet Marxism (1958), his

> examination of the limitations as well as the surviving potentialities of Soviet society as reflected in its official theory, and *One-Dimensional Man* (1964), the now classic analysis of the extension of the technological base into the supposedly autonomous realms of art, science, and philosophy. (Katz, 1979: 17/18)

*One-Dimensional Man* (1964) was the work that would propel Marcuse into stardom. Marcuse moved to California and within five years of publication *One-Dimensional Man* 'had sold over 100,000 copies in the United States and been translated into 16 languages' (Katz, 1979: 18). Marcuse was attacked and criticised for his work by an array of disgruntled critics that included 'the Kremlin and the Vatican, the Minutemen and the Weathermen, the American Legion and the Progressive Labour Party' (Katz, 1979: 18). However, some have stated that it 'might be regarded as the single most famous book ever published by the Frankfurt School of critical theory' (Klikauer, 2018: 161). In 1965, at the age of 67, Marcuse accepted a senior post in philosophy at the University of California, and devoted the following decade to teaching, writing, clarifying and 'developing his theoretical position before an international audience of scholars and activists' (Katz, 1979: 18). It is interesting to note that, whilst Marcuse was averse to offering any response to his academic critics or any critical correspondence that he received in the 1960s from organisations such as the Ku Klux Klan and the Minutemen, there was a third audience that Marcuse was inordinately responsive to, and they were 'the New Left, and the student anti-war movement as it had begun to take shape in Europe and America' (Katz, 1979: 18).

Katz further notes that Marcuse did not recognise 'any "agent" of socialist revolution other than the industrial proletariat of the advanced capitalist countries' (Katz, 1979: 18). Marcuse, like Marx was of the notion that the key determinant of a 'revolutionary class is that it represents the "determinate negation" of capitalist society, which American working class manifestly did not' (Katz, 1979: 18). Bearing this in mind, Marcuse did see in the New Left movement the "anticipatory consciousness" that for him, was the required determinant that offered the potentially to 'break with the administered system of one-dimensional needs and gratifications, and perform an essential catalytic function' (Katz, 1979: 18). The central theme of Marcuse's work in the last phase of his life focused on 'the prospects of the Left under the present period of "preventative counter-revolution"' (Katz, 1979: 18), and he continued to write at

his usual prolific rate as well as lecturing and continuing to agitate. Marcuse died in 1979, and his last works included:

> *The Essay on Liberation* (1969), *Counter-Revolution and Revolt* (1972) as well as important essays on feminism (thematic for him since the 1940s), theory and practice, topical political issues, and, of course, the concluding essay which he wrote with Erica Sherover – "*Mitarbeiterin, Freundin, und Frau*" – in which he returned to the political significance of The Aesthetic Dimension. (Katz, 1979: 18)

## **5.12** Wider Theoretical Model

In 1964 when Marcuse published *One Dimensional Man* 'both Marxism and liberalism were unanimous in their praise for the new technological society coming into being' (Feenberg, 1988: 225). However, Marcuse's sharp critique of technology came as a surprise (Feenberg, 1988: 225). Feenberg states that Marcuse's ideas are now easier to attach to the tradition of Marxist technology criticism but that when he first published *One-Dimensional Man* his ideas were 'invisible to all but a few aficionados of 20th century intellectual history' (Feenberg, 1988: 225). Texts that would soon become classics such as 'Lukacs' *History and Class Consciousness* and Adorno and Horkheimer's *Dialectic of Enlightenment* were untranslated and out of print' (Feenberg, 1988: 225). In the few works that noticed their existence they were 'scarcely mentioned' (Feenberg, 1988: 225). Feenberg describes the immediate impact of Marcuse's work as more atmospheric than academic in the respect that at the time political oppositional resistance was growing fuelled by the fear of an emerging technocratic dystopia (Feenberg, 1988: 225). Marcuse's work and indeed his 'name became a symbol of these oppositional currents, and in response, his ideas were attacked as anti-technological and anti-scientific' (Feenberg, 1988: 225). It was this aspect of his work that caused outrage and scandal and infuriated both the left and the right, essentially it was his critique of progress that became the real issue rather than 'its social and political radicalism' (Feenberg, 1988: 225).

During the 1960s Marcuse and Habermas debated over technology and these debates 'marked a significant turning point in the history of the Frankfurt School' (Feenberg, 1996: 45). In the following years Habermas would see his influence grow while

Marcuse's declined and 'Critical Theory adopted a far less Utopian stance' (Feenberg, 1996: 45). Feenberg notes that more recently there has been a 'revival of quite radical technology criticism in the environmental movement under the influence of Foucault and constructivism' (Feenberg, 1996: 45). In view of these recent developments Feenberg re-examined the earlier debates between Marcuse and Habermas and while he suggests that Habermas's argument could still be considered as persuasive, he adds that 'his defence of modernity now seems to concede far too much to the claims of autonomous technology' (Feenberg, 1996: 45). Feenberg argues that Habermas's position viewing 'technology as an application of a purely instrumental form of non-social rationality is less plausible after a decade of historicizing research in technology studies' (Feenberg, 1996: 45). Feenberg goes on to argue 'that Marcuse was right after all to claim that technology is socially determined even if he was unable to develop his insight fruitfully' (Feenberg, 1996: 45). Feenberg confronts Marcuse and Habermas's views on technology and proposes an alternative approach to technology criticism in which he selects and combines elements from both Marcuse and Habermas's approaches. Feenberg argues that:

> The essence of technology is shown to be historical and reflexive, like the essence of other social institutions. As such an institution, its rationality is always implemented in value-biased forms subject to political critique. (Feenberg, 1996: 45)

For Feenberg the critique of technology characterizes the Frankfurt School - particularly two of its leading scholars Adorno and Horkheimer (Feenberg, 1996: 45).

> In *Dialectic of Enlightenment* (1972) they argue that instrumentality is in itself a form of domination, that controlling objects violates their integrity, suppresses and destroys them. If this is so, then technology is not neutral, and simply using it involves taking a valuative stance. (Feenberg, 1996: 45)

Others have also critiqued technology such as 'Heidegger (1977), Jacques Ellul (1964), and a host of social critics who might be described unkindly as technophobic' (Feenberg, 1996: 45). However, in general these sorts of critiques are positioned 'in a speculative framework' (Feenberg, 1996: 45). For example, Heidegger bases his theory of technology on an 'ontological understanding of being; a dialectical theory of rationality does the same work for the Frankfurt School' (Feenberg, 1996: 45).

Feenberg argues that these theories are not whole heartedly convincing however they serve as a 'useful antidote to positivist faith in progress and bring into focus the need for limits on technology' (Feenberg, 1996: 45). While this offers an analysis of Marcuse's work within its historical specificity Feenberg re-examines Marcuse's work outside its historical context and 'the debates it sparked, strictly in terms of its theoretical contribution' (Feenberg, 1988: 225).

Feenberg argues that 'Marcuse's basic claim is that there is an essential connection between modern technology and the domination of man by man in the existing industrial societies' (Feenberg, 1988: 226). Feenberg supports and asserts this claim by 'employing two familiar concepts, domination and technology' (Feenberg, 1988: 226). However, while these two concepts are singularly familiar, when they are used in combination with each other they are not familiar, as Feenberg notes this combination is both strange and unfamiliar 'technology is domination and vice versa' (Feenberg, 1988: 226). To clarify what Marcuse means by technology Feenberg expresses that it is exactly what we may think it is 'machines, industry' (Feenberg, 1988: 226). When Marcuse discusses domination, he is referring to 'the suppression of the individual by society' (Feenberg, 1988: 226). For Marcuse, this domination is 'both in the external form of exploitative hierarchy and coercive power, and the internal or "introjected" form of conformism and authoritarianism' (Feenberg, 1988: 226). While critics of Marcuse have often claimed that his critique of domination implied a 'rejection of all authority in society and moral conscience in the individual' (Feenberg, 1988: 226), Feenberg argues that his critique never actually extended this far, therefore, Marcuse's argument held that:

> Today the machine is not merely used for the purpose of suppressing individuality but that it is the basis for new types of suppression it alone makes possible and which it is in some sense destined to carry out. (Feenberg, 1988: 226)

Feenberg (1999) simplifies the long history that has contributed to the various theoretical positions in relation to philosophy and technology and identifies four predominant schools of thought that characterize scholarship in the tradition of philosophy of technology namely, instrumentalism, determinism, substantivism and

critical theory (see Table 6). The way in which these varying theories differ is the way in which they view the role of human action and the neutrality of technical means.

| Technology is: | Autonomous | Humanly Controlled |
|---|---|---|
| Neutral | Determinism (e.g., Traditional Marxism) | Instrumentalism (Liberal Faith in Progress) |
| Value Laden | Substantivism (means and ends linked systems Ellul, Heidegger) | Critical Theory (Choice of alternative means-ends systems) |

*Table 6: Technology and Society: Main Schools of Thought* (Feenberg, 1999: 9)

Deterministic theories for example such as traditional Marxism 'minimize our power to control technical development' (Feenberg, 1999: 9). However, they regard 'technical means to be neutral insofar as they merely fulfil natural needs' (Feenberg, 1999: 9). Substantivism has similarities with determinism in the respect that it shares the scepticism in relation to human agency but differs in the respect that it 'denies the neutrality thesis' (Feenberg, 1999: 9). For example, Ellul, 'considers ends to be so implicated in the technical means employed to realise them that it makes no sense to distinguish means from ends' (Feenberg, 1999: 9). Critical theories such as those of Marcuse and Foucault give affirmation to 'human agency while rejecting the neutrality of technology' (Feenberg, 1999: 9). Feenberg defends the position that 'means and ends are linked in systems subject to our ultimate control' (Feenberg, 1999: 9), and he compares his analysis to Marcuse and Foucault, however, he states that he works 'it out rather differently' (Feenberg, 1999: 9). In an interview conducted in 2021 Feenberg discusses Marcuse's theories and states:

> What we can get from Marcuse is the beginnings of the initial elements of a political theory of technology, a political theory of technoscience and we need this urgently because increasingly the issues that concern us are technical and scientific in nature. The basic notion that there's an interaction between an historically modulated lifeworld and the sciences - I think that notion is fundamental to Marcuse's thought and it it's fundamental to our own situation today whether we are aware of these theoretical concepts or not, so we need to overcome the obstacles for these

> transformations of the technical sciences. (Feenberg, in SFU's Vancity Office of Community Engagement, 2021)

Feenberg goes on to say that to overcome the obstacles, Marcuse's theory would advocate for a socialist revolution but that this, in Feenberg's opinion, is not realistic (Feenberg, in SFU's Vancity Office of Community Engagement, 2021).

Paul Mattick a German Marxist political writer and social revolutionary critiqued Marcuse's work in *One-dimensional Man* 'Marcuse and Mattick were both known as sympathetic and supportive of the New Left as it emerged during the 1960s' (Roth, 2014: 74). Even though Mattick 'was a long-term fan of Marcuse's work' and described *One-Dimensional Man* as 'one of the most important and beautiful books written in recent times' (Roth, 2014: 75). Mattick was also of the opinion that Marcuse's work had its limitations and Mattick went on to write *Critique of Marcuse*, with the intention of dealing with the things he believed Marcuse left out. (Roth, 2014: 75). Mattick's critique centred on 'Marcuse's dismissal of the working class as an agent of social transformation and his assumption that capitalism had solved its crisis dynamics' (Roth, 2014: 75). Of key importance for Mattick was 'the chances of present-day capitalism to survive' (Roth, 2014: 75). Matticks' critique appeared in print, after which, Marcuse corresponded with him in private letters in which he referred to it as, 'the only solid and real criticism of *One-Dimensional Man*' (Roth, 2014: 75). Erich Fromm also critiqued Marcuse's work and argued that 'philosophers such as Sartre, Marcuse, Horkheimer, Adorno and others who tried to use psychoanalysis were limited in their understanding of the field because of 'insufficient knowledge of its clinical basis'' (Fromm 1970: 27; Kamau, in Berry, 2016: 190). There were also reportedly strong antipathies between Marcuse and Fromm and, 'the reason for these antipathies, aside from theoretical disagreements, may have lain in stark differences in the personalities of Fromm's colleagues compared to his own' (Kamau, in Berry, 2016: 196).

## **5.13** Contemporary Critical Commentary

It is now over fifty years since Marcuse published *One-Dimensional* Man and it is recognised that the use of Marcuse's critical theory of society in this study could

perhaps be criticised for its lack of contemporary relevance. Therefore, the following section, aims to dispel this criticism by citing recently conducted studies that focus on education and educational provisions that have employed Marcuse's theories in their analysis.

As noted previously, Herbert Marcuse gained notoriety in the 1960s for his critical theory of one-dimensional society where he provided a critical perspective on contemporary society in both capitalistic and communistic states (Kellner et al., 2009: 1). He critiqued the 'major transformations within both the structures of social reproduction and emergent forms of resistance to domination and repression' (Kellner et al., 2009: 1). In addition, his 'notion of the Great Refusal won him renown as a theorist of revolutionary change and "liberation from the affluent society"' (Kellner et al., 2009: 1). As a direct result of this work 'he became one of the most influential intellectuals in the United States during the 1960s and into the 1970s' (Kellner et al., 2009: 1). However, the question that Kellner et al., pose in the introduction section of the publication *Marcuse's Challenge to Education* (2009) is: What is Marcuse's legacy? It is interesting to note that Kellner et al., acknowledge that other Frankfurt School critical theorists have received affirmation that their critical theories continue to be relevant. Marcuse, however, has not received this affirmation, on the contrary, Marcuse has been viewed as 'a historical figure locked within the dramas of the sixties [3]' (Kellner et al., 2009: 1). To further explicate this perspective Angela Davis (2005) is of the opinion that a return to Marcuse 'seems to veer dangerously close to nostalgia for a past age [4]' (Kellner et al., 2009: 1). However, despite this lack of affirmation Kellner et al., note that there have been traces of a Marcuse renaissance in recent years and these are exemplified as follows:

[3] See, for instance, Fredric Jameson's 1996 defense of Theodor Adorno as a philosopher who anticipates postmodernism and provides important perspectives on global capitalism, or the renewed and invigorated interest in Walter Benjamin (Agamben 1998; Ž i ž ek 2000).

[4] Marianne DeKoven (2004) makes a similar observation.

> Following a collective book commemorating Marcuse after his death in 1979 (Pippin, Feenberg, and Webel 1988), several readers have appeared, including Marcuse: From the New Left to the Next Left (Bokina and Lukes 1994) and Herbert Marcuse: A Critical Reader (Abromeit and Cobb 2004). Recently there have also been several books about Marcuse that re-evaluate his philosophy within a variety of contexts, including Heidegger and Marcuse: The Catastrophe and Redemption of History (Feenberg 2005), the collection Herbert Marcuse: Heideggerian Marxism (Abromeit and Wolin 2005), and four volumes of The Collected Papers of Herbert Marcuse, edited by Douglas Kellner (1998, 2001, 2005, 2006). (Kellner et al., 2009: 1-2)

This list of publications serves to demonstrate that there is a growing body of literature that both employ and evaluate Marcuse's theories. However, this alone does not demonstrate Marcuse's theories' continuing relevance and importance in providing a critical perspective to contemporary society. Therefore, Kellner et al., aimed to add to this body of literature by devoting the entire volume of *Marcuse's Challenge to Education* as a body of work designed to defend the 'relevance and importance of Marcuse's thought to the contemporary situation' (Kellner et al., 2009: 2) with a particular focus on:

> Marcuse's critical analysis of education in the current era of global capitalism and his potential for generating transformative pedagogical practices through a reconstruction of schooling. (Kellner et al., 2009: 2)

In addition, it is interesting to note that Kellner et al., take a variety of elements into consideration with relation to their impact on education such as: the increase of standardisation policies in the sphere of schooling; the continued 'growth of the "affluent society" within Western, post-industrialized economies' (Kellner et al., 2009: 2). As well as:

> The waning of dialectical thinking in the field of philosophy and theory, the immediate degradation of the environment, a dispiriting era of war and militarism, and the rise of a militant anticorporate globalization movement. (Kellner et al., 2009: 2)

Marcuse spoke with some clarity to teachers, activists and academics who were 'interested in understanding the complexities of "counterrevolution and revolt" occurring today in a variety of locations and across a variety of domains' (Kellner et al., 2009: 2). Kellner et al., also included in *Marcuse's Challenge to Education* two previously unpublished lectures that clearly demonstrate Marcuse's 'concern for education, and theorizing schooling' (Kellner et al., 2009: 2). As well as a selection 'of essays by emerging and established Marcuse scholars on his relevance for contemporary education' (Kellner et al., 2009: 2). The concluding chapters are written 'by noted Marcusian theorist Charles Reitz' (Kellner et al., 2009: 2). The various essays contained in this book focus on educational concerns, however Kellner et al., note that 'the implications are broad and concern the fate of critical theory and radical democracy' (Kellner et al., 2009: 2). In summary the publication *Marcuse's Challenge to Education's* main aim was to:

> Not only demonstrate Marcuse's relevancy but also the urgency with which we must evaluate his writings in light of continuities and transformations within the present system of social relations and institutions from Marcuse's time to our own. (Kellner et al., 2009: 2)

Hornstein also notes that, Marcuse's 'work deserves to be treated not just as historically influential, but rather, as *prescient'* and that his work is 'perhaps even more relevant today than it was when he first wrote it' (Hornstein, 2009: 87). Writers such as Kellner and Hornstein state there is a sense of urgency with regard to the evaluation of Marcuse's writings due to the 'continuities and transformations within the present system of social relations and institutions from Marcuse's time to our own' (Kellner et al., 2009: 2). In its broadest sense Marcuse's critical theory:

> Refers to theory that can undertake a systematic and dialectical analysis of the economy, the state, and the political realm and its linkages to culture, ideology, and everyday life (Kellner 1989). (Kellner et al., 2009: 2)

Thus, Kellner's evaluation of Marcuse's theory provides further evidence and substantiates the deployment of Marcuse's theoretical concepts for the purpose of this study from the perspective that; it will allow the systematic and dialectical analysis of

the data to identify the links between the economy, the state, the political realm and the culture and ideology of everyday life. To further exemplify the contemporary relevance of Marcuse's critical theory Kellner et al., state that critical theory:

> Consists of dialectical analysis, which involves both making connections and demonstrating the contradictions that provide the opening for political intervention (Kellner 1989). Defined as such, critical theory is highly relevant to a critique of technocapitalism—as a technologically advanced mode of capitalist accumulation—and its association with information society ideology. Critical theory's interrogation of technocapitalism is of growing importance, mainly because of the increased importance of culture, technology, media, information, knowledge, and ideology in more domains of social life (Kellner 1989). (Kellner et al., 2009: 182)

In addition, as Marcuse himself proposes - a discipline that is involved in studying 'the creation, use, classification, and access of information simply cannot ignore the larger socio-political critiques of modern, technological society' (Kellner et al., 2009: 183).

The following outlines a study in the field of library and information science (LIS) and serves to exemplify and further substantiate the contemporary relevance of Marcuse's theories. Pyati states that due to the diversity in the field of (LIS) which consists of 'a variety of disciplines – such as library studies, information science, archival studies, and informatics' (Pyati, in Kellner et al., 2009: 181), there is not a unified theory that is able to construct a 'proper theoretical framework in the field' (Pyati, in Kellner et al., 2009: 181). For the most part the study states that 'critical theory's appearance in IS usually takes the form of references to Habermas and his notions of the public sphere and theory of communicative action' (Pyati, in Kellner et al., 2009: 183). Habermas's work is both useful and valuable as Habermas's focus 'on communication issues resonates with many of the concerns of information studies' (Pyati, in Kellner et al., 2009: 183). However, what Pyati finds puzzling is that there is a 'lack of reference to other Frankfurt School theorists, most notably Theodor Adorno, Max Horkheimer, and Herbert Marcuse' (Pyati, in Kellner et al., 2009: 183) and further suggests that Marcuse's work in particular is 'highly pertinent to the field of information studies' (Pyati, in Kellner et al., 2009: 183).

> Marcuse's focus, for instance, on "technological rationality" as a tool of domination in One-Dimensional Man (1964) is a useful construct for understanding how discourses of information technology are being used to perpetuate modernist notions of information and capitalist logics of consumption. (Pyati, in Kellner et al., 2009: 183)

The study on *Critical Theory and information studies: A Marcusian Infusion* (Kellner et al., 2009: 181) evidences the relevance of using concepts from Marcuse's critical theories of advanced industrial societies as set out in *One-Dimensional Man,* especially in relation to information and communication technologies. The subject being examined differs to that of this study on DLE, however it serves to demonstrate the validity of building a framework based on various concepts of Marcuse's critique of advanced industrial society. Feenberg one of Marcuse's most prominent advocates stated that 'only through an approach that is both critical and empirically oriented is it possible to make sense of what is going on around us now' (Feenberg, 2005: 62).

## **5.14** Summary

The digital literacy section of the House of Commons Digital Culture, Media and Sport Committee report states that:

> Children, young adults, and adults—all users of digital media—need to be equipped in general with sufficient digital literacy, to be able to understand content on the Internet, and to work out what is accurate or trustworthy, and what is not. Time and again, we heard people saying that "when the service is free, you are the product" and, as the product, individual users are continually being manipulated, without their even realising. (House of Commons, 2018: 60)

This therefore begs the question; Are the educational provisions of DLE addressing this situation so that future citizens are equipped with sufficient digital literacy skills? Or, has 'one-dimensional thinking' limited and constricted government policy and the educational curriculum in relation to DLE provisions. It is proposed that, if students are only taught to view the digital environment and its devices in a one-dimensional capacity; in a mechanistic way for example, then it is unreasonable to expect them to view the world they live in, in a multidimensional, dialectical, and critical way. The

critical perspective has to be baked into the cake as it were, in order for these multidimensional perspectives to permeate into the social cultural and ethical perspectives of students growing up in the post-digital era.

The historical omission of the cultural, social, and ethical aspects of educational provisions surrounding the use of digital technologies compounds the notion of Marcuse's one dimensionality created by consumer capitalism. Deploying Marcuse's theories allows for an analysis of government education policies to evaluate why mechanistic skill-based learning has been central to DLE provisions. Essentially, this perspective will serve to evaluate whether educational policy makers are affected by Marcuse's theory of one-dimensionality. To expand on this further, within the context of Marcuse's theory in relation to one-dimensional thinking, created by the economic capitalistic system, the digital environment and infrastructure could be viewed as another paradigm, another capitalistic realm. As such, it could be suggested that education policy makers may have been subsumed into this digital system to such a degree that they can only view DLE in a one-dimensional way. This leads to the question; Are government educational policy makers only able to think and behave in a way that is controlled and dominated by the capitalist hegemony of the digital world. A world that is fused intrinsically with the real world, created by the technology giants who are, to all intent and purpose, capitalistic overlords, and ideological instrumentalists.

In conclusion, this research will offer an insight into (1) Whether students are being sufficiently educated about how digital technologies use and affect them in a social, cultural, and ethical capacity. (2) Whether the programme content of digital literacy education is primarily driven by neo-liberal economically driven government policies, and (3) How much influence private neo-liberal capitalistic enterprises have in determining the educational agenda of DLE? Therefore, this research will be of significant importance in offering an insight into whether DLE in Wales is sufficiently fostering an understanding of the social, cultural, and ethical implications of the digital milieu, and whether the current provisions are sufficiently orientated to produce and foster critically thinking future citizens.

# 6 Chapter 6: Findings and Discussion

The findings presented in this chapter refer to the analysed results of data collected via two methods (1) responses from three focus group interviews and (2) twenty-six semi structured interviews. The focus group interviews collected data from students, who, due to their respective ages (over 18) offered a reflective perspective of their digital literacy education in primary and secondary schools. The semi-structured interviews gathered data from educators, government officials and digital literacy experts.

## **6.1** Focus Group Findings

Participant demographics and codes/themes are located in the methodology chapter of this thesis. The following section presents the interview responses analysed through the lens of the theoretical concepts developed in Herbert Marcuse's 1964 publication *One-Dimensional Man.*

### 6.1.1 Digital Devices and Software

The macro theme digital devices and software includes the micro themes - hardware and software available, and hardware to pupil ratio.

#### 6.1.1.1 Hardware and Software Available

The participants were asked to discuss the type of hardware and software they encountered in their primary and secondary schools. The results showed that the type of hardware participants had access to varied. However, the consensus was that PC desktop computers were more commonly available than for example, laptops, or tablets. All the participants stated that Microsoft Office was the main and predominant software application used, as per the following examples:

*Primary School*

> I remember using Word.
>
> (Tara, 22, female, Welsh Medium, Wales)

> We had an old school box computer we had to save floppy discs and stuff on.
>
> (Fred, 22, male, English Medium, Wales)

*Secondary School*

> It was a lot with word, and I think I did a lot with publisher as well, making posters on publisher and then obviously, they'd ask you to make a presentation on Power Point.
>
> (Grace, 21, female, English Medium, in Wales)

> In comp we had Microsoft word.
>
> (Fran, 22, female, Welsh Medium, Wales)

> We only used Excel, Power Point and Word.
>
> (Fred, 22, male, English Medium, Wales)

> How to use Microsoft Word and how to prepare a proper presentation in PowerPoint and things like this.
>
> (Daisy, 21, female, Educated in another country)

The type of hardware available to the participants in primary and secondary school was predominantly PC desktop computers, on which they learned to use one particular software application i.e., Microsoft Office. Therefore, the analysis of this data indicates that the predominant hardware and software employed by primary and secondary schools was extremely limited, and as such, could be described in Marcusian terms as one-dimensional. In addition, the software was provided by one private neo-liberal capitalistic company i.e., Microsoft, which further implies not only

a one-dimensional aspect in relation to the predominant software used in their DLE, but also, that this one-dimensionality was, as Marcuse describes, underpinned by the hegemony of the private business sector of corporate capital. As such, it is suggested that digital literacy education at this point in time was dominated and influenced by the economic neo-liberal capitalistic system of the private business sector. It is interesting to note that Daisy, who was not educated in Wales, also stated the predominant software used in her primary and secondary school was Microsoft Office. Therefore, it is further suggested that this one-dimensionality extended far beyond the Welsh educational system.

#### 6.1.1.2 Hardware to Pupil Ratio

The interviewees were asked what the ratio of computers to pupils was, and the responses indicated that the ratio varied greatly from participant to participant.

*Primary School*

> I think sometimes you had to share but I think there was enough for everybody there'd be an odd one or two people that would have to share a computer.
>
> (Fran, 22, female, Welsh Medium, Wales)

> We had about 2 or 3 kids per computer you'd have a buddy and you'd both go on it together.
>
> (Fred, 22, male, English Medium, Wales)

> We never really had anything to do on the computer.
>
> (Janet, 25, female, English Medium, Wales)

*Secondary School*

> We'd have to share as well because in my Comp, we only had like 10 computers and there was like 25 of us in a class.
>
> (Matilda, 22, female, English Medium, Wales)

> We had enough laptops go round every student and we had about 25 to 30 students.
>
> (Francesca, 21, female, English Medium in England)

> We didn't have access to all the computers, there weren't enough to go around, even in high school, there still wasn't enough because the majority of them didn’t work so it was just easier for teachers to ask students to use their phones.
>
> (Grace, 21, female, English Medium, in Wales)

As per the examples given, the ratio of hardware to pupils varied from 1:1 to the more extreme case as cited by Grace who stated that due to the significant lack of hardware students were asked to use their own phones. It is also interesting to note that Francesca who was educated in England stated that the ratio was 1:1 and the hardware available to them was not PCs but laptops. Janet, who was 25 and the oldest participant, expressed that during her time in primary school they did not use computers, this suggested that at that point in time there was little to no use of digital technology in primary school education. However, participants who were three to four years younger than her used computers in their primary schools. Therefore, it could be argued that primary schools experienced an increase in the use of digital technologies over a relatively short period of time.

### 6.1.2 ICT Lessons

The participants were asked to reflect on their ICT lessons in school and offer their views and opinions. The answers and topics they discussed generated the Macro theme ICT lessons and six micro themes that include: lack of student focus; teachers’ ICT

abilities; coding; digital skills learned in lessons outside of ICT; learned more digital mechanistic skills after leaving school, and DLE relating to preparation for employment.

#### 6.1.2.1 Lack of discipline and student focus

A common theme voiced by many of the participants was that their ICT lessons in secondary schools was a subject lesson where there was a distinct lack of student focus and little to no discipline, as per the following examples:

> I just remember messing around on mini clip I don't remember like learning anything specifically, I think mainly it was just like Microsoft Word, Excel, Power Point.
>
> (Libby, 22, female, Welsh Medium, Wales).

> All I did really was mess around on the Internet.
>
> (Janet, 25, female, English Medium, Wales)

> Copy and paste that’s the most memorable thing I learned.
>
> (Fran, 22, female, Welsh Medium, Wales)

The following quotes exemplify the conversation flow from focus group three and relates to their discussion about what they remember experiencing in their ICT lessons:

> Google things that the boys told you to Google.
>
> (Libby, 22, female, Welsh Medium, Wales)

> Yeah, like one man one jar.

(Janet, 25, female, English Medium, Wales)

Like two girls one cup.

(Tracy, 22, female, Welsh primary, English secondary, Wales)

Yeah, and blue waffle.

(Libby, 22, female, Welsh Medium, Wales)

Yeah, and it's crazy that we all went to different schools and we all were involved in that sort of thing.

(Libby, 22, female, Welsh Medium, Wales)

The participants explained that the terms, blue waffle, two girls one cup, and one man one jar were all terms that returned results of a sexually explicit and inappropriate nature. All of the participants from this focus group were actively involved in this same behaviour despite the fact that they had all attended different schools. In *One-Dimensional Man* 'individuals and the societies private and public existence of man and of the individual is controlled; is exposed to, standardised required ways of behaviour standardised imposed use' (Marcuse, 1964). In addition, Marcuse believes that individual's needs are being controlled in the respect that they are expected to behave in a certain standardised way. This control for Marcuse can be enacted by private as well as public bureaucracy and it can be done via the perfectly democratic media of mass communication; it is in a way:

> a consequence of 'technical progress' which implies mass production and mass distribution which in turn requires a significant and considerable degree of standardisation and a considerable degree of the submission of the individual to pre given superimposed values aspirations goals and so on. (Marcuse, in Biophily2, 2016)

Marcuse's concept of one-dimensionality is that it is devoid of dialectical thought created by the submission to the 'existing society, deriving its view of the world and mode of behaviour from existing practices and modes of thought' (Kellner, in Marcuse, 2002: xxviii). Therefore, it could be argued that the behaviour demonstrated by the participants in their ICT lessons was standardised and one-dimensional.

#### 6.1.2.2 Teachers' ICT Abilities and Interest

The participants discussed their teachers' IT expertise and abilities. A common theme raised was that teachers' lacked IT expertise, and the lack of teacher interest in using digital devices, as per the following examples:

*Primary School*

> In primary school, I had mainly, like older teachers. I think they just didn't know much about it, to be honest if we had any computer trouble they'd just, you know, turn it off and we would use another one or join someone else. I don't think they even really had the knowledge.
>
> (Francesca, 21, female, English Medium, England)

*Secondary School*

> In my school there was never an IT teacher, the IT lessons were always done by a supply teacher so someone who was basically learning to become a full-time teacher.
>
> (Grace, 21, female, English Medium, Wales)

To give context to the following example, Tracy was discussing the introduction of an interactive white board that her teacher had no interest in using:

> I remember my year six teacher saying that she didn't want one she kept with her blackboard.

(Tracy, 22, female, Welsh primary, English secondary, Wales)

The participants' responses indicate there was a lack of teachers with sufficient digital skills in primary schools, and moreover, a lack of sufficiently skilled teachers to deliver specific IT lessons in secondary schools. Furthermore, teachers displayed a lack of interest in adopting digital devices within the classroom.

#### 6.1.2.3 Coding/Programming

Only two out of the ten total participants stated that coding and programming was included as part of their secondary school DLE provisions. However, both of these participants were educated outside of Wales. Only one of the participants educated in Wales stated that they had experienced computer programming in school. However, this was on one single occasion as part of their secondary school ICT education when the class visited a local university and experienced what she described as, an introduction to computer programming.

> They wanted to teach us like the beginning of coding or programming. There was like a little turtle that was going around the screen and we had to command it by actually typing in a programming comment.
>
> (Daisy, 21, female, educated in another country)

> It was like BBC something and it was like animals teaching you where to put your fingers and stuff, but that was the closest.
>
> (Francesca, 21, female, English Medium in England)

> I went to [name of university] and like did a sort of introduction into computer programming.
>
> (Libby, 22, female, Welsh Medium, Wales)

The interviewees responses demonstrate that DLE provisions in primary and secondary schools in Wales had some provisions in place to teach students how to code or programme computers, however, these provisions were very limited. It is therefore suggested that DLE provisions did not adequately offer students the opportunity to develop holistic and multi-dimensional digital skills due to the exclusion of this aspect of DLE from the curriculum. As such, the findings thus far imply that there was a one-dimensionality to the DLE curriculum in Wales.

#### 6.1.2.4 Digital skills learned in school lessons outside of ICT

An interesting micro theme that emerged from the analysis was that participants felt they had developed greater mechanistic digital skills outside of their designated ICT lessons in secondary school. The lesson they cited as being the most productive for developing these digital skills was Welsh Baccalaureate:

> Actually, I probably did more work on the computer in Welsh Bac than I did in TG (Technoleg Gwybodaeth) (TG is the Welsh language word for ICT)
>
> (Fran, 22, female, Welsh Medium, Wales)

> Around GCSE time when I was doing my Welsh Bac, we had to create our own CV and we were told to put our Twitter profile, or like where they can find you on socials, and we were told to put that down, and they said if you post anything inappropriate, anything that employers will then see it.
>
> (Grace, 21, female, English Medium, Wales)

> A lot of the meaty use of the computers that we did was in school but taught by college lecturers because we used to go up there for

> engineering studies which is where a lot of my IT lessons came from and how to use a computer for things.
>
> (Fred, 22, male, English Medium, Wales)

Participant responses firstly indicate that digital devices were not annexed to the realm of ICT lessons as evidenced by their inclusion in other lessons such as the Welsh Baccalaureate. Secondly, these lessons were not only adopting the use of digital technologies as a part of the lesson content, but also, their use in these lessons was seemingly offering students more effective mechanistic digital skill development than their designated IT or ICT lessons. In addition, it is interesting that advice was given to students during Welsh Baccalaureate lessons regarding their use of social media accounts in relation to future employment. Therefore, this suggests that these lessons offered a more multi-dimensional aspect to DLE than ICT lessons.

#### 6.1.2.5 Independent/Heuristic Learning

Many of the participants expressed that they had learned and developed more of their mechanistic digital skills independently, and outside of mainstream compulsory education. The main resource cited by the participants that afforded them the ability to develop these skills independently was Google. In addition, they also stated that when they encountered new types of digital technologies or software programmes, they found that they had to acquire new digital skills in order to use them effectively, as per the following examples:

> I feel like I can use like Word and these kinds of programs better since coming to university and doing it on my own and like actually researching it, and then like practicing it myself. I think I've learned more on my own than I did in five years of school.
>
> (Francesca, 21, female, English Medium, England)

> With the technology we have now, I Google it. I have it done within five minutes and I don't have to keep it in my memory.
>
> (Daisy, 21, female, educated in another country)

> I changed my laptop. So, I used to have a Windows laptop and then I changed to Apple and everything was so different I didn't understand anything, so I was like I've got to Google a lot to understand how to use it.
>
> (Grace, 21, female, English Medium, Wales)

> I learned quite a lot of it on my own spending a lot of time on the computer, spending a lot of time on my phone as well, like with my dad he showed me quite a lot as well.
>
> (Grace, 21, female, English Medium, Wales)

> I have to sign everything online now; I get really confused how to do that online.
>
> (Tracy, 22, female, Welsh primary, English secondary, Wales)

> All the new stuff has come in and unless we've had time or been taught how to use it, we'd probably be a bit more stuck, to be honest.
>
> (Janet, 25, female, English Medium, Wales)

Although all of the participants were taught mechanistic digital skills in their respective schools, the interview data suggests that to use digital technologies and software effectively, continuous education and learning is required. The responses also suggest that digital skills acquired in compulsory education can quickly become

obsolete or outdated when there are advances in technology. In addition, Daisy made an interesting comment about technology affording her the ability to essentially outsource her memory. It could be argued that in Marcusian terms, this functionality of digital technologies where one's memory can in essence be outsourced is impacting the way she thinks about retaining information. Taking this analytical perspective into account coupled with Nicholas Carr's argument that:

> Culture is more than the aggregate of what Google describes as "the world's information." It's more than what can be deduced to binary code and uploaded onto the Net. To remain vital, culture must be renewed in the minds of every generation. Outsource memory, and culture withers. (Carr, 2010: 197)

It can be argued that the impact of digital technologies affording us the ability to outsource our memory is a direct result of what Marcuse describes as the subsummation of the individual into the world of thought and behaviour of the digital system. A system that has been created by private neo-liberal capitalistic companies. Therefore, if Carr's argument is also considered, the impact of outsourcing our memory to Google, could have a negative effect on culture and in turn on the culture of education.

#### 6.1.2.6 DLE relating to preparation for employment

Participants were asked if they felt they had acquired sufficiently holistic digital skills in compulsory education to enable them to acquire jobs and enter the workplace. Responses varied as per the following examples:

> Yeah, like in school we didn't get taught how to apply for jobs online or anything.
>
> (Tracy, 22, female, Welsh primary, English secondary, Wales)

> Education wise like every time I've gone for a new job there's been like a new a different software I've had to sign up for, and it's like, I don't know how to use any of these things.

(Janet, 25, female, English Medium, Wales)

I think that was covered the photos side, be careful what you upload because they could pop up in the future and you might lose your job.

(Tara, 22, female, Welsh Medium, Wales)

I had no idea how to make my work stand out online until college and university, they're helping us with that now.

(Tracy, 22, female, Welsh primary, English secondary, Wales)

It definitely prepared the basics of what I learned so like I know how to use like Microsoft, PowerPoint, Publisher, you know, but I wouldn't say, like there are certain jobs that are reliant on using software and I wouldn't say that in any shape way or form I'd be prepared for it I'd probably have to learn as I go.

(Grace, 21, female, English Medium, Wales)

The interview data suggested that there were varying degrees of DLE education offered to participants that related to preparing them for employment. Even though some of the participants felt they had been furnished with basic mechanistic digital skills, they also felt that there would always be the need for ongoing training due to the plethora of software packages used by different organisations. In addition, the responses demonstrated that only some of the participants received advice regarding their social use of the digital environment in relation to how it may negatively affect their employment opportunities. Furthermore, the interview data also suggested there was a lack of DLE provisions relating to the process of applying for jobs online or promoting their creative work as was the case with Tracy, an Art student. Therefore, it is suggested that the education that was provided did not sufficiently furnish students with the knowledge or skills required to perform tasks beyond minimum Microsoft Office proficiency levels. Essentially, the DLE they received was limited to providing

them with proficiency levels that would only be sufficient for securing basic entry level jobs.

### 6.1.3 Education Relating to Social use of Digital Devices and the Digital Environment

The participants were asked whether the DLE they received in primary and secondary school taught them about the digital environment and their use of the Internet and social media platforms. The answers and topics they discussed generated the Macro theme, education relating to social use of digital devices and the digital environment, and the micro analysis of the data produced two micro themes: PSE/ABCh; knowledge of the digital environment.

#### 6.1.3.1 PSE/ABCh

The main theme that surfaced throughout the analysis of the interviews was that any information relating to the social use of digital technologies was delivered on PSE/ABCh days or during assemblies. The PSE 'revised framework was implemented for all learners in September 2008' (Welsh Government, 2008). This framework is described as, a 'key document which schools and colleges should use to review and develop existing personal and social education (PSE) provision to ensure they plan and deliver a broad, balanced programme of PSE to meet the specific needs of learners' (Welsh Government 2008). The framework states that:

> PSE prepares learners to be personally and socially effective by providing learning experiences in which they can develop and apply skills, explore personal attitudes and values, and acquire appropriate knowledge and understanding. (Welsh Government 2008: 4)

More specific aims of PSE are to:

> Develop learners' self-esteem and a sense of personal responsibility; promote self-respect, respect for others and celebrate diversity; equip learners to live safe, healthy lives; prepare learners for the choices and opportunities of lifelong learning; empower learners to participate in their schools and communities as active responsible citizens locally, nationally and globally; foster positive attitudes and behaviour towards the principles of sustainable development and global citizenship; prepare learners for the challenges, choices and responsibilities of work and adult life. (Welsh Government 2008: 4)

Within the PSE framework the aspect that related to digital literacy is described as follows:

> Learners develop their ICT skills across the curriculum by finding, developing, creating, and presenting information and ideas and by using a wide range of equipment and software. In personal and social education, learners develop both their purposeful application of ICT skills and their understanding of the benefits and risks of using current and emerging technologies. They gain an understanding of the importance of adopting safe and legal practices which minimise risks to themselves and others when using digital communications, along with an appreciation of the need to show respect towards others. (Welsh Government, 2008: 9)

Even though the ICT section of the PSE/ABCh framework describes its implementation as being across the curriculum, the focus group interviewees suggested that PSE/ABCh was delivered on designated days that occurred once or twice a year, usually towards the end of the second term just before the summer holidays. In addition, they were not delivered by the usual school staff but rather by a community policeman who covered various topics of a social nature. For example, the dangers of drugs or alcohol, online bullying, and personal hygiene. The following examples exemplify their responses:

> Like cyberbullying stuff you'd have assemblies about it, they would show us videos of like being aware online and stuff like that, but it wasn't, the teachers never discussed us using the social platforms, it would always be maybe a comment like, "oh just make sure you're aware of what you're posting online", or whatever because we did have a situation in school where something was posted and then it spread, but it was never, they never really went further into discussion.
>
> (Grace, 21, female, English Medium, Wales)

> I think it was like every now and again we'd have one person come in and we'd all be in the neuadd which is in the hall, neuadd is just hall in Welsh, we'd all be in the neuadd and then they'd put like the projector on and they'd show us a safety video and I think that would be it really.
>
> (Fran, 22, female, Welsh Medium, Wales)

> Teachers didn't really, they always had people to come in and talk to us about it they never spoke about it themselves.
>
> (Tara, 22, female, Welsh Medium, Wales)

> I think they happened once a year maybe more often than that, but I can only remember them being once a year.
>
> (Fred, 22, male, English Medium, Wales)

The participants also stressed that the information they received from their PSE/ABCh days regarding digital technologies and their social use focused heavily on online safety issues that related to online grooming and bullying:

> It was more like yeah how to be safe online and the positives and negatives of being on social media, but like in primary school, you didn't, I didn't hear anything about it.
>
> (Janet, 25, female, English Medium, Wales)

> It was more about again who you're talking to, online. So, it was about if someone asked to meet you somewhere, and you didn't know who they were say no and then we would watch a video.

(Grace, 21, female, English Medium, Wales)

Scaremongering rather than education.

(Fred, 22, male, English Medium, Wales)

We'd have like sex education and then we'd have like how to be safe from like nonces online.

(Libby, 22, female, Welsh Medium, Wales)

I think it was like what's the main causes here, okay someone's being bullied and someone is being groomed let's address those two things.

(Fran, 22, female, Welsh Medium, Wales)

These responses suggest that the personal and social aspect of the ICT element of the PSE/ABCh framework was not implemented across the curriculum, but rather annexed and limited to designated times and days. In addition to the limited time afforded to teaching students about the social use of digital technologies, the responses also suggested there was a limit to the type of information they received about their social, cultural, and ethical use of digital technologies and the digital environment. It is therefore suggested that these provisions were one-dimensional in the respect that they focused on online bullying and grooming and did not include information that offered a metaphysical analysis of digital technologies and the digital environment. Essentially, they were not equipped with the information required to understand what Marcuse describes as the essence of technology. Similarly, Heidegger argued that we view technology superficially in the anthropological and instrumentalist way as a means to an end and a human activity without considering what the essence of technology is, by exploring it in a metaphysical way (Heidegger, 1977: 5).

> Marcuse claims that metaphysics is superseded by technology, in that the previous metaphysical concept of subjectivity, which postulates an active subject confronting a controllable world of objects, is replaced by a one-dimensional technical world where "pure instrumentality" and "efficacy" of arranging means and ends within a pre-established universe is the "common principle of thought and action." (Kellner, in Marcuse, 2002: 252 -253)

Therefore, it is suggested that by not including educational provisions that considered the essence of technology students were less able to critically evaluate digital technologies and the digital environment.

#### 6.1.3.2 Knowledge of digital environment

The participants' responses to the questions about their PSE/ABCh education prompted further questions regarding the education they received and their knowledge about the digital environment. For example, they were asked if they had been taught about social media sites, web sites and Google etc in relation to data collection and how these sites generate income; if they were aware of the existence of filter bubbles and echo chambers and how this translates into the type of content offered to them to view in their everyday use of networked digital technologies. The following are examples of the responses to these questions:

> Not that side of it.
>
> (Fred, 22, male, English Medium, Wales)

> Not that side of it at all not even in the slightest.
>
> (Fran, 22, female, Welsh Medium, Wales)

> I'm still learning things I've learned so much in this conversation to be honest I've realised how little I know yeah; I don't really know a lot to be honest.
>
> (Tara, 22, female, Welsh Medium, Wales)

The participants' responses indicated they had not received any educational provisions relating to the essence of the digital environment in their primary or secondary school education. Thus, demonstrating that DLE was completely devoid of educational provisions that enhanced their knowledge about the essence of technology. The participants also expressed that the knowledge they had acquired about the essence of the digital environment had been gained outside of their compulsory education, as the following examples exemplify:

> It wasn't until uni when I really looked into it, did I realise how much data that they were actually collecting.
>
> (Grace, 21, female, English Medium, Wales)

> Not until [Lecturer's name]'s lecture. And I remember like going home and like actual home and told my parents, like, you know, they're collecting all your data and my mum was like oh my god.
>
> (Francesca, 21, female, English Medium, England)

To further explore the focus group participants' knowledge about the digital environment they were asked if they were aware of how, for example Google or Facebook etc make money. Participants were also asked if they were aware that when they signed up for a social media account in addition to the information that they had knowingly offered about themselves, their every online interaction was also subjected to data collection in order to profile them and predict their behaviour. All of the participants stated this was not something they had learned about throughout their compulsory education as per the following examples:

> I only learnt that in the past year actually.
>
> (Tara, 22, female, Welsh Medium, Wales)

> I had no idea I remember when it really kind of hit me was when we were watching the Cambridge Analytica documentary. We were sat there and they were talking about the persuadables like the percentage of people who were persuadable, and I remember it was around the time of the Brexit vote and they were saying about how there was like a persuadable population and all this kind of stuff, and me and you (addresses Fred) literally sat there and thought wow we were the persuadables because of the amount, the amount of, just barraging of Brexit content that was all over our Facebook.
>
> (Fran, 22, female, Welsh Medium, Wales)

> It was totally different for my parents the barrage of stuff that they had.
>
> (Fred, 22, male, English Medium, Wales)

> Mine was completely different to yours as well (addresses Fred) which was, well it's not bizarre because I know what's happening now, but when you have that realisation that like, oh my god everything I do is being monitored all the time, it's really overwhelming because no-one ever explains to you when you're younger.
>
> (Fran, 22, female, Welsh Medium, Wales)

These responses suggest that there was a one-dimensionality to the education they received that related to the social use of the digital environment in the respect that they were not taught to consider its essence. In addition, the findings also suggested that by not including this aspect in DLE provisions, participants only gained an awareness of the essence of the digital environment at a point in their lives when they had already

been subsumed into the system to think and behave in a one-dimensional way. This is exemplified by the comments made by Fred and Fran. It was interesting and pertinent that Fred and Fran only became aware of the essence of the environment after watching a documentary about Cambridge Analytica's involvement in the 2016 EU Referendum. This serves to demonstrate the real-world relevance of this omission from DLE provisions as both Fran and Fred cast their EU Referendum votes before they acquired the knowledge or awareness of how the digital environment functions and operates.

#### 6.1.3.3 Summary

In conclusion, the analysis of the empirical data generated by the focus group interviews offered the following findings. The choice of digital hardware was limited to desk top PCs and the main software the participants learned to use was Microsoft Office. The hardware to pupil ratio varied but the responses indicated that for the majority the ratio was not 1:1. ICT lessons were viewed as lacking discipline and focus, and teachers in both primary and secondary schools were not furnished with sufficient digital skills to be able to facilitate lessons adequately. Coding and computer programming was not featured in any of the DLE provisions offered to the majority of the participants who were educated in Wales. Participants felt they gained more mechanistic digital skills in their secondary schools in lessons outside of their designated ICT lessons, and that they had been able to better develop their mechanistic digital skills through independent learning. There were varying degrees of DLE education offered to participants that related to preparing them for employment. Some of the participants felt that even though they had been furnished with basic mechanistic digital skills there would always be the need for ongoing training due to the plethora of software packages used by different organisations. In addition, the responses demonstrated that only some of the participants received advice regarding their social use of the digital environment in relation to how it may negatively affect their employment opportunities. Furthermore, the data suggested there was a lack of DLE that related to the process of applying for jobs online or promoting their creative endeavours. The education they received regarding their social use of digital technologies and the digital environment was predominantly annexed to designated PSE/ABCh lessons which were delivered by external providers. The focus of the

education received regarding their social use of digital technologies and the digital environment was in relation to online bullying and online grooming. The participants current knowledge and education about the essence of the digital environment varied significantly, and it was not acquired via their primary and secondary school DLE but accessed through external sources such as documentaries.

### 6.1.4 Discussion

The findings from the focus group interviews found that the predominant digital devices in both primary and secondary schools were desktop computers PCs. These devices were employed in a variety of subject areas throughout primary and secondary schools, not solely in IT or ICT, and the most common software application taught and used was Microsoft Office Suite. These findings serve to substantiate and align with previous research. For example, from an historical perspective it was the 1990s that saw 'the emergence of pre-installed software - specifically office productivity software such as word processors and spreadsheet programmes' (Moller and Crick, 2018: 125), and the educational priority was focused on 'basic digital literacies and IT user skills' (Moller and Crick, 2018: 125). However, an interesting finding was that respondents from the focus groups felt that they developed better mechanistic digital skills outside of their designated ICT lessons, and through independent learning. In addition, respondents reported that they began using digital technologies and accessing the Internet or the digital environment at a young age. Respondents from the focus groups felt that their education regarding the social, cultural, and ethical use of digital technologies and the digital environment was minimal. In essence, the respondents felt that they did not receive an adequate or sufficient education regarding the digital environment, especially in relation to data collection and privacy issues. A significant number of the respondents did not possess accurate knowledge about the digital environment. For Marcuse 'the world of immediate experience—the world in which we find ourselves living—must be comprehended, transformed, even subverted in order to become that which it really is' (Marcuse, 2002: 127). On this basis it is suggested that to truly understand the digital world in which we live we must transform and subvert it to fully comprehend what it really is. If you are only taught to view the digital environment and its devices in a one-dimensional capacity; in a mechanistic way for example, then it is unreasonable to expect an individual to view the world they live in, in a multidimensional, dialectical, and critical way. The historical omission of

the cultural, social, and ethical aspects of educational provisions surrounding the use of digital technologies compounds Marcuse's notion of one-dimensionality created by consumer capitalism. Therefore, it is argued that DLE provisions did not furnish students with the critical skills or knowledge required to see the digital world as it really is. The 2014 Estyn report on ICT education in Wales found that, despite the reforms of the 2008 curriculum and the definition offered by the Schools' ICT Strategy Working Group, 'The National Curriculum for ICT was not fully relevant to the technological needs of today's society or engaging enough for pupils' (Estyn, 2014: 4). It is interesting that, the 2014 Estyn report recognised and highlighted the inadequacies of the DLE curriculum at the time, and the findings from this study serve to substantiate the findings of this 2014 report.

*Does digital literacy education in school prepare students for the social and cultural aspects of living in the digital milieu?*

Previous literature suggested that digital literacy education had historically focused on teaching mechanistic digital skills. One of the contributing factors of this one-dimensional focus could have been the introduction of the National Curriculum in 1989 and the position that Thatcher's new right-wing government took when they demanded that:

> Schools return to the supposed rigours of disembedded knowledge and skills, and all attempts to relate learning to the life of the child or their society were seen as deficient. (Wrigley, 2014: 21)

Wrigley argues that 'it was through such rhetorical gestures as much as any legislation that the battle against a progressive or critical curriculum was pursued' (Wrigley, 2014: 21). Evidence suggested that there was a decisive move to steer away from the idea that the curriculum should provide a child with an education that allowed them to 'relate learning to the life of the child or their society' (Wrigley, 2014: 21). The neo-liberal ideology that was introduced into the education system during Thatcher's time in government remained the fundamental basis and purpose of digital literacy education, and indeed education in general. Marcuse's critique of culture and ideology in advanced industrial societies is rooted in the socio-economic foundations of that society (Kellner, 1984: 227). Marcuse's critique explains and dissects the mechanisms through which 'consumer capitalism integrates individuals into its world of thought

and behaviour' (Kellner, in Marcuse, 2002: xii). The developments of advanced industrial society and consumer capitalism are viewed as unbeneficial advancements for individuals within this society. Therefore, it is argued that the neo-liberal ideology introduced into education during Thatcher's time in office that denied students an education that related to the life of the child or their society was as Marcuse suggests, an unbeneficial advancement for individuals (Kellner, in Marcuse, 2002: xii). The National Assembly for Wales's Education and Lifelong Learning Committee stated that, 'during the 1990s after the creation of the National Curriculum the development of ICT education in schools throughout Wales was, largely driven by central government' (Harries, 2000: 7-8). Therefore, for a newly devolved Wales, any reforms of this subject would be from this inherited starting point (Harries, 2000: 8).

The findings from the focus groups suggest that educational provisions regarding the social use of digital technologies and the digital environment was predominantly annexed to designated PSE/ABCh lessons delivered by external providers. The focus of the PSE/ABCh lessons was in relation to online bullying and online grooming. The findings also indicated that the participants current knowledge and education about the essence of the digital environment varied significantly. Additionally, the knowledge they possessed was not acquired via their primary and secondary school DLE but accessed and attained through external sources such as documentaries. Therefore, these findings suggest that education policy in Wales rallied against this inherited one-dimensional educational curriculum by incorporating elements in DLE that related to students' social, cultural, and ethical use of digital technologies and the digital environment. However, the findings also indicated that the inclusion of this aspect of DLE was limited in relation to – the amount of time allocated for its inclusion in the curriculum, and to the focus depth and breadth of the information imparted.

*How well has, or does, digital literacy education prepare students to adapt the skills gained so that they are able to secure employment when changes occur in technologies?*

The findings from the focus group interviews indicate that participants' digital skills acquired through their mandatory schooling did not sufficiently prepare them to gain employment. The results showed that whenever new digital technologies, software, or operating systems are first used new skills needed to be developed. Even though the

focus group participants had developed a level of digital skills throughout their primary and secondary school education, they had acquired significantly more mechanistic digital skills independently. Previous studies suggest that 'frequent changes that occur with technologies themselves have not been something that has been taken up and addressed within educational policy' (Passey, 2014: 146).

Thus far, the findings represent students' reflections on their DLE during their time of study in primary and secondary schools in Wales. These findings have served two purposes. Firstly, they have been used to inform the question design for the subsequent qualitative data collection method, and secondly, they offer a basis of comparison for the findings presented in the next section of this chapter.

## **6.2** In-Depth Interview Findings

To situate and contextualise the qualitative empirical research findings presented in this section the following overview of the educational curriculum at the time of this research is firstly presented. At the time this research was conducted, schools in Wales were preparing to implement a new curriculum based on the Donaldson Report, *Successful Futures* published in 2015. The implementation of the new curriculum is scheduled to begin in September 2022 as detailed in the 'refined guidance for Curriculum Wales in January 2020' (Welsh Government, 2020: 2). The document states that its purpose 'is to set out for schools, consistent expectations for the process of designing their curriculum and preparing to implement it from 2022 onwards' (Welsh Government, 2020: 2). The main aims and objectives of the guidance document is to 'help each school develop its own curriculum, enabling their learners to develop towards the four purposes of the curriculum – the starting point and aspiration for every child and young person in Wales' (Welsh Government, 2020a). One of the defining features of the framework, 'is that it requires schools to design their own curriculum and assessment arrangements. By itself, it is not an 'off the shelf' programme for delivery' (Welsh Government, 2021c).

| The Curriculum for Wales guidance sets out: |
| --- |

- the proposed curriculum requirements set out in legislation for all learners aged 3 to 16, to ensure all schools cover the same core learning and to secure a consistency of approach for learners across Wales
- guidelines for schools in developing their curricula
- expectations around assessment arrangements to support learner progression

The purpose of every school's curriculum will be to support our children and young people to be:

- ambitious, capable learners, ready to learn throughout their lives
- enterprising, creative contributors, ready to play a full part in life and work
- ethical, informed citizens of Wales and the world
- healthy, confident individuals, ready to lead fulfilling lives as valued members of society (Welsh Government, 2020a).

*Figure 2 Curriculum guidance for Wales (Welsh Government, 2020a).*

The new curriculum aims to not only change how subjects are taught, but also how digital literacy will be included within it. Therefore, at the time of this study there were various subject areas within the curriculum that were delivering different aspects or elements of digital literacy. These subject areas include Information and Communication Technology (ICT) which was scheduled to be replaced by Digital Technology in September 2021 (Powell, 2021); Computer Science; PSE/ABCh days, and the Digital Competence Framework (DCF) which is a cross curricula framework made available in September 2016 (Welsh Government, 2018c: 3). It should be stressed that although the DCF was the first element of the new curriculum to be released for implementation in 2016, not all schools had adopted this cross-curriculum framework at the time of this research. It is also noted that with regard to the digital aspect of the new curriculum for Wales, the DCF was a key recommendation:

> The need for a comprehensive DCF was a key recommendation of Professor Graham Donaldson's report, Successful Futures: Independent Review of Curriculum and Assessment Arrangements in Wales (2015), reflecting a proposal from an independent ICT

> Review Panel in 2013. The panel's report to Welsh Government noted that digital competence is as important in the twenty-first century as literacy and numeracy. (Welsh Government, 2018c: 5)

The educationalists interviewed in this study were teaching in various primary and secondary schools. The data reflects that different schools were at different stages of preparation for the implementation of the new curriculum, a situation that was documented and recognised by the Welsh government, 'we recognise that schools will be in different places and the pace and focus of activity will vary' (Welsh Government, 2020: 2). In addition, there was also a recognition that the imposed COVID-19 lockdowns had significantly impacted schools' preparation plans for the new curriculum:

> The response to COVID-19 has of course had a significant impact on schools and is likely to have disrupted their plans for preparation for the new curriculum. In terms of curriculum, schools will need to focus on two key aspects. They will need to: adapt their current curriculum and teaching to changing circumstances and prepare for a range of scenarios, prepare for rollout of the new curriculum in 2022. (Welsh Government, 2020: 2)

Therefore, this study was conducted at a time when there was a disparity amongst schools in Wales regarding their position within this transitional period from the old to the new curriculum, and at a time when schools were providing online or blended teaching as a result of the imposed COVID-19 lockdowns.

### 6.2.1 DCF

The DCF is a cross-curricular framework which has four high level strands, citizenship; interacting and collaborating; producing, and data and computational thinking; these high level strands are then subdivided into various elements (See Fig 6). 'For each element there are skill statements which describe the skills a learner would be expected to have attained at a given stage' (Welsh Government, 2018b: 5). The DCF was also the first element of the new curriculum for Wales to be made available in 2016 (Welsh Government, 2018b: 2).

| Citizenship | Interacting and collaborating | Producing | Data and computational thinking |
|---|---|---|---|
| › Identity, image and reputation<br>› Health and well-being<br>› Digital rights licensing and ownership<br>› Online behaviour and cyberbullying | › Communication<br>› Collaboration<br>› Storing and sharing | › Planning, sourcing and searching<br>› Creating<br>› Evaluating and improving | › Problem solving and modelling<br>› Data and information literacy |

*Figure 3 DCF strands and elements (Welsh Government, 2018b: 5)*

To reiterate, the need for a comprehensive DCF was a key recommendation of Professor Graham Donaldson's report, *Successful Futures: Independent Review of Curriculum and Assessment Arrangements in Wales* (2015). The report reflected a proposal from an independent ICT Review Panel in 2013. The panel's report to Welsh Government noted that digital competence is as important in the twenty-first century as literacy and numeracy (Welsh Government, 2018c: 5). The definition of digital competence offered by the Welsh Government is as follows:

> Digital competence is the set of skills, knowledge and attitudes that enable the confident, creative, and critical use of technologies and systems. It is the skill set that enables a person to be a confident digital citizen, to interact and collaborate digitally, to produce work digitally, and to be confident in handling data and computational thinking (problem solving). (Welsh Government, 2018c: 2)

The Digital Competence Framework (DCF) was made available for implementation in September 2016 (Welsh Government, 2018c: 2). However, before September 2021 its adoption was optional rather than mandatory, i.e., the DCF was not statutory. As the following findings show, the participants of this study represent a mixture of schools, some of which had been implementing the DCF since 2016, and others who worked in schools where it had not been implemented at all. The participants were asked various questions about the macro theme DCF to explore their views and understanding of this cross-curriculum framework such as, how they envisaged the

strands being implemented into lessons. They were also asked about the training they had received regarding the implementation of the DCF across the curriculum. The micro analysis of the data produced the following themes: teachers' knowledge; teacher training; lack of importance; digital poverty; citizenship strand, and mechanistic skills.

#### 6.2.1.1 Teachers' Knowledge

Participants were asked various questions about their views in relation to the implementation of the DCF. A common theme that emerged from the analysis was teachers' lack of sufficient knowledge. Due to the various elements included in the four strands of the DCF (See Figure 6) and the cross curricular nature of the framework, all teachers were required to include various elements of the four strands in their lessons. The following examples exemplify the concerns they held:

> Digital literacy and everything is definitely something I think a lot of teachers are going to struggle with because there are some things probably on there that we don't know ourselves, and there's a lot of going back and you know us having to have a go before teaching them you know.
>
> (Amanda, 23, Teacher, Welsh Language Primary School)

> The sort of data side of things the spread sheets that's always been a bit of an issue because I think staff have always been a little bit scared to use those themselves, and so they can't model effectively the confidence and the competence for pupils to use those tools.
>
> (Richard, 36, ICT Teacher, English Language, Secondary School)

> When it comes down to DCF it was trying to get teachers through that mindset that you're now a teacher of digital skills and this is another thing, you're a teacher of literacy you're a teacher of maths

> and you've accepted that, but now it was kind of like and it's a hurdle that's still, I think we've definitely got a leg over there I think the training leg is coming over now.
>
> (Charlie, (1), 47, ICT Teacher, English Language Secondary School)

The comment made by Charlie regarding teachers being maths and literacy teachers as well as teaching their own subjects refers to another cross curricular framework, the National Literacy and Numeracy Framework (LNF). The LNF became 'statutory in September 2013 for all learners aged 5-14' (Welsh Government, 2013: 2), and saw teachers having to 'integrate literacy and numeracy into their teaching' (Welsh Government, 2013: 2). The examples cited above indicate that teachers were concerned about a lack of competency, knowledge, confidence, and the correct mindset required to fully integrate the DCF into their teaching. Additionally, there appeared to be a genuine lack of knowledge regarding the digital environment that could also impact the successful implementation of the DCF. The following examples are responses from the participants who were asked if they knew why Google, Facebook etc were free to use:

> I mean I don't know but Facebook is free for us all isn't it and so is Google, it's free for us all, you can get apps on Google I know you have to pay for those, lots of add-ons that you pay for, and with Facebook I think if you, they've got lots of ads that's just scrolling through your feed, and if you click on accidentally you can click on something that you've got to pay for, so obviously Facebook will get a percentage of whatever you pay because it's advertised on there, so I don't know maybe that's how they do it, I wouldn't even, I wouldn't even know it's just like a whirlwind isn't it?
>
> (Ava, 40, Supply Teacher, English Language, Primary School)

> I don’t think adults are aware I don’t think the teachers are aware.
>
> (Arya, 23, LSA, English Language, Primary School)

Marcuse argued that individuals in the post-industrial society had been subsumed into the neo-liberal capitalistic system of the time, and that this subsummation had been achieved by what he termed as the mechanics of conformity. This subsummation of an individual into the system discouraged dialectical thought and promoted the type of thinking that Marcuse describes as uncritical and one-dimensional. Therefore, it could be argued that teachers’ lack of knowledge about the digital environment is as a result of their subsummation into the ubiquitous and pervasive digital system of the post digital era created by neo-liberal private companies. Moreover, it is suggested that this subsummation is so extreme that it has produced a society that views the digital environment in a one-dimensional instrumental and anthropological way – as a means to an end, devoid of critical thought and negation. As such, there is a one-dimensional perception of digital devices and the digital environment that discourages dialectical thought. and promotes the type of thinking that Marcuse describes as one-dimensional.

#### 6.2.1.2 Teacher Training

Participants were asked if they had received training in relation to the implementation of the DCF. Interviewees’ responses showed significant inconsistencies in relation to the levels of training received. While some of the participants had not received any training at all, others had received some training from the appointed digital leads within their school, as per the following examples:

> We’ve just been told well there you go there’s the iPads just get on with it, we haven’t really had any instruction of what to do with it not yet in any way.
>
> (Alison, 34, LSA, Welsh Language, Primary School)

> Our digital lead I know has had quite a lot of training, which she then will bring back to our add sessions (additional training

> sessions) and feedback. We did have coding training, so I know I missed that. I think I was doing something else at the time so there has been a little bit, but I wouldn't say it's been intensive training for all teachers, but like most things, like I know I'm English lead and I get most of the training and I feed it back. It tends to be me that's always sent on those courses and we would tend to do it like that, so we know that at least one person has got a really good understanding, then they can support the other teachers as necessary. So, I wouldn't say I myself have been on a lot but then I know a teacher who finds it quite difficult with digital things and is not as confident digitally has had a bit more support from the digital lead at different times, so we tend to work like that really.
>
> (Barbara, 34, Teacher English Language Primary School)

Arguably, the inconsistency of training provisions regarding the implementation of the DCF could go some way to explaining teachers' lack of digital competence and confidence.

The participants were also asked whether the teacher training provisions at the beginning of their careers had included digital literacy. The analysis of the responses showed that teachers who received teacher training prior to the publication of the 2015 Donaldson report had little to no training regarding digital literacy. Those that had received training stated that the focus was on how they could use digital technologies as part of their pedagogical practice.

> It was like as if they'd found people who had found things they were good at and asked them to present on it, for example sort of using applications to do assessment for learning stuff, like quizzes and stuff around the classroom, rather than you know specific to Geography which would have been far more useful, what sort of programmes are out there that you can use to really enhance the Geography or the History or the RE, not this is a different way of

> doing it digitally, a more beneficial way would be, how can we teach Geography through digital literacy through digital learning would have been more ideal.
>
> (Adam, 24, Teacher, English Language Secondary School)

> As part of our observations that there would be a section that we had to show were competent using digital means, but it was more things like would you use PowerPoint to prepare your lessons, are you using digital technology effectively within your lessons rather than promoting it through the children using it.
>
> (Barbara, 34, Teacher English Language Primary School)

> I think I was really fortunate obviously because the Donaldson Report came out in 2015, and I obviously went to university in 2016, and the DCF framework was quite fresh at that point as well, so we did have a lot of lessons going through the DCF and looking at the skills, then obviously going from nursery up to year 6 and just the basics on how to get nursery children involved with digital learning and everything like that.
>
> (Amanda, 23, Teacher, Welsh Language Primary School)

The responses suggested that teacher training provisions relating to digital literacy were minimal and focused on how to employ digital devices in their pedagogical practice. However, since the publication of the Donaldson report (2015) teacher training provisions had altered to include provisions that focused on the basics of the DCF and offered training that had a greater focus on the students' use of digital devices and the digital environment. It is therefore suggested that the new training provisions challenged the previous one-dimensional teacher training provisions by incorporating a more multi-dimensional approach. Previous teacher training provisions were one-dimensional in two ways, firstly little to no training regarding digital literacy was

provided, and secondly, if training provisions were available there was a one-dimensional focus on how digital technologies could be employed as part of their pedagogical practice. Essentially, there was no training that related to the students' use of digital devices and the digital environment. That being said, Amanda spoke at some length about her teacher training, and while she considered herself fortunate to have received training that covered the DCF, she also stated that she found one aspect of the training difficult:

> When I was doing my teacher training type thing and we had a specific lesson plan we had to do, and like on the top it said ICT, PSE, assessing blah de blah, and I got pulled up once because in one lesson there was no technology used at all except for me using a PowerPoint at the start of the lesson as an introduction, and the lecturer said to me you didn't put down that you used the white board as your IT, and I said yeah but that's not part of the IT and he was like yeah, yeah you've used IT so you need to put it in that you've used IT like it's ticking the box.
>
> (Amanda, 23, Teacher, Welsh Language Primary School)

Amanda's response indicated that although the one-dimensionality of teacher training provisions regarding DLE were being challenged by the inclusion of training relating to the DCF, an element of one-dimensionality still remained. For example, delivering a PowerPoint presentation at the start of a lesson was viewed as meeting the DCF cross curriculum requirements; or as stated by Amanda - ticking a box. However, whilst the data suggested that teachers were being trained to view the DCF as a tick-box exercise, participants had a more multidimensional view, as per the following examples:

> We're very much for not doing things for the sake of it, doing things properly at different points. I'm not just shoehorning things in for the sake of it and actually, really, we'd struggle. We wouldn't have

> enough technology available to be able to have it in every math lesson.
>
> (Barbara, 34, Teacher English Language Primary School)

> I try to make them very aware not to shoehorn things in and just fit it in as a tick-box exercise, it needed to have meaning, and like I said our staff have, it took a long time it took you know a couple of years for them to really start understanding how it fits in.
>
> (Debbie, 30, Computer Science Teacher, English Language Secondary School)

The participants' responses suggested that teacher training provisions had previously produced one-dimensional teaching in relation to ICT in the respect that the training they received focused solely on using digital technologies for teaching purposes. However, with the introduction of the DCF, this one-dimensional use of digital technologies solely for pedagogical practices was changing. This being said, issues were identified with newer training provisions, for example, if a piece of digital hardware had been used in any context whatsoever in a lesson, then teacher training provisions saw this as satisfying the DCF element of the lesson. Interestingly, this viewpoint was being challenged by the teachers whose view was, they would not just shoehorn in the digital element to satisfy the DCF requirement of the lesson. Nevertheless, participants' saw the successful implementation of the DCF as being dependent on the use of digital devices. Therefore, it is further suggested that there remained a one-dimensional view that digital devices were a necessary requirement to implement or integrate the DCF into a lesson. Furthermore, this suggests that there is still a predominant focus on the teaching of, and use of digital mechanistic skills, as opposed to developing an understanding about what Marcuse views as the essence of technology.

#### 6.2.1.3 Lack of Importance

Participants' responses indicated that the DCF was not considered as important as the LNF. The main reason cited for the disparity between the importance placed upon the respective cross curricula frameworks was that the DCF was not subject to assessment, unlike the LNF which had rigorous assessment criteria:

> It is critical in all schools that planning for assessment is integral to, and continuous with, curriculum planning. Assessment should be truly across the curriculum rather than just through English, Welsh, and mathematics. Schools will need to ensure that whole-school systems are in place to support the consistent and rigorous assessment of literacy and numeracy skills across the curriculum. (Welsh Government, 2013: 8)

The following examples exemplify the lack of importance attributed to the DCF and offer reasons as to why this is the case:

> That was a big sort of hurdle with staff because they felt that well if it's not being assessed well, I'm not going to worry about doing it especially some of the schools I was talking to when I was developing it, that was their thinking, I'm not going to put too much effort into it because no one is going to test it.
>
> (Debbie, 30, Computer Science Teacher, English Language Secondary School)

> There isn't a national test for things like the DCF so that's why it's always, even though it's the third skill it's always seen as um, I don't want to say not as important, because that's probably wrong, but everyone knows that English and Maths is the B all and end all, and that is the structure of the curriculum, that's the structure of every subject, you know we won't get carried away, everyone needs English and Maths probably more than they need digital

> competence, but it would be nice if that was again probably more prominent then in a lot of curriculum areas.
>
> (Colin, 30, ICT Teacher, English Language Secondary School)

In Marcusian terms, there is a one-dimensionality regarding the lack of importance attributed to the DCF, in the respect that, unless a framework is being assessed it is not considered important. One of the digital experts interviewed stated that:

> That has to change within the new curriculum because it isn't just about oh well that's a GCSE so it's important and we need to get five A* to C's or we know ESTYN are going to hammer us on that so we're going to focus on that, that has to change and hopefully that will change, you know partly it should be carrot and stick hopefully fewer sticks but you kind of want to have more carrots to say well of course we're going to be developing confident digital practice because we're doing our young people a disservice if they leave school at 16 or 18 and they're digitally incompetent, and I think that's a failing of the school system.
>
> (Oliver, Digital Literacy Expert)

It could therefore be argued the lack of importance attributed to the DCF is a result of the way the school system is structured. As such, it is further argued that the school system itself is designed in a one-dimensional way, in the respect that, the system has been designed to promote a one-dimensional teaching focus driven by the need to satisfy assessment criteria. Ergo, if there is no assessment then there is no value or importance afforded to a subject or framework. Therefore. what takes precedence is based on achieving assessed results that organisations such as Estyn can report on. However, Oliver the digital literacy educational expert's comments and views demonstrated his recognition of this one-dimensional view of the schooling system. As Oliver stated, this was something that in his view needed to be addressed and

changed. Therefore, there is a recognition and a view that challenges this one-dimensional systemic perspective of education.

#### 6.2.1.4 Digital Poverty

Participants who worked in schools situated in deprived areas expressed concerns regarding a lack of digital devices and digital resources that they believed may impede the successful implementation of the DCF. In addition, they added that in order to fully implement the DCF across the curriculum more digital devices and digital resources would be needed:

> It's really hard to be promoting these things when you haven't got the technology to use. So, we definitely feel the drive and we understand it and we want to be able to get our children literate in technology, but it's very difficult unless you are given the tools to get there.
>
> (Barbara, 34, Teacher English Language Primary School)

> It's going to take a really long time for, you know if they want the DCF to be a cross curricula responsibility it's really difficult when the resources are not there already because how are you meant to do it if you've got nothing to work with you know.
>
> (Amanda, 23, Teacher, Welsh Language Primary School)

The analysis of the responses suggests that to successfully integrate the DCF into the curriculum more digital devices would be required. Therefore, it could be argued that there was a one-dimensional view of the DCF that saw the inclusion and use of digital devices as integral to its successful implementation, and the lack of digital hardware as being problematic. It could therefore be argued that if there is a perspective that sufficient numbers of digital devices are integral to the successful implementation of

the DCF, there is also a one-dimensional perspective that focuses on or prioritises the teaching of mechanistic digital skills.

#### 6.2.1.5 Citizenship Strand

The four strands of the DCF include both mechanistic and knowledge based digital skills. The citizenship strand in particular focuses on the social, cultural, and ethical use of digital technologies and is designed to encourage teachers to ensure that their students become - informed digital citizens. The citizenship strand of the DCF was of particular interest to this study, as one of the questions posed was: In addition to the mechanistic skills being taught are students sufficiently educated about how digital technologies use and affect them in a social, cultural, and ethical capacity? As such, importance was placed on locating the educational provisions where the social, cultural, and ethical aspect of digital literacy were being addressed. The citizenship strand aims to ensure that students become informed digital citizens as per the following outline from the Welsh Government Digital Competence Framework Guidance Update- June 2018:

> The focus of this strand is on learners developing the skills needed to contribute positively to the digital world around them. These skills will help learners to critically evaluate their place within the digital world, so that they are prepared to encounter the positive and negative aspects of being a digital citizen. Critical thinking skills, strategies and tools will be developed and applying them in all aspects of their digital lives will equip learners to become responsible, independent consumers and producers of digital products in the rapidly changing digital world. (Welsh Government, 2018b: 6)

The most common interpretation of the purpose of this strand by the majority of the participants was that it dealt with online safety. In many cases the focus and the elements of this strand were seen as something that would remain a part of the Personal and Social Education PSE part of the curriculum, or that it would be dealt with by the pastoral care providers in the school, as the following examples demonstrate:

> Citizenship that's it yeah, I was thinking stay safe online, citizenship then um a lot of that really, I'd love to say will be covered in PSE, now PSE is changing a lot, and it's going to be more brought into the curriculum, that's my view on it but I know with our health and wellbeing they've done a lot with the citizenship strand.
>
> (Colin, 30, ICT Teacher, English Language Secondary School)

> There's more kind of like PSE type lessons that we do, so discussing social situations and a lot of things we discuss whether it's right or wrong to do with um, mostly to do with social media if I'm honest because it just plays such a big part now in children's lives.
>
> (Amanda, 22, Teacher, Welsh Language Primary School)

> I'd say the element of the DCF or the strand of the DCF where most what's the word we're competent with then and best at delivering here would be the ethical element of digital literacy taking care safeguarding online we've got a pastoral support team which deal a lot with day to day pastoral issues and a lot of their time is dominated with educating kids and resolving issues mainly as a result of that educating the kids about safe use of mobile phones.
>
> (Adam, 24, Teacher, English Language Secondary School)

One of the focuses of this strand is to 'help learners to critically evaluate their place within the digital world' (Welsh Government, 2018b: 6). However, the analysis of the data suggested that this strand was predominantly viewed as the online safety strand, and in many cases seen as a strand that can be annexed out of the cross-curriculum framework. To further explore the type of information included in their lessons teachers were asked if they educated students about how Google, and social media platforms make their money. They were also asked if they thought students were already aware of this type of knowledge about the digital environment. Responses to

this question produced some interesting results. For example, the only participants that categorically stated they taught students about this aspect of the digital environment were from FE colleges. These participants also expressed the view that students did not possess this knowledge until they imparted it to them, as per the following examples:

> Not until we tell them. That's what we cover, we have information skills sessions and again that's one of the elements we cover in information skills sessions and it's also an element of their own digital footprint, they're own, so we cover a lot of work really in that area, but it's the, how authoritative it is and this year safer Internet day in February, the theme was you know sort of fake news, because it was very topical, so we created a flip book for learners with some real you know Instagram and Facebook content which was absolutely false, so we've created a resource with photographs that were out there but then found the real one and the context that that was you know of when that photograph was taken, so we create resources to try and show and demonstrate how data can be manipulated, how sources on the Internet may have extreme bias, and an agenda behind it, so it's just to make them more digitally savvy.
>
> (Tony, 55, Learning Resources Manager, FE College)

> If you have known nothing else, if you've been on the Internet since the age of eight it's normality. Yes, and again what we do again, because we link it, we try to link it to employability you know and just make that link that it is important for your future, it is important for your career potentially, if you post something and again the news over the last couple of years is littered with casualties of people who've been appointed to very high profile posts and they've had to resign the next day, because within a day some comment five years

ago surfaced and they've had to step down from you know quite senior roles.

(Tony, 55, Learning Resources Manager, FE College)

The following represents some of the responses from participants who taught in primary and secondary schools:

It is an element of the Digital competency Framework it is a strand but I don't think that that's delivered as much, it might be in ICT lessons or in another department but I know we don't do anything surrounding that but you know saying that we could get a lot from it and it's just not something we do at this moment so I really don't think there's that.

(Adam, 24, Teacher, English Language Secondary School)

There almost needs to be a separate strand for what are companies doing with your data, how it's used and how it's mined and so forth you know.

(Colin, 30, ICT Teacher, English Language Secondary School)

I don't think I've ever witnessed even down to when I was having e-learning safety when I was in school about information gathering off social media platforms or anything.

(Arya, 23, LSA, English Language, Primary School)

I don't think we specifically have taught about how data can be sold and how data can be used or misused by other companies in order

> to, you know, sell on information about you. I don't think we've really covered that per se.
>
> (Betsy, 60, Head Teacher, English language Primary School)

> For the digital environment I suppose it all depends on if we're saying we want pupils to thrive and that's what the digital competence sort of theme is allowing or you know developing pupil skills to be able to thrive in an ever increasingly digital world. I suppose my feeling on that would be I don't necessarily, I mean I look at it as in we are literally trying to give pupils the digital skills to be able to work in a digital world and that's my main priority when I look at it.
>
> (Richard, 36, IT Teacher, English Language, Secondary School)

The analysis of these responses suggested that knowledge relating to how Google, Facebook, Instagram etc make money is not being imparted to students at primary or secondary school, regardless of whether the schools had already implemented the DCF or not. Responses from FE college participants substantiated this situation when they stated students aged 16+ arrive in college ignorant and devoid of this information. Therefore, it could be argued that in Marcusian terms the essence of technology was not being conveyed to the students as part of their digital literacy education. In other words, their education did not encompass the metaphysical perspective or analysis of the essence of technology. This is very similar to the Heideggerian viewpoint. Heidegger's analysis firstly establishes the view that technology is a means to an end, and a human activity, and that this 'current conception of technology, according to which it is a means and a human activity, can therefore be called the instrumental and anthropological definition of technology' (Heidegger, 1977: 5). Heidegger's view is that although this instrumental and anthropological definition of technology is correct, it is an insufficient, and inadequate superficial view that is unable to really define what he refers to as the essence of technology (Heidegger, 1977: 3).

Marcuse suggests that one has to subvert and transcend the system that has been developed to produce critical thinking skills. Therefore, to critically evaluate the digital system or environment one firstly has to understand the essence of technology in a metaphysical way. It is suggested that there was a one-dimensionality to the information imparted to students regarding their social use of the digital environment which focused on the potential impact it may have on their future employment prospects.

The responses also suggested that students have been subsumed into the digital system to such a degree that the system has been in effect naturalised, as per Tony's comment "if you've been on the Internet since the age of eight it's normality". In addition, some of the participants were of the view that students were totally unaware of Google and social media platforms business model, and as such unaware of how they, as users, are 'instruments for economic profit accumulation' (Fuchs, 2012: 697). The following examples demonstrate the degree to which students understand the digital environment and their use of digital technologies:

> I would say very little to no understanding with regards to their place in the whole system and where they fit and why, they don't ask themselves why they're so obsessed with what's in front of them the why almost doesn't matter.
>
> (Adam, 24, Teacher, English Language Secondary School)

> To be honest with you I imagine they probably don't, they understand obviously the risks and dangers but not necessarily, I don't know if they do know the infrastructure of it and how it works and how clicking on this will give someone some money but no, I don't necessarily think they realise that. They're very up with the influencers obviously on You Tube and things like that they tend to be quite knowledgeable about that, but no I don't know if they would be.

(Debbie, 30, Computer Science Teacher, English Language Secondary School)

No because it's like going back to the Google thing you know with people paying to put themselves up the Google results thing and no, I think learners find that quite surprising you know and accepting cookies and stuff a lot of young people just accept them without even any consideration as to what other information they might be disclosing, so no I don't think, no I don't think they have much of a concept.

(Thomas, 50, Learning Resources Manager, FE College)

Marcuse argues throughout *One-Dimensional Man* that the mechanics of conformity resulted in a lack of critical thinking. Therefore, it could be argued students' lack of critical appraisal of their use of digital technologies and the environment is a symptom of the way the mechanics of conformity have contributed to promoting one-dimensional thought in relation to the students view of the digital environment. In addition, some of the participants held the view that even if students developed an in-depth understanding about the digital environment they would not care because it is free. As such, teaching mechanistic skills for employment purposes was viewed as more important, as per the following examples:

Yes, do they have an awareness it depends which year group? I think the younger ones Key Stage 3 probably not, the older ones definitely do but they don't care because it's free, and when something is free if it's useful to them and why should they, I say why should they care, that sounds harsh but if they're using the platform they're using the product then you know these platforms and products would not be anywhere near as popular as they are if they had to be, if there was a subscription fee with them.

(Colin, 30, ICT Teacher, English Language Secondary School)

> I don't think it really makes much difference because people are already aware of how that works, I mean huge success of the film *Social Dilemma*, I don't know if you saw that on Netflix. It was hugely successful the kids were all talking about it but it makes absolutely no difference, they all still use it, they all, and it's just confirmation bias, the kids love it you can present those facts to them, but they don't necessarily believe it even in some cases, so for me the big thing is actually giving them the skills to be able to work.
>
> (Richard, 36, IT Teacher, English Language, Secondary School)

> You could say oh you know are you aware of the impact this is going to have when you're applying for jobs in the future, I think in some cases the pupil will just be, I don't care. I think it's, I'm not sure, I'm not sure if they're aware to be honest with you.
>
> (Susan, 28, Maths Teacher, English Language Secondary School)

The analysed data suggests that teachers viewed students as being subsumed into the digital system to such a degree that even if they were furnished with greater knowledge, it would have no effect on how they use, view, or interact with the digital environment. In addition, participants were also of the view that preparing students for employment purposes by teaching mechanistic skills was more valuable and beneficial. Therefore, it could be argued that the multidimensional approach to DLE embedded in the DCF, and the Welsh Government's objectives, to educate future citizens to be able to critically evaluate their place in the digital world is not being fully embraced in practice. Responses also indicated that the essence of the digital environment and its real-world implications and impact were not fully understood by the participants, and in turn, not fully explained to students. Even when participants noted that the students did possess an understanding, there was an inference that this understanding was superficial. For example, Oliver the digital expert was of the view

that understanding how an algorithm works was a key skill as per the following example:

> You don't need to know a formal definition of what an algorithm is but I want you to understand that algorithms exist and make decisions about your lives and actually that kind of algorithmic governance and transparency piece is, you understand that your Facebook feed is not what everyone sees that's curated for you because of your preference and it's targeted to you, and you understand about how things propagate across social media, not because they're true, it's because they're popular and you know that's the thing, around this is shaped public discourse, it can shape elections it can shape you know societal discussion and it can bring down Governments, so the power of technology and algorithms is profound, and obviously remember they're not like neutral things so you know how many times have we seen algorithms that have been systematically biased against like black people.
>
> (Oliver, Digital Literacy Expert)

However, Colin an ICT teacher in an English medium school held a different viewpoint as per the following example:

> Just because someone doesn't know how an algorithm works, doesn't necessarily make them not digitally competent, I value spread sheet skills much more.
>
> (Colin, 30, ICT Teacher, English Language Secondary School)

While the ethos of the DCF citizenship strand promotes and encourages educators to teach students about the digital environment in a way that impresses upon them the real-world implications and impacts. In practice this was seen as less important than

other aspects of the DCF such as developing mechanistic digital skills. Subsequently, this demonstrates that there is a disparity between policy and practice.

#### 6.2.1.6 Mechanistic Skills

As suggested in the previous section while participants recognised that developing an understanding of the digital environment was an aspect of DLE, more importance was placed on mechanistic skill development for employment purposes, as the following examples demonstrate:

> We did a big thing about obviously with the children of this generation now they're going to be going into jobs which don't even exist at the moment which are really big on technology so how really can we ensure they've got those skills.
>
> (Amanda, 22, Teacher, Welsh Language Primary School)

> We have to teach them these ways because look how many jobs are advertised now outside of the IT industry where they're asking for experience with Office, they don't ask for G-Suite they ask for Office so that's why you know they do, yeah they do the same things but you want the pupils to become confident and competent in using these to give them the better opportunities for employment later on because that's where they're going.
>
> (Charlie, 47, (1), ICT Teacher, English Language Secondary School)

While the new curriculum includes elements that consider and promote teaching digital literacy skills beyond the mechanistic. The analysis of the data surfaced evidence that suggested there was a government educational directive that concentrated on preparing students for employment:

> I think it is important the Welsh Government are getting it clear to us even at primary level, even at nursery level, really how important it is that children becoming really au fait really familiar with these technologies that they use them as readily as we pick up a pen and pencil sort of thing, you know?
>
> (Betsy, 57, Head Teacher, English language Primary School)

However, the new curriculum offers a wider focus of DLE that includes educating students to become engaged future citizens of Wales as Oliver, the digital expert, explains in his comments:

> I think in the longer term it's been a much more appropriate and sustainable solution to the kind of challenges in Wales but yeah I think also there's always a frustration around you know, if you have an idea of how you want things to change how that sits within a wider kind of reform context, and obviously at the time there were lots of concerns about the education system in Wales, some of it's more kind of external like Pisa, and other kind of international metrics, but actually just saying was this fit for purpose for young people in Wales, you know, what do we want to achieve from education in Wales, and clearly digital was a key part of that in a sense of being a, you know the four purposes you know, but actually being a, creating future citizens of Wales and it not just being economically driven, it's not like let's make them effective workers for the work force this is about being engaged future citizens of Wales.
>
> (Oliver, Digital Literacy Expert)

Therefore, the one-dimensionality that existed previously is being challenged with the introduction of the new curriculum. As such, digital literacy is now being seen in a more holistic way. However, while the overarching view of the new curriculum aims

to provide a more comprehensive DLE, this study found disparities between policy and practice.

#### 6.2.1.7 Summary

The DCF became statutory in September 2021 and crosses all of the curriculum areas offering students digital skill development from the age of 3 to 16, as exemplified by Oliver the digital expert:

> I think that wider rethinking about having digital competence as a cross-curricula skill and then having you know Computer Science as part of the Science and Technology area learning experience is probably a much more sustainable approach, and it also makes it, by tying science and technology together I think you can do some really innovative kind of learning and teaching type stuff there, but also ensuring digital competence has the prominence because it's a statutory cross-curricular skill with literacy and numeracy so you know there's no getting away from it now you can't just say that's the ICT teachers problem, that's a whole school responsibility to acknowledge that over the continuum 3 to 16 that you have to think about developing digital competence.
>
> (Oliver, Digital Literacy Expert)

The DCF is the digital heart of the new curriculum. Students can also learn digital skills in Computer Science and Digital Technology; however, these subjects are optional. Therefore, it appears the DCF will be the vehicle that offers every student the opportunity to develop a range of mechanistic and knowledge based digital skills. In principle, the DCF is a multidimensional framework that aims to offer a comprehensive set of digital skills. However, this study indicates that the successful implementation of the DCF may be impaired by: educators' lack of knowledge that could be further compounded and perpetuated by a lack of suitable training provisions; a lack of importance attributed to the framework by educators who tend to hold a one-dimensional view that assessment value is directly linked to importance value; digital

poverty with regard to the number and type of digital technologies and resources available, and the indication that the citizenship strand is predominantly viewed as the online safety strand that could be annexed to PSE/ABCh or Wellbeing lessons. In addition, educators lack of knowledge and views about the digital environment indicate they are either unenthusiastic or unable to inform students about the real-world implications and impact of their use of the digital environment. In addition, the one-dimensionality that existed in the old curriculum that focused solely on teaching mechanistic skills for employment purposes is being challenged. While the overarching view of the new curriculum aims to offer a more holistic DLE to students, evidence indicates that there is a disparity between policy and practice.

### 6.2.2 Discussion

In relation to the in-depth interview findings and the DLE aspect of the new curriculum currently being implemented in Wales. Firstly, it is noted that the Welsh Government is now in the midst of delivering what they term as, 'a reformed and successful education system' (Estyn 2018: 2). 'Central to this mission is ensuring that learners in Wales have relevant high-level digital skills and are digitally competent' (Estyn 2018: 2). The findings of this research suggest that the rhetoric of this new curriculum and digital educational policy, is that it is a policy that aims to fully address, and indeed reverse previous educational ideologies instated by central governments. Essentially reverse the policies that had previously steered away from the idea that the curriculum should provide a child with an education that allowed them to 'relate learning to the life of the child or their society' (Wrigley, 2014: 21). This demonstrates that there is what Marcuse would term as multidimensional thought and behaviour being employed within educational policy deliberations. Moreover, the cross-curricular framework, the DCF which was made available for implementation in September 2016 (Welsh Government, 2018c: 2) states that 'digital competence is as important in the twenty-first century as literacy and numeracy (Welsh Government, 2018c: 5), and it is suggested that the DCF is essentially the digital beating heart of the new curriculum. Students will also learn digital skills in Computer Science and Digital Technology; however, these subject areas are optional. Therefore, the DCF, will be the vehicle that democratises digital literacy education by offering every student the opportunity to develop a range of mechanistic and knowledge based digital skills. Some of the knowledge based skills relate to the social, cultural, and ethical uses of digital

technologies and the digital environment (See Fig 6, page 154). Thus, demonstrating that there is a challenge against the one-dimensionality of the previously inherited curriculum. Marcuse 'contrasts one-dimensional with multi- dimensional thought and behaviour' (Kellner, in Marcuse, 2002: xxvii). Therefore, one-dimensionality is interpreted as 'conforming to existing thought and behaviour and lacking a critical dimension and a dimension of potentialities that transcend the existing societies' (Kellner, in Marcuse, 2002: xxvii). However, the findings of this study suggest that despite the DCF being made available for implementation in 2016 (Welsh Government, 2018c: 2) this framework is considered less important by educators than other cross-curricula frameworks such as the LNF. One of the reasons cited by participants for the disparity between the importance placed upon the respective cross-curricula frameworks was that the DCF was not subject to assessment. In contrast the LNF has rigorous assessment criteria, as stated in the Welsh Government Curriculum planning guidance document (2013):

> It is critical in all schools that planning for assessment is integral to, and continuous with, curriculum planning. Assessment should be truly across the curriculum rather than just through English, Welsh, and mathematics. Schools will need to ensure that whole-school systems are in place to support the consistent and rigorous assessment of literacy and numeracy skills across the curriculum. (Welsh Government, 2013: 8)

It is argued that this finding indicates there is a perception among educators that the curriculum is based on attainment and not one that would widen the education experience of learners. Conceptually Marcuse's analysis is based on 'the historical rise of a technological world which overpowers and controls its subjects' (Kellner, in Marcuse, 2002: xxv). Within this technological world:

> Metaphysics is superseded by technology, in that the previous metaphysical concept of subjectivity, which postulates an active subject confronting a controllable world of objects, is replaced by a one-dimensional technical world where "pure instrumentality" and "efficacy" of arranging means and ends within a pre-established universe is the "common principle of thought and action". (Kellner, in Marcuse, 2002: xxv)

Therefore, it is argued that this finding indicates that not just DLE but the entire educational curriculum and system has been orientated informed and shaped by

instrumentalist ideals. As a result, the aim of education is viewed as a means to an end, and this view has become the ‘“common principle of thought and action”’ (Kellner, in Marcuse, 2002: xxv).

Previous research regarding the introduction of computers into schools in the 1970s stated that because the British education system was exam-orientated it ‘affected the means by which innovations such as computer education were accepted, and the slow pace of the curriculum change that accompanies it’ (Longworth, in Capel, 1993: 49). This view was restated almost fifty years later by The Organisation for Economic Co-operation and Development review team:

> For Wales to measure learning up to the age of 14 on the basis of narrow and standardised forms of assessment was to risk bringing into being a student population with limited capacity for wider kinds of learning, as well as a teaching force focused on ‘getting students through tests’ at the expense of more creative outcomes. (OECD 2014, in Jones, 2016: 205)

Therefore, it is argued that the lack of importance attributed by educators to the DCF is due to the deeply indoctrinated instrumentalism which has been perpetuated by the historically exam orientated British education system. It is further argued that despite curriculum reforms this instrumentalist perspective is so ingrained in educational practitioners that it is difficult for them to place importance on educational provisions that are not subject to assessment.

### 6.2.3 Personal and Social Education (PSE)

The implementation of the new curriculum will see PSE becoming a part of the Health and Wellbeing AOLE. 'The previous Personal and Social Education (PSE) framework will become Health and Wellbeing; one of the six areas of learning and experience in the new curriculum' (PSE Association, 2019) (See Figure 7).

The new framework is a requirement in primary and secondary schools and states the key aims of Health and Wellbeing are to "develop the capacity of learners to navigate life's opportunities and challenges... developing healthy, confident individuals, ready to lead fulfilling lives as valued members of society."

'What matters' in the Health and wellbeing area has been expressed in five statements which support and complement one another:

- Developing physical health and well-being has lifelong benefits.
- How we process and respond to our experiences affects our mental health and emotional well-being.
- Our decision-making impacts on the quality of our lives and the lives of others.
- How we engage with social influences shapes who we are and affects our health and well-being.
- Healthy relationships are fundamental to our well-being.

*Figure 4 What matters statements health and wellbeing AOLE (PSE Association, 2019).*

The introduction to the Health and Wellbeing section in the Curriculum for Wales guidance document states:

> How we engage with social influences shapes who we are and affects our health and well-being. This Area can help learners understand the important role of *social influences* on their lives. These influences are comprised of rules, *social norms, attitudes,* and *values* that are created and reinforced by different social groups. It is through interaction with social groups

> that we experience these influences. They affect our identity, *values*, behaviours and health and well-being, and often do so without our being aware of it. (Welsh Government, 2021c)

Social influences are defined as 'any process whereby a person's attitudes, opinions, beliefs or behaviour are altered or controlled' (Welsh Government, 2021c). Social norms are defined as 'common standards within a social group regarding socially acceptable or appropriate behaviour in particular social situations, the breach of which has social consequences' (Welsh Government, 2021c). Attitudes are defined as 'a settled way of thinking or feeling about something' (Welsh Government, 2021c), and values are defined as 'principles or standards of behaviour; a person's judgement of what is important in life' (Welsh Government, 2021c). The guidance also states:

> Learners will need to engage critically with these social influences within their own culture, as well as those of others, in order to understand how norms and values develop. This can enable them to understand how their own behaviours, relationships and experiences are shaped. (Welsh Government, 2021c)

The participants were asked to describe the type of content included in PSE that related to DLE, and in what context these lessons were delivered. The analysis of the data found that the predominant focus was online safety relating to, accessing inappropriate content, online grooming, discouragement of online interactions with strangers, and protecting personal details such as advice about not disclosing your home address. The DLE aspect of the PSE framework was sometimes delivered by teachers but most commonly by external providers who were usually community police officers, as per the following examples:

> We do it from nursery, yes we've got Smarty the penguin who's our little computer thing and they've got to, because obviously they can't write in nursery so they put their finger print if they agree if they see something that's naughty online or that they don't like the look of they've got to tell an adult so we do a big online safety thing, and a police officer comes in then to talk to the children as well about things online.

(Alison, 34, LSA, Welsh Language, Primary School)

> A PSO comes in, normally at the end of year two and he's quite full on about what goes on, on the Internet, and he actually talked about, he comes in normally at the end of year two when he talks about You Tube and all that and I can remember last year him saying cause the boys were going oh we're on You Tube, what You Tube are you on, are you on the CBeebies You Tube and they were no we're, well I'm telling you now he said, your father and mother he said I can come and arrest them cause you are not old enough to go on and he's very, very, strong on it and he said that you shouldn't be watching anything like that.
>
> (Anna, 55, LSA, English Language Primary School)

> When we've ever done e-online sorry e-safety it's always only ever been about not talking to strangers and not putting you addresses on there.
>
> (Ava, 40, Supply Teacher, English Language, Primary School)

The responses suggest that in Marcusian terms the type of DLE content included in the PSE framework is one-dimensional in its focus, as these provisions mainly concern themselves with ensuring safety online from a variety of potential dangers such as bad actors, accessing inappropriate content and disclosure of personal details such as a home address. The importance of these online safety provisions is not negated. However, this focus is limited and does not offer the knowledge required to equip learners with skills that will allow them to develop the understanding that 'how we engage with social influences shapes who we are and affects our health and well-being' (Welsh Government, 2021c). Marcuse argued the transition had been made from the self no longer forging 'its identity through battling its id impulses and superego parent figures' (Kellner, 1984: 239) to the self now identifying with 'social ego ideals and

role models' (Kellner, 1984: 239). It is suggested that the current social apparatus and ideologies imbued in digital technologies and the digital environment are now a contributing factor in the socialisation of individuals and identities are being forged under their influence. It could therefore be argued that there is a new socially administered system that also dictates 'individual's very gratifications, thoughts and behaviour' (Kellner,1984: 239). The Welsh Government guidelines aim to provide an education that will 'help learners understand the important role of *social influences* on their lives' (Welsh Government, 2021c) from the responses analysed in this study it is suggested that the current provisions are not fully satisfying this aim. However, PSE/ABCh will in future be included in the AOLE Health and Wellbeing, and as such, whether these provisions will be implemented and teach students about the undue influence digital technologies can have with regard to their own individual socialisation remains to be seen.

Interestingly, the responses also demonstrated that if children were too young to write, they were offered the option of using their fingerprint to operate online safety educational software such as Smartie the Penguin. It is therefore arguable that by using educational software, these educational online safety provisions have in effect been subsumed into the technocratic system that has been created by private neo-liberal enterprises. The irony is not lost here, as essentially the educational system has incorporated online safety educational provisions that encourage nursery children who are not old enough to write to use their fingerprint as a method of operating the software. In effect, the children's bio-metric data is potentially open to data collection and curation by the private enterprises that create and provide the online safety software. This then raises the question; what elements or aspects constitute online safety? From the evidence here, online safety is viewed in a one-dimensional way that relates to online grooming and bullying with no considerations for other potential online safety measures, such as the implications of nursery school children's biometric data potentially being harvested and curated.

### 6.2.4 Discussion

The strands, and elements within the DCF that focus on the social, cultural, and ethical aspects of the digital environment are not afforded the same importance as other element such as the development of digital mechanistic skills. For example, the

citizenship strand of the DCF which would predominantly deal with the social, cultural, and ethical areas of DLE was viewed by the majority of the participants as being the strand that deals with online-safety. As such, this commonly held view serves to diminish or narrow the breadth and depth of the type of content that could teach students about their position within the digital environment in relation to their social use of digital technologies. Meaning that, knowledge relating to the extent to which both their external and internal lives are being datafied, or the inherent biases that they may be subjected to as a result of the constant use of digital technologies could be excluded. While there are efforts being made to offer more holistic DLE provisions that offer a multi-dimensional perspective there is still an element of one-dimensionality in the respect that it is 'lacking a critical dimension' (Kellner, in Marcuse, 2002: xxvii). Therefore, even though the citizenship strand of the DCF offers guidelines regarding the education of the social, ethical, and cultural aspect of the digital environment, this study found that in practice educators tended to view this in the narrow one-dimensional context of online safety. Moreover, it is also suggested that educational practitioners do not currently possess the depth or breadth of knowledge about the digital environment to enable them to sufficiently educate students. Therefore, educators' current interpretations or misconceptions of the citizenship strand and their lack of knowledge and training regarding the digital environment could negatively impact the policy aims of the Welsh Government. To elucidate, *The Welsh Government Digital Competence Framework Guidance Update-June 2018* states that:

> The focus of this strand is on learners developing the skills needed to contribute positively to the digital world around them. These skills will help learners to critically evaluate their place within the digital world, so that they are prepared to encounter the positive and negative aspects of being a digital citizen. Critical thinking skills, strategies and tools will be developed and applying them in all aspects of their digital lives will equip learners to become responsible, independent consumers and producers of digital products in the rapidly changing digital world. (Welsh Government, 2018b: 6)

The theories developed by Marcuse in *One-Dimensional Man* are read as a 'dialectical text, which contrasts one-dimensional with multidimensional thought and behaviour'

(Kellner, in Marcuse, 2002: xxvii). The policy aims of the Welsh Government demonstrate that they are now adopting a more multidimensional position in relation to DLE provisions. The findings from this research indicate that while government policy rhetoric regarding DLE is now multidimensional, the training provisions and educational professionals' views remain one-dimensional. Therefore, it is speculated that educational professionals have been subsumed into the instrumentalism of the educational system to such a degree that it is difficult for them to adjust their thought and behaviour and adopt a more multidimensional approach in their pedagogical practices.

Previous research has also identified problems with implementing government policy such as Crick and Moller who state that, despite 'government funded ICT initiatives, various reports throughout the decade identified problems with implementing government policy on ICT educational reform' (Crick and Moller, 2016: II). Wales' ICT curriculum was 'generally viewed to be more flexible and less prescriptive than the equivalent subject in England' (Crick and Moller, 2016: II). However, Wales was experiencing many of the same issues as England and Younie summarises the problems identified by these reports into five key areas, including management, teacher training and competence, as well as impact on pedagogy (Younie, in Crick and Moller, 2016: II). Crick and Moller note that:

> Computer studies in school – since the late 1990s generally named Information and Communications Technology (ICT) has evolved into IT studies with an emphasis on digital literacy and "office productivity" skills – significantly more mundane than the social networking and gaming for which many pupils use their personal digital devices. (Crick and Moller, 2015: 121)

It is interesting to note that Capel was of the opinion that the main focus of IT and computer education in the National Curriculum 'was technocentric' (Capel, 1992: 56). Its central focus was 'the computer and its associated technologies, with little regard for the wider human relations which produce it and on which it has an effect' (Capel, 1992: 56). Marcuse's analysis reworks the Hegelian-Marxian theme of reification and alienation in the respect that, the individual is losing 'the power of comprehending and transforming subjectivity as it becomes dominated by alien powers and objects' (Kellner, in Marcuse, 2002: xxviii). Therefore, it could be argued that if DLE

disregards the wider human relations involved in the production and use of digital technologies this could result in both an individuals' loss of comprehension and in them becoming alienated and as such 'dominated by alien powers and objects' (Kellner, in Marcuse, 2002: xxviii). For Marcuse, the discerning characteristics of a human being are free and creative subjectivity, therefore, if an individuals' economic and social life is dominated by the apparatus of administered technical labour and one conforms to what are perceived as the presiding social norms, then any potentialities of individuality or self-determination are lost. Thus, for Marcuse 'one-dimensional man' is 'alienated from the powers of being-a-self, one-dimensional man thus becomes an object of administration and conformity' (Kellner, in Marcuse, 2002: xxviii/xxix).

It could be suggested that the DCF is designed to combat this technocentric view, and although the findings of this study suggest that a degree of progress has been made in this direction, it is argued that there is still a 'rhetoric-reality gap' - the difference between what is being claimed for the use of computers in education, and what is current practice (Trend *et al.* (1999), in Haydn, 2004: 67). Therefore, whilst the new curriculum has in principle incorporated a more holistic multi-dimensional educational policy approach to digital literacy education in Wales, this study found that the disparity between policy and practice is still apparent. As such, there is a tendency to place more importance on teaching digital mechanistic skills rather than imparting knowledge to students about the digital environment and the social cultural and ethical aspects. Additionally, this investigation revealed that within the teaching profession there was a lack of specific DLE related knowledge. Previous research suggested that the professional development of teachers, was viewed 'internationally as the single most important factor in enabling effective integration of ICT into schools' (Harries, 2000: 17). Therefore, as this is an issue that has been identified as ongoing and unresolved it is suggested that this is a matter that warrants continued and sustained research.

While the DCF is seen as a new and malleable cross curriculum framework for educators to work within, the notion of IT being cross-curricula is not new. The creation of the National Curriculum in 1989 served to reaffirm 'the government's commitment to making IT an integral part of education' (Selwyn, 2002: 433). This was enacted by placing 'basic IT skills at the heart of the curriculum' (Dearing, 1993:

28). IT was to be ‘taught across conventional academic subjects’ (Selwyn, 2002: 433) as one of the ‘so called ‘cross curricular themes’’ (Selwyn, 2002: 433). The immediate result was that ‘teachers were suddenly not able to choose whether or not to consider the use of computers’ (Griffin and Davies, in Passey, 2014: 135). The findings of the focus group interviews supported this notion and confirmed the use and inclusion of IT skills in conventional academic subjects across the curriculum. Marcuse’s analysis ‘describes the mechanisms through which consumer capitalism integrates individuals into its world of thought and behaviour’ (Kellner, in Marcuse, 2002: xii). It is argued that the mandatory inclusion and use of computers in education, acted as a mechanism which subsumed the entire educational system into the private capitalistic technology companies’ world of thought and behaviour.

### 6.2.5 Impact of Digital Technologies on Behaviour

The previous section presented the findings that related to the digital literacy content of the PSE/ABCh framework, and the argument was made that due to the ubiquitous and pervasive nature of the digital environment it had the potential to socially influence individuals. In *One-Dimensional Man* Marcuse describes and analyses what is often termed as the ‘technological society that is, a society which has been restructured by technology, not only in terms of labour and leisure, but also ‘modes of thought’ (Kellner, in Marcuse, 2002: xii). Therefore, this section will present the findings from the analysis of the participants’ responses that relate to their observations and experiences regarding how digital technologies and the digital environment have impacted students’ behaviour, and their digital literacy skills. The participants were asked various questions regarding their observations of students’ behaviour, and if they had noticed any demonstrable changes since digital devices had become more ubiquitous. The analysis of the responses produced the macro theme, impact of digital technologies and the digital environment and the following micro themes; attention span and immediacy; aspirations; constantly connected; skills – unintended consequences.

#### 6.2.5.1 Attention Span and Immediacy

The participants were of the opinion that using digital technologies to play or work were more attractive options to students than other activities. In addition, participants

found that children were becoming increasingly less patient and unable to focus for long periods of time on tasks that did not involve the use of digital technologies, as per the following example:

> They'll stay on an iPad for ages absolutely ages but you ask them to do a task, holding a pencil or counting something, no ten minutes that's it then, but even on the interactive whiteboard you know when they're painting or doing some sort of activity, they'll stay on that for twenty minutes at least.
>
> (Alison, 34, LSA, Welsh Language, Primary School)

> I'm wondering if it's that immediacy that we've all sort of tapped into that's created the compulsions that we now face and everybody's got them, so even something as simple as seeing an advert for Special K cereal on the phone you go into the shop and you go and get it, it's a lot more compulsive it's a lot more immediate and it's a lot more irrational and you can see that in the children they are a lot less patient than they used to be, a lot less patient.
>
> (Ava, 40, Supply Teacher, English Language, Primary School)

> The pupils are obviously on the world wide web regardless of what they're doing, everything is instant they can, if they want to say something it's instant, trying to get pupils to actually sit there and consider and then put their hands up, listen to other people before jumping straight in and bla bla because that's what they're used to doing isn't it online, that feeds then into lessons and you can see that they can't, they find it difficult to hold conversations with each other because they can't, they can't listen and consider what's been said, not all of them not in all cases of course but then they do, they need

> to respond now, they have to say what they're going to say and I think that is a big part that's a big result of the way that they communicate online, definitely.
>
> (Richard, 36, IT Teacher, English Language, Secondary School)

The responses suggest students' behaviour and thought processes have been impacted in various ways such as attention spans and impatience. Richard's comment suggests the digital environment has indeed influenced students' behaviour and thought in a one-dimensional way in the respect that, they apply the way they communicate and behave in the online digital environment to real world social environments such as the classroom. This indicates that as Marcuse suggests, technology has restructured society and effected behavioural changes in individuals. Moreover, digital devices and the behemoth of the capitalistic system that we access through them have, one could say, become an integral part of our socialisation and the embodiment of the 'the social apparatus and ideology which requires submission to its rules, dictates and institutions' (Kellner,1984: 239). To reiterate, in 1963 Marcuse argued that the self no longer forged 'its identity through battling its id impulses and superego parent figures' (Kellner, 1984: 239), and that the transition had been made where the self-identified with 'social ego ideals and role models' (Kellner, 1984: 239). This theoretical perspective could be aptly applied to the current social apparatus and ideologies that are imbued in digital technologies and the digital environment. Essentially it is further argued that the self is now subject to being forged by the rules, dictates and institutions of the digital era. Ellul also analysed the tendencies that contribute to the technological society, however, whereas Marcuse draws on classical philosophical ideas within his analysis Ellul does not. Ellul sees the plasticity of societies as being significant in the advances of techniques. Essentially, Ellul identifies different factors to Marcuse. Marcuse sees the technological base as instigating the change in society, whereas Ellul sees the change in society as instigating the developments of technique:

> The machine is now not even the most important aspect of technique (though it is perhaps the most spectacular); technique has taken over all of man's activities, not just his productive activity. (Ellul, 1954: 25)

Ellul's analysis does not view capitalism as having the influence that Marcuse's analysis does, as illustrated by Ellul's suggestion that 'it is useless to rail against capitalism. Capitalism did not create our world; the machine did' (Ellul, 1954: 25). For Ellul, 'the machine took its place in a social milieu that was not made for it, and for that reason created the inhuman society in which we live. Capitalism was therefore only one aspect of the deep disorder of the nineteenth century' (Ellul, 1954: 25).

#### 6.2.5.2 Aspirations

A common theme that surfaced from the analysis was how students' life and career aspirations had altered to reflect occupations relating to the social aspect of the digital environment, such as You Tubers or Influencers as per the following examples:

> I've seen a big change with speaking about aspirations in class you know I like to do, we do a thing like when I grow up, I want to be blah de blah and a lot of the children I teach at the moment especially, they all want to be You Tubers.
>
> (Amanda, 22, Teacher, Welsh Language Primary School)

> They want to be TikTok influencers and You Tube influencers.
>
> (Debbie, 30, Computer Science Teacher, English Language Secondary School)

> The days of having I don't know astronauts, or footballers or whatever as heroes and who you want to be. Sometimes when we do aspirational things, it is often people who are on YouTube are the aspirations for some of our or many of our children at the moment which I find quite sad.
>
> (Betsy, 60, Head Teacher, English language Primary School)

> There's not a job out there where you sit and play games all day that isn't real that's just not how it works and I think the same with influencers I'm not sure they understand the fact that they get paid to influence something that maybe not, not as good as maybe they think it is.
>
> (Debbie, 30, Computer Science Teacher, English Language Secondary School)

The responses suggest that students' aspirational goals have been influenced and changed by the pervasive ubiquity of the digital environment in their everyday world. As Debbie stated, she is not sure they fully understand the logistics and implications of being an Influencer or a You Tuber. As such, it could be argued that this indicates students do not understand the essence of the digital environment and serves to demonstrate the digital environments' pervasiveness is influencing and shaping who they are aspiring to be. To explicate this point further, influencers are a new type of celebrity that have emerged since the 'emergence of social media as popular and powerful communication channels' (Khamis et al., in, Venus et al., 2019: 522). Facebook and Google's business model relies solely on their ability to gather, analyse, and monetise the data they collect in order to attract advertising revenue (Zuboff, 2019: 23). Influencers have the ability to attract millions of users and this is part of the 'commercial draw for brands to social platforms' (McCorquodale, 2021: 155). Social networks do not 'want to lose their most prolific and often most controversial content creators' (McCorquodale, 2021: 155). The users attracted to influencers will often follow them across platforms and are in many ways platform agnostic as they are invested in the influencer rather than the platform they appear on (McCorquodale, 2021: 82). The commercial interests of the platform are disguised as the user is drawn by the influencer and as such unaware of the commercial interests that enable an influencer to develop a career. Influencers suffer from a great deal of anxiety as they are 'building a career entirely in a space that does not belong to them, as such if YouTube suddenly ceased to exist, it would be the end of many careers' (McCorquodale, 2021: 93). There is a problematic nature to the digital influence industry that extends beyond 'trolling intimidation and spreading vile points of view' (McCorquodale, 2021: 156). For example, the mental health of influencers creating

content has been cited as problematic, due to them becoming 'stuck in an almost unmanageable cycle of daily supply and demand, in order to maintain high numbers of views and make enough You Tube advertising revenue to sustain their careers' (McCorquodale, 2021: 156). It could therefore be suggested that this is a result of what Marcuse argued 'was the total mobilisation of the material and mental machinery which did the job and installed its mystifying powers over the society' (Marcuse, 2002: 194). The impact of this on the individual was that they were unable to see beyond or behind the facade of the machinery – 'those who used it, those who profited from it, and those who paid for it' (Marcuse, 2002: 194). Therefore, this further supports the notion that in order for students to understand the social influence of the digital environment educational provisions need to include content that allows for a deeper understanding of how this environment is shaping and influencing them; essentially offering them the ability to see behind the facade of the machinery.

#### 6.2.5.3 Constantly Connected

Participants' observations of their students' use of digital devices, particularly smart phones indicated that students are constantly connected. Participant responses included terms such as addicted and obsessed to describe the relationship between students and their digital devices. This was a resounding opinion held by all participants as per the following examples:

> They are addicted there is an obsessive need for them to be on social media or some sort of social media platform all day every day… It's just the way they are, I don't think they necessarily want it, it's just the way their lives have been shaped really, their face to face interaction is always about what's gone on online or something they've seen or done online, something somebody's said, yeah there is a constant need to be connected.
>
> (Adam, 24, Teacher, English Language Secondary School)

> My sister is 14 and I had to physically take her phone off her and put it in the middle of the table so she could actually have a conversation with us.
>
> (Arya, 23, LSA, English Language, Primary School)

> If they were allowed, they'd all sit there staring at their screens all day.
>
> (Susan, 28, Maths Teacher, English Language Secondary School)

Adam's comment "it's just the way they are" perfectly reflects Marcuse's analysis of how the mechanics of conformity created a situation where individuals had lost the ability to think or behave critically and dialectically. Therefore, the analysis of the data suggests that students' behaviour and lives have been shaped by the neo-liberal private capitalistic digital system in the same way that Marcuse describes societies lives being shaped by consumer capitalism in the post-industrial age. The following examples are offered to further exemplify this analysis:

> I mean you know they hit a certain age and then their life is absorbed on their phone really, there's not many you know, once they reach year 7, I don't think there's many children who don't have a phone by that age so everything they do it would be on this phone.
>
> (Amanda, 22, Teacher, Welsh Language Primary School)

Angela spoke in a parental context about her fourteen-year-old daughter's use of her smart phone:

> She's constantly with the phone, it's constant, but I think that they're doing these Snapchat things they do the squiggle there's no actual purpose to the communication I think it just seems as if there's um,

> the volume is more important than the content its constant ding, ding, ding, ding, ding.
>
> (Angela, 55, LSA, Welsh Language, Secondary School)

Angela's observations of her daughter's use of her smart phone demonstrates the extent to which her daughter's behaviour has been shaped by the technological based that has reshaped society. Her daughter's need to be in constant communication and to create a large volume of communicative exchanges demonstrates what Marcuse terms as a false need. A need that has been created by the neo-liberal capitalistic digital system which has influenced her daughter's behaviour to such an extent that she is unable to imagine another way of living, behaving, or thinking. Retaining a user's attention enables these digital companies to increase their profits, therefore, this need has been created by the design features of social media platforms whose business model relies on volume of use rather than the quality of the users' communication.

> They're so engrossed in it, it's part of their lives I don't know how they can, because I think we look at it so differently and it's difficult then to see it through their eyes, and I feel like a blinking dinosaur telling them to get off, switch your phone off you know.
>
> (Angela, 55, LSA, Welsh Language, Secondary School)

The comment "it's part of their lives", is indicative of the ubiquity of digital technologies which from Marcuse's perspective further validates his theories that the technological base has reshaped society, so they are no longer able to imagine an alternative way of living, behaving, or thinking. As such they have been subsumed into the system to such a degree that they are not able to critically evaluate their position within in it. Further comments uphold this analysis regarding the influence of the digital system on behaviour:

> We always find it interesting when we go on things like residentials where we're quite strict usually on those things not having lots of

devices you don't need to bring them, or we'll say like okay you can bring them but you get half an hour in the evening and that's you limit, and then we're playing board games and you see in that half an hour every child, there's just no communication anymore and they even send a message to each other in the same room, we find that really quite astounding.

(Barbara, 34, Teacher English Language Primary School)

A hundred percent it's like an addiction yes, they all a hundred percent every single one of them their phone is out as they're walking out of the classroom at three o'clock it is out ready to look at yes definitely.

(Debbie, 30, Computer Science Teacher, English Language Secondary School)

If you have known nothing else, if you've been on the Internet since the age of eight it's normality.

(Tony, 55, Learning Resources Manager, FE College)

As soon as they come out from school they're straight on their phones and then that's all you'd hear about the next day would be I played Fortnite all night last night or you know I made a You Tube video or this that and the other and it's just, they don't understand … That's all their talking about it is literally taking over everything a child is doing.

(Arya, 23, LSA, English Language, Primary School)

There are several telling comments in the examples above that suggest the neo-liberal capitalistic private digital system has created a world that has subsumed society into

its world of thought and behaviour. For example, Tony's comment where he states, "if you have known nothing else since the age of eight it's normality". In addition, many of the participants used the word addiction to describe their students' use of digital technologies in a social capacity. Therefore, these responses further support the suggestion that students have been subsumed into the digital world which in turn has shaped and influenced their behaviour in what Marcuse would describe as a one-dimensional way.

#### 6.2.5.4 Summary

In summary responses indicated that students' attention spans have diminished in relation to tasks not being conducted using digital technologies, and the way in which students communicate with each other during classroom discussions has also been impacted. In addition, students' life aspirations have changed significantly since the emergence of YouTube and Influencer online careers. The analysis of the data also suggested that students are addicted and obsessed and unable to disconnect from their digital devices. These findings further validate Marcuse's theories that the technological base has reshaped society so that individuals are no longer able to imagine an alternative way of living, behaving, or thinking. As such, they have been subsumed into the system to such a degree that they are not able to critically evaluate their position within it.

### 6.2.6 Skills Impact - unintended consequences

A significant number of participants spoke about observed changes in students' abilities that coincided with increased social and educational use of digital devices. The responses suggested that digital technologies may be having a negative impact on the development of the following skills: critical thinking; telling the time; phones and apps; grammar, communication, and digital distractions.

#### 6.2.6.1 Critical Thinking

A topic that recurred during participant interviews was students overuse of the digital copy and paste function. Despite repeatedly requesting and encouraging students to paraphrase content in their assignments this practice was viewed as a recurring and ongoing challenge.

They'd go and find information and they would just copy and paste it into a word document, and the amount of times I've said what does that word mean then? And they start laughing and I'm like no no please do tell me, because I don't know what it means, so there's no way you know what it means without being patronising, you don't know what that means so we'd find that a lot.

(Alice, 27, LSA Secondary School, and Primary School)

I think that copy and paste is always an issue isn't it and how do you stop something like that from happening.

(Charlie, (1), 47, ICT Teacher, English Language Secondary School)

They'll copy and paste stuff that'll be like American that's a big, big, thing you know, there's a lot of that, yeah, they try to get away with doing the least amount of work so if there's a page then oh yeah copy that boof put it in um so yeah without it going through their actual brains you know.

(James, 50, Learning Resources Manager, FE College)

Copy and pasting not putting stuff into your own words those are quite common offences in FE.

(Thomas, 50, Learning Resources Manager, FE College)

We find as is universal you know students are given a project, the Internet is there, they type in, they find a website, they'll dump all

> that text into their project, done deal and it's not, so I think it makes it too easy to create a three page assignment where the content, the evaluation is not there. So, that is a recurring theme across where, it's the um, the learning from the content that they're finding and the evaluation and understanding and interpreting, paraphrasing, paraphrasing is lost in FE.
>
> (Tony, 55, Learning Resources Manager, FE College)

The participants' responses suggested that the digital function of copy and paste was impeding the development of critical thinking skills, and that this was a ubiquitous phenomenon. Marcuse argues that in the post-industrial society there was a demise in the ability to think critically which he attributed to the subsummation of the individual into the administrative system of the time. It is argued that the digital function of copy and paste is mechanistic and one-dimensional, and that learning this mechanistic function in Microsoft Office leads to major problems with quality of work, plagiarism, and knowledge acquisition. Indeed, this phenomenon questions how students understand knowledge itself in the digital age. Furthermore, it is also argued that the digital system and the type of functionalities it offers work in the same way as the mechanics of conformity described by Marcuse, and as such could be considered as a mechanic of conformity that promotes the demise of critical thinking.

#### 6.2.6.2 Telling the time – analogue

A skill that seems to have been affected as a result of digital technology is students' inability to tell time on an analogue clock. One participant stated that as a direct result of this lost skill they had changed the clocks in exam rooms from analogue to digital:

> When we're in exams now we've had to buy digital clocks, going back a few years we were skiing right in, I laugh at this right there was a boy, a lovely boy, very rich family and we were skiing in [name of location] and we drove back down to [name of location] and we were in a shopping centre, and he spent around about a

> thousand dollars on a watch right, you know money was no object to this boy right, his family had a lot of money, and we were like good god that's nice, "yeah" he said, "it's good", so we asked "what's the time then? what's the time?", "Oh, I don't know", "what do you mean?", "oh I can't tell the time", on the plane ride home we had to teach him how to tell the time.
>
> (Colin, 30, ICT Teacher, English Language Secondary School)

Neil Postman discusses the notion that at the start of a new technology's journey, the creators of the technology are more often than not unable to foresee the future cultural and societal implications or consequences that may arise. Postman offers the example of the monks who invented the clock in order to 'devote themselves more rigorously to God; it ended as the technology of greatest use to men who wished to devote themselves to the accumulation of money' (Postman, 1992: 232-234). Postman adds that 'Thamus understood well the limitations of inventors in grasping the social and psychological—that is, ideological—bias of their own inventions' (Postman, 1992: 241-242).

#### 6.2.6.3 Impact on Grammar

Several participants saw what they termed as a demise in grammar skills which they attributed to the use of text speak as per the following examples:

> I think it's not as good as it used to be, I even have work coming in online that's not spelt correctly and I'm like you have a tool there to help you and they still don't utilise that sometimes but yes spelling and grammar isn't as good as it used to be I would say especially with the use of computers the use of acronyms rather than full words so we often get like U instead of the word you so yeah they do shorten words a lot of the time so yeah I have noticed that over the last few years more techno, techno writing rather than actual writing.
>
> (Debbie, 30, Computer Science Teacher, English Language Secondary School)

> One hundred percent, one hundred percent it really riles me because I say, whenever I send any form of communication whatsoever if I'm sending a message on What's App or an I message it's always perfectly punctuated, it is, I send proper messages so people yeah you can see that in the pupils you know, they use short hand um very poor spelling and punctuation grammar particularly things like capital letters they don't bother with you know yeah we definitely see that definitely.
>
> (Richard, 36, IT Teacher, English Language, Secondary School)

> When I write a text message, I try to spell it correctly and not use lol and all the rest of it um what happens is that when the kids are transferring, they're actually on the machines and when they're in examinations you're not allowed to have spell check so take a sentence I went to school and it will be I went 2 school.
>
> (Edward, 64, ICT, Computer Science Teacher, English Language, Secondary School)

Based on these findings it could be argued that the demise of students' grammar skills is a direct result of the use of digital devices and the type of written communication they promote. In turn this could be attributed to the influence of the private neo-liberal technology companies that imbue these technologies with their functionary capabilities. Therefore, it could be argued that the creators of the technologies as Postman notes were not unable to foresee the future cultural and societal implications or consequences that may arise (Postman, 1992: 241-242).

#### 6.2.6.4 Emails – changes in communication.

Participants expressed students' written communicative style had been impacted by the use of digital devices. For example, student to teacher emails were devoid of formalities and fashioned in the same way as digital social communications:

> People aren't using formal communication it is more about the instant messaging culture, when you look at how messaging has changed over the years, I mean going back Blackberry messenger used to be the most popular thing then um you've got WhatsApp, Facebook messenger, Signal and all the others, these pupils aren't used to using email, they are using different digital services to sort of communicate with each other, so we can't really, we do teach email in year 9 and we do it throughout year 7 and 8 and we do make a point of saying, right this is how you structure it properly think of it like a letter but unless their using it in the house and their practicing it they're not going to, they're going to default back to what they're normally used to aren't they?
>
> (Colin, 30, ICT Teacher, English Language Secondary School)

> I think it's they probably don't prefer and I do think there's anecdotal evidence that they don't like email, so it's chat or a chat bubble or whatever is definitely there because it's short and to the point, I don't think you know you'll ever get a three, more than a three sentence email from a learner, so it's just not their preferred comms and I think anecdotally again you know email, they've all got email accounts but they're not universally popular or looked at so it's you know messages through the Google Classroom are far more well received and read than an email.
>
> (Tony, 55, Learning Resources Manager, FE College)

Based on these responses it could be argued that the changes in the way students communicate is directly influenced by private neo-liberal technology companies who design the functionary capabilities of digital devices, and the type of written communication they promote. Therefore, the creators of the technology as Postman

notes were unable to foresee the future cultural and societal implications or consequences that may arise (Postman, 1992: 241-242).

#### 6.2.6.5 Digital Distractions

A common response from participants indicated that digital devices in classrooms often distracted students and took them off task. For example, students would often access unrelated online content or engage in online activities as per the following examples:

> Oh yes it's the scourge of our lessons I'm telling you so yeah there's always the temptation of you know you can often look around and you'll see a kid on YouTube or you'll see them sort of, the big obsession at the moment is the how fast you can click your mouse game, I don't know if you've seen that, Oh it's bizarre, they sit there all you can here is (makes a rrrrrr sound) because it gives them a score.
>
> (Richard, 36, IT Teacher, English Language, Secondary School)

> How many thousand times, it's like um one of the kids he was looking at something he shouldn't, so I sent him a message and he just typed in F Off.
>
> (Edward, 64, ICT, Computer Science Teacher, English Language, Secondary School)

> If you weren't watching over their shoulder they'd be like looking up stupid pictures on Google you know like they'd Google , Oh teenage boys are the worse they'd Google like Jeff and then start laughing at pictures of random people called Jeff … it's too much freedom for them, it's like they can't handle the possibility of being able to Google so much, so just Jeff … there's so much, none of it

> what they're meant to be doing, it's not like they get lost in the research oh that would be brilliant if they were like sorry I'm like three pages deep into an article on this topic , no, no, it's because of Ferrari's and pigs and they go "oh look it's you you're a pig".
>
> (Alice, 27, LSA Secondary School, and Primary School)

> Oh, there would be definite distractions there would be, well games were a huge thing, distraction they'd be sort of going onto games, what else, online shopping I've seen.
>
> (Angela, 55, LSA, Welsh Language, Secondary School)

> It's human nature, isn't it? you know you set a piece of work or you set something they have naturally inquisitive minds they are going to wander and they are going to want to explore and sometimes do things that maybe they shouldn't be doing um I think it would be very, it would be very odd then if they didn't.
>
> (Colin, 30, ICT Teacher, English Language Secondary School)

Colin's comment is interesting as there is an acknowledgment and acceptance of this behaviour as human nature. Marcuse would view this behaviour as being the result of the subsummation of society into the post-digital administrative system created by the technological base that influences society's mode of thought and behaviour. Therefore, from a Marcusian perspective this would demonstrate that the technological base and administrative system has altered and influenced modes of behaviour and thought.

#### 6.2.6.6 Phones and Apps Affecting Digital Skills

Participants felt the user-friendly nature of smart phones and Apps impeded the development of digital skills and digital literacy, as per the following examples:

> They can use all photoshop things on their phone and they can airbrush images really highly skilled stuff, but you know on a computer typing up a piece of work they're not using capital letters for "I" or whatever you know so yeah definitely on mobile phones, but in terms of using applications and stuff on the computer it's the, what can I say, it's the ones that have an extra interest in that sort of stuff you know programming but everyone has a phone and an X-Box etc I don't think that develops digital literacy in the classroom, if anything it probably holds it back.
>
> (Adam, 24, Teacher, English Language Secondary School)

> All of the applications that they use, the reason that they're so popular is because they're so intuitive and so easy to use they're set up for people to literally be able to do it without even thinking about it, so it's not developing digital skills.
>
> (Richard, 36, IT Teacher, English Language, Secondary School)

While students are extremely proficient at using smart phones and apps, responses suggest that their mechanistic digital skills regarding the use of other digital technologies such as computers are lacking. Therefore, there is a one-dimensionality regarding students' mechanistic digital skills relegated to the use of a smart phone and its software applications – which have simplified interfaces and fewer digital skill requirements compared to other devices such as laptops or desk top computers. This was an interesting finding as previous research identified in the literature review surfaced evidence that suggested smart phones or mobile phones had contributed to narrowing the digital divide from a socio-economic perspective, which may hold some merit. However, it is suggested that the pervasive and ubiquitous use of smart phones has contributed to a demise in students' mechanistic digital skills which is creating a society that are developing one-dimensional mechanistic digital skills.

#### 6.2.6.7 Summary

To summarise, the analysis of participants' responses indicated that the use of digital devices has negatively impacted students' critical thinking skills as a result of the copy and paste functionality of digital technologies. This was viewed as a universal problem. Other skills impacted were students' ability to tell time on an analogue clock, a demise in grammar skills, and changes in students written communication styles. In addition, the use of digital technologies in educational settings often served to distract students from educational tasks rather than enhance their abilities to complete them. The user-friendly nature and students ubiquitous and pervasive use of digital apps and smart phones was also viewed as hindering their digital literacy development.

### 6.2.7 Digital Native and Digital skills

In 2001 Marc Prensky wrote an article in which he used the term 'digital native' (Prensky, 2001: 1). However, Paul Gilster used the term four years earlier in 1997 and defined it as 'the ability to both understand and use digitised information' (Gilster, 1997: 2). The data was analysed to explore students' mechanistic digital skill proficiencies and evaluate whether digital native was an appropriate nomenclature for the generation of students currently being educated by the participants of this study. The macro analysis of the data produced the broad theme digital native and digital skills, and the micro analysis the following sub themes, lack of mechanistic skills; mouse skills; impact of touch screen digital technology; demise of keyboard skills; poor research skills.

#### 6.2.7.1 Demise of Mechanistic Digital Skills

Participants spoke about the lack of students' mechanistic digital skills when using digital devices other than iPads, smart phones, or gaming machines as per the following examples:

> They're just used to their mobile phone and they're just used to their games console or whatever. They're not used to using you know laptops, they're not using PowerPoint, Word, Excel, and they're not copy and pasting pictures and making digital posters, they're not doing that sort of thing, so yeah digital very, very capable on the

phone on apps and things like that but I don't think that transfers to the classroom so much for practical use.

(Adam, 24, Teacher, English Language Secondary School)

If they've come from primary schools, they're not having those keyboard and mouse skills because everything is touch tap on the iPad devices, so we've noticed that getting worse and worse as it goes on because of the heavy influence of apps at primary and not necessarily dealing with document creation.

(Charlie, (2), 47, ICT Teacher, English Language Secondary School)

I think we take it for granted that children can just like us log in with a username and password and it's done in five minutes but when you're actually in that environment it takes them a good 15 minutes sometimes to get everything done.

(Amanda, 23, Teacher, Welsh Language Primary School)

I've seen over the last few years pupils not being able to use a mouse properly or touch typing which sounds, obviously it's a skill in its own right being able to type quickly on a keyboard, years ago pupils would be mastering it by the time they came to us and they would be able to do it, whereas now it takes them until about year 9 normally.

(Colin, 30, ICT Teacher, English Language Secondary School)

To further demonstrate the decline in students' mechanistic abilities when using digital hardware, Charlie, a secondary school IT teacher went as far as to offer anecdotal evidence that related to a time when he was working for a company from 1993 to 1994:

> They were doing the roll out then to desk top PCs from dumb terminals and I can still see it now they went into one room and put the PC on the desk, hadn't given the person any training and the person took the mouse, put the mouse on the floor, took their shoe of and tried to move it around with their foot and to a degree I think that's where we've gone back to you know to a degree.
>
> (Charlie, (2), 47, ICT Teacher, English Language Secondary School)

> Student's ability to evaluate the technology that's in front of them it's quite narrow if you will, they're not, their broad skill sets and broad understanding of technology is maybe lacking I think that from a teaching and from a curriculum point of view that's an interesting point.
>
> (Stephen, (1) 30, digital literacy expert)

The views offered by the participants indicate that students are unable to evaluate digital technologies in a multi-dimensional way as exemplified by Stephen who highlighted students' narrow digital skill set. Therefore, responses indicate that students do not currently have a wide range of mechanistic digital skills and are indeed only proficient when using touch screen technology or gaming machines. As such, it is suggested that there is a one-dimensionality to the students' mechanistic digital skill proficiencies. Further negation of the view that today's students are digital natives was exemplified by the digital expert Oliver who acknowledged what he described as, the myth of the digital native, and made the following comment:

> Let's not make the mistake that's still abound, and you still hear politicians saying this is the myth of the digital native, so remember kids aren't intrinsically digitally confident, sorry they are confident, but it doesn't mean they're capable and, nor do they have transferrable skills there's no like intrinsic digital genetic capability, and let's not assume just young teachers newly qualified teachers are intrinsically digitally competent because they've been to university, and they kind of use social media, again you need to think about discipline specific appropriate pedagogical practice, digital pedagogy and practice, so that's something that has to be, I think maybe something that needs to be front and centred a bit more on ITE, and also in the early years of a teacher's professional kind of practice to build that as well.
>
> (Oliver, Digital Literacy Expert)

Other participants such as Barbara viewed her two and half year-old child as a digital native because of his mechanistic digital skill set and stated:

> My two and a half year old I would say is a digital native you know he steals the iPad he uses it amazingly he can get access to the camera, and you think, oh my goodness how, you know he's obviously just seen that he's playing the games he's excellent and he's had the access to it, and actually, I always said oh he's not having this, he's not having that, and we got him an Amazon tablet and actually he's learned so much form it, I think I'm doing him a disservice not giving him that in the world we live in.
>
> (Barbara, 34, Teacher English Language Primary School)

Although Barbara's comment does not reflect DLE provisions it does offer an insight into her perception of the skills she believed defined the term digital native. Barbara's perception of the term digital native seems to be determined by an individual's ability

to acquire and develop mechanistic digital skills such as the ability to operate touch screen digital technology. It could be argued that Barbara's comment that she would be doing her child a disservice by not giving him a tablet suggested that this digital product was viewed as a true need. A need that in Marcusian terms has been created by neo-liberal private enterprises as a mechanism to subsume individuals into its world of thought and behaviour. It is further argued that this finding suggests future generations are being groomed (from before they are able to walk or talk) to be subsumed into the digital world created by the neo-liberal digital private enterprises. In addition, primary care givers are complicit in enabling this continuing subsummation, as they too have been subsumed into this system that has created what Marcuse would term as a false need.

#### 6.2.7.2 Impact of Touch Screen Digital Technology

The introduction of touch screen technologies into educational settings were identified as devices that contributed to the demise of other mechanistic digital skills, such as, students' abilities to operate a mouse, or use a keyboard as per the following examples:

> So, we look at, one of the big hurdles we have especially when the children come from primary is that they've been using iPads and laptops and they don't necessarily have those mouse skills, and for a lot of them sitting down and using Windows for the first time is um there's a lot they need to learn.
>
> (Charlie, (1), 47, ICT Teacher, English Language Secondary School)

> They'd touch the screen before anything they all do, they all just instinctively go to touch the screen, and then they'd look very disappointed when I'd pass them the mouse.
>
> (Alice, 27, LSA Secondary School, and Primary School)

> They try and touch the screen on the computers (motions touching screen) and think why doesn't it work?
>
> (Alison, 34, LSA, Welsh Language, Primary School)

> Everything is touch screen based so what we find is when they come into year 7, we'll ask then to do basic tasks such as you know create a folder put a sub folder inside there, name it, create this file, save it here, and they really struggle, because they've been using tablet PCs.
>
> (Richard, 36, IT Teacher, English Language, Secondary School)

> I've had children in year 5 and 6 who cannot navigate around a laptop or a computer but can do anything on their phone.
>
> (Amanda, 23, Teacher, Welsh Language Primary School)

> I've seen a big, big, big, big change, now iPads didn't come in until 2011 then I think iPad two was coming out and then from there on we started to see a little drop right, um, certainly I've seen over the last few years pupils not being able to use a mouse properly.
>
> (Colin, 30, ICT Teacher, English Language Secondary School)

Primary schools' heavy investments in iPads appears to have narrowed and limited students' mechanistic digital skill acquisition. Therefore, as the iPad was the predominant type of digital device used by the educational sector, it could be argued that DLE became one-dimensional in relation to the type of device used, and in turn the type of skills learned. Stephen, a digital literacy expert also acknowledged and confirmed that the range of students' mechanistic digital skills were declining as per his comments below:

> I think we wouldn't have had this feedback from teachers if we hadn't worked with this set of teachers, but this idea about the ability of year 7s you know coming into the schools you'd expect to have better digital skills now than they did 5 years ago, and actually and I have to put a time frame on this, let's say 3 years ago, 3 years ago and maybe between 6 years ago and 3 years ago they were coming into their year 7 classrooms and they didn't know how to log in, they didn't get the concept of typing in a user name followed by a password, this was alien to them because the computing and the sort of digital devices they were using in school were primarily tablets, usually iPads.
>
> (Stephen, (1), 30, Digital Literacy Expert)

However, Stephen went on to say that from his viewpoint this demise in mechanistic skills was now being addressed and resolved by the introduction of Chromebooks into primary schools as opposed to iPads and stated that:

> I put the kind of 3 years ago caveat because I would say from about 3 years ago until now the use of Chromebooks within schools has taken off, now Chromebooks offer this very cheap alternative to a laptop in a classroom that has many of the advantages that a tablet has. Now because of that, these Chromebooks are more like a mini laptop rather than a tablet and therefore many of these kinds of basic skills that we would like to have and expect from our students they are developing them now in primary school again.
>
> (Stephen, (1), Digital Literacy Expert)

The introduction of Chromebooks into primary schools viewed by Stephen as a solution to the demise in students' mechanistic digital skills was not held by the teachers interviewed for this study. Colin and Charlie viewed Chromebooks as

perpetuating the issues created by touch screen technologies rather than resolving them:

> Primary schools over the years have made heavy investments in iPads and in Chromebooks and I'm having, I kid you not I had a pupil sit down last week sorry two weeks ago sat down, he sat down in front of a PC and he put his hand on the screen and tried to swipe the monitor to try to unlock it and he looked at me and he went "it's not touch screen" and I said, "no, no we use the keyboard and a mouse", and he held up the mouse and went "what do I do with this?"
>
> (Charlie, (2), 47, ICT Teacher, English Language Secondary School)

> We are noticing that pupils are more used to jabbing a screen or using an app, and the problem we've got with that is that sometimes it does oversimplify a process, it's the same issue we're finding now with Chromebooks. Years ago, pupils used to have a computer they used to log into the computer itself and then when they came up to us from primary, they were used to that type of thing whereas now in primary schools when they're using Chromebooks, they're normally logged in for them and they don't necessarily, a lot of them when they come up, they don't know their Hwb username. Normally the first lesson or two is right well here's your username here's your password try and remember it, put it in your planner and then the first sort of six weeks then is right just drumming into them click on this do this, do this, do this.
>
> (Colin, 30, ICT Teacher, English Language Secondary School)

The decline of keyboard skills was also noted by participants from FE colleges as well as primary and secondary schools as per the following examples:

> What I find is amazing sometimes with learners they look at a keyboard and are lost, they go oh, and I mean caps to a lot of them call me old fashioned, but I like a capital L a capital I and it's like oh (exasperated) and I think it's, and that's an education if you're sending a document or preparing a proper assignment you know capitalisation is not yesterday's history.
>
> (Tony, 55, Learning Resources Manager, FE College)

> My friend is an ICT teacher, and she despairs with the computer skills that year 7s are coming up with um, and the fact that they don't know, you know, if she's saying left click or enter or control um pupils they really struggle with any sort of basic skills on a keyboard.
>
> (Barbara, 34, Teacher English Language Primary School)

The responses indicate a decline in students' keyboard skills due the increased use of touch screen technology. Therefore, furthering the argument that there has been a one-dimensionality to the type of digital devices used in educational settings which in turn has resulted in a narrowing of students' mechanistic digital proficiencies. It is therefore argued that in Marcusian terms student mechanistic digital skills have become one-dimensional.

#### 6.2.7.3 Poor Research Skills

Participants spoke about students' digital research skills and suggested that they lacked the skills and knowledge to conduct efficient and effective online research. In addition, the responses also suggested that students did not possess sufficient knowledge about the permitted use of online content, as per the following examples:

> They can't sometimes make the connection with like Safari on an iPhone to Google Chrome on the Chromebook.

(Amanda, 23, Teacher, Welsh Language Primary School)

They don't understand and we're working really hard on trying to get them to understand it that Google images is not a catalogue of images for you to use.

(Charlie, (2), 47, ICT Teacher, English Language Secondary School)

You know this has happened since day one, a lot of our pupils will go to the first source.

(Colin, 30, ICT Teacher, English Language Secondary School)

One of the main things we do is kind of search skills and you know um kind of critical thinking in terms of thinking about where information is coming from and the quality of information, and I think in those areas most FE learners are quite poor, poor in terms of using search terms and always going to the first results they get.

(Thomas, 50, Learning Resources Manager, FE College)

I remember talking to a couple of lads and they were, I think, plumbing students and they'd been set a task to look up certain building supplies on the Internet and to come up with some costings for some materials for a particular job, and these boys they weren't even able to carry out a standard Google search, you know, they put in the strangest kind of search words and hadn't really thought the process through, and then of course what came up on screen was utter nonsense and they'd no idea what to do with it so they'd click on a few hyperlinks which would probably take them even further away from what it was they were supposed to be doing.

(Daniel, 66, Retired Learning Resources Manager, FE College)

Participants also suggested that when students conduct online research, they were inclined to use Google as a first and main port of call. FE colleges hold their own digital repository of research material; however, their statistics show that students are not accessing this material:

> You can see that from our statistics you know we've got some superb resources and they hardly get used, and I don't know, perhaps that's our fault you know, that we don't promote them properly but yeah Google is the first place they go to, Wikipedia second.
>
> (James, 50, Learning Resources Manager, FE College)

> I think probably like 90% of the human race Google, and I think it's silly denying that, so you will, but then that can be a frustration because especially if you're doing any sort of real research you come up against a brick wall with Google quite often.
>
> (Tony, 55, Learning Resources Manager, FE College)

> Generally speaking, Wikipedia and Google are where people head to.
>
> (Thomas, 50, Learning Resources Manager, FE College)

In relation to research skills, participants also spoke about students' inability to identify reliable information and this was problematic in FE colleges as well as secondary schools as per the following examples:

> What we're trying to do in the library is trying to signpost them to quality information whether that's freely available information or

> stuff that we've purchased in, but it is quite challenging um and learners do tend to take whatever they see online on face value often so it's getting them to think about that really.
>
> (Thomas, 50, Learning Resources Manager, FE College)

The responses suggested that learning to identify reliable information when conducting research is potentially an area of DLE that is not being addressed sufficiently in primary and secondary schools. If an understanding of the essence of technology is not acquired, and if critical thinking skills are not developed, then it is fair to say that a one-dimensional view of the digital environment would be sustained and perpetuated. The impact being, that individuals will lack the ability to critically assess the information they are presented with. The viewpoint that they firstly turn to Google also demonstrates the ubiquity of the digital world as a system that has subsumed students into its world of thought and behaviour so that they behave and think in a one-dimensional way. For example, the propensity to only conduct research via a Google search engine indicates that, a one-dimensional aspect to knowledge acquirement is perpetuated by a system that has been created by a private neo-liberal capitalistic technology company.

#### 6.2.7.4 Summary

To summarise, the range of students' mechanistic digital skills has decreased as a result of the increased use of touch screen technologies in educational establishments and social settings. As such, students are increasingly unable to operate a mouse or a computer keyboard effectively or identify and operate the appropriate digital device for a given task. Students also lack the skills and knowledge to conduct efficient and effective online research, and they do not possess sufficient knowledge about the permitted use of online content.

### 6.2.8 Discussion

In contrast to the focus group findings, the in-depth interviews related to the DLE provisions that were in place at the time this research was conducted i.e., 2020-2021. One of the key findings that has not been surfaced in previous literature related to the

demise of students' mechanistic digital skills. The findings suggested that this skill deterioration was a result of the ubiquitous use of touch technologies. It was after 2011 that digital devices such as iPads began being introduced into educational settings and as such superseded the use of PCs, especially in primary schools. As a result, students entering secondary school education were not familiar with desktop PCs and did not have the range of mechanistic digital skills seen in previous generations. Therefore, it is argued that the inclusion of touch screen technologies in educational settings coupled with the social use and ubiquity of touch screen technology such as smart phones has negatively impacted the range of students' mechanistic digital skills. This was a surprising finding as previous research indicated that the focus of DLE had been on the development of mechanistic skills, and as such, the inference was that mechanistic digital proficiencies would have exponentially increased over time rather than decreased. This finding aligns with Marcuse's neo- Marxist theory in relation to the technological society, 'that is, a society which has been restructured by technology, not only in terms of labour and leisure, but also 'modes of thought' (Kellner, in Marcuse, 2002: xii). Though Marcuse's analysis of the technological society differs from Ellul's, in the respect that while Marcuse's analysis takes the position that 'technology is controlled by the elite and powerful within society' (Van Vleet, 2014: 119), for Ellul capitalism did not create our world; the machine did' (Ellul, 1954: 25). It is argued that this finding supports the technological deterministic viewpoint that both these theorists held. Although McLuhan's medium theories have not been discussed in this thesis, this finding also aligns with McLuhan's viewpoint that the 'medium is the message' (McLuhan, 1964: 13). Educational institutions are now in the process of investing in new digital technologies, namely Google Chromebooks which have been identified and endorsed by the Welsh Government as the device of choice for use within educational settings. The findings of this study suggested that the operational nature of Chromebooks may further contribute to the demise of mechanistic digital skills such as, the ability to proficiently log into a digital device, or how to use a mouse. In view of these findings, it is suggested that further research be conducted into the potential impact digital technologies may have on the development of students' mechanistic digital skills.

### 6.2.9 Digitised Educational Resources

This section presents the results regarding the use of digital devices and resources in educational establishments to evaluate the extent of their influence within DLE provisions. The macro analysis produced the theme digitised resources, and the micro analysis produced five themes; hardware; software; iPads to Chrome Books; VLE, and schools use of digital platforms. The following offers an overview of the use of digital technologies and the digital environment within the educational curriculum at the time of this research.

#### 6.2.9.1 Hardware

The responses suggest that even though some schools were better equipped with digital hardware and software than others, the use of, and reliance on digitised educational resources within primary and secondary schools was extensive, as per the following examples:

> I would say 97% of the teaching is through a whiteboard.
>
> (Alison, 34, LSA, Welsh Language, Primary School)

> The interactive white board was like in every lesson pretty much.
>
> (Alice, 27, LSA Secondary School, and Primary School)

> When you are a class teacher you really need that tool, you can't work without it now…It would be a crime if a class didn't have one. It's got to be that way now, in the morning, the interactive white board would be the focal point in the mornings, so even taking Sims, Sims is the register, so a teacher would do the Sims.
>
> (Ava, 40, Supply Teacher, English Language, Primary School)

> I couldn't live without my interactive white board.

(Susan, 28, Maths Teacher, English Language Secondary School)

> I tell you what did revolutionise school we're talking here about maybe 13 or 14 years ago was the electronic whiteboards, that revolutionised the way teachers were teaching …I think that changed and made a big impression in terms of how new technology could improve education.
>
> (Carlton, 60, Government official)

Interactive white boards were viewed as an essential requirement in the classroom, and a commonly held view was that they had revolutionised and improved education. It is therefore suggested that the introduction and ingratiation of white boards has actually changed what teaching is. Marcuse's theory would view this essential need as a false need, created by neo-liberal digital capitalistic enterprises, and those educationalists had, as such, been subsumed into their technocratic world of thought and behaviour. Moreover, this was McLuhan's point when he stated that when new technologies are introduced into societies they shape and change them - the 'medium is the message' (McLuhan, 1964: 13). This change in pedagogical practices is a clear example of McLuhan's point.

The following examples further exemplify the dependence within education on digitised resources:

> Our curriculum that we offer especially at Key Stage 4 we've got Welsh Bac which has a heavy demand on IT, you've got Public Services, Business Studies, IT which is soon to be Digital Technology just these four areas there have a huge demand at Key Stage 4 on IT resources, um, going back a few years ago we made a decision to convert one or two rooms and I think it's been one of the best decisions we've had because a lot of teachers do book them and they are used constantly.

(Colin, 30, ICT Teacher, English Language Secondary School)

> Oh, every day, every day there was a computer used without fail, because it's the only way you can get kids to do work apparently.
>
> (Alice, 27, LSA Secondary School, and Primary School)

These examples demonstrate the extensive use of digital resources in primary, and secondary schools and how their use has become an absolute requirement within education. Further suggesting that not just digital literacy education, but education in general has been subsumed into the system that has been created by neo-liberal capitalistic private enterprises.

#### 6.2.9.2 Software

Participants spoke about the increased use of software and apps in lessons which further demonstrates the extensive use of digitised resources in primary and secondary schools:

> It's all software, it's all already apps that are there and the school then decides which ones are suitable for reception, nursery so we've got different ones throughout the school, it just depends then on the age of the children what apps they use…the nursery is mainly learning through software that's on the iPads.
>
> (Alison, 34, LSA, Welsh Language, Primary School)

> They use it for letter land where you can draw the letter on the iPads and everything tracing over it like a D and the little creature will tell you what to do and then you have a go and everything.
>
> (Anna, 55, LSA, English Language Primary School)

> Even in primary school they use PowerPoints they're encouraged to do that.
>
> (Angela, 55, LSA, Welsh Language, Secondary School)

It could be argued that education gets boiled down to the production of, and consumption of PowerPoint presentations, and that the use of digital resources from a very young age within education is conditioning children to view education as something that is intrinsically linked to the digital world. Moreover, using the Marcusian theoretical framework to analyse the data the question arises, who benefits more from the digitisation of educational resources; the private companies that provide them, or the students? It could therefore be suggested that the digital world has permeated education and subsumed it into its way of thinking and behaving, and as such, education is being used as a complicit vehicle to condition children and future generations to think and behave in this technocratic way. In Marcusian terms this subsummation and conditioning would create one-dimensional individuals who view the use of digital technologies and the digital environment as a true need. This identification of a false need as a true need is for Marcuse detrimental to the development of individuals freedom and creativity, in the respect that, changes in production, consumption, culture, and thought produce an 'advanced state of conformity' (Kellner, in Marcuse, 2002: xii). This conformity is due to the way in which the aspirations and needs of individuals are being created by the prevailing societal structures. As such, individuals are being subsumed or integrated 'into the established societies' (Kellner, in Marcuse, 2002: xii), in what Marcuse would class as a 'totally administered society' (Kellner, in Marcuse, 2002: xii).

One of the most recent software packages to be included and made available through the Hwb VLE is the Adobe Creative suite. A third of the participants commented on the inclusion of this software package in relation to purchasing costs. Adobe software is not free to use and will cost schools £5.00 per license as per the following Welsh Government advice:

> Adobe Creative Cloud through Hwb offers a platform of 22 products that give learners a comprehensive, mobile, digital makerspace to bring their stories and creativity to life, using the same tools that

> industry leaders use today. In school and at home Adobe Creative Cloud licenses, accessed using Hwb single sign on, enables both teachers and learners to use Creative Cloud on devices in school and on their devices at home - unleashing their creativity and allowing users to work on projects from anywhere. How can my school buy licenses? All maintained schools in Wales can place orders with their local authority. The purchase of Adobe Creative Cloud licenses will be made via the EdTech service and offers schools significant savings on the cost per license. Licenses can be allocated by schools through their Hwb User Management Portal. (Welsh Government, 2021d)

Participants expressed the view that the inclusion of this software would put financial pressure on schools, as one license only covers one pupil:

> Adobe fine £5.00 per user that doesn't sound like a lot of money, but if the school had to pay that you know we've got 800 pupils in school so you know what's that? Five eights are forty so you know you're talking £4000 a year just on software.
>
> (Colin, 30, ICT Teacher, English Language Secondary School)

> With the Digital Technology GCSE, a driving factor was that it was not going to be the case, it would not be screen shot based it would be software based, you would submit your project files for the work that you'd done, and your teachers would examine them that way. And I mean teachers have always examined them that way but the moderators would also examine them that way, they would break them up, and to do that the WJEC decided that they wanted to make sure that only one piece of technology was used really, one compatible piece of technology, and they picked the Adobe Suite six to nine months ago, and this was causing everyone a headache because I don't know if you know how much the Adobe Suite costs.
>
> (Stephen, (1), 30, Digital Literacy Expert)

> Yes so they will actually do the course work or the in class assessments or NEA's as they're called as part of, they'll do them in the class and produce them using the Adobe Suite, and then, rather than submitting screen shots and just output from them they'll submit the project file so they can be moderated as Adobe Package things, and that's where they had to put a restriction on it, now my side note on that is, did they have to restrict it to Adobe or could they have found some other open source tools that can do the same thing? Well to be honest they could have found some open-source tools particularly for the GCSE but they decided to go down this route if that makes sense.
>
> (Stephen, (1), Digital Literacy Expert)

Increased sums of money will now need to be allocated from the school budget to purchase licenses for this software in order for the students to be able to submit their assessments for the new qualification Digital Technology. Therefore, it is suggested that there is a one-dimensionality in relation to the decision made to use Adobe, as open-source software was an option.

#### 6.2.9.3 iPads to Chromebooks

Responses showed that there was a shift within educational establishments in relation to the type of digital devices being purchased for student use from iPads to Chromebooks.

> Chromebooks seem to be the big thing at the moment don't ask me why but apparently, it's Chromebooks.
>
> (Anna, 55, LSA, English Language Primary School)

> These Chromebooks were a big first cost I think, you know what happens in two years when that contract runs out. Are we going to have enough to, or when the iPads are no longer functioning, it's an ongoing cost isn't it? It's not one lump sum is it you know technology changes so quickly.
>
> (Barbara, 34, Teacher English Language Primary School)

> A vast majority of our devices were given out to other schools and where we though that we would be getting Windows 10 devices back we've now been told through the Welsh Government Funding it's Chromebooks.
>
> (Charlie, (1), 47, ICT Teacher, English Language Secondary School)

> Our head teacher he's really encouraging staff with obviously the use of ICT so he's bought Chromebooks for every department we've got three full sets of suites.
>
> (Debbie, 30, Computer Science Teacher, English Language Secondary School)

Chromebooks are seemingly the latest type of digital device to be favoured by the educational system, and as Charlie stated it is the device they have been instructed to purchase by the Welsh Government. Earlier findings from this study suggested that the use of touch screen technologies contributed to the demise of students' mechanistic digital skills, and that Chromebooks would not address this situation. It could therefore be argued that the introduction of Chromebooks as the current favoured digital device is in Marcusian terms perpetuating a one-dimensional situation in relation to digital hardware and digital skills learned. Essentially, the ubiquitous use of one type of digital device is simply being replaced by another.

In addition, the comments regarding the requirement to regularly update hardware in education indicates that a significant amount of the educational budget has, and will, be allocated to the purchase of digital hardware. Therefore, it could be further argued that education in general has been subsumed into the neo-liberal capitalistic system created by the private digital technology companies. As such, their influence on not just digital literacy education but on education in general is profound. Additionally, participants viewed digital devices as essential to their pedagogical practices to the extent that they could not teach without them. From a Marcusian perspective it is suggested that neo-liberal private enterprises that provide digital technologies to the educational establishments have created what Marcuse would describe as a false need, in the respect that, the inclusion of digital technologies to impart knowledge and educate students is now viewed as a critical component of education. False needs are 'superimposed upon the individual by particular social interests in his repression' (Marcuse, 2002: 7). The 'prevailing needs to relax, to have fun, to behave and consume in accordance with the advertisements, to love and hate what others love and hate, belong to this category of false needs' (Marcuse, 2002: 7). Marcuse expands on this further and states that 'such needs have a societal content and function which are determined by external powers over which the individual has no control' (Marcuse, 2002: 7).

#### 6.2.9.4 VLE

The Welsh Government encourages schools in Wales to use Hwb as their predominant virtual learning environment (VLE). Leighton Andrews, the Welsh Education Secretary at the time launched the bilingual digital learning platform Hwb, on December 12th, 2012 (Hook, 2012). Hwb has undergone redevelopment over the last ten years since its launch and has partnered with companies such as Microsoft and Google. Hwb is a repository for resources and a central point for information and communication as per the description by Pembroke Council obtained via the freedom of information act:

> Hwb is the digital platform for learning and teaching in Wales. Hwb provides its users with access to a range of centrally funded, bilingual, digital tools and resources. It is the Welsh Government's

> strategic digital channel to support the delivery of the curriculum in Wales. Hwb provides access to the Curriculum for Wales 2022; the Curriculum for Wales 2008; professional learning information; thousands of bilingual resources (via the Resources repository); information about online safety. In addition, Hwb users (users with a login) have access to a range of centrally funded tools to help education practitioners create and share their own resources and assignments; a professional networking environment; Google for Education; Microsoft Office 365; Just2easy and Flipgrid.
>
> (Anon)

> Hwb is built on a number of technologies (a "stack"); which would be: * Azure, Azure ADFS, Microsoft Office, Google for Education, J2E, etc…As far as I am told, all content stored within Microsoft Azure on the platform (which is the majority) is stored within data centres in Cardiff, Wales. Microsoft actually now offer Cardiff (UK West) as a location for all Azure customers, which is a direct result of Welsh Government's activities, and a great thing for all UK developers in my humble opinion.
>
> (Nicholas, Government Official)

As per the description of Hwb given by Nicholas, it is built on a number of technologies (a stack) that are provided by private capitalistic digital enterprises. Therefore, Hwb has been built by, and is completely dependent on the provisions of neo-liberal private enterprises. It can therefore be argued that Hwb has been created by private capitalistic technology companies, and therefore, been subsumed into their world of thought and behaviour. The use of alternative platforms is greatly discouraged as per the following:

> The Local Authority would never encourage the use of an app that was at risk of breaching GDPR, and our policy is that Hwb should

> be the predominant platform. If a school was to use their own Google / Microsoft systems rather than via Hwb, they do so at their own risk and not on the advice of the local authority. ClassDojo seems to fit your description but it is not recommended by the local authority or linked to Hwb.
>
> (Nicholas, Government Official)

Interestingly, ClassDojo was used throughout the COVID-19 lockdown periods by one of the participants who was of the opinion that it was a far more effective and efficient means of educating and communicating with her students than Hwb:

> We have ClassDojo, it's a free app basically and as a school we use it all the time. It's like a text message on the parents' phone, even in those families where finances are a concern there tends to be one parent in the family who has a phone.
>
> (Barbara, 34, Teacher English Language Primary School)

Barbara's primary school is situated in an area of deprivation where only some households have access to a range of digital devices. However, at least one member of the family owns a mobile phone. Therefore, ClassDojo was an effective solution to the socio-economic digital divide that existed among her students. The participant spoke highly about this free app; however, GDPR concerns or questions as to why this app was free were not considered. ClassDojo is a 'popular application in schools that 'nudges' students to behave in particular ways. ClassDojo digitises and datafies student behaviour by allowing teachers to track and report on behaviour' (Williamson, in Hogan, 2019: 560). Further details of the functionality of this app are as follows:

> This app normalises surveillance and constant assessment of behaviour (both emotional/psychological and cognitive/neurological) as well as data-driven performative cultures of discipline (Manolev et al. 2019). It also points to the 'doublethink' of data (Hardy and Lewis 2017) in which Williamson

> describes the idea that schools and teachers have to capture data but are also captured through data. (Williamson, in Hogan, 2019: 560)

Therefore, it could be argued that the lack of questioning about how this app functions and operates demonstrates a demise in critical thinking, resulting from Barbara and her school being subsumed into the digital system to such an extent that the use of this app was viewed superficially, in the anthropological and instrumentalist way as a means to an end and a human activity without considering the essence of this technology by exploring it in a metaphysical way (Heidegger, 1977: 5).

The participants were asked if they thought Hwb was user friendly. The majority stated it was a difficult site to navigate. They also experienced problems with the site's functionality and features, as per the following examples:

> No, I don't think so I forget and I know I'm quite young and quite literate with digital things and I forget what's in where … I don't think it's easy to navigate and particularly for some of our parents who can't speak English for example…I mean even J2 Easy the other day I couldn't make it do what I wanted it to do and I was like how does this work? It's driving me mad. Sometimes it just doesn't do what you need it to do, they lay down their picture in one part and then they want to write their title but then they have to move it into the writing part like it's just not, it's not easy, I can't do it. I'm always saying bloody hell.
>
> (Barbara, 34, Teacher English Language Primary School)

> For some of the children it's not the easiest thing to navigate your way around as it's a huge platform, isn't it? There are so many different things on there. I do think sometimes they do lose their way or find it difficult to get back to where they were.
>
> (Betsy, 57, Head Teacher, English language Primary School)

> The issue you've got is if you try to find things on Hwb it's very messy because what they did, they imported a lot of stuff from the old National Grid For Learning so a lot of the stuff is just messy.
>
> (Colin, 30, ICT Teacher, English Language Secondary School)

There were also positive views about Hwb such as:

> Hwb have ensured that to a degree no child's left behind how can we not embrace that? How can we not be thankful for that?...When we looked at Hwb and we look at the way it's grown we look at all the different apps that are now being provided through it there's some schools who could never have afforded the licensing because of the number of pupils that they've got it's just absolutely amazing where Hwb is now we should be, well we are very thankful for the investments and the vision of Welsh Government and if there's anything as well it's, it's provided an amazing opportunity to kind of encourage the pupils from a young age to become creators not consumers which is what we want.
>
> (Charlie, (2) 47, ICT Teacher, English Language Secondary School)

The investment made by the Welsh Government has ensured that as long as a student has the means to access Hwb from home they are able to make use of the free software such as Microsoft Office. However, this accessibility is dependent on a students' access to digital devices and wi-fi connections at home. Therefore, gaining access could be problematic for students from poor socio-economic backgrounds. The inclusion of new software programmes on Hwb is increasing, and the choice of software is often teacher driven as per the following example:

> Hwb came over to me and he smiled and he said we're just going off for a meeting with Flipgrid to discuss it coming on to Hwb and it was the most amazing thing and I thought yeah I've nagged so much and I've introduced it to other teachers who've then gone and nagged you, so teacher voice wins again and where would schools have been during the last fifteen months if we didn't have Flipgrid as a tool and that's what I love about Hwb, they listen.
>
> (Charlie, (2) 47, ICT Teacher, English Language Secondary School)

The following extract describes the functionality of Flipgrid:

> On Hwb there was Flipgrid where um interactive making videos and everything, and there was like an option there, that allowed students to like and comment on each other's videos that was on that and on Seesaw as well there's an option there to allow students to like and comment on each other's videos, and I was thinking you know in like an educational environment it can be quite detrimental to allow them to see each other's work and to have access to comment, and like you know I think you know if I was their age and everyone was liking my friends work but nobody liked my work that whole thing can start an argument and everything, so I personally always decline liking and commenting on each other's videos because I just think it's opening a can of worms.
>
> (Amanda, 23, Teacher, Welsh Language Primary School)

It is interesting that Hwb is populated with some digital resources such as Flipgrid that are designed to imitate the functionality of social media platforms, and as such it is suggested that the inclusion of these apps on Hwb is perpetuating and encouraging the use of social media style applications as a part of the educational teaching framework. Therefore, it is further suggested that pedagogies are also being subsumed into and

influenced by the technocratic system. The following are further examples of the influence of social media style resources surfaced in the analysis:

> We stuck with Moodle because it's open source and the costs and also Classroom as well so, Classroom because it's more familiar with what learners already use so it's kind of got that, that social media type feel to it you know, with the kind of um I can't remember what you call the term, there's a proper term for it now but you know kind of like a news, an update type thing, um timeline thing so people are used to that from social media.
>
> (Thomas, 50, Learning Resources Manager, FE College)

> There was a group of older kids who were using like Hwb messenger and stuff to message inappropriate things…One kid sent like a really inappropriate rap that he made up, I think teacher's also noticed as well then there was a lot of kids were messaging outside of school and using it as a messenger rather than what it was supposed to be for, so they were messaging each other like "Oh are you coming out tonight" or something, or "we're going to the park" so they all had an assembly on that, like look this isn't what it's there for ,you're not to use it like this and if you are continuing to do it you're going to have it removed from you.
>
> (Arya, 23, LSA, English Language, Primary School)

Arya's comments were interesting as they indicated that even if a digital resource did not emulate the functionalities of a social media platform, students were repurposing the resource to communicate content that is more synonymous with social media platforms. Therefore, there is a one-dimensional aspect regarding how certain educational apps are constructed from the perspective that, their functionality is modelled to resemble the functionality of social media apps. Moreover, the analysis of

the data also showed that students will repurpose digital technologies and use them to communicate in the same way they use social media apps or platforms. The students' behaviour further indicates their subsummation into the system that has been created by digital technologies.

#### 6.2.9.5 Schools' Use of Digital Platforms

The participants were asked whether their schools or colleges had social media accounts and what their primary purpose was. This line of questioning was prompted by a response from a participant who stated that schools had to market themselves in a similar way to commercial businesses to attract and encourage parents to enrol their child or children, as per the following:

> Most schools now have their own social media Twitter feed and some of them have Facebook but most of them have websites because in a sense they're in a market now in terms of attracting pupils because catchment areas are very fluid, but most of the schools Twitter feeds will be locked down so you can only get in if you're a parent or some of them are open you know for various safety reasons.
>
> (Carlton, 60, Government official)

This was an interesting finding as it suggested that educational establishments view themselves as neo-liberal capitalistic enterprises. It is therefore argued that the mechanics of conformity as theorised by Marcuse have influenced schools to market themselves via social media platforms in the same way as other capitalistic enterprises. Although Carlton was of the view that most schools had online presences that were only accessible by parents, responses indicated that schools' social media platforms were open to the public, as per the following:

> Yesterday [name of participants child aged 9] went on a trip down to [place name] a walking trip and I had photos all through the day then of what they were doing on the trip so it's good in a way.

(Alison, 34, LSA, Welsh Language, Primary School)

Q. Is that open to the public on Twitter?

(Interviewer)

On Twitter, yes anybody can go onto it.

(Alison, 34, LSA, Welsh Language, Primary School)

A further analysis of schools' use of digital platforms surfaced a disparity between the advice given to students about online safety regarding privacy and non-disclosure of personal details, and the schools' use of these platforms. Schools actively promote themselves by using images of the children performing various activities. Parental permission has to be given to include a child in these images and responses indicated that parents rarely refused:

It's quite uncommon for parents to refuse but it does happen.

(Susan, 28, Maths Teacher, English Language Secondary School)

Very, very, rarely it only tends to be if there's an issue in terms of identity where there's been for example a domestic issue and the family in our school are protected that's been the only time.

(Barbara, 34, Teacher English Language Primary School)

The following further exemplifies and contextualises how rare it is for a parent to refuse permission for their child to be featured in public online school content. Alison's class caters for 60 children in the morning session and 60 different children

in the afternoon. When asked how many parents refused to give permission for their child's image to be displayed online, she offered the following response:

> One, one child well one parent but that's because there's child protection issues in the family so they said no, everybody else has said yes.
>
> (Alison, 34, LSA, Welsh Language, Primary School)

The following is indicative of the type of online safety advice imparted to students:

> [participant's child's name, age 9] knows if I take a photo of [participant's child's name, age 9] in his school uniform, he tells me don't put it on Facebook and I acted silly one day and said, "oh why can't I put it on Facebook?" "Because it's got my school badge on it somebody could know what school I'm in", so I said, "how do you know that?" "The policeman told me".
>
> (Alison, 34, LSA, Welsh Language, Primary School)

Students are, on the one hand told not to post photographs of themselves in their school uniforms on social media sites. However, schools post photographs online of their students as a part of their marketing strategy. Firstly, it could be argued that schools are behaving like any other corporate entity by marketing themselves via digital platforms indicating that, their behaviour and thought has been subsumed into the neo-liberal capitalistic digital world. Secondly, the disparity between this marketing practice and the online safety advice given to children was not identified as problematic by any of the participants from this study. This therefore suggests that the educational system and the parents/guardians have been subsumed into the world created by the capitalistic digital companies.

#### 6.2.9.6 Summary

To summarise, responses indicate that digitised resources are now intrinsic to the pedagogical practice of educators in primary and secondary schools in Wales. Software applications are heavily relied upon, and students are conditioned from a young age to employ the use of digital technologies within their education. Digital hardware is currently being updated; however, the current favoured device i.e., Chromebooks may not address the demise of students' mechanistic digital skills. Hwb is a VLE that is difficult to navigate and some of the educational software applications that are being added to it imitate the functionality of social media platforms. Education establishments have used apps that are free and not recommended due to GDPR issues, and why they are free has not been questioned by the respective schools using these apps. There was also a disparity between what students were taught in relation to safety online and schools marketing practices.

### 6.2.10 Discussion

Findings from the in-depth interviews indicated that the current range of digital technologies and software available within primary and secondary schools differed from the type encountered by the participants of the focus group interviews. Classrooms in Wales offered iPads and Chromebooks, and cloud computing services like Google Classroom. Most recently the Welsh Government negotiated a deal with Adobe to provide Adobe Creative Cloud Licenses which 'can be allocated by schools through their Hwb User Management Portal' (Welsh Government, 2021d). 'The purchase of Adobe Creative Cloud licenses will be made via the EdTech service and offers schools significant savings on the cost per license' (Welsh Government, 2021d). This software offers:

> A platform of 22 products that give learners a comprehensive, mobile, digital makerspace to bring their stories and creativity to life, using the same tools that industry leaders use today. (Welsh Government, 2021d)

The acquisition of expensive industry standard software licences for use within schools in Wales serves to illustrate the increasing dominance of neo-liberal capitalistic private enterprises within the education sector. Marcuse suggests that there is always a choice when a society organises the lives of its members and that the choices made are

selected over other alternatives that are available within that particular historical timeframe. The choices are determined by 'the inherited level of the material and intellectual culture' (Marcuse, 2002: xlvi). As such, the dominant interests determine the choices as Marcuse states: 'it anticipates specific modes of transforming and utilizing man and nature and rejects other modes' (Marcuse, 2002: xlvi). The powers that be, decide how man will be utilised and the decisions are usually arrived at in their favour:

> In the medium of technology, culture, politics, and the economy merge into an omnipresent system which swallows up or repulses all alternatives. The productivity and growth potential of this system stabilize the society and contain technical progress within the framework of domination. Technological rationality has become political rationality. (Marcuse, 2002: xlvii)

Therefore, if you consider the digital milieu and the digital society as the technical apparatus in this scenario and recognise its untenable links with the social and political. Then this theoretical concept demonstrates that the digital capitalistic system is having a determining influence on DLE provisions; as well as determining individuals' needs, aspirations, occupations, skills, attitudes etc.

Further findings indicate that there is a technocratic view held by teachers regarding the importance they place on students' developing digital skills on a range of devices and software packages. Although it could be argued that by including a wider range of digital devices and software within schools means that considerations have now been given to changing technologies within educational policy. The findings of this study suggest that the inclusion of new digital technologies in schools such as iPads have served to diminish students' mechanistic skills rather than enhance them. Moreover, the introduction of new types of technologies such as iPads and Chromebooks have had a reductive effect on students' mechanistic digital abilities. To elaborate on this aspect further, the findings of this study suggest that newer technologies have been increasingly designed to be 'user friendly', however perhaps the term 'user ignorant' would be a more appropriate nomenclature. A paradox of the 'so-called information age' (Pasquale, 2016: 191) is that 'often the information most important to us is out of

reach, available only to insiders' (Pasquale, 2016: 191). This situation could be viewed as aligning with Marcuse's concept of one-dimensional thought - the inability to differentiate between existence and essence, appearance and reality, fact, and potential. Essentially, it is argued that digital literacy is viewed in a one-dimensional way that focuses on the existence and appearance of digital technologies and the digital environment, and not on the reality or essence of them. For example, digital technologies are not neutral artefacts, but imbued with the ideologies of their creators (Winner, 1980: 125). Digital technologies are imbued with ideologies that are not obvious or transparent but masked and hidden by their very design. Individuals are not free to change the functionality of these devices in any way they choose. They cannot rewrite or alter the code or the functionality of an algorithm. Even if an individual had the skills to perform these tasks the digital devices have been created in such a way that they are closed ideological systems. The creators of the algorithms hold tightly to the view that 'less known about algorithms - by spammers, hackers, cheats, manipulators, competitors, or the public at large the better' (Pasquale, 2016: 193). This ironclad view is not just a view, but is legitimised 'ironclad secrecy, both real and legal' (Pasquale, 2016: 193). In addition, literacy is popularly understood as an ability to read and write. Digital tools only offer us the one-dimensional ability to read. Therefore, individuals are limited to using these devices within the confines, parameters, and ideologies of the technology that have been created by the private neo-liberal capitalist companies that produce them.

Several papers note that 'in the early 1980s the BBC Micro was introduced to schools throughout the UK as part of the BBC's Computer Literacy Project; before long they were in 80% of UK class- rooms' (Vasko and Dicheva, in Crick and Moller, 2015: 121). Crick and Moller suggest that due to the nature of this technology young learners from the 1980s were encouraged to experiment with computers, and as a result, 'a generation of creative (and computational) talent was spawned' (Crick and Moller, 2015: 121). However as stated previously:

> Computer studies in school – since the late 1990s generally named Information and Communications Technology (ICT) has evolved into IT studies with an emphasis on digital literacy and "office productivity" skills – significantly more mundane than the social networking and gaming for which many pupils use their personal digital devices. (Crick and Moller, 2015: 121)

Therefore, it is suggested that as technologies have become increasingly 'user friendly' and have been included and employed in educational settings, they have not only contributed to the decline of students' computer studies skills but also contributed to the decline of students' mechanistic digital skills. In addition, the findings also suggest that the notion of the digital native is a myth (Prensky, 2001: 1), as the data in this study suggests that while students are extremely proficient when operating touch screen technologies or smart phones, their mechanistic digital skills have been reduced and relegated to these specific digital devices. It is therefore argued that there is a one-dimensionality to the skills that students are acquiring that is being dictated by the pervasive ubiquity and design of the digital devices that have now secured their place within the education system. '95 percent of Generation Z use smartphones, and 45 percent of teens say they are online "on a near constant basis"' (Zuboff, 2019: 447). It is the forces of capital that dedicate and perpetuate what has become a compulsion to being constantly online (Zuboff, 2019: 551). We are enslaved within the system; a position which is currently masked by the way in which the system provides satisfaction of what Marcuse views as "false needs" which have been created within us. False needs, that have come to be perceived as our own individual needs, that are integral to the smooth functioning of our everyday lives. As Marcuse suggests, just because we perceive these needs to be our own does not negate the position of servitude that we are in. Marcuse suggests that the ruling social establishments preserve the hegemony of the needs and satisfaction within the population (Marcuse, 2002: 10). Therefore, if neo-liberal capitalistic digital companies are the ruling social establishment, it is further argued that the educational system and DLE provisions are aiding them to preserve the hegemony of the needs and satisfaction within the population. The inclusion of digital devices in educational settings perpetuates our position of servitude and diminishes our ability to recognise that we are in this position. Marcuse also states that this sense of naturality attributed to accepting the rationality of this system is only possible if thought and behaviour is either unwilling or:

> Perhaps incapable of comprehending what is happening and why it is happening, a mode of thought and behaviour which is immune against any other than the established rationality. (Marcuse, 2002: 148)

Marcuse's analysis bolsters the notion that citizenship in today's world requires far more than 'an understanding of government, which is just the tip of an iceberg of social organisation' (Pasquale, 2016: 217). Educated citizenship demands the understanding of the digital companies that 'influence our government and culture' (Pasquale, 2016: 217). Therefore, while there is an intent amongst educators to prepare students to secure employment by furnishing them with the digital skills needed to adapt when changes occur in technologies. The findings from this study suggest that, firstly, whenever new technologies emerge there will always be a requirement for an individual to undergo varying degrees of retraining or relearning. Secondly, the introduction of new user-friendly technologies into education has diminished rather than fostered students' adaptability. It is therefore suggested that further research be conducted into whether the technologies currently included in education serve to foster or diminish the range of students' mechanistic digital skills.

*Is the content of digital literacy still primarily driven by economically driven government policies?*

There is historic evidence of digital literacy being driven by economic government policies. For example, previous research suggested that the introduction of computers into schools on a large scale was in 1981, when the Information Technology Advisory Panel was established, 'as an independent business-orientated body to steer the Conservative's reforms' (Selwyn, 2002: 431). This political reorganisation allowed the government to 'produce a policy agenda to support the beleaguered British IT industry' (Selwyn, 2002: 431). Selwyn states that it was here that, 'education was identified by the Conservatives as playing a vital role in achieving this aim' (Selwyn, 2002: 431). Baker's 'outline of a 'National Strategy for Information Technology stated that:

> Schools should be provided with small and low-cost microcomputers and software systems. To give a boost to our own hardware industry they should be asked to design and supply these quickly. (National Strategy for IT 1980, in Baker, 1993: 476)

However, in line with the policy to revitalise the UK IT industry, the schools' choice of which machine they could purchase was restricted to 'one of two British- made machines and it quickly made an impact on the UK educational system' (Selwyn,

2002: 431). For example, ‘in 1980 there were only around 700 microcomputers in UK schools’ (Selwyn, 2002: 431). However, ‘by 1982 over 4000 secondary schools had ordered microcomputers’ (Selwyn, 2002: 431). Throughout the 1980s IT was being aggressively embedded in educational institutions and the government continued to ‘focus on IT, the young and education’ (Selwyn, 2002: 433).

The Welsh Government have imposed restrictions on schools with regard to the type of hardware they should be investing in; for example, schools have been given the directive to purchase Chromebooks as opposed to other types of digital devices. Similarly, Hwb is built on selected technologies provided predominantly by Microsoft and it is populated with selected software created by various private enterprises including Microsoft and more recently Adobe. However, this thesis has not surfaced findings that suggest there is a wider economic imperative attached to the purchase of certain types of hardware, or software. Therefore, the findings are inconclusive and further research would need to be conducted with government officials as to why certain technologies and companies were chosen over others.

The new curriculum and policy advice regarding the development of future citizens of Wales (four purposes) suggests that the DLE provisions of the new curriculum do not solely focus on preparing students for employment purposes. In addition, research conducted for the literature review of this study demonstrated that there was an economic imperative in relation to preparing students for employment purposes. For example, Kirsty Williams, the Education secretary for Wales 2016 to 2021, set out the Welsh Government’s action plan for education in the *Education in Wales: Our national mission, action plan 2017-2021* document (Welsh Government, 2017a: 1). The document outlines ‘how the school system in Wales, including its sixth forms, would move forward over the period up until 2021 to secure the effective implementation of a new curriculum’ (Welsh Government, 2017a: 1). Within this document digital skills were viewed as a ‘particularly vital part of the new economy’ (Welsh Government, 2017b: 27). The new curriculum aimed to ‘build coding and other aspects of digital literacy into it’ (Welsh Government, 2017b: 27). Williams is quoted as saying:

> Good skills make Wales a more attractive destination for investors, bringing with them the higher-end, higher-paying jobs we need. Better and more transferable skills help people to move more easily between jobs, progressing from lower- paying roles with limited prospects. The higher the skill levels, the more resilient our economy will be, and better able to ride out economic shocks. (Williams in, Welsh Government, 2017b: 27)

This study found that educational practitioners tended to place more importance on preparing students for employment purposes than on how to understand and negotiate the social, ethical, and cultural implications of the digital milieu. Marcuse suggests that the locus of mystification has changed as a result of the technical achievements of advanced industrial society enacted by the 'effective manipulation of mental and material productivity' (Marcuse, 2002: 193). For Marcuse, it is now the rational where he sees this mystification being most effective rather than the irrational. The 'growth of repression in contemporary society manifested itself, in the ideological sphere' (Marcuse, 2002: 194) where regimes rejected their 'irrational "philosophies" by the all-out technical rationalization of the apparatus' (Marcuse, 2002: 194). Marcuse argues that 'it was the total mobilisation of the material and mental machinery which did the job and installed its mystifying powers over the society' (Marcuse, 2002: 194). The impact of this on the individual was that they were unable to see beyond or behind the facade of the machinery – 'those who used it, those who profited from it, and those who paid for it' (Marcuse, 2002: 194). Therefore, it is argued that educators' placing more importance on preparing students for employment purposes than on how to understand and negotiate the social, ethical, and cultural implications of the digital milieu, could be a result of what Marcuse's views as individuals being incapable of seeing behind the machinery. However, while teaching students to see beyond the machinery, as it were, is not completely ignored in current DLE provisions, this study argues that this insight is viewed as less important. Marcuse argues that, if an individual can only experience and express that which is literally given to him and is therefore in possession of only the facts and not the factors, then this constitutes a mutilation of the individual and the 'acceptance of the empirical violates the empirical' (Marcuse, 2002: 187). In this scenario an individual's behaviour is one-dimensional as a result of this manipulation. It is further argued that when DLE provisions offer

only facts and not factors this results in an individuals' behaviour becoming one-dimensional manipulated behaviour.

> By virtue of the factual repression, the experienced world is the result of a restricted experience, and the positivist cleaning of the mind brings the mind in line with the restricted experience. (Marcuse, 2002: 187)

Essentially, if there is a factual repression of the digital environment that is perpetuated through DLE provisions, then this in effect, restricts and constricts the experience of a student so that they only experience and view their world in this constricted way.

*How much influence do private neo-liberal capitalistic enterprises have in determining the educational agenda of digital literacy education?*

The inclusion of digital technologies and software programmes created and developed by private neo-liberal capitalistic enterprises has continued to permeate not just DLE but educational provisions in general. This finding confirmed that the objectives in the Stevenson report published in 1997 have been realised:

> To see a society within ten years where ICT has permeated the entirety of education (as it will the rest of society) so that it is no longer a talking point but taken for granted - rather as electricity has become. (Stevenson, 1997: 4)

ICT had by 2000 'permeated both primary and secondary school curricula, not least in the newly devolved nations' (Crick and Moller, 2015: 3). Therefore, neo-liberal private enterprises have continued to permeate DLE education exponentially and indeed education in general. It is interesting that a report conducted in 2000 by Neil Harries and commissioned by the National Assembly for Wales's Education and Lifelong Learning Committee (Harries, 2000: 7-8), identified that the situation in Wales was in common with that of the UK. Content providers were 'largely commercial companies' (Harries, 2000: 19), and many were from the USA, which raised a 'culture issue' (Harries, 2000: 19). The report noted that UK and Welsh broadcasters such as 'BBC, ITV and S4C had limited commissioning roles in terms of digital content' (Harries, 2000: 19). The report also recognised that there was a 'critical shortage of Digital Learning content in the Welsh Language' (Harries, 2000: 19). Even though the influence of private commercial companies was raised and identified as a

cultural concern in 2000, it appears that little has been implemented to address this. As such, the influence that US based neo-liberal private companies have had on DLE and the educational curriculum in general has grown exponentially. Pedagogical practices have also been increasingly influenced by neo-liberal private companies. For example, the increasing reliance on digital devices to deliver lessons such as interactive white boards, and software applications like PowerPoint.

Marcuse's critical theory of 'advanced industrial society' serves to explain how the changes in production, consumption, culture, and thought produced an 'advanced state of conformity' (Kellner, in Marcuse, 2002: xii). This conformity was due to the way in which the aspirations and needs of individuals had been created by the prevailing societal structures so that individuals were subsumed or integrated 'into the established societies' (Kellner, in Marcuse, 2002: xii). In view of the findings of this thesis and the extent to which ICT has permeated the education sector, it is hard to argue against the suggestion that the education sectors' needs have been created by, the prevailing societal structures, and as such have been subsumed into the established society. Education, like society, has been reshaped and restructured by digital technologies. Marcuse's view that 'consumer capitalism integrates individuals into its world of thought and behaviour' (Kellner, in Marcuse, 2002: xii), is arguably the exact concern being raised by Harries in 2000.

Michael Apple explored and critiqued the introduction of computers into schools specifically in the USA. Apple suggested that the computer companies themselves geared 'much of their advertising to the educational possibilities of computers' (Apple, 1993: 115; Selwyn, 2010: 435). There was, he states, frantic competition to drive a link with particular computers to schools, for example: Apple 'in a highly touted scheme proposed to 'donate' an Apple to every school in America' (Apple, 1993: 115). Whilst there is a seemingly philanthropic intent to this action Michael Apple suggests that:

> The clear market strategy is to couple particular computer usages to schools where parents – especially middle class parents with the economic wherewithal and keen motivation (to insure mobility) – purchase machines compatible with those in schools. (Apple, 1993: 115, Selwyn, 2010: 433)

These marketing strategies worked on the basis that they aimed to manipulate parents by making them feel compelled to purchase computers in order to 'enhance and augment their children's education' (Apple, 1993: 115). The implications are clear, the educational sector was seen by technology companies as a lucrative market that if conquered would extend their reach into the domestic market. Previous research identified Microsoft as the major or predominant private company associated with DLE in the UK. However, the findings of this thesis have found that several big tech companies now occupy the educational market space. For example, Apple iPads and more recently Google Chromebooks which are now the favoured hardware device in primary and secondary schools and FE colleges. In addition, the online educational platforms offered by Google Classroom and Microsoft Teams are both used by the education system in Wales. The findings of this study showed that the Welsh Government has had a long-standing relationship with Microsoft for their own IT requirements as well as for educational purposes. Evidence that further substantiates the notion that consumer capitalism has integrated the education sector 'into its world of thought and behaviour' (Kellner, in Marcuse, 2002: xii).

New Technology for Better Schools couched the use of technology in schools 'in explicitly educational rather than economic terms' (Selwyn, 2002: 433). The National Curriculum served to continue this 'dominant government discourse about the use of IT to enhance and enrich pupils' learning and extend the scope of their learning potential (Selwyn, 2002: 433). In essence, by the end of the 1980s government policy had shifted from its introduction of the *Micros in Schools* scheme which had been 'loosely justified in terms of benefiting industry and the economy' (Selwyn, 2002: 433) to a policy that explicitly enshrined 'the educational capabilities of IT into legislation that every school in England and Wales had to follow' (Selwyn, 2002: 433). Therefore, by the end of the 1980s 'the notion of the 'educational' computer had been affirmed in UK schools' (Selwyn, 2002: 433). Interestingly, the findings of this thesis suggested that digital devices can serve as a distraction in the classroom which hinders a pupils' learning rather than supporting and enhancing it. Therefore, it could be argued that rather than enhancing, digital technologies can have a negative effect on pupils' learning.

This study also found that the increasing use of digital technologies within educational settings can have a negative influence on students' grammar, spelling, and critical thinking skills. The propensity for students to copy and paste directly from a given source to complete assignments was, as one participant put it 'universal'. It is argued that this rote mechanistic digital practice impairs a student's ability to fully learn, comprehend and synthesise information, leading to a demise of critical thinking skills. It is argued digital technologies and by association private digital companies have contributed to, and influenced the demise of students' critical thinking, grammar, and spelling skills as well as pedagogical practices. Marcuse argues 'a "mechanics of conformity" spread throughout the society' (Kellner, in Marcuse, 2002: xx). As a result, the individual was so overpowered by the administrative efficiency and power derived from 'the way it has organized its technological base' (Marcuse, 2002: 5) that society and individuals 'gradually lost the earlier traits of critical rationality (i.e., autonomy, dissent, the power of negation), thus producing a "one-dimensional society" and "one-dimensional man"' (Kellner, in Marcuse, 2002: xx). Therefore, it is argued that the digital private neo-liberal enterprises have spread their mechanics of conformity throughout society and overpowered the education system with their administrative efficiency resulting in a demise of critical thinking. In brief, Marcuse is suggesting that, critical rationality that 'posits the existence of another realm of ideas, images, and imagination' (Kellner, in Marcuse, 2002: xvii) has been lost to society as a result of a new form of control underpinned by the way in which the advanced industrial societies organised their technical base. It is therefore suggested that further research be conducted into the unintended negative impact of the use of digital devices and digital software on pupils' educational development.

An interesting sidenote relating to the impact of digital technologies on skills is that students are losing the ability to tell the time on an analogue clock. While this is not strictly within the realm of DLE it does further exemplify the social impact that digital technologies are wielding on previously taken for granted skills. When new technologies are introduced into a society 'they encourage in-sensitivity to what skills may be lost in the acquisition of new ones to amplify one sense or skill or attitude more loudly than another. This is what Marshall McLuhan meant by his famous aphorism "The medium is the message"' (Postman, 1992: 217). Additionally, this thesis found that the design and functionality of educational software and applications are

increasingly being modelled to mirror the features of social media platforms. For example, Flipgrid offers students a 'like' button function to demonstrate that they approve of another students' uploaded work. This indicates that social networking private companies are also influencing the design of digitised educational resources.

### 6.2.11 Impact of COVID-19 Lockdowns

On March 23rd, 2020, the UK government announced that the whole of the UK would go into a nationwide lockdown to try and stop the rapid spread of the COVID-19 virus.

> On Wednesday 18 March 2020 it was announced that all educational establishments in Wales would close at the latest on Friday 20 March 2020. The exception was provision for children of critical workers and vulnerable children due to the ongoing coronavirus pandemic. Since then, schools in Wales have opened or closed a number of times for all other pupils. (Welsh Government, 2021a)

The first in-depth interview of this study was conducted on the 30th of July 2020 and the last on the 15th of July 2021. As such, the interviews were conducted at a time when the education system had been disrupted by the imposed COVID-19 lockdowns. During these times of school closure, educational provisions were delivered and received remotely via digital devices and platforms such as Microsoft Teams. The initial questions posed by this study were still apparent and relevant, but as a result of this paradigm shift in the education sector another aspect had arisen that clearly needed to be explored and included. Therefore, this section of the findings focuses on the analysis of the data that relates to the impact of COVID-19 on digital literacy education in schools, and FE colleges in Wales.

A macro analysis of the interviews established a series of codes for the responses to the qualitative questions regarding the impact of the COVID-19 lockdowns on digital literacy. The participants' responses fit into the following six themes. Upskilling of

teachers and students; acceleration of the use of digital technologies; digital poverty awareness; increase in digital resources; pedagogical changes and narrowing of the curriculum.

#### 6.2.11.1 Upskilling of Teachers and Students

One of the most common themes to emerge from the data was the view that as a result of the total reliance on digital technologies for educational activities during the lockdown periods, both teachers and students experienced an upskilling effect regarding the use of digital technologies. Participants reported that teachers and students had become far more proficient at using digital technologies due to the absolute necessity and requirement to use them. This view was expressed by educationalists from both primary and secondary schools, and FE colleges, as per the following examples:

> With the learning from home, I think that really enhanced their digital literacy, with everything being online learning, my skills certainly got better throughout the pandemic and you know with all the apps and all the new websites we've discovered they've certainly enhanced their digital literacy as well.
>
> (Amanda, 23, Teacher, Welsh Language Primary School)

> It became about how to use it like in order to replace what you do in a classroom, don't be robotic your pupils will be excited to see you so we just really, really quickly upskilled, really quickly upskilled.
>
> (Richard, 36, IT Teacher, English Language, Secondary School)

> In fairness to the teaching staff in our college and not just our college but I think throughout have been absolutely brilliant in learning this because they had to, and then you know it's become a way of life now.

(James, 50, Learning Resources Manager, FE College)

> I think the last fifteen months have really pushed it and because, it's been enforced and that's what they've needed to rely on and I think the mind set has changed a lot.
>
> (Charlie, (1), 47, ICT Teacher, English Language Secondary School)

The comments made suggested that from the participants perspective the upskilling effects enacted by the necessity to move all teaching online was very much focused on students' and teachers' mechanistic digital skills. During the COVID-19 lockdown periods, educators and students' mechanistic digital literacy skills broadened and increased, and the move to online teaching positioned digital technology companies at the heart of the education itself. Therefore, it could be argued that the education system in its entirety had been subsumed into the digital environment created by the capitalistic digital technology companies.

#### 6.2.11.2 Acceleration of The Use of Digital Technologies in Education

Participants were of the opinion that the accelerated use of digital technologies in education during the COVID-19 lockdowns served to speed up a process that was already underway. This is exemplified by the following examples:

> Since lockdown it's been a huge shift towards the digital medium of presenting work and delivering it back.
>
> (Angela, 55, LSA, Welsh Language, Secondary School)

> It hasn't replaced anything it's just accelerated that process of things that were going to happen in any case.
>
> (James, 50, Learning Resources Manager, FE College)

> It sort of concertinaed everything into a concentrated amount of time where we've had to learn, we've had to do it. We had to make errors and learn by our mistakes and very quickly in a matter of months, so I think this is really pushed things on massively.
>
> (Betsy, 60, Head Teacher, English language Primary School)

> Digital competency is a massive, massive deal, massive deal, because as things develop everything's going to go online now and most things are.
>
> (Ava, 40, Supply Teacher, English Language, Primary School)

COVID-19 lockdowns created a situation where digital technologies underpinned the entire education system during the lockdown periods and positioned neo-liberal capitalistic private tech companies as the dominant facilitators of not just digital literacy education but education in its entirety. In addition, the responses also suggested that the dominance of private tech companies not only in DLE provisions but in education in general was already on the horizon in a pre-COVID world. Therefore, the COVID-19 lockdowns simply served as the accelerant for what participants viewed as an inevitable outcome for the dominance of digital technologies in the education sector.

#### 6.2.11.3 Digital Poverty Awareness

Over two thirds of the participants stated the need to deliver online lessons and communicate via digital technologies during the COVID-19 lockdown periods highlighted and raised their awareness of the digital divide amongst their students. They stated that prior to the lockdowns they had some awareness of this divide with regard to digital device access and Internet connectivity, but in the majority of cases the full extent of this divide came as a surprise. The extent of this division was highlighted to teaching staff in a variety of different ways; some noticed that students

were not engaging with the work being posted online; others had conversations with their students during the periods in between lockdowns, and others from student survey results. The divide included not only a lack of devices, but also a lack of Internet connectivity:

> We were posting work for our children to do, and it was becoming apparent to us that there were some children who weren't able to engage with it, and it wasn't because they didn't want to it was because they didn't have the devices.
>
> (Betsy, 60, Head Teacher, English language Primary School)

> When it came to hardware yeah, we're definitely more aware of more pupils that need it and that obviously didn't have that at home so yeah it brought it to our attention, as a department and IT as well we've always worried about homework and things like that you know not everyone has access at home but it has brought it to our attention that that's probably more the case than we expected.
>
> (Debbie, 30, Computer Science Teacher, English Language Secondary School)

> There were lots of pupils who didn't have access and to be honest there was a lot more than I think we'd realised.
>
> (Susan, 28, Maths Teacher, English Language Secondary School)

> Although the county had said you can give them your Chromebooks, your laptops, sometimes it wasn't worth giving it cause the household didn't have the Internet.
>
> (Anna, 55, LSA, English Language Primary School)

> Yes definitely as you know it's kind of been exposed hugely by COVID and I think it's been also a recognition that it's not just about, it doesn't magically solve the problem by giving kids devices and dongles so you know we know there's a digital and data poverty aspect and NESTA have done some great work around looking at data poverty in Wales and Scotland but actually that shows fixing the problem in the longer term is not just an education issue it's actually a wider societal issue as well, so actually it is about community it's about jobs and the economy it's about infrastructure and connectivity.
>
> (Oliver, Digital Literacy Expert)

Participants also spoke about the surprising number of staff who also needed to be furnished with digital devices:

> The college has issued over 1500 laptops in the last year to both staff and students you'd be amazed how many staff didn't have decent kit, so we've given hundreds and hundreds of laptops out to staff and that was the big push for the first lot of COVID was just to get them so they could teach.
>
> (James, 50, Learning Resources Manager, FE College)

> What we also found is that our staff needed devices as well.
>
> (Colin, 30, ICT Teacher, English Language Secondary School)

It could be suggested that the lack of awareness of the digital divide amongst students and staff was in Marcusian terms one-dimensional, from the perspective that Marcuse's analysis explains and dissects the mechanisms through which 'consumer

capitalism integrates individuals into its world of thought and behaviour' (Kellner, in Marcuse, 2002: xii). Therefore, looking at this data from this perspective it could be suggested that the education system and educationalists had been integrated into the digital consumer capitalism world of thought. As such, the education system and educationalists held the technocratic view that access to the digital environment and digital devices was far more ubiquitous that the COVID-19 lockdowns revealed.

#### 6.2.11.4 Increase in Digital Resources.

A theme that participants were keen to speak about was how the digital divide or digital poverty had been addressed to ensure that all students had equitable access to their online education. As a result of the measures taken educational establishments saw a significant increase in the number of digital resources available to them and the students:

> We've got Chromebooks now since the pandemic well pre-pandemic we only had around about sort of forty Chromebooks in the school now we're closer to the four hundred mark right, so you can see that's scaled up massively…We haven't paid for the Chromebooks they were gifted to us by Welsh Government.
>
> (Colin, 30, ICT Teacher, English Language Secondary School)

The Welsh Government made a significant economic investment into digital resources during the COVID-19 lockdowns. At the start of the pandemic, the Minister for Education committed up to three million pounds as part of Stay Safe, Stay Learning (Welsh Government, 2021b):

> Based on the demand identified by schools and local authorities, there have been 10,848 MiFi devices and 9,717 software licences funded by the Welsh Government and deployed across Wales. These figures do not include any local arrangements made by individual local authorities or schools to loan other equipment to learners. (Welsh Government, 2021b)

> Through the support of the Welsh Government, we were able to go a long way to bridge that digital divide and that will stand us in good stead for the future now, I hope anyway.
>
> (James, 50, Learning Resources Manager, FE College)

> The money came from the Welsh Government as kind of a digital inclusion funding so that's paid for the vast majority of our Chromebooks and we also had to get wi-fi for some learners as well where they don't have Internet access at home so yes so, we've done both, the Wi-Fi numbers are quite small probably fifty or sixty we've given out but Chromebooks like I say it's about a thousand.
>
> (Thomas, 50, Learning Resources Manager, FE College)

This investment was driven by the numbers of staff and students that did not have digital technologies available to them to be able to engage in teaching and learning online. This suggests that consumer capitalism flourished during the lockdown periods offering the private neo-liberal technology companies an increased economic share and ideological dominance in the education sector. In Marcusian terms, this would suggest that as a result of the need to move education online it furthered the subsummation of the education system into a world that has been restructured by technology and consumer capitalism. It could be argued that the significant investment made into the purchase of thousands of Google Chromebooks ingratiates Google into the education system which further integrates the educational system into Google's world of thought and behaviour.

#### 6.2.11.5 Pedagogical Changes

Participants expressed the view that they had to change the way they delivered lessons. The data showed that this was a very individualistic approach that relied on the teacher acting autonomously, rather than acting on any central advice about how they should deliver online lessons.

> For reception during lockdown. I'd record myself doing a lot of lessons or doing little ideas or I'd record my children in the house doing an activity and showing the parents what they could do.
>
> (Barbara, 34, Teacher English Language Primary School)

> So, say I set a task and there were four pupils that said oh I'm using a smart phone I can't necessarily do that, for example I'd just slightly adapt the task, you know to use things that they could do so it just had to be, that was the difficult thing.
>
> (Richard, 36, IT Teacher, English Language, Secondary School)

> It was difficult I don't think anyone can say it was an easy time it was nothing that we were prepared for because you can have an established way of working in school but everything had to be, had to change out there.
>
> (Charlie, (1), 47, ICT Teacher, English Language Secondary School)

Varying factors were taken into consideration with regard to how they could teach effectively and engage students with online learning and teaching, and although the factors differed, they were all influenced and shaped by the allowances and limitations that the digital technologies afforded them. This view of the requirement to redesign pedagogical practices for online teaching and learning was substantiated by a digital education expert:

> Whatever happens post COVID you know particularly if we're going to be moving into online and blended learning anyway is actually that means everyone needs to have an understanding of effective digital practice, and it isn't just about the people who either

> do this for a living you know the kind of people in SALT or your learning technologists or people you kind of think about EdTech and learning design in general, everyone needs to have a bit of an understanding of this as well.
>
> (Oliver, Digital Literacy Expert)

#### 6.2.11.6 Narrowing of Curriculum

Participants spoke about the impact of COVID-19 lockdowns on the curriculum and they were of the view that the mechanistic digital skills of students and staff had improved, therefore, their view was that digital literacy had improved. However, the analysis of the responses suggests that the preparation of students for the social and cultural aspects of living in the digital milieu had diminished. As a result of the constraints of teaching online, the curriculum had been narrowed and the education students would have usually received regarding their social and cultural use of digital technologies, especially in PSE lessons had been directly affected. As per the following examples:

> I suppose the DCF or digital competency will only be a success if it is genuinely embedded across the curriculum, but then you clearly need some specific timetable, some time in the timetable to develop some of these skills, so I think there has been a concern with having a very narrow curriculum over COVID.
>
> (Oliver, Digital Literacy Expert)

> I think the talk on the police has gone on for years but their talk has changed because they'd always talked about the drugs and things but then they talk about the digital because there's more going on about grooming and whatever. I think that goes on with the year sixes and the year fives, with ours is to do with YouTube a lot and the Facebook and the different channels that you're not supposed to

be on, and he was very adamant about that and see they've lost that this year because of lockdown.

(Anna, 55, LSA, English Language Primary School)

The COVID-19 lockdowns and the requirement to deliver education online narrowed the breadth and depth of the curriculum. Whilst the data shows that the mechanistic digital skills of students and staff improved, the educational provisions regarding the social and cultural aspect of digital technologies and the digital environment decreased. In addition, from a Marcusian perspective COVID-19 impacted digital literacy by creating a one-dimensional education that focused on the mechanistic use of technologies to facilitate online teaching, learning and communication, as opposed to, a more holistic education that included imparting knowledge about the social and cultural use of digital technologies. Furthermore, the responses also suggest that during the COVID-19 lockdowns not just DLE but the whole of the educational curriculum was subsumed into the digital world of thought and behaviour. The curriculum had been narrowed to recording and distributing video content, and educational pedagogies were influenced by the submission to the 'existing society, deriving its view of the world and mode of behaviour from existing practices and modes of thought' (Kellner, in Marcuse, 2002: xxviii).

### 6.2.12 Discussion

The whole of the education sector was impacted by the COVID-19 pandemic. As such the impact of the imposed lockdowns on DLE became an additional consideration of this research. A key finding from the analysis of the data was that the move to online teaching during the imposed lockdowns in Wales increased teachers and students' mechanistic digital skills. Previous research indicated that throughout the 1980s the increasing appearance of computers in schools was, 'much to the bemusement of most teachers, many of whom were quite hostile to their introduction' (Smith, 2014). Therefore, both previous studies and the findings of this thesis suggest that in the time period before the COVID-19 lockdowns there was still an element of derision towards the overt use of digital technology in education by some educational practitioners. However, the imposed lockdowns created a situation where the requirement to solely

employ digital technologies to teach students was emphatic, imposed, and unavoidable. The inclusion of digital technologies in education had already been increasing exponentially, enacted by educational policy as per the following quote from the 1997 educational report:

> To see a society within ten years where ICT has permeated the entirety of education (as it will the rest of society) so that it is no longer a talking point but taken for granted - rather as electricity has become. (Stevenson, 1997: 4)

The imposed lockdowns saw an even greater acceleration of the inclusion of digital technologies in educational environments. The move to online teaching saw digital technologies becoming the heart of the entire educational system in Wales and beyond. Williamson et al., suggest that the pandemic presented EdTech and technology companies 'remarkable business opportunities for profit-making, as well as enhanced influence over the practices of education' (Williamson et al., 2020: 108). Therefore, it is argued that the move to online learning and teaching created a situation where the whole of the education system was operating under the hegemony of private neo-liberal corporate capitalism.

The move to online teaching also exposed the levels of digital poverty that existed in Wales. Teachers were genuinely surprised at the levels of the divide suggesting that they held a technocratic one-dimensional view as to the ubiquity of digital devices available to students in Wales. Pedagogical practices were also impacted as a result of the move to online teaching, and as such, pedagogical practices were shaped and influenced by the allowances and limitations of the digital resources and the digital environment. To reiterate, previous research suggested that the main focus of IT and computer education in the National Curriculum 'was technocentric' (Capel, 1992: 56). Its central focus was 'the computer and its associated technologies, with little regard for the wider human relations which produce it and on which it has an effect' (Capel, 1992: 56). Between the period of 1983 and 1993 'a view of the computer as a 'tool' with which children can 'think' and work had become the dominant view of the role of IT in education' (Capel, 1992: 57). Capel suggests that this did not move us 'much further away from a focus on the technology, it merely attempted to render it neutral and not in need of explanation' (Capel, 1992: 57). Capel also raises the point that such

a view ‘hides the technological framework within which anyone using a computer is obliged to work and think’ (Capel, 1992: 57). Streibel made an interesting point when he stated that, in view of the direction IT education had taken, ‘personal intellectual agency had thereby been limited to the technological framework’ (Streibel, in Capel 1992: 57). Therefore, it is argued that the move to online teaching further shifted pedagogical practices to work within the technological framework of the digital technologies which further subsumed the educational system into the private capitalistic technology companies’ world of thought and behaviour. Previous research identified in the literature review sees the incorporation of global commercial platforms into public education as potentially posing a risk to ‘education as a public good’ (Hillman et al., 2020: 7-8). Warnings are offered that suggest caution be exercised ‘regarding the expansion of edtech and other platform companies during the coronavirus pandemic’ (Williamson et al., 2020: 108). What Williams et al., term as ‘pandemic pedagogy’ was put in place as an emergency response. However, the concern is that it may be seen by some businesses ‘as a rapid prototype of education, as a private service and an opportunity to recentralise decentralised systems through platforms’ (Williamson et al., 2020: 109). It is further argued that the findings of this thesis indicate the move to online learning and teaching served to further subsume the education system into the world of thought and behaviour of the technological system under the hegemony of private neo-liberal corporate capitalism.

The constraints of teaching online during the lockdown periods also resulted in a narrowing of the curriculum, which in turn affected the education that the students would have received regarding their social and cultural use of digital technologies. It is suggested that the impact of the COVID-19 lockdowns on DLE had a positive outcome in relation to the upskilling of teachers and students’ mechanistic digital skills. However, it is argued that the lockdowns had a negative impact on the DLE provisions regarding students’ social, ethical, and cultural use of digital technologies and the digital environment. From a Marcusian perspective the COVID-19 lockdowns created a one-dimensional DLE. The focus on developing mechanistic skills took precedent to facilitate online teaching, learning and communication. Imparting knowledge about the social and cultural use of digital technologies was in effect abandoned. During the COVID-19 lockdowns, the whole of the educational curriculum was subsumed into the digital technology companies’ world of thought and

behaviour. The curriculum had been narrowed to recording and distributing video content, and educational pedagogies were influenced by the submission to the 'existing society, deriving its view of the world and mode of behaviour from existing practices and modes of thought' (Kellner, in Marcuse, 2002: xxviii).

### 6.2.13 Socio Economic Impact on DLE

One of the considerations of this study was whether socio-economic status affected educational access and opportunities in relation to DLE. The previous COVID-19 section presented the findings that specifically related to the raised awareness of digital poverty as a result of the imposed COVID-19 lockdowns. However, the following findings refer to the analysis of the data regarding socio-economic issues that relate to digital literacy education and digital poverty in Wales pre-lockdown. The macro analysis produced the broad theme socio-economic impact on DLE and the micro analysis produced the following micro themes: educational establishments digital resources; students' digital resources; funding issues; PTA funding, and Government funding.

#### 6.2.13.1 Educational establishments' resources.

The responses showed that the levels of digital poverty in educational establishments in Wales vary. While some educational establishments are well equipped with digital resources, others struggle to provide digital resources for their students. Unsurprisingly, it was predominantly schools in deprived areas that suffered from a lack of digital equipment and software. The following exemplifies the disparity:

> It's certainly the case that some schools are better equipped than others.
>
> (Stephen, 30, Digital literacy expert)

> We're quite lucky because our head teacher prioritises our need for technology but I know there are schools out there who struggle with the need for technology.
>
> (Debbie, 30, Computer Science Teacher, English Language Secondary School)

> In general classrooms we haven't got that technology, so actually I know I find it a struggle to be honest with you because I've got two computers. I've got four iPads that are ancient and you can't download anything on them. They are not refreshed. It's really hard to be promoting these things when you haven't got the technology to use. So, we definitely feel the drive and we understand it and we want to be able to get our children literate in technology, but it's very difficult unless you are given the tools to get there.
>
> (Barbara, 34, Teacher English Language Primary School)

Barbara added that although her school was allocated higher proportions of funding because it was in an area of deprivation, this funding was being allocated to more pressing school needs, as per the following:

> So, we get a higher proportion of funding because of the area we're in, and the schools are to use it as they feel necessary. So, like realistically we could be using that every year on technology and things, but we tend to resource our people, so like for example, we have a counsellor on site and we fund magic room which is a set of different counselling sessions but it's not as intense as the counsellor. We fund a family liaison officer who will support different things, particularly if there's ongoing issues in the family. So, we fund those people with it more than other things.
>
> (Barbara, 34, Teacher English Language Primary School)

Barbara's response suggested that schools in deprived areas use their funding to employ additional staff whose role is to offer wellbeing support, a greater priority for the school due to the social issues experienced by their students. As such, funding these resources was prioritised over purchasing digital resources. Interestingly, the current digital resource poverty experienced by some schools in Wales was also an issue when the National Curriculum was introduced in 1989:

> I was a governor when they introduced the National Curriculum, I was deputy chair of governors for my daughters primary school, [name of school] and [headmaster's name] was the headmaster at that time I went up because the guy who was actually chairman was always working, so I used to go up and I can remember sitting there and he said look at this, 14 different National Curriculum documents for each teacher to use, I was like, they had to do for instance Technology but they didn't have the equipment to do Technology so they had to bring people in for a couple of hours on a Wednesday afternoon or something.
>
> (Edward, 64, ICT, Computer Science Teacher, English Language, Secondary School)

As the findings of this study echo the situation described by Edward, it is suggested that the same issues in relation to a lack of digital equipment are as apparent today as they were in 1989.

Information regarding the Welsh Government's acquisition of Adobe software first surfaced during the interview with Stephen, a digital literacy expert. Stephen was asked whether all schools and students would have suitable hardware to run this software. Essentially, could the mandatory use of this software for Digital Technology assessments potentially exasperate the digital divide:

> Does using this more advanced, more advanced is the wrong word, more professional standard software, does it actually make an even bigger wedge between our students who don't have the right technology at home, and then maybe you know and because technology sometimes occasionally lacks in schools it could have a knock-on effect as to how much they could actually utilise this, it's a very interesting point [interviewer's name] and it's a very valid observation and question.

(Stephen, (1), 30, Digital Literacy Expert)

The response suggested that the Welsh Government chose to negotiate and finalise the deal with Adobe to provide licenses at a reduced cost of £5.00 per license per student without fully considering whether all schools or students had access to suitable hardware to run this software; essentially this aspect was not factored in. Therefore, from a Marcusian perspective this suggests that the Welsh Government took a technocratic one-dimensional approach to the inclusion of this software that did not consider the impact this may have in relation to the socio-economic digital divide. Therefore, to not consider the impact the mandatory inclusion of this software may have in exasperating the digital divide further exemplifies the extent, intensity and reach of this technocratic one-dimensional view. Moreover, it indicates that decisions were being made by authorities subsumed into a technocratic world of thought and behaviour.

#### 6.2.13.2 Students' digital resources

There was a commonly held view that students have access to a phone of some description whether it be the latest iPhone or an old smart phone. However, the responses suggested that the poverty extremes that exist in Wales extend far beyond the digital aspect, as per the following:

> We are in a deprived area, about 40 just over 40% of our children are in receipt of free school meals… we are aware that there's not an equal field out there in amongst our pupils we have the range of children who have the latest you know iPhone to children who have nothing apart from maybe an old smartphone with their parents and they don't have laptops or iPads in their home.
>
> (Betsy, 60, Head Teacher, English language Primary School)

> Huge there's a huge digital divide, I mean a lot of the kids have got phones and because they've got phones um obviously you can use

different apps now which are available so that is possible but working on a phone I mean.

(Edward, 64, ICT, Computer Science Teacher, English Language, Secondary School)

I did a lot of school visits as a [participants professional position] and you know I'd go to some schools on the east side of the river where I'm told that pupils can describe in exact detail how their parents intravenously inject heroin, I mean 7 year old pupils now, and I go to somewhere like [ name of school] where the kids are absolute boy and girl geniuses with professional parents who can speak several languages and write computer programmes at the age of 8 or 9. I'm thinking my god I could not do that at the age of 50 or 60 you know it's just a huge gap sometimes in attainment simply on the basis of income and attainment, even though the ambitions of parents on both sides of the river both sides of [Place name] may well be equal they don't have the same resource to be able to push their children on…In some instances that was the case you know, they literally hired people to go around and knock the door and drag the pupil into school, so just by getting the pupil into school increased their education attainment massively, if you think about it because they weren't attending school on a regular basis by employing someone to get them into school on a regular basis then their education attainment was lifted as a result of that.

(Carlton, 60, Government Official)

These responses suggest the socio-economic divide in Wales extends far beyond the focus of this study. The comments made by Carlton in particular serve to exemplify the extremes of poverty that exist in Wales showing there is a broader economic and societal problem that permeates into and impacts not just DLE, but general life opportunities and educational achievement and attainment. Further comments

highlighted the extreme disparities regarding socio-economic status in Wales as per the following:

> Learn how to play even is massive for us because they don't know how to play, the idea is they don't have that creative thinking, actually we spend a lot of time teaching how to play what does play look like, sharing and things is huge and particularly because of the area we're in actually not many toys at home, they don't have those things.
>
> (Barbara, 34, Teacher English Language Primary School)

The findings regarding digital poverty are borne out by Oliver the digital literacy expert who stated that digital poverty was a part of a much larger poverty issue, that would require more than just an educational intervention:

> The fix is not you know it's not just a one off capital investment to buy loads of laptops and to buy loads of dongles I think you realise actually there's a bigger, it's really exposed a problem that we've probably known about implicitly for a while and actually that's going to require a programme of government to fix rather than, it's not going to be something we're going to fix in the next year, but hopefully we now know the scale of the problem now and actually we'll be serious about fixing stuff, and again it isn't just about, nor is it just about you know ensuring there's fibre broadband everywhere that also doesn't solve the problem because it's about affordability and accessibility so you know, it's about jobs and it's about communities and it's about supporting families and all that kind of stuff as well so it shows it's a whole government thing rather than it just being an education intervention.
>
> (Oliver, Digital Literacy Expert)

> I think Welsh Government get that it's more than just laptops and dongles and I think it also shows the breadth of the challenge because you know like breakfast clubs and getting kids, you know kids going to school hungry and all that kind of stuff it really reinforces the scale of the socioeconomic challenge that some communities and schools and kids face in Wales, and actually it's not just about giving them a laptop, that doesn't solve that problem completely, but it's definitely a facet of it, because actually you know clearly it is, it's difficult to access online learning if you don't have a device but again that doesn't necessarily mean that solves the entire problem.
>
> (Oliver, Digital Literacy Expert)

Oliver's comments demonstrated that he held a multi-dimensional view about the socio-economic digital divide in Wales. This perspective challenges what would be, in Marcusian terms, considered a one-dimensional approach - a one-off capital investment as the silver bullet solution to eradicating this divide. Although, he states that this capital investment would go some way to addressing the issue, he also acknowledges that a far more holistic and multi-dimensional approach needs to be adopted if the problem is to be seriously addressed.

#### 6.2.13.3 Funding issues

The resounding opinion held by all the participants was that a lack of sufficient funding was always an issue. Participants spoke about the funding of digital devices pre-pandemic and what surfaced was that funding made available by local authorities was insufficient to furnish schools with the number of devices required. This lack of funding was seen as particularly problematic when it came to schools' ability to fully implement the DCF framework. In addition, in the case of primary schools in particular, funding had been sourced from other areas such as PTA fund raising activities and lottery grants, as per the following examples:

> You know, pens and pencils are stretched some years let alone a new iPad, I know that's because we make sure we protect our staff and actually we probably all say in our school that our staff particularly our TAs are our bread and butter. They are so valuable that we try to protect them at all costs, but it is financially we struggle.
>
> (Barbara, 34, Teacher English Language Primary School)

> Because of the constraints of budget, we go for some things that aren't brand new sometimes where we've gone for second-hand things that have been reconditioned again because of budgetary constraints.
>
> (Betsy, 60, Head Teacher, English language Primary School)

> We had the PTA they raised money for us to get an interactive whiteboard, so the nursery had two interactive whiteboards from the PTA so they the children then could get up with technology and do things with technology, but before that there wasn't really anything, they wouldn't work, they were so old the interactive whiteboards wouldn't work
>
> (Alison, 34, LSA, Welsh Language, Primary School)

> Of course, PTAs in the West of [place name] raise more money than PTAs in say [place name]. If you've got a very rich PTA who can buy you know lots of equipment then you have an advantage over a school that hasn't got that.
>
> (Carlton, 60, Government Official)

A lack of sufficient funding is an issue that could impact educational establishments' ability to successfully educate and prepare students in relation to DLE. The broader

socio-economic divide that exists in different geographical areas also has an impact on a schools' ability to acquire sufficient digital resources, as exemplified by the comments that relate to the funding amounts different PTAs are able to raise. Therefore, the very possibility of being digitally one-dimensional is contingent on economic resources.

#### 6.2.13.4 Government Funding

Carlton offered an interesting insight into the logistics of how schools funding is allocated as per the following:

> Mostly schools have to find their own resources to pay for the hardware and I know [school name] for example we bought a trolly, a special trolly to store all the tablets on which they wheel from class to class, other schools have had to invest, so I think it comes out of the general funding which they get, because the thing about funding of schools is it doesn't come directly from the Welsh Government, and there's no special line in the Welsh budget for schools as such, and in fact, the education ministers' budget does not fund schools directly apart from special grants such as the pupil development grant, so what happens is, the money for schools is part of the local government settlement, so the local government minister has a budget which he or she passes down to local government and then local government then determines how much schools get from their resources, and the money the local government get is roughly about two thirds or a quarter of their total budget, so the council tax which we pay is no more than about a quarter maybe less of the councils total budget, the vast majority comes from a grant from the Welsh Government as a grant, and that money then is distributed according to the local councils own discretion, but of course you know depending on their own priorities, so some councils pay more per pupil than others and that's how it works out, but that money is then used I think to buy equipment like hardware for technology, there may well at some stage have been special grants to help schools to

> install Wi-Fi for example, because a number of schools didn't have that facility so most schools now have the ability to run Wi-Fi as the results of grants they've had from the Welsh Government, and there is, but I don't think there is any specific grants in terms of buying the hardware to deliver an IT curriculum.
>
> (Carlton, 60, Government Official)

He embellished on this insight further by stating that:

> Well this is the other thing, whenever you make policy at a national level it always has funding implications, and it's typical not just of the Welsh Government but the UK government and the Welsh office before that, they never put enough money in to deliver the policy, and when I was a [professional position] we always used to question the financial assessment of any new legislation that came before us, it was always wrong and it was always wrong on the cautious side as opposed to the generous side, and you talk to anybody in local government and they'll say well we're being asked to bring in new laws but we're not being given the funding to do it. So, they expect the local government to make that up themselves and of course the other thing of course is decisions made at a national level are not always properly funded, so they don't have the resources to give the teachers a pay rise because you don't get that money given to you, your told this is how much the teachers are getting extra, find the money from your own resources and that is quite common in local government unfortunately.
>
> (Carlton, 60, Government Official)

The insight Carlton provided regarding how funding is made available to schools throughout Wales shows that, not only is there a disparity between the amount of

funding allocated to students that is dependent on local councils, but that policies made at national level are never allocated enough funding to deliver them.

#### 6.2.13.5 Summary

To summarise, the analysis of the participants' responses relating to the socio-economic impact on DLE found that there is a disparity between educational establishments in relation to the number of digital resources they have access to. This disparity is driven by the following micro factors: the need for schools particularly those in areas of deprivation to allocate the funding they receive to other resources that are deemed more important. This disparity is compounded by the inability of PTAs in these areas of deprivation to raise as much money as PTAs in more affluent areas. In addition, there is also a macro issue that relates to the source of the funding i.e., Government and local councils. The analysis of the findings suggested that when policies are made at governmental levels the considerations given to the funding required to fully implement a policy is invariably underestimated. In addition, the local councils determine the amount of funding to be allocated per child, and this amount can change from one local council to another, indicating that a child in one area can be afforded less or more funding than a child in another. In relation to the socio-economic impact on students DLE, the poverty extremes in Wales indicate there is a much broader societal issue that needs to be addressed which extends beyond the scope of this study. However, what can be said is that the socio-economic status of a student or a school has a negative impact on both the delivery of digital literacy education and on students' educational attainment.

### 6.2.14 Discussion

Previous research suggested that private digital technology companies used a combination of marketing strategies aimed at the school and home markets that could not 'fail to further disadvantage large groups of students' (Apple, 1993: 115). Essentially this was a divisive issue of access to technologies directly influenced by the socio-economic status of either the school or household, and as such, with the burgeoning technology market apparent; the more affluent the school, or the student, then the greater the 'social stratification of life chances' (Apple, 1993: 115). Life chances that would be greatly improved not due to natural ability, 'but to wealth'

(Apple, 1993: 115). The findings from the research conducted in this thesis concur that socio-economic disparity impacted access to digitised resources at a school and student level. Some schools were able to allocate a significant amount of their budget to acquiring digitised resources. Other schools, especially those in areas of deprivation, used their budget to employ additional staff to provide wellbeing support to students. Essentially, the socio-economic status of the area a school is situated in impacts how its budget is best spent to support students' needs. This disparity is further compounded by the inability of PTAs in these areas of deprivation to raise as much money as PTAs in more affluent areas. In addition, there is also a macro issue that relates to the source of the funding i.e., Government and local councils. When policies are made at governmental levels the considerations given to the funding required to fully implement a policy is invariably underestimated. In addition, the local councils determine the amount of funding to be allocated per child. This amount can change from one local council to another, indicating that a child in one area can be afforded less or more funding than a child in another.

One of the digital literacy experts stated that digital poverty in Wales was implicitly understood. However, the findings from this study suggest that it was not until the mandatory COVID-19 lockdown periods when all teaching moved online that the extent of the problem was fully realised. This lack of realisation could be attributed to the notion that the Welsh Government held a somewhat technocratic view prior to the COVID-19 lockdowns. The data also revealed that schools and students in some areas are fighting against such debilitating degrees of poverty that financial resources are allocated in ways that address extreme social situations. For example, in some cases staff are employed to attend the students' home every morning to ensure a students' attendance in school. In these extreme social situations ensuring a students' attendance was seen to increase their general educational attainment and was viewed as a far greater priority than the student attaining digital skills or having access to digital devices.

The findings showed that there are areas in Wales that suffer from severe socio-economic issues that impact DLE which in turn exasperates the digital divide. Therefore, it is argued that the recent introduction of professional software such as the Adobe Creative Suite, could serve to exasperate this divide. It is further suggested that

the socio-economic perspective had not been considered when governmental level deliberations and decisions were being made about the inclusion of this software. Nonetheless, Adobe Creative Suite is now the official format required to present students' work for GCSE Qualification assessment in the new Digital Technology qualification which will replace ICT from September 2021. In essence, the deal with Adobe had been decided, finalised, and written into the qualification guidelines without considering the socio-economic implications of its mandatory inclusion. Therefore, it is argued that from a Marcusian perspective the Welsh Government took a technocratic one-dimensional approach to the inclusion of this software that did not consider what impact this may have in relation to the socio-economic digital divide. Moreover, to not consider, or factor in the impact on the digital divide further exemplifies the extent, intensity and reach of this technocratic one-dimensional view. Furthermore, it indicates that decisions were being made by authorities subsumed into a technocratic world of thought and behaviour. It is therefore suggested that further research be conducted that investigates the impact of the inclusion of new software on the digital divide, and whether this aspect is being considered as a facet of the digitised educational resources procurement process.

Previous research suggested that the issue of socio-economic factors influencing access to technologies as noted by Millen et al., state that, 'children living in more economically deprived areas have been shown to have more limited access to computer resources at school' (Millen et al., 2018: 24), and they are often 'less likely to have computers at home' (Millen et al., 2018: 24). This limited access 'is a particular issue for children, both male and female, coming from households of lower socio-economic status' (Millen et al., 2018: 24-25), and that this lack of access can contribute to 'low self-efficacy'' (Millen et al., 2018: 24). However, they further state that as currently 'around 88% of UK households contain a computer and most schools have sufficient hardware, this complaint has retreated' (Millen et al., 2018: 24). Due to the ubiquity of digital technologies 'socio-economic concerns are now overshadowed by the stronger influence of parental attitudes' (Shashaani, 1994; See also Downes & Looker, 2011; Álvarez, et al. 2013; Symons, et al. 2017, in Millen et al., 2018: 25). This being said, Williamson et al., note that since the outbreak of COVID-19 'education policy makers are beginning to realise that the rhetoric around young people is incorrect, and now some young people are excluded from much of their

education' (Williamson et al., 2020: 109). They add that 'not all young people are the well connected, digitally savvy, 'digital natives' that the rhetoric around young people and technology would have us believe' (Williamson et al., 2020: 109). The findings of this thesis suggest that socio-economic status and access to digital technologies is still very much a live issue in Wales. In addition, this study evidenced that surveys conducted during the COVID-19 lockdowns were not returning accurate results. As one participant who taught in a school located in area of deprivation put it, "they may be poor but they're still proud" and as such were reticent to admit they needed help. Therefore, it is suggested that further qualitative research be conducted in this area to gain a better insight and understanding of students' digital status in Wales. This being said, the stratification of poverty in Wales is a far wider social issue that extends beyond the scope of this research study.

#### 6.2.15 Gender

Another consideration of this study was whether gender had an impact on the levels of digital literacy attainment. A macro analysis of the interviews established a series of codes for the responses to the qualitative questions regarding gender and digital literacy. The participants' responses fit into the following four themes. Lack of interest; gaming interest; latency of educational intervention, and schemes and initiatives to combat gender disparity.

##### 6.2.15.1 Lack of Interest

Participants responses indicate that boys are more interested in using digital technologies than girls. Girls disinterest in digital technologies is evident from a young age and filters through to secondary school as the following examples show:

> I think boys were more inclined I remember more boys arguing over it than girls, I think girls were kind of if they couldn't do it, they'd just find something else to do.
>
> (Alice, 27, LSA Secondary School, and Primary School)

Alice had LSA experience in both primary and secondary schools and so to contextualise her comment she was referring to her observations of children in primary

schools. It is interesting that from her observations not only were boys more inclined to favour using digital technologies in the classroom, but they would also argue over the availability of the technologies. Whereas, if no devices were available girls were more inclined to find something else to do.

> A lot of them weren't savvy, a lot of girls weren't that savvy cause they like pen and paper.
>
> (Anna, 55, LSA, English Language Primary School)

Anna suggested that from her observation girls preferred using pen and paper, a preference she viewed as contributing to the girls' lack of proficiency with digital devices. Charlie had the following to add regarding his experience of girls' interest in computer science:

> In computer science this year the numbers are low on who's taking them and so it's kind of getting them interested, they're interested to a certain point and then they can only select four options at GCSE so the numbers are low, but some of the girls that we've had come through have just been, they've been fabulous, not as many maybe as you'd want but they have absolutely been superb.
>
> (Charlie, (1) 47, ICT Teacher, English Language Secondary School)

To reiterate Marcuse tackled Freud's theoretical concept with regard to personality structures by situating Freud's theory within an historical context explaining that in light of the transition of a new social order, 'the father is no longer a dominant economic figure in the world of 'organized capitalism' and is replaced at home by the authority of the 'mass media, school and sports teams, gangs, etc' (5L, p. 47) (Kellner,1984: 239):

> The self immediately identifies with social ego-ideals and role models, and no longer forges its identity through battling its id

> impulses and superego parent figures. ‘The ego shrinks to such an extent that it seems no longer capable of sustaining itself, as a self’ (5L, p. 47). The result is a ‘one dimensional static identification with the others and with the administered reality principle’ (5L, p.47). Social controls are no longer internalized through the ingression of society into the mental structure of individuals’ (5L, p. 54ff). but are embodied in the social apparatus and ideology which requires submission to its rules, dictates and institutions (5L, pp. 54ff). The result is ‘a society of total reification’ (ibid) where the individual’s very gratifications, thoughts and behaviour are socially administered. (Kellner,1984: 239)

If we are to look at the data regarding girls’ lack of interest from this perspective, it could be argued that current social conditions have influenced the development of individuals, and that the digital milieu and the digital technologies that are ubiquitous and pervasive have heralded a new era of civilisation. Digital tools or devices and the capitalistic system we access through them have, one could say, become an integral part of our socialisation in the respect that digital technologies and the digital realm has become the embodiment of the ‘the social apparatus and ideology which requires submission to its rules, dictates and institutions’ (Kellner,1984: 239). Previous academic studies surfaced in the literature review cite the socialisation of men and women as a contributing barrier of female inclusion in the IT industry. Different value systems and world views are developed by male and females as a result of societies expectations and influence (Harding, 1997: 21; Van der Vleuten et al., 2016: 183). Several authors have argued ‘that ICTs are racially white, Western, male artefacts’ (Chen & Collis, 1999; Chen, Mashhadi, Ang, & Harkrider, 1999; Collis, 1999; Joo, 1999, in Li and Kirkup, 2007: 303). As such it is further argued that a contributing factor to female disinterest in digital technologies is as a result of the patriarchal nature and male world view that is ‘more usually presented in the practice of technology and in its presentation for learning’ (Harding, 1997: 21). When considering Marcuse’s notion of one-dimensional static identification within the context of the current social environment, it is argued that in the digital milieu men and women are socialised by racially white, western, male artefacts or ICTs that influence their perceptions, use, and relationship to and with digital technologies, and the digital environment. This patriarchal influence is more pronounced in relation to female interest and uptake of computer science based subjects.

#### 6.2.15.2 Interest in Gaming

Participants were of the view that from a young age i.e., primary school, boys were far more inclined to play popular online games, whereas girls were more interested in social media platforms. One game in particular was repeatedly mentioned by various participants, *Fortnite*, an online video game.

> Every class from year 3 up every boy, some girls but every boy was playing it, it was the main topic of discussion throughout, it was very, it was quite strange because obviously they were more obsessed with paying for you know my mum bought me, gave me her card to buy this type of skin on *Fortnite*.
>
> (Arya, 25, LSA, English Language, Primary School)

> The girls are very much more Instagram and TikTok the boys are very much more the gaming side of things.
>
> (Barbara, 34, Teacher English Language Primary School)

> When you throw the question out there who can access this using a phone you know everyone's hand goes up and then there's like how many have got an Xbox well obviously the boys are going yes.
>
> (Amanda, 23, Teacher, Welsh Language Primary School)

Participants stated that students viewed computer science predominantly as a subject that taught video game programming, as per the following examples:

> A lot of them want to be gamers and they don't necessarily understand the mechanics behind it especially the ones that want to

become gamers. They come to computer science GCSE and they're like oh but we're not playing games and I'm like well that's not what a gamer would do anyway, so they do play games obviously when they've made them but I said there's not a job out there where you sit and play games all day that isn't real.

(Debbie, 30, Computer Science Teacher, English Language Secondary School)

We're trying to encourage girls to think differently about the subject, interestingly it also maybe isn't such a bad thing it also switches some boys off because boys maybe think too narrowly about it, it's all about creating games, there is game creation within this area but that's maybe the least important or one of the, I mean you could argue in lockdown it's been one of the most important things but you get this idea that it's actually only a very small chunk of what computers can do.

(Stephen, 30, Digital Literacy Expert)

From a Marcusian perspective it could be suggested that if gaming is viewed one-dimensionally from a gender perspective i.e., it is something that is male orientated, and if computer science is intrinsically linked to gaming, in the respect that it is a subject viewed solely as teaching you how to code and programme games, then it could be further argued that computer science is also viewed one-dimensionally. Therefore, it is suggested that computer science has been subsumed into this one-dimensional view which could be a contributing factor as to why more males than females take an interest in computer science. This suggestion then raises two further questions: Does this one-dimensional view of what computer science is, contribute to the lack of females in the IT industry? And is the exclusion of females from technological subjects deliberate, and an extension of the techno social patriarchy?

#### 6.2.15.3 Initiatives to Combat Gender Disparity

The participants who taught at secondary school level were keen to demonstrate their awareness of the disparity between girls' and boys' uptake of computer science and as such, were keen to speak about measures and initiatives offered to combat this.

> For two years we had a group of girls from our school who were interested in coding and computing to go up and spend a day at Microsoft offices in Reading, they're called Digigirlz so they were paired up with some of the female employees at Microsoft the developers and they developed using Micro bits the kind of solutions to world problems and things like that.
>
> (Charlie, (1) 47, ICT Teacher, English Language Secondary School)

> I've got one girl now at the moment in year ten going into year eleven, she's very, very able I've been working with her over the years giving her task books to do and she's almost self-taught and so what I offer is, I offer her every Tuesday after school she stays behind, we work then on the controlled assessment and we look at various different, oh what do they call it, like theory topics and so forth.
>
> (Colin, 30, ICT Teacher, English Language Secondary School)

Technocamps is a Swansea University based outreach initiative to promote computer science within school settings, and one of the digital literacy experts spoke about how Technocamps try to encourage girls to change their perspective about computer science:

> We're trying to encourage girls to think differently about the subject.
>
> (Stephen, (2), 30, Digital Literacy Expert)

There is a one-dimensional perspective when it comes to students' views about computer science. This lack of understanding about how the digital world has impacted the world could also feed back into the one-dimensional perception that girls hold. If they had developed a deeper understanding about technology and its cultural, ethical, and social implications at a young age then perhaps their views or perceptions about computer science, coding and programming would be altered. Therefore, the focus DLE has historically had on teaching mechanistic skills and not the digital environment could also have contributed to girls' misconception of computer science. It is also interesting and ironic that Microsoft are running Digigirlz programmes to try and combat a situation that they have potentially contributed to creating. In one way digital technologies themselves are also being subjected to gender stereotyping, boys have X Boxes and play video games, while girls do not. Girls are more inclined to be interested in social media apps than boys – studies cited in the literature review show that software is developed differently depending on whether it is targeting boys or girls. This further demonstrates a one- dimensional socialisation of females that digital systems are superimposing on them.

#### 6.2.15.4 Latency of educational Intervention

Oliver one of the digital experts acknowledged that there was still a lack of female representation in the IT industry and offered statistics to demonstrate the degree of the disparity:

> This is a big problem for the IT industry and more generally the professional body the BCS challenge of IT have acknowledged that you know, 17% I think is the sort of gender split in IT, and obviously most computer science degree programmes are at best would be like 80/20 at best, so there is a pipeline problem.
>
> (Oliver, Digital Literacy Expert)

Oliver was of the opinion that this gender disparity was potentially due to a number of factors, such as the lack of female role models in this sector. However, what he saw as one of the main factors regarding this gender imbalance was that any intervention to

try and combat this disparity by changing perceptions was being deployed at too late a stage in the educational process. Interestingly, no initiatives seem to be currently in place at primary level schooling to combat this disparity.

> There's no point trying to speak to 15- or 16-year-olds because it's too late because they've made their GCSE choices or they've already been put off the subject so you need to crack this in primary school and change perceptions in primary schools so it feeds through into secondary.
>
> (Oliver, Digital Literacy Expert)

Oliver also offered his views on how to combat and change this situation.

> You need to work a lot earlier, and you need visibility of role models, and you can't be sort of doing, oh boys want to do techy stuff and girls want to do like nice shiny pink stuff, don't pinkify things and all that sort of stuff, I think there's a lot of literature there's a lot of research to look at effective interventions to make it inclusive, and it isn't just about having you know like girl only sessions. I think you do need to have an integrated approach to some of this stuff, but you know there's a lot of evidence and research having been done in this space and it requires long term sustainable approaches to fix the problem.
>
> (Oliver, Digital Literacy Expert)

Debbie, a female computer science teacher is a visible role model. She stated that the uptake of computer science by girls for her classes was improving, but very slowly:

> It is slowly changing but I would say especially over the last four years, in the beginning literally all boys I didn't have any girls for at

least two or three years, the last two years I've had one or two girls in a class of maybe twenty-three and really interestingly enough this year we've got seven girls in a class of thirty so I was really happy this year to see more girls take it, so maybe it is developing slowly we are working our way up, so yeah it's really interesting.

(Debbie, 30, Computer Science Teacher, English Language Secondary School)

I think if we say at a very young age oh well you know it's a girls and a boys thing, we're already stereotyping, we're already getting pupils then to sort of say well if you're a girl, you're going to do this and if you're a boy you're going to do this, um I've always been of the opinion I don't care who does whatever if it's a boy, if it's a girl if it's a monkey whatever and that's my view on it, you always have the best person for the job, isn't it.

(Colin, 30, ICT Teacher, English Language Secondary School)

What was also interesting was that girls often outperform boys in IT.

Girls do outperform boys, I have had one year where it was the other way around I had a good bunch of really geeky boys and they were really bright they would learn mark schemes off by heart it was frightening, but normally yes girls are more studious when they're going through things they'll read mark schemes more carefully and they'll look at guides more, whereas the boys will be a bit more slap dash because they want to go through things quickly, and I think that's a boy nature, gosh I was exactly the same you know I can't say that um, I can't say that I was bad, but essentially you know that is, that's the way boys are isn't it?

(Colin, 30, ICT Teacher, English Language Secondary School)

Responses suggest there is an acceptance that girls and boys behave in different ways. However, this is a wider debate beyond the scope of this study, but in the context of gender and digital literacy the analysis of the data bears out the findings in the literature review, and perhaps adds to the notion that this one-dimensionality regarding the perceptions of females and males when it comes to digital technologies is universal and global. As such, this is an area that deserves more research in order to answer the why question, only then can this disparity be addressed and combated effectively.

### 6.2.16 Discussion

The 2014 Estyn report stated that in Wales, a higher percentage of girls over boys achieved 'the expected level 5 or above in ICT' (Estyn, 2014: 6), but that this is also the case in all other non-core subjects. However, this achievement gap is less in ICT and the report merely speculates as to why this may be the case by suggesting that it 'could be due to the appeal of the subject to boys, and that it is acceptable for boys to do well in ICT' (Estyn, 2014: 6). However, while reports indicate that girls' achievement levels are high in ICT, when it comes to computer science there is a lack of uptake or interest in the subject at secondary school. Previous research suggested that there is a relative consensus, 'that the decision-making process of females (and males) when it comes to careers in computing is imbued with a range of popular misconceptions' (Millen et al., 2018: 26). One of the most prevalent is 'that computing (and specifically, programming) is a solo activity' (Margolis & Fisher, 2002; Zimmerman & Sprung, 2008, in Millen et al., 2018: 26), and as such it would not suit 'females who prefer team-based jobs involving greater social interaction' (Margolis & Fisher, 2002; Zimmerman & Sprung, 2008, in Millen et al., 2018: 26). This is also borne out in evidence cited by the 'ICT Steering Group's report to the Welsh Government published in September 2013 which states that 'by the time girls get to secondary school and are selecting GCSE subjects, a poor perception of the discipline has already developed' (The ICT Steering Group, 2013: 19). However, the findings of this research suggest there is another misconception that effects the decision making process of females and males when it comes to careers in computing. The findings from this study suggest that misconceptions relating to the educational content of computer science lessons could be affecting the interest and uptake of the subject by

females. This study found that computer science is perceived by students in a one-dimensional way as a subject that focuses on how to code or programme video games. Moreover, the findings also suggested that from a young age, boys were more interested in playing video games than girls. Therefore, it is argued that the lack of female interest in playing video games coupled with the misconception that computer science focuses on programming video games could be a contributing factor as to why there are fewer females interested in studying the subject.

To explore potential reasons as to why there is a lack of female interest in playing video games or in using digital devices previous research suggested that several authors have argued 'that ICTs are racially white, Western, male artefacts' (Chen & Collis, 1999; Chen, Mashhadi, Ang, & Harkrider, 1999; Collis, 1999; Joo, 1999, in Li and Kirkup, 2007: 303), and as such, it is the male world view that is 'more usually presented in the practice of technology and in its presentation for learning' (Harding, 1997: 21). To explore this even further, other research cited in the literature review suggested that 'historically, software was designed by males for males, and its development since has continued along gendered lines' (Millen et al., 2018: 26; Heemskerk et al., 2005: 2). Research indicates that children's predominant interaction with computers 'particularly in their leisure time, is through using various pieces of software' **(**Millen et al., 2018: 26). However, previous research also showed that 'the gendering of software even penetrates education software' (Millen et al., 2018: 26; Baker, 1983; 1985 in Beynon, 1993: 8). A study conducted by Huff and Cooper in 1987 'asked teachers at all levels of schooling to design educational software for their students' (Huff and Cooper, in Millen et al., 2018: 26). The results of the study found that 'the teachers followed gendered stereotypes and designed tool software for the females, and software involving competitive violence for the males' (Huff, 2002: 519). The experiment was repeated 15 years later, and the results were exactly the same. Huff concluded that, 'it is not the computer, or even the software, that is at the root of the sex bias in software, but the expectations and stereotypes of the designers of the software' (Huff, 2002: 519). It is suggested that there is a one-dimensional perspective when it comes to students' views about computer science. A lack of understanding about how the digital world has impacted the world could also feed back into the one-dimensional perception that girls hold. It is speculated that if girls had developed a deeper understanding about the essence of technology and its cultural, ethical, and

social implications at a young age then perhaps their views or perceptions about computer science, coding and programming would be altered. Therefore, the focus on mechanistic skills and not the digital environment could have contributed to their one-dimensional perception. It is suggested that in view of the findings of this study, further research be conducted into girls' one-dimensional view and misconceptions about computer science.

### 6.2.17 Welsh Language

The findings in the following section relate to the participants views, and opinions of the use and inclusion of the Welsh language in digital literacy provisions, and their views of the VLE, Hwb. The macro analysis of the data identified the broad theme the Welsh language and digital literacy education; however, a micro analysis of the data identified the following themes: Welsh language educational resources, and Hwb and the Welsh language.

#### 6.2.17.1 Welsh Language Educational Resources

Participants who taught in Welsh medium schools stated that the number of digital Welsh language educational resources had been slowly increasing within digital technologies. Alison who teaches nursery aged children in a Welsh language primary school discussed the type of digital resources that fostered and included the Welsh language.

> We've got an iPad corner where they can just go and play on the iPads and, there's even Welsh apps on it.
>
> (Alison, 34, LSA Welsh Language, Primary School)

> Teaching wise we do use it, a load of the things the resources that they've got on Hwb, there's the Teddy Twt or something on it where you've got to choose clothes for Teddy Twt so I use Hwb a lot.
>
> (Alison, 34, LSA Welsh Language, Primary School)

Alison's use of language is interesting as there is an element of surprise in her use of the word 'even' as if the inclusion of Welsh apps was a welcomed and unexpected surprise. It is therefore suggested that the inclusion of the Welsh language in digital resources is not viewed as a normal occurrence, which in turn demonstrates the extent to which the Welsh language has been excluded from digital resources. Alison was asked if there were Welsh language resources available outside of Hwb, her response was:

> There's not many.
>
> (Alison, 34, LSA Welsh Language, Primary School)

She was then asked if the amount of Welsh language resources available on Hwb had increased to which she replied:

> Yes, there's a lot on it now from when it first started, I don't know if we're more aware of them as well as a school you know if there's something new now the teacher's seen it so they pass the message on - oh yeah this is really good.
>
> (Alison, 34, LSA Welsh Language, Primary School)

Despite this increase, the participants were of the view that there was still a disparity between the large number and range of English language resources available in comparison to Welsh, especially when it came to STEM based subjects. In addition, participants also held the view that the COVID-19 lockdowns had served as a catalyst to increase the number of Welsh language resources available. Both Alison and Amanda were also of the opinion that the lockdown periods afforded them more time to explore Hwb and discover features and resources that they were previously unaware of:

> When I was training there was always a lot of English medium resources out there English language resources out there, especially online, but I feel like especially with the lockdown happening and everything there's a lot more resources, especially on Hwb it's such an amazing thing for Welsh language, there's a lot more available now in Welsh and there was also a lot of people came together, and you know like, we had famous artists doing a lot of things through Welsh medium and everything, so there was a big push throughout this last couple of months for the Welsh medium education and language resources as well…Yes and there's really nice things on Hwb you know we've even got maths and science resources now that are coming into Welsh which I don't think you know years ago you could never ever find any science or maths work sheets or interactive things to do in Welsh but now there's definitely a lot more especially on Hwb and everything like that.
>
> (Amanda, 23, Teacher, Welsh Language Primary School)

The findings suggested that Hwb was the main repository for Welsh language resources and that even though the number of resources had increased they were still limited, especially in relation to STEM based resources.

6.2.17.2 Hwb and the Welsh Language

To reiterate, Leighton Andrews the Welsh Education Secretary at the time launched the bilingual digital learning platform 'Hwb', on December 12th, 2012 (Hook, 2012). Hwb was designed and created specifically to serve the educational sector in Wales. The following examples demonstrate the participants' views regarding the lack of bilingual resources, or indeed the lack of the bilingual nature of Hwb:

> Hwb is, it's not completely bi-lingual it should be but they're getting there you know things don't happen overnight.
>
> (Charlie, (2) 47, ICT Teacher, English Language Secondary School)

> They did contract to several parties at different times for solutions to be created for various technical issues, but I am not aware of any backing towards the education software sector – which is a shame! I would love to see Hwb throw their weight behind setting up an Education Software Incubator that helps people with ideas for educational software, bi-lingual, in Wales.
>
> (Nicholas, Government official)

It is argued that since Hwb's launch in 2012 more consideration has been given to its digital and technical development than on developing it as a bilingual platform. Therefore, it is suggested there has been a one-dimensional technocratic focus on developing the digital and technical aspect of Hwb, rather than on developing a sufficient number of Welsh language resources, to ensure that the platform was, from its inception, completely bi-lingual. The findings show that although the number of Welsh language educational resources have increased over time, they are still limited.

### 6.2.18 Discussion

A report commissioned by the Welsh Assembly - published in 2000 and conducted by Harries has been identified as the first to raise the issue of the use of the Welsh language in IT education. Further initiatives were identified in the literature review that aimed to increase the use of the Welsh language in technology and digital media education (Welsh Government 2018a: 27). For example, a Living Language: A Language for Living (the Welsh language Strategy for 2012-17), (Welsh Government 2018a: 27), and The *Welsh Government 2018/Welsh Language Technology Action Plan* states that; in order to ensure that the Welsh language thrives digitally, the Welsh language technology action plan has been formulated and is derived 'from the Welsh Government's strategy Cymraeg 2050: A million Welsh speakers (2017)' (Welsh Government 2018a: Introduction). Its primary goal is to ensure that through technological developments 'the Welsh language can be used in a wide variety of contexts, be that by using voice, keyboard or other means of human-computer interaction' (Welsh Government 2018a: Introduction). There are three specific areas

that the plan addresses which are, ‘Welsh Language Speech Technology, Computer-assisted translation, Conversational Artificial Intelligence’ (Welsh Government 2018a: 4). With regards to education and skills, the plan proposes to address this by implementing the following:

> Take advantage of the new curriculum and the Hwb website, to develop children’s and young people’s skills in digital literacy, coding, digital content creation, etc. in Welsh. Examine the potential of developments such as e-sgol for increasing Welsh- medium educational provision. Promote wide and proactive use of Welsh-language interfaces and software on devices for Welsh-speaking learners and staff at Welsh-medium schools, colleges, and universities in Wales. Promote Welsh-language coding and other relevant resources. (Welsh Government 2018a: 4)

The main repository for digitised Welsh language educational resources is Hwb. Despite government rhetoric and plans to increase the number of Welsh language educational resources available on Hwb, participants of this study were of the opinion that while Welsh language resources were increasing, the pace was slow. It is argued that the lack of Welsh language resources and the slow pace of their inclusion could be due to greater prominence being placed on the technical development of this VLE. Rather than ensuring that the platform was bi-lingual from its inception, a technocratic view steered the focus towards the technological development of the site. In addition, little investment was afforded to developing specific bi-lingual digital educational resources. It could be argued that there has been a one-dimensional technocratic focus on developing the digital and technical aspect of Hwb rather than on ensuring that the platform was, from its inception, completely bi-lingual. This further illustrates the overpowering effect of the administrative efficiency and power derived from the way society has been restructured and changed by its technological base (Marcuse, 2002: 5). It is suggested that further research be conducted into the impact that a reduced focus on the inclusion of the Welsh language on Hwb and in digitised educational resources could have on the Welsh Government’s strategy Cymraeg 2050: A million Welsh speakers (2017)’ (Welsh Government 2018a).

### 6.2.19 Definition of Digital Literacy

JISC identifies seven elements of digital literacy (See Figure 8). However, the seven elements identified do not comprehensively illustrate what digital literacy is, or where its boundaries end. Digital literacy encompasses a plurality of literacies and 'often serves as an umbrella term for a range of distinct educational practices which seek to equip the user to function in digitally rich societies' (Leaning, 2019: 4).

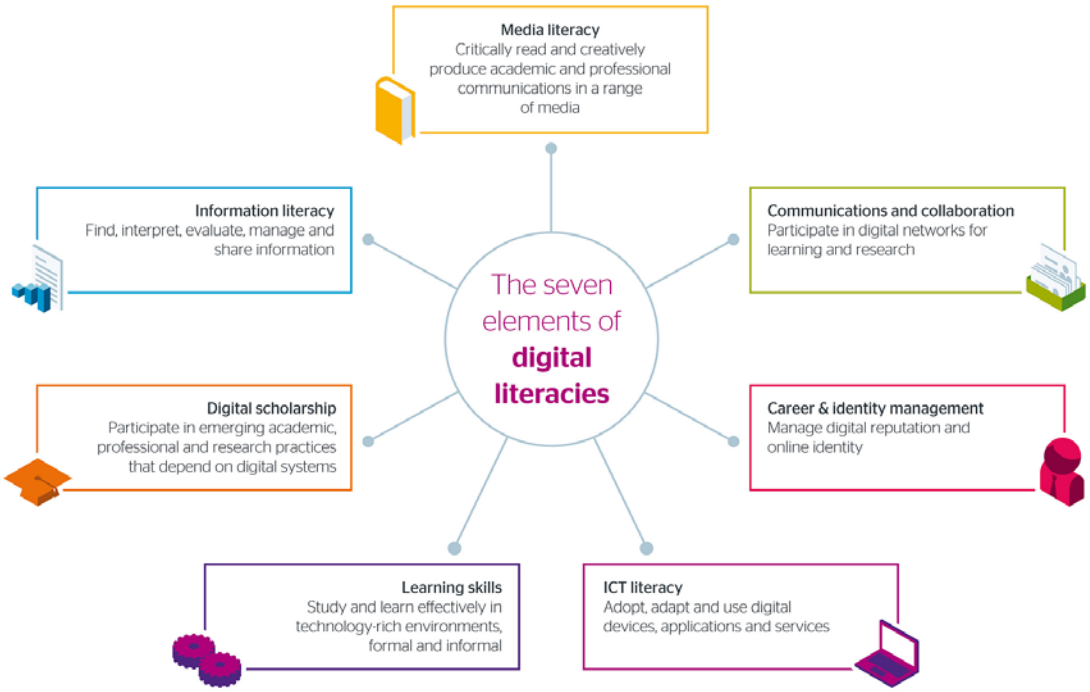


*Figure 5 JISC graph defining digital literacies, (Advance HE, 2017).*

One of the main questions this study sought to answer was: What does the term digitally literate mean within the educational sector? Many of the participants regarded this as a difficult question to answer and some provided short brief responses whilst others spoke at length as to what they considered digital literacy to be. In 1997 Paul Gilster defined digital literacy in the following terms, 'the ability to both understand and use digitised information' (Gilster, 1997: 2). However, the current definition of digital literacy is complex, and the term is 'so broad that some experts even stay away from it' (Heitin, 2016). Moreover, attempts 'to describe a single digital literacy have been challenged, and thinking has shifted towards the concept as a plurality of literacies' (Ng, in Advance HE 2017). These literacies incorporate 'elements of

cognitive and practical skills, an understanding of the social context in which they are being applied, and the empowerment that new tools and techniques provide to think differently about the world' (Ng, in Advance HE, 2017).

The findings in this section of the study are particularly pertinent as the definitions offered by the interview participants could be indicative of what educators and curriculum advisors deem digital literacy to be. In turn, it is suggested that their definitions may influence their teaching and subsequently affect the knowledge and information passed on through compulsory education to future generations in Wales. Several of the participants considered this to be a question that required a considerable amount of thought and took their time to gather their thoughts before offering lengthy responses, as the following examples show:

> Well for me it's like you know are they able to use digital technology for modelling, that's what I see someone as being digitally literate, it's almost like this is going to sound a bit strange now, but it's the way I think sometimes. Growing up I used to love the *A Team* and it's kind of like those times when they're stuck in a barn and they need to get out and they look around and they say, "right we need to do this what have we got around us", and then they look at everything they've got and they're able to problem solve and collaborate and create to make something that meets the specification of what they needed to, of what they need to do, and it's that. It's what have I got, what do I need to do, and I think the other big thing is getting them to understand from a young age as well that maybe throwing into that is understanding purpose and audience in using them, you're not just making things for yourself that comes into the creating side of things because that changes the way you do things as well.
>
> (Charlie, (2) 47, ICT Teacher, English Language Secondary School)

That's quite a difficult one to answer isn't it, because if you measure it against the Digital Competence Framework you would have somebody who was turning out like a computer. I suppose they probably would have an awareness of how their data is used, who their data would be shared with, I would love, well I'd love to think that you know a digitally informed citizen would be someone who could structure an email quite well, um know how to communicate on various different platforms, but more than that, be able to correctly identify the platform, so for example if they wanted to apply for a job as an example, they wouldn't send an instant message or a Facebook message, however there are a lot of jobs out there that are getting taken up like that, in terms of like how an algorithm works is that the b all and end all, I wouldn't have thought so right, and that sounds a bit weird for me to say as someone who's quite passionate about that, but just because someone doesn't know how an algorithm works, doesn't necessarily make them not digitally competent so, I value spread sheet skills much more than things like algorithmic thinking as an example, I think a spread sheet would have much more value, especially when you look at cross-curricular skills.

(Colin, 30, ICT Teacher, English Language Secondary School)

Being able to use different formats of like digital media not just Word Excel and Power Point which is what I was taught in school that was literally my IT lessons 38.09 just how to use Excel, but the kids know how to do that straight off the bat now, so I think it's more of like digital literacy is being able to do something on your phone as well as laptop or if you go to a different job and they've got a different system you can pick it up quickly, because everything is more or less in the same place…I would consider myself quite digitally literate if I can go from Google Classroom to something

else and learn it quite quickly, because I've learned it all before somewhere else.

(John, 24, Maths Teacher, English Medium, Secondary School)

Digital competence and digital literacy really is, you've gone from the point of knowing what the tool is so you could say to me make a presentation and I'd be able to go right well whichever piece of presentation software it is I know roughly what I can do with it, and then I know that if it's online I can embed that link onto a web page or a website or send it in an email you know it's one of those things.

(Richard, 36, IT Teacher, English Language, Secondary School)

Somebody that is competent with technology, so somebody that is quite comfortable and confident with computers and iPads and yeah just knows their way around technology um I guess in using different types of equipment.

(Susan, 28, Maths Teacher, English Language Secondary School)

People's ability to function in a kind of modern society so that you're able to you know do your banking online and shop online and fill in all the various government stuff that you need to do online like renewing your driving licence and things like that so that would be my definition.

(Thomas, 50, Learning Resources Manager, FE College)

The analysis of the participants definitions showed that educators' definitions tended to associate and focus the meaning of digital literacy as developing a level of competence and confidence to be able to adapt and use a variety of digital technologies

in what this study describes as a mechanistic way. They also saw digital literacy as the ability to use digital tools to source information, present information, communicate and problem solve. Marcuse suggests that the post-industrial society of the 1950s and 1960s did not have the ability to recognise the essence of technology and that metaphysics had been superseded by technology. Therefore, from a Marcusian perspective this predominant focus on the mechanistic use of digital technologies within the definitions presented, perpetuates this notion through this particular mechanic of conformity which Marcuse identifies as contributing to the creation of a one-dimensional society:

> In this technological world, Marcuse claims that metaphysics is superseded by technology, in that the previous metaphysical concept of subjectivity, which postulates an active subject confronting a controllable world of objects, is replaced by a one-dimensional technical world where "pure instrumentality" and "efficacy" of arranging means and ends within a pre-established universe is the "common principle of thought and action." (Kellner, in Marcuse, 2002: 252-253)

Therefore, it could be suggested that definitions cited do not encompass the metaphysical perspective or analysis of the essence of technology. This is very similar to the Heideggerian viewpoint in the respect that we view technology superficially in the anthropological and instrumentalist way as a means to an end and a human activity without considering what the essence of technology is by exploring it in a metaphysical way (Heidegger, 1977: 5). Heidegger's analysis firstly establishes the view that technology is a means to an end, and a human activity and states that this 'current conception of technology, according to which it is a means and a human activity, can therefore be called the instrumental and anthropological definition of technology' (Heidegger, 1977: 5). However, Heidegger's view is that though this instrumental and anthropological definition of technology is correct, it is a superficial view that is not sufficient or adequate enough to really define what he refers to as the 'essence' of technology. In view of the fact that words and language need to be understood when reading Heidegger, in this context what Heidegger means when he uses the term 'essence' is that it is an enduring characteristic that 'remains through time as what it is' (Heidegger, 1977: 3). By drawing on this theoretical concept it could be argued that

these definitions demonstrate this element where students are taught to evaluate and critique their relationship to and with technology and analyse it in a metaphysical way; essentially how they as individuals and in turn as a society interface with digital technologies has not been included. It could be further suggested that as a result this aspect of analysing the essence of technology, may be omitted DLE provisions in Wales.

### 6.2.20 Discussion

The term digitally literate coined by Paul Gilster in 1997 is defined as 'the ability to both understand and use digitised information' (Gilster 1997: 2). However, the current definition of digital literacy is complex, and the term 'so broad that some experts even stay away from it' (Heitin, 2016). Moreover, attempts 'to describe a single digital literacy have been challenged, and thinking has shifted towards the concept as a plurality of literacies' (Ng, in Advance HE, 2017). These literacies incorporate 'elements of cognitive and practical skills, an understanding of the social context in which they are being applied, and the empowerment that new tools and techniques provide to think differently about the world' (Ng, in Advance HE, 2017). The study conducted in this thesis revealed that participants' definitions varied, and there was no clear consensus of opinion as to what being digitally literate meant. Many of the participants stated that the question was a difficult one to answer, and some participants were more verbose than others when offering their definitions. This being said, participants' definitions tended to associate the meaning of digital literacy with the development of an individual's confidence and competence to be able to quickly adapt and confidently use a variety of digital technologies in a mechanistic way. It is therefore argued that the tendency to define digital literacy as developing mechanistic skills aligns with Marcuse's concept of one-dimensional thought. This aligns with Heidegger's argument that technology is viewed superficially in the anthropological and instrumentalist way, as a means to an end, and a human activity without considering what the essence of technology is, by exploring it in a metaphysical way (Heidegger, 1977: 5). Essentially, digital literacy is viewed in a one-dimensional way that focuses on the existence and appearance of digital technologies and the digital environment, and not on the reality or essence of them. Previous research that explored educators' understanding of technology in the curriculum also demonstrated that throughout the 1990s when educationalists were asked to define technology in the

context of its newly found status in the curriculum, they struggled (Mulberg,1993: 302). It is suggested that further research be conducted into educationalists' views and understanding of what it means to be digitally literate.

# 7 Chapter 7: Conclusions Summary

This chapter will clearly state the answer to the main research question, summarise and reflect on the important insights of the research, exemplify the new knowledge the research has surfaced, and make recommendations for future work on the topic. The primary aim of this study was to conduct a Marcusian analysis of the qualitative empirical research into digital literacy educational provisions in primary and secondary schools in Wales. However, it should be noted that considerations were also given to the DLE provisions in FE colleges.

Question 1 - Is digital literacy education still focusing on mechanistic skills?

This research produced the following results regarding the question that related to whether DLE provisions in Wales focused solely on teaching mechanistic digital skills i.e., were the educational provisions one-dimensional. Firstly, the findings suggested that educational policies regarding the content provisions of DLE in the curriculum have changed, especially since the introduction of the DCF a cross curricula framework, which was made available in 2016, (Welsh Government, 2018c: 2). This framework offers a far more holistic and critical approach to digital literacy that does not solely focus on teaching mechanistic skills. However, the findings of this thesis suggest there is a lack of importance attributed to this cross-curriculum framework by educational practitioners. This demonstrates that while the educational policy focus has shifted to include a more holistic and critical approach to DLE, there is a disparity between policy and practice that has resulted in a persistence amongst educators to place more value and importance on teaching mechanistic digital skills. In addition, a surprising finding that surfaced was that as a result of the introduction of new technologies into educational settings, in particular touch screen technologies such as the Apple iPad, educators had observed a significant reduction in students' mechanistic digital skill abilities. This was an unexpected finding as the inference from previous research studies and educational reports identified in the historical development of digital literacy chapter suggested that the focus of DLE provisions was predominantly focused on teaching mechanistic digital skills. Therefore, the expectation would be that students' mechanistic digital skill levels would have increased significantly. While this question sought to answer whether the focus of teaching mechanistic digital skills impeded and excluded teaching students in a critical

way about the social, cultural, and ethical use of digital technologies and the digital environment, it was surprising to find that mechanistic digital skills of students were declining rather than increasing. Therefore, this research suggests that not only is there more value still being placed on teaching mechanistic digital skills, but there is also an issue with the type of mechanistic digital skills being taught as they are negatively impacting students' mechanistic digital skill levels. Moreover, the latest technologies to be introduced into educational settings in Wales i.e., Chromebooks, have been identified as perpetuating rather than resolving this issue. These findings exemplify and demonstrate the new knowledge this research has surfaced, and the original contribution made to this field of study. Recommendations for future work on this topic include research into educational practitioners' perspectives on the importance and implementation of the DCF, and research that focuses on the suitability of digital devices and technologies in relation to the development of students' mechanistic digital skills; to avoid any future negative outcomes.

Question 2 - What does the term digitally literate mean to professionals in the education sector?

Another aim of this research was to answer the question: What does the term digitally literate mean to various stakeholders and professionals in the education sector? The findings of this study found that there is currently no consensus within the education sector as to what makes a person digitally literate. This was viewed as a difficult question to answer which suggested that there are currently definitional complexities associated with this term that result in a lack of clarity or consensus. In addition, while there was no clear definitional consensus as to what the term digital literacy meant, the main focus of the majority of definitions offered, focused on the proficient development of mechanistic digital skills as opposed to any depth or breadth of knowledge that related to the social, cultural, and ethical aspects of the use of digital technologies or the digital environment. Therefore, it is suggested that in view of these findings there is a risk that students may leave mandatory education in Wales without the sufficient skills and knowledge that will allow them to successfully negotiate their increasingly digitised and datafied lives. These findings exemplify and demonstrate the new knowledge this research has surfaced, and the original contribution made to this field of study. It is suggested that this knowledge could serve as the basis for

further research into educational practitioners' views on what it means to be a digitally literate citizen.

Question 3 - Does digital literacy education in school prepare students for the social and cultural aspects of living in the digital milieu?

The third question that this study sought to answer was: Does digital literacy education in school prepare students for the social, ethical, and cultural aspects of living in the digital milieu? Firstly, to refer back to the findings relating to the definitional problems associated with the term digital literacy, it could be suggested that if educators do not have a clear definition of what being digitally literate means, then there is a risk that students will not be fully prepared for their social use of digital technologies. The provisions currently in place that are aimed at preparing students for the social, ethical, and cultural aspects of living in the digital milieu rely predominantly on educational provisions that focus on online safety. Moreover, what this study found, is that even though the DCF has a citizenship strand which is designed to include the critical element of digital literacy or digital competence that focuses on these socially orientated aspects, there is a tendency to not attribute as much importance to the DCF as other cross curricula frameworks such as the LNF due to the lack of assessment attributed to the DCF. Therefore, if the DCF in general is not valued or prioritised in the same way as the LNF, then it is argued that the citizenship strand, or indeed any other strand of the DCF will be afforded even less value or importance. In addition, the findings of this study also suggested that the general consensus of opinion was that the citizenship strand dealt with online-safety, indicating there is a misconception as to the purpose of the citizenship strand and therefore, this type of content could be annexed to specific lessons such as PSE or Wellbeing. Moreover, this suggests that opportunities are potentially being missed to offer students the depth and breadth of critical knowledge required to fully comprehend and understand how digital technologies impact their lives as digital citizens. The research conducted in this thesis also found that educators themselves lacked sufficient knowledge in relation to these social, ethical, and cultural aspects, and as such, the implications are that they are unable to sufficiently educate students in this capacity. In conclusion, the DCF, in principle, offers a far more holistic and well-developed range of digital skills across the curriculum than has been offered in previous curriculum reforms. If successfully

implemented the DCF would go some way to preparing students as critically thinking digital citizens. However, in practice this research has identified several barriers that could impede its successful implementation. In turn, this could result in students leaving mandatory education in Wales devoid of the skills that will enable them to make fully informed decisions in relation to their use of digital devices and the digital environment, and unprepared for living in the digital milieu. These findings demonstrate that this research has made an original contribution to this field of study that could serve as the basis for future research and contribute to the growing body of research that is investigating the varying educational responses to the increasing digitalisation and datafication of individuals everyday lives. It is therefore suggested that further research be conducted into educational practitioners' perspectives regarding the importance of preparing students in a critical way for the social, cultural, and ethical use of digital technologies and the digital environment.

Question 4 - How well has, or does, digital literacy education prepare students to adapt the skills gained so that they are able to secure employment when changes occur in technologies?

This research was also interested in how well the DLE provisions prepared students for employment and posed the question: How well has, or does, digital literacy education prepare students to adapt the skills gained so that they are able to secure employment when changes occur in technologies? The research found that there is a perspective held by educationalists particularly in secondary schools that encouraging students to learn to use a variety of digital devices, software packages or applications and cloud-based platforms will better prepare them for employment. Their reasoning was couched in the view that students would have developed a range of mechanistic digital skills that would enable them to competently adapt from one digital device, system, or application to another. Therefore, their intention was to expose students to a multitude of digital technologies hardware and software. However, it is argued that this exposure is limited to the technologies that the school is furnished with and has access to, thus impacting the effectiveness of this pedagogical ideology. Interestingly, the focus group findings indicated that no matter what digital skills are possessed or acquired, a process of learning and training is always required when new digital hardware, software, or cloud-based platforms are firstly encountered in order to use

them proficiently. Therefore, it is argued that while basic digital skills and exposure to a variety of digital technologies may benefit an individual, when changes occur in technologies, there will inevitably be a period of new digital skill development. Furthermore, the degree to which new digital skills will need to be developed will undoubtedly vary depending on the skill requirement of the technology and the skills already held by the individual. Nevertheless, the requirement for digital skill development of some level will always be required. This then raises the question as to whether it is possible to fully prepare an individual to adapt to changes in technology to secure employment. The findings of this study suggest that in view of how rapidly digital technologies change, the requirement to continually develop new digital skills is a Sisyphean task. This research has surfaced findings that have made an original contribution to knowledge in this field of study. It is suggested that future research be conducted into whether a pedagogical focus of exposing students to a variety of digital technologies mitigates the requirement to learn new mechanistic digital skills when new technologies emerge. The benefit of future research would be that it could aid in determining how much time and focus should be placed on this pedagogical ideology.

Question 5 - Is the content of digital literacy still primarily driven by economically driven government policies?

There is a clear view of the historic governmental economic imperatives in the research cited in the literature review. To reiterate Kirsty Williams, who was the Education secretary for Wales at the time, set out the Welsh Government's action plan for education in the *Education in Wales: Our national mission, action plan 2017-2021* document (Welsh Government, 2017a: 1). The document set out 'how the school system in Wales, including its sixth forms, would move forward over the period up until 2021 to secure the effective implementation of a new curriculum' (Welsh Government, 2017a: 1). Within this document digital skills were viewed as a 'particularly vital part of the new economy' (Welsh Government, 2017b: 27), and the new curriculum aimed to 'build coding and other aspects of digital literacy into it' (Welsh Government, 2017b: 27). Williams is quoted as saying:

> Good skills make Wales a more attractive destination for investors, bringing with them the higher-end, higher-paying jobs we need. Better and more transferable skills help people to move more easily between jobs, progressing from lower- paying roles with limited prospects. The higher the skill levels, the more resilient our

> economy will be, and better able to ride out economic shocks. (Williams in, Welsh Government, 2017b: 27)

The findings of this research were not wholly conclusive. However, although this study was not able to offer a clear conclusion in relation to this question, it did surface findings that indicated there was a view held by educators that focused and prioritised their DLE pedagogical practices on preparing students for employment purposes. This being said, it is also pertinent to note that the digital literacy experts interviewed recognised there was an aspect of DLE that had an economic imperative. However, they insisted that this was not the only directive of the digital element of the new curriculum, and that the inclusion of educating students as to the social, ethical, and cultural use of digital technologies was also included in the policy remit. The findings of the research in this thesis found that whilst educational policy states that the social element of DLE should be included, the importance placed upon this aspect on a practice level was not as prevalent as the importance of preparing students for employment. Therefore, the finding suggested that there is an educational policy rhetoric to include DLE provisions that focus on furnishing students with broader digital skills that will prepare them to be critically thinking digital citizens. However, the research conducted in this thesis found that educational practitioners tended to place greater importance on preparing students for employment purposes. The findings also surfaced interesting data regarding the economic links between the Welsh Government and Microsoft, in the respect that Microsoft Azure are based in Cardiff. However, this thesis has not surfaced findings that suggest there is a wider economic imperative attached to the purchase of certain types of hardware, or software over others. Therefore, the findings in relation to this economic imperative are inconclusive and further research would need to be conducted with government officials as to why certain technologies and companies were chosen over others.

Question 6 - How much influence do private neo-liberal capitalistic enterprises have in determining the educational agenda of digital literacy education?

The final question that this study sought to answer was: How much influence do private neo-liberal capitalistic enterprises have in determining the educational agenda

of digital literacy education? The findings of this study suggest that both DLE, and education in general has been incrementally permeated by private neo-liberal capitalistic enterprises. This thesis has found that a significant amount of the content of DLE, and education in general is driven by the educational provisions they provide. For example, the hardware, software, educational programmes, and digital applications are predominantly created by private neo-liberal capitalistic enterprises. In addition, the findings also suggest that pedagogical practices themselves have also been shaped, moulded, and influenced by the digital technologies produced and sold to the educational institutions. Therefore, this indicates that educators rely on digital technologies and devices to deliver their lesson content, to the extent that some of the practitioners in this study stated that they could not imagine delivering lessons without the aid of these digital devices. Therefore, the findings suggest that the content and pedagogical practices of both DLE and the wider educational curriculum in Wales has been increasingly influenced by private digital neo-liberal capitalistic enterprises.

Interestingly, the findings also indicated that students' use of digital technologies in both educational and social settings had impacted their education in a number of ways; ways that this study has referred to as unintended consequences. Therefore, these unintended consequences further demonstrate the influence of neo-liberal private companies, as an influence that extends beyond DLE provision content and educational pedagogies. While dominant government discourses have hailed the use of digital technologies in education as being positively beneficial in enhancing and enriching pupils' learning and extending the scope of their learning potential (Selwyn, 2002: 433). The findings from this study argue that this is not always the case. Previous studies have also found that educators 'know that simply using digital media tools is no educational panacea' (Hobbs, 2010: 51). For example, a 'study of students in grades 5–8 showed that those from disadvantaged families got lower math and reading scores once the Internet arrived in the home' (Hobbs, 2010: 51). The research conducted for this thesis also demonstrates that digital technologies can have a negative impact on a students' education. It is interesting that while this situation has been identified in previous studies the research in this thesis shows that this has not been effectively addressed. The specific skills that have been surfaced as being negatively impacted by the use of digital technologies are grammar, spelling, critical thinking, and focus. The results also suggested that students' critical thinking skills were being impacted by the

copy and paste functionality of digital devices and software. This is a practice that has been previously identified as problematic in the respect that students are using the Internet in a way where they are not assimilating or synthesising information, and Gilster suggested in 1997 that to combat this problem students need to be taught 'how to assimilate the information, evaluate it, and then reintegrate it' (Gilster, in Pool 1997: 9). Therefore, it is interesting that over twenty years later this issue has not been addressed. As explained, the consequences of this practice create a situation whereby a student is performing what is essentially a rote task of simply copying and pasting material from digitised resources to carry out their assignments. This is a significant problem for at least three reasons, firstly this practice is plagiaristic and if allowed to go unchecked or combatted has wider implications and ramifications. Secondly, it can impede a students' abilities to learn, synthesise, critique, and understand the topic they are studying which can hinder the development of students' knowledge and critical thinking skills. Thirdly, it can change what students believe knowledge to be.

The pervasive and ubiquitous use of digital devices and their social applications has also been surfaced as contributing to a demise in students' grammar and spelling abilities. Again, this has been surfaced in previous research in 2010 and identified as a common complaint made by educators who stated that that there are a 'generation of children who cannot distinguish between standard English grammar and spelling and the discourse of text messaging' (Hobbs, 2010: 25). The findings of this research suggest that students still tend to apply the way they formulate their written language when using social digital applications to all forms of written work or communication, and as such has been identified as an ongoing issue that has not been addressed within educational institutions. For example, email communication with teachers is often short, abrupt, and informal, and essays are fraught with text speak. For example, numerical signs such as the number (2) are used in place of the word (to). The inference is therefore that students are unable to appropriately adapt their written language to suit the various forms of written work or communication that will be required of them outside of the realm of social digital communication. Finally, while digital technologies are hailed as being beneficial to education, the research conducted in this study suggests they also act as a distraction and can often take a student off task. These findings exemplify and demonstrate the new knowledge this research has surfaced, and the original contribution made to this field of study. It is suggested that further

research be conducted into the unintended negative consequences of the use of digital devices and technologies, not just in DLE but in the wider educational curriculum in Wales.

Socioeconomic

How socioeconomic status may impact digital literacy skill attainment was also a consideration of this study. To reiterate, previous research suggested that 'around 88% of UK households contain a computer and most schools have sufficient hardware' (Millen et al., 2018: 24), and that due to the ubiquity of digital technologies 'socio-economic concerns are now overshadowed by the stronger influence of parental attitudes' (Shashaani, 1994; See also Downes & Looker, 2011; Álvarez, et al. 2013; Symons, et al. 2017, in Millen et al., 2018: 25). However, the findings of this research indicated that in Wales, the disparity between the levels of digital poverty is stark. In relation to schools, the findings suggested that schools in areas of deprivation do not have the same access to digital resources as a school in a more affluent area. This disparity was often due to the allocation of funding to other more prescient resources, such as additional staffing to support the students' wellbeing. Essentially, the research suggests that students who attend schools in areas of deprivation are more likely to be faced with limited digital resources than students who attend schools in more affluent areas. This may not be due to disparities in the amount of funding made available to schools, but rather to do with the allocation of these funds by the school as per their prioritised needs.

The findings suggested that the same principle holds for individual students, in that the disparities of poverty amongst students in Wales is stark with some individuals not even having educational supplies such as pen and paper at home. This research has surfaced evidence that suggests socio-economic circumstances still continue to have an impact on digital device access and in turn on digital skill level attainment. An interesting finding that relates to this digital divide was that new software licensing deals that have recently been struck with Adobe could exasperate this divide at both a school and individual student level. Moreover, the findings indicated that digital poverty was not something that was considered in the negotiating stage of the deal but rather a consideration that was given after the deal was done as it were. Therefore, it is suggested that by omitting to consider the economic implications to both schools

and students, the governmental body when making this decision held a technocratic view of both schools and individual students' digital status in Wales. This research has surfaced findings that have made an original contribution to this field of study. Moreover, if the digital divide is to be addressed and diminished rather than exasperated, it is suggested that these findings could inform the basis of future research that focuses on whether the procurement and decision making process regarding the introduction of digitised resources considers the potential impact on schools and individuals in socio-economically deprived areas.

Gender

Previous reports have identified that females or girls tend to do well in what was known as IT or ICT (Estyn, 2014: 6), but it is computer science where there is a lack of uptake or interest in the subject at secondary school level. Previous research identified various elements that contribute to this lack of interest or uptake such as the nature of technology in education, socialisation, and misconceptions. Previous research found that the most prevalent misconception is 'that computing (and specifically, programming) is a solo activity' (Margolis & Fisher, 2002; Zimmerman & Sprung, 2008, in Millen et al., 2018: 26). The findings from the research conducted in this thesis surfaced a possible explanation for another misconception about computer studies. The findings suggested that computer science is viewed as a subject that teaches a student how to programme and code video games and that this misconception is developed in primary school age children. The findings also suggested that boys' interest in playing video games is greater than girls. Therefore, the lack of interest held by girls in video gaming and the misconception that computer science is a about programming and coding video games could be a contributing factor to the lack of interest in studying computer science currently displayed by girls. The findings also suggested that while there are initiatives and programmes that aim at dispelling this misconception they do not feature in educational provisions until students enter secondary school. Therefore, it is suggested that interventions need to be deployed in primary school that nurture and shape more accurate representations of the subject computer science in order to combat the current misconceptions held. It is further suggested that this early intervention may foster an interest in the subject for girls that is currently not visible. The findings that have suggested the correlation between video games, computer science and lack of female interest in computer

science offers an original contribution to the field of knowledge. Furthermore, it is suggested that further research be conducted in order to address this issue further.

COVID-19

The impact of COVID-19 on DLE surfaced the following findings. The imposed lockdowns and school closures resulted in a move to online teaching which findings suggest increased teachers and students' mechanistic digital skills. Therefore, the impact of the COVID-19 lockdowns on DLE had what could be described as a positive impact regarding the improvement of these digital skills for both educational practitioners and students. Additionally, as a result of this move to online teaching digital technologies underpinned the entire education system, and as such served to accelerate the use of digital technologies in all areas of education, not just DLE. The move to online teaching also surfaced and raised the awareness of the levels of digital poverty that existed in Wales. The levels of digital poverty that were highlighted during these lockdown periods came as a surprise to educational practitioners. It is therefore suggested that educational practitioners had previously held a technocratic view in relation to the ubiquity of digital devices available to students in Wales. Pedagogical practices were also impacted as a result of online teaching, in the respect that pedagogical practices were shaped and influenced by the allowances and limitations of the digital resources and the digital environment. Finally, the findings of this study found that the constraints of teaching online during the lockdown periods resulted in a narrowing of the curriculum. This affected the education that the students would have received regarding their social and cultural use of digital technologies. The research also suggested that the Welsh Government made significant efforts to combat the digital poverty that became apparent during this period in an attempt to narrow the divide and ensure that students had the necessary devices to engage with their education. The findings suggested that a significant amount of money was invested in purchasing digital devices, predominantly Chromebooks and dongles. This study was conducted during a period of time when schools in Wales were constantly opening and closing their doors as a result of the various lockdown periods imposed. Therefore, it is suggested that further research be conducted that could offer an insight into the longer term impact of the COVID-19 lockdowns on DLE in Wales. In view of the unique and unprecedented situation that the COVID-19 lockdowns created within the

educational system, and the timing of this study, this research has offered an original contribution to the field of knowledge.

Welsh Language

The findings relating to the Welsh language and DLE firstly suggested that the number of Welsh language digitised resources available to primary and secondary schools in Wales have been slowly increasing over time. There is currently a considerable amount more available than in previous years. The findings also suggested that it was STEM subjects that suffered the most from a lack of Welsh language digitised resources, but that this situation was slowly improving. It is interesting that even though concerns had been raised about the inclusion of the Welsh language in education, in the 2000 report, which recognised that there was a 'critical shortage of Digital Learning content in the Welsh Language' (Harries, 2000: 19). The findings from the research conducted for this thesis found that the inclusion of Welsh language digital resources has been a painstakingly slow process. In 2018 Eluned Morgan, (Minister for Welsh language) stated that a great deal of work is yet to be done (Morgan, in Welsh Government 2018a: Introduction). Furthermore, Hwb which was commissioned by the Welsh Government as the digital platform for digitised educational resources in Wales (Hook, 2012) was not fully bi-lingual from its inception despite the rhetoric that it was, as per the following, Andrews launched the bilingual learning platform 'Hwb', on December 12th, 2012 (Hook, 2012). Therefore, in view of the findings of this research, it is argued that while there have been significant investments made in the technological development of Hwb, there has been a lack of investment in the development of bespoke Welsh language digitised resources. Therefore, it is suggested that further research be conducted into the current levels of Welsh language digitised resources available on Hwb, as this research could contribute to the successful realisation of the Welsh Governments' aim of creating one million Welsh speakers by 2050.

In conclusion, this thesis has conducted research that makes an original contribution to knowledge as the findings of the empirical research conducted surfaced new knowledge in this field. Additionally, it has been identified that in relation to ICTs 'few empirical investigations are connected to sound theoretical backgrounds' (Choi et al., 2020: 1). Therefore, this also further substantiates another dimension of a void in the current academic literature that this study on DLE has addressed by employing

Marcuse's critical theory as a solid theoretical framework to critically analyse the empirical data. As a final word I would like to reiterate and echo Neil Selwyn's sentiments - digital technologies 'lie at the heart of how people communicate, consume information, and organise their lives' (Selwyn, 2016: 2). This thesis has surfaced evidence that substantiates the notion that 'more than ever before, the issues and tensions that have grown up around education and technology merit close examination' (Selwyn, 2016: 2), and that it is 'a topic that demands sustained analysis and critical thought' (Selwyn, 2016: 2).

## **7.1** Critique and Limitations of the project

The empirical results reported herein should be considered in the light of some limitations that could be addressed in future research. The first limitation to be considered is the participant sample size. The research was conducted between July 2020 and July 2021 during a period of mandatory lockdowns and school closures. As such the participants of the in-depth interviews were under immense pressure to deliver online lessons which affected the recruitment and availability of participants. Therefore, future research could be conducted that includes a larger sample size as this would have afforded the study a larger representation of educators from Wales. Similarly, due to the COVID restrictions the recruitment and availability of focus group interview participants was also impacted by the COVID-19 imposed lockdowns. Therefore, future research could also increase the sample size of students educated in Wales. In addition, the focus group interviews were conducted via the video platform Zoom which impacted the natural flow of a focus group conversation that would normally be conducted in person. Therefore, further research could include focus group interview data conducted in person. Future research may also benefit from a longitudinal study, as the educational practitioners were interviewed during an educational curriculum transitionary period where new cross curricula digital frameworks such as the DCF had not been fully implemented throughout all schools in Wales. The major findings and results from this study are based on the analysis of the qualitative interviews conducted with educators, digital experts, and government officials. Further research could also benefit from the inclusion of an increased representation of government officials directly linked with the digital educational agenda for primary and secondary schools in Wales. Finally, this study could have also

benefited methodologically by including an observational analysis of students in situ receiving DLE lessons.

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# Appendix 1- Four Purposes of the Curriculum

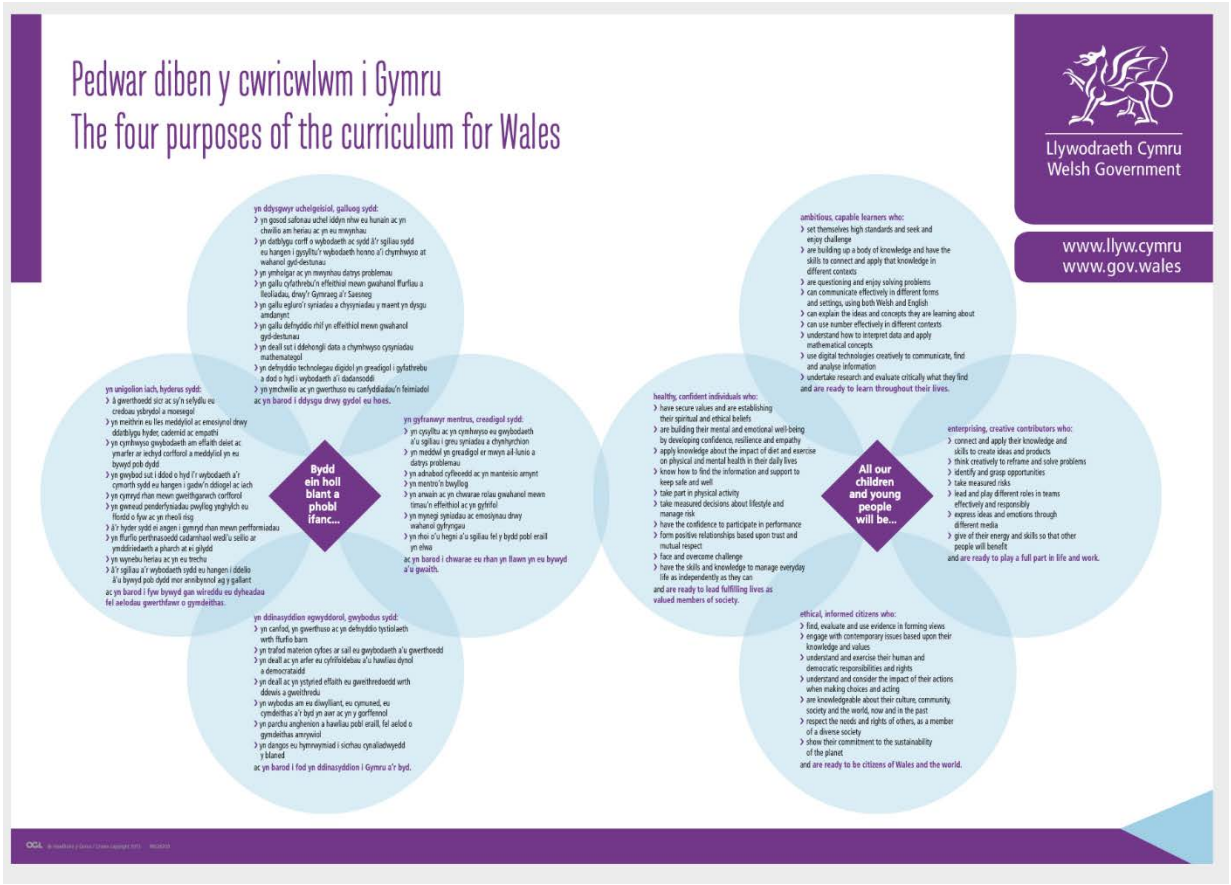


*Figure 6 The four purposes of the curriculum for Wales (Welsh Government, 2015)*

# Appendix 2 – Data Management Plan

**Plan Overview**

*A Data Management Plan created using DMPonline*

**Title:** Research into digital literacy educational provisions in primary and secondary schools in Wales – A Marcusian Analysis

**Creator:** Sarah Williams

**Affiliation:** Swansea University

**Template:** DCC Template

**Project abstract:**

Digital technologies are imbued with ideologies that impact culture and society. These technologies are ubiquitous, pervasive, and central to how people communicate, consume information, and orchestrate their lives. Therefore, for people to fully understand the impact and influence of these technologies on their lives and engage with them and the digital environment in a critically informed way - digital literacy is an absolute and necessary requirement. However, we are not seeing digital literacy as standard. This study assesses: (1) Whether students are being sufficiently educated about how digital technologies use and affect them in a social, cultural, and ethical capacity; (2) Whether the programme content of digital literacy education (DLE) is primarily driven by neo-liberal economically driven government policies; and (3) How much influence private neo-liberal capitalistic enterprises have in determining the educational agenda of DLE? Qualitative data was collected via three focus group interviews and twenty-six semi-structured interviews which explored students, educational professionals, and government officials' views of DLE in Wales. The data was then thematically coded using critical discourse analysis, and analysed using theories developed in Herbert Marcuse's 1964 publication *One-Dimensional Man.* The results indicated that DLE educational policy has broadened to include knowledge that

extends beyond the teaching of purely mechanistic skills. However, a variety of factors were identified that impede their implementation. Additionally, it is argued that students' mechanistic digital skills have been declining since the introduction of touch screen technologies into primary and secondary schools. Findings also indicated that educators main DLE focus was on preparing students for employment purposes, and the influence private neo-liberal capitalistic enterprises have in determining not only the educational agenda of DLE, but education in general is profound, and has accelerated exponentially since the COVID-19 imposed lockdowns.

**ID:** 111121

**Start date:** 01-06-2020

**End date:** 31-07-2021

**Last modified:** 11-11-2022

**Research into digital literacy educational provisions in primary and secondary schools in Wales**

**Data Collection**

The research project involved primary data collection in the form of individual in-depth semi structured interviews, focus group discussions and email interviews. The researcher undertook twenty-four individual in-depth semi-structured interviews, three focus group interviews and two email interviews. Twenty of the individual interviews were conducted via Zoom due to the COVID 19 lockdown restrictions and four were conducted face-to-face. Zoom was selected as it was the chosen means of online communication made available to staff and students by Swansea University.

The individual interviews ranged from 40minutes in length to 1 hour and 50 minutes and the focus group interviews ranged from 1 hour to 1.30 hours. The laptop and external hard drive had sufficient storage capacity to store this data.

Individual interview data was collected and stored using a digital audio recording device (MP3) for in person interviews and for online interviews the video conferencing platform Zoom was used. The recording function built into the Zoom platform was used to record and store the data. As a backup the digital audio recording device was also used to record the data during the online interviews. Post interview data from the digital audio device was transferred to the researcher's laptop and saved in an encrypted file, named interviews and to an external hard drive that kept in a locked cupboard. The original recording was not deleted from the digital audio device until the interview had been transcribed. The MP4 video and MP3 audio recordings as well as the transcripts generated by Zoom were downloaded to the researcher's laptop as soon as the platform had finished processing them and made them available. This data was also transferred to the external hard drive.

The data from the Zoom individual and focus group interviews i.e., MP4's MP3's were saved in a folder named interviews, the Zoom generated transcripts were saved in the folder named transcripts. This data had been automatically assigned a numerical file name by Zoom and this was used to identify the recording of the different participants or focus group. A separate word document was then created that listed the numerical file names and linked these file names to the participants who were anonymized at this point in the data collection process and assigned pseudonyms ad this was saved in a separate folder named primary research. Similarly, the digital audio recording device also generated numerical file names for the individual recordings and these file names were used in the same way. The email interviews were downloaded and stored as PDF documents within the encrypted interview transcripts folder and stored on the external hard drive.

Three focus group interviews were conducted, and the data was recorded using the recording function of the online platform Zoom for two of the focus group interviews, this was due to the COVID 19 lockdown restrictions in place at the time that did not allow for face-to-face interviews. One of the focus group interviews was conducted at

a time when the lockdown restrictions had been lifted and the data was recorded using a digital audio recording device (MP3). Post interview the data from the digital audio device was transferred to the researcher's laptop in an encrypted file and to an external hard drive that was kept in a locked cupboard. The MP4 video and MP3 audio recordings as well as the transcripts generated by Zoom were downloaded to the researcher's laptop as soon as the platform had finished processing them and made them available. This data was also transferred to the external hard drive.

**Documentation and Metadata**

The raw data was transcribed by only the researcher on the researcher's laptop using Microsoft Word and stored in the encrypted file on the same device named transcriptions. The transcripts were also saved on the external hard drive. The individual transcripts included the date of the interview and the anonymized name of the participant as well as the numerical MP3 or MP4 file name.

When the data collection and data transcription for the research was complete the transcribed Word document interviews were uploaded to the analytical software program NVivo which had been downloaded to the researcher' s laptop from the Swansea University Website. The raw data was then analysed and thematically coded within NVivo. Appropriate quotes were then extracted and included in the findings section of the PhD thesis.

**Ethics and Legal Compliance**

Ethical approval was given by Swansea University to conduct this research. All of the participants involved in the research were given informative documentation that explained the purpose of the research, what taking part involved, strategies for assuring ethical use of the data and confidentiality, the benefits of taking part, possible risks involved, what happens if they change their mind, do they have to take part and where

they can get more information. All the participants signed consent forms before the interviews took place. All participants consented to the raw data being preserved on password protected, encrypted hard drives for a period of three years. Participants only consented to the raw data being accessible to the researcher and her supervisor.

**Storage and Backup**

All the devices that the raw data is saved on are password protected and the data is also saved in a password protected encrypted hard drive which is stored in a locked cupboard. The access to the data is limited to the researcher and her supervisor only and the risks to data security have been considered and measures put in place to ensure that the data is secure. As much of the data was collected online and from the alarmed and locked home office of the researcher the risks involved in relation to its safe transfer into the main secured systems were negated.

**Selection and Preservation**

The raw data will be retained for a period of three years after which the hard drives will be erased. This is in line with the conditions outlined on the participant consent forms. The participants only agreed for the raw data to be accessed by the researcher and the researcher's supervisor therefore the data is not and will not be made available to other researchers.

**Data Sharing**

The raw data will only be shared with the researcher's supervisor as per the conditions and criteria outlined in the participant consent forms.

**Responsibilities and Resources**

The researcher Sarah Williams will be responsible for all the data management activities. This includes data capture, metadata production, data quality, storage and backup, data archiving.

The resources required to deliver the plan include appropriate hardware i.e., laptop and digital recording device (researchers own). Stable Wi-fi connection, access to Zoom subscription provided by Swansea University, NVivo software provided by Swansea University. Microsoft Word provided by Swansea University. NVivo training - provided by Swansea University. Training in relation to conducting academic qualitative interviews provided by Swansea University.