Conversational Artificial Intelligence: A Catalyst for Rethinking Assessment in Higher Education

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Abstract: Conversational Artificial Intelligence has disrupted higher education by fundamentally altering its landscape. Fuelled by natural language processing and machine learning this technology has gained widespread adoption particularly since the release of ChatGPT in November 2022. As universities embrace digital transformation, assessment practices must evolve to align with the capabilities of Artificial Intelligence-driven chatbots and virtual assistants. This paper explores how conversational artificial intelligence impacts higher education, in particular, student assessment. A fundamental shift in assessment and evaluation of student competencies is necessary to not only consider knowledge retention but also critical thinking, communication, and adaptability skills. A review of the literature was conducted to understand how assignments should change due to the emergence of this disruptive technology. Conversational Artificial Intelligence and its application within the higher education context is uncertain, with disparate practices—in terms of ethical consideration and understanding—across the sector. A case study was conducted in which MSc Management students undertaking a specific module were tasked to use three Artificial Intelligence tools in their report writing of a business, to verify the sources and content provided by the Artificial Intelligence tool, and to critically evaluate the process as well as the output received for each prompt. The paper proposes a collaborative approach to navigate the ethical implementation and utilization of conversational Artificial Intelligence in higher education, advocating for the co-creation of guidelines through forums like Knowledge Cafés, stressing the need to rethink student assignments and its assessment and the adoption of artificial intelligence technologies by students for assignments.

Keywords: conversational artificial intelligence, knowledge café, higher education, assessment, disruptive technology

1. Introduction

The launch of advanced models such as OpenAI's ChatGPT in November 2022 (OpenAI, 2023) has significantly accelerated the adoption of conversational Artificial Intelligence (AI) in higher educational settings. These models are capable of understanding and generating human-like text, making them useful for a range of applications from tutoring to administrative support. The introduction of these advanced models has become popular tools amongst both students and academic staff, who are using it to improve their academic practice, as Bahroun *et al*. (2023, p. 2) points out "In the domain of teaching, generative artificial intelligence showcases promising opportunities for lesson planning, personalized learning support, rapid assessment and evaluation, and addressing learners' queries".

Since traditional assessment methods—particularly in Business and Management courses—can easily be supported by AI, it presents higher education with a conundrum. Assessment serves multiple purposes beyond merely measuring what students have learned, however, it is becoming more difficult to measure what students have learnt or their ability to critically analyse texts, given the fact that AI can be employed to do so for them. In a study by Smolansky *et al.* (2023) it was found that educators favour assignments that are tailored to incorporate AI use and which promote critical thinking. However, students have mixed feelings about this approach, partly because they worry it might stifle their creativity. The results highlight the need to involve both educators and students in efforts to reform both assignments and its assessment, emphasizing the learning process rather than its outputs, fostering higher-order thinking, and encouraging real-world applications.

There is thus a need to rethink assessment in higher education to be agile in the current climate of AI as a disruptive technology, especially in subjects, where the essay and report are commonly used for student assignments. It is important that academic staff are given the autonomy to innovate and experiment with different forms of assignments and its assessment so that learning, creativity and development is measured. The main aim of the paper is to explore the impact of conversational AI on higher education, specifically focusing on how this technology influences student assessment practices. The paper seeks to understand the necessary shifts in evaluating student competencies to accommodate the capabilities of AI-driven chatbots and virtual assistants. Additionally, it aims to propose a collaborative approach for the ethical implementation and utilization of conversational AI within the higher education sector.

In this paper an example is provided where students were tasked with including conversational AI tools in their assignment. The usefulness of Knowledge Cafés to discuss and deliberate on assessment in higher education is proposed as a helpful platform to rethink assessment in general. An introductory review of the literature is presented next, with an example of how assessment was rethought by considering the reality of conversational AI.

2. Background

Recent research has underscored the significant influence of AI on teaching and learning within higher education, acknowledging both the favourable and unfavourable views of conversational AI. However, the consensus is increasingly recognizing the indispensability of AI tools. Crompton & Song (2023) highlight the considerable promise of AI to broaden and improve educational practices. Rudolph *et al.* argue that it presents substantial opportunities when both students and faculty are properly educated on using the technology ethically (Rudolph, Tan, & Tan, 2023).

2.1 Conversational artificial intelligence

Virtual assistants, conversational agents, and chatbots are all tools designed to facilitate interaction between humans and machines using natural language. However, the terminology used by different authors within the AI field can have varying meanings.

Gartner classifies conversational agents as Virtual Assistants (VAs) and notes that they are utilized for personal, educational, or business functions. According to Gartner, these VAs operate using semantic analysis and Natural Language Processing (NLP) and may also integrate chatbot technologies. By observing and interpreting human behaviours, conversational agents or VAs apply these models to predict outcomes and facilitate decision-making (Gartner, 2023). According to Basu conversational AI is a broad field that includes both open-domain and closed-domain chatbots designed for human-like interactions through conversation (Basu, 2019). Katsarou *et al.* (2023) refers to a specialized category of a virtual assistant called an embodied conversational agent (ECA) which is characterized by increased complexity, and which is primarily utilized for educational purposes. These agents are effective because they possess a deep knowledge base in specific fields and have the capability to assist learners by offering easy access to information and enhancing motivation. Amazon's Alexa, Apple's Siri, and Google Assistant are cloud-based, general-use Intelligent Virtual Assistants (IVAs) (Katsarou, Wild, Sougari, & Chatzipanagiotou, 2023). In this paper we refer to all the above as conversational AI agents.

2.2 Benefits of conversational artificial intelligence in education

According to Rudolph *et al.* artificial intelligence has the capacity to revolutionize teaching and learning methods, boosting student engagement by enabling experiential and experimental learning. For instance, by using AI tools such as ChatGPT, students can explore various strategies and methods for problem-solving and goal attainment (Rudolph, Tan, & Tan, 2023). The integration of conversational artificial intelligence, particularly chatbots, in education presents a wide array of benefits that can revolutionize the learning experience for students, enhance engagement, and provide personalized support. Thus, increased availability for students at any time, adaptability to cater to individual student needs, providing scripted education interactively, answering questions using natural language processing, chunking information into manageable segments, allowing for personalized learning experiences, enhancing student motivation, improving speech skills in foreign languages, reducing student anxiety, promoting self-paced learning, offering instantaneous feedback, and easing administrative procedures (Kaphings & Kohlmann, 2021; Sysoyev & Filatov, 2023; Gökçearslan, 2024; Lee, 2023; Ilieva, 2023; Babirye, 2024; Ghayoom, 2023).

2.3 Challenges of conversational artificial intelligence in education

Despite the advantages of conversational AI, it is important to acknowledge that chatbots, including advanced models like ChatGPT, may have limitations and can make mistakes, which could potentially lead to issues, especially in education. Therefore, careful consideration and analysis are necessary for the successful implementation of chatbots in educational settings. A further concern is that conversational AI can produce adequate text for students and that plagiarism checkers will not be able to detect it. However, these concerns might also stem from educators' reluctance to adjust to new methods for both student assignments and the assessment thereof. Traditional Business Management written assignments have often been criticized for being boring and unsuccessful at measuring student learning (McMurtrie, 2023). Ojha *et al*. (2023) suggest that the incorporation of artificial intelligence in education has prompted a reassessment of teaching methods and practices, which includes assessment strategies. The challenge is how does one design assignments to effectively measure student competency and not AI comptetency.

2.4 Impact of artificial intelligence on student assignments and its assessment

Assessments in educational and professional environments traditionally focus on measuring knowledge, skills, and abilities through tests, exams, interviews, and performance evaluations. With the more extensive use of AI tools currently, these practices will have to transform.

2.4.1 Traditional assessment practices

Paper-based exams, in-person interviews, and subjective evaluations: Human biases might influence traditional assessments which may not be uniformly administered as it relies on standardized formats and subjective grading criteria. Furthermore, these assessment methods may not always accurately reflect students' abilities since students could have used conversational AI to do assignments (Holzinger, Lettner, Steiner-Hofbauer, & Capan Melser, 2020). Scalability is another problem when assessing exams or tests since it requires significant resources, and it is very time-consuming for large classes. Feedback is thus often delayed, and sometimes not detailed or personalized (Hadibarata & Jusoh, 2023). Traditional methods of assessment may also not capture students' holistic development and individual learning needs, resulting in a one-size-fits-all approach that may not cater to diverse student populations (El Hashash, 2022).

2.4.2 Assessment using AI tools: online adaptive tests, AI-driven interviews, and simulations

The gap in traditional assessment practices could potentially be addressed by conversational AI, providing personalized learning experiences (Hadibarata & Jusoh, 2023). Although AI can reduce human bias, algorithmic bias can occur if not carefully managed. The consistency of AI tools is high, and it is standard since AI tools can apply the same criteria uniformly across all assessments. As far as scalability is concerned it is scalable to large numbers of users with automated processes for administering and scoring. Feedback is immediate and it can be detailed with AI identifying specific areas of strengths and weaknesses (Hadibarata & Jusoh, 2023). Furthermore, AI tools can analyse vast amounts of data to detect patterns, predict outcomes, and provide insights that are not readily apparent through traditional assessment methods.

2.4.3 Hybrid approaches

By using AI for initial screenings and practice, institutions can enhance efficiency and provide targeted educational support. Simultaneously, having human evaluators oversee more nuanced or critical decisions ensures that the grading and assessment of assignments maintain a necessary level of human insight and ethical consideration. This hybrid model not only optimizes resource use but also supports a more personalised learning experience. Students can receive immediate feedback from AI-driven tools, which helps them identify and focus on areas needing improvement. Meanwhile, educators can devote more time to complex evaluation tasks and personalised teaching, rather than routine grading/assessment (Ifelebuegu, 2023)

2.4.4 Group assignments

For collaborative or group assignments, it is possible to use AI to track and analyse individual contributions in group tasks, facilitating a more precise evaluation of each student's involvement in the collaborative task. Additionally, AI can oversee and guide online discussions, ensuring equitable participation from all students and fostering critical thinking and teamwork. However, AI deployment in such cases demands substantial investments in technology and training, which could worsen the digital divide and amplify inequalities in education (Ifelebuegu, 2023).

2.5 Ethical considerations

Some of the ethical issues with using AI for assessment in higher education concerns privacy, data security, bias in AI algorithms, transparency in decision-making processes, and the potential for AI to replace human judgment when providing feedback in the assessment of assignments (Holmes, et al., 2022; Franco D'Souza, Mathew, Mishra, & Surapaneni, 2024; Akgun & Greenhow, 2022). There are also ethical considerations related to intellectual property rights, ownership of AI-generated content, and the impact of AI on widening educational disparities (Akgun & Greenhow, 2022; Franco D'Souza, Mathew, Mishra, & Surapaneni, 2024; Ng, Wu, Leung, Chiu, & Chu, 2024). Issues such as accountability, fairness, and the ethical implications of using AI in educational settings need to be carefully addressed to ensure ethical AI use in higher education (Ng, Wu, Leung, Chiu, & Chu, 2024; Baker, Mills, McDonald, & Wang, 2023). These ethical considerations emphasize the importance of critically examining the implications of integrating conversational AI in higher education—particularly in the execution of assignments and assessment of assignments—to ensure that students are ethically supported and that their rights and well-being are safeguarded.

Teaching students to use conversational AI ethically poses a significant challenge, and leaving this to individual staff members may not yield the desired results. Integrating ethics education into business curricula can enhance

students' ethical decision-making skills and prepare them for future challenges (Eyal, Berkovich, & Schwartz, 2011), especially with the rise of conversational AI. This integration is important for fostering responsible business practices and corporate social responsibility (Olatoye, et al., 2024). Therefore, establishing frameworks for responsible AI use and embedding ethical considerations into business education would be essential for ethical business conduct (Olatoye, et al., 2024).

2.6 The concept of Knowledge Cafés

The Knowledge Café serves as a dynamic space where individuals can critically engage with ideas in a dialectical manner. It provides a unique opportunity for researchers to unobtrusively hear from numerous knowledgeable individuals about key topics, thus making it a valuable tool for both knowledge sharing and research (Singh, 2017). It convenes people to discuss topics of mutual interest, helping them to understand issues more profoundly and explore various possibilities with the objective to unearth collective knowledge, facilitate idea sharing, and deepen understanding of subjects. The Knowledge Café is a simple but flexible, conversational; compared to similar methodologies, it makes no definitive attempt at making decisions or trying to reach consensus as part of the Café itself. At its best, a Knowledge Café adheres to a set of principles that help create a relaxed, informal, conversational environment conducive to open dialogue and to learning (David Gurteen, n.d.). The attendees of such a café are empowered to express their genuine concerns without fear or judgment (Piskopani, Webb, & Caleb-Solly, 2023).

2.7 Current research on AI and assessment

The impact of conversational AI on student assessments is significant. Studies show that integrating AI in assignments leads to innovative and improved outcomes. For example, conversation-based assessments (CBA) use AI to evaluate students' comprehension (Yildirim-Erbasli, Bulut, Demmans Epp, & Cui, 2023) and tools like Artificial Intelligence–based student learning evaluation (AISLE) assess understanding through concept maps, revolutionizing assessment methods (Jain, Schroeder, & Faulkenberry, 2014).

AI in assignments enhances student engagement, motivation, and learning outcomes, with technologies like educational robots and conversational agents boosting interest and attitudes towards learning (Yang, Oh, & Wang, 2020). This integration also facilitates personalized learning, improves teaching efficiency, and provides valuable insights into student performance (Uluskan, 2023; Samuelsson, 2023).

AI has the potential to reshape traditional assessments, offering more interactive, personalized, and effective methods. By leveraging AI, educators can enhance the assessment process, provide customized feedback, and better align assessments with learning objectives, ensuring that student skills and learning are accurately measured.

2.8 Identified gaps in the literature

Gaps in the current literature around conversational AI in higher education and business management assessment methods include the need for 'authentic assessments' focusing on higher-order cognitive skills and problem-solving, rather than traditional methods (Ifelebuegu, 2023). There is a call for re-evaluation of the appropriateness of multiple-choice questions (MCQs) as an assessment tool in higher education due to the risks of academic dishonesty and dependence on AI models (Li & Chignell, 2022). Additionally, there is a gap in evaluating the environmental impact of AI applications in the chemical industry, given data gaps and challenges in choosing appropriate assessment methods (Odonkor, Kaggwa, Uwaoma, Hassan, & Farayola, 2024). Comprehensive qualitative assessments exploring the practical experiences, benefits, and challenges of academic professionals utilizing AI tools in engineering pedagogy remain limited (Hao, et al., 2024). There is a gap in assessing the readiness of conversational AI models for application in real-world clinical scenarios (Wang, et al., 2023)

These gaps highlight the need for further research to address the effectiveness, ethical considerations, and practical implications of integrating conversational AI in higher education and business management assignments and its assessment methods. This paper attempts to close this gap by undertaking research to understand how students would perform, and what their perceptions of the alternative assessment method was, which embedded the use of conversational AI platforms.

3. Methodology

Case study methodology allows for in-depth exploration of specific instances within real-life contexts, defined as intensive studies of single units (Gerring, 2004). Widely used in fields like nursing, marketing, and information systems (Crowe, et al., 2011; McCutcheon & Meredith, 1993), it enables investigation from multiple perspectives within a bounded context (Rashid, Rashid, Warraich, Sabir, & Waseem, 2019). This research utilised case study

methodology with participant observation, allowing for high-quality data collection through active engagement (Wilkinson, 2017). Following Fàbregues and Fetters' (2019) steps—literature review, research question formulation, case design selection, case boundary definition, data collection preparation, data analysis, report writing, and quality appraisal—the study aimed to understand how students would perform, and what their perceptions of the alternative assessment method was, which embedded the use of conversational AI platforms.

Objective 1: Analyse the impact of conversational artificial intelligence on student assessment practices in higher education**.**

Research Questions

1. How has conversational artificial intelligence disrupted higher education, particularly in terms of student assessment?
2. How should assignments and evaluations evolve to consider not just knowledge retention but also critical thinking, communication, and adaptability skills in the era of conversational AI?

Objective 2: Explore best practices for the ethical implementation and utilization of conversational AI in higher education assessments**.**

Research Questions:

1. What are the ethical considerations associated with the implementation and utilization of conversational AI in higher education?
2. How can AI technologies be incorporated into student assignments and integrated into assessment?

4. A Case: Rethinking student assignments and its assessment

4.1 Background

As part of the MSc Management programme at Swansea University, a module on Information Systems is taught. The module looks at ways in which information systems can be used effectively to achieve competitive advantage. The MSc Management cohort is usually a small cohort of not more than 45 students. In 2024 a cohort of initially 36 students enrolled for the module, with only 28 submitting to the final coursework. Most of the cohort are from the Indian and Nigerian descent—some of the students often have English as a third or fourth language and therefore find it difficult to use English both for communication and for writing reports. The assessment of this module has seen several changes over the years, in 2024, the module included two multiple choice/true and false online tests, as well as a business report that students needed to research and write up. Students ordinarily would be tasked in an assignment to research a company and provide a report on the various aspects of the information systems used within the company. With the popularisation of ChatGPT and other conversational AI tools, the module coordinator tried to incorporate AI tools in the assignment which required students to use AI tools for their report writing.

4.2 Integrating AI tools in assignments

Traditional report writing assignments face the problem of students using conversational AI tools to complete much of the work, making it hard for educators to assess learning. To address this, a module coordinator designed an assignment allowing AI tool use but requiring students to critically evaluate their prompts and AI responses, reducing the risk of plagiarism, and ensuring that critical skills were also being used.

Students were assigned to use three AI tools, verify sources, and critically evaluate the process and outputs. They also had to write a short report on the process and output validity and create a business report on a company and its information systems.

Students were advised how to undertake the coursework and what constituted the misuse of conversational AI tools. The importance of developing skills and critically analysing what they were doing and receiving as output of the tools was a required skill to develop. Students were advised of the structure of the coursework and how the process of using the AI platforms would be evaluated. A generic template for the process was provided.

Upon receiving the assignment, students found it interesting but challenging, requiring multiple briefing sessions for clarity. Both the process and the final report were part of the summative assessment.

At the International Congress & Exhibition on Current Trends on Science Technology Education SCITEED 2024 conference, similar assignments were discussed, emphasizing the evaluation of both the product and the process in assessments involving AI tools.

5. Data analysis and results

5.1 Objective 1 - Analyse the impact of conversational artificial intelligence on student assessment practices in higher education.

5.1.1 Fundamental shift required for student assessment in higher education

Given the ease of using conversational AI by students for their coursework, academic staff are uncertain who is writing the work, complicating the evaluation of student competencies. A fundamental shift in assessment practices is needed to address AI-driven technologies, but there is no program-level guidance, leaving academics to innovate at the module level.

Developing new assessment methods that evaluate student competencies rather than AI capabilities is challenging (Thurab-Nkhosi & Williams, 2018). This requires revisiting module objectives and transferable skills, focusing on practical demonstrations and interpersonal skills where AI falls short (Chen & Zhu, 2016). The syllabus and prompt-engineering techniques may also need revision.

Integrating AI in assignments necessitates rethinking evaluation criteria, faculty training, and resource allocation (Chow, 2024). Ensuring the validity and reliability of AI-driven assessments is crucial, as biases and inaccuracies in AI algorithms could affect fairness, effectiveness, and raise data privacy and security concerns (Sharma & Lin, 2022).

The Russell Group, in partnership with educational experts, developed principles to ensure students and staff are AI-literate, leveraging technological breakthroughs in teaching and learning. The five principles (Russel Group, 2023) are:

1. Support students and staff in becoming AI-literate.
2. Equip staff to help students use generative AI tools effectively.
3. Adapt teaching and assessment to include ethical AI use and support equal access.
4. Uphold academic rigour and integrity.
5. Collaborate to share best practices as AI evolves in education.

The fifth principle emphasizes collaboration, suggesting this approach should extend to program and module levels to share best practices. Knowledge Cafés, like those conducted by Swansea University academics at various international conferences, as well as at Swansea University, provide a platform for academics to share experiences with conversational AI in higher education.

5.1.2 Authentic assessment methods for appropriate skills development and effective assessment

In the era of conversational AI, leveraging conversational Artificial Intelligence in higher education institutions is essential for assessing knowledge retention, critical thinking, communication, and adaptability. Developing authentic assessment types requires innovation, creativity, and rethinking student skills and module intentions. Kasimatis & Papageorgiou (2021) describe authentic assessment as a dynamic evaluation focusing on skill development, suitable for evaluating critical thinking (Jingbo & Ying, 2023), while embedding it in curricula, can enhance employability by fostering reflection, communication, and collaboration (Manville, Donald, & Eves, 2022; Manville, Donald, & Eves, 2022). By incorporating real-life scenarios, universities can effectively measure critical thinking skills (Chusni & Suherman, 2021), engaging students in meaningful activities to improve learning outcomes (Vu & Dall'Alba, 2013).

5.2 Objective 2: Explore best practices for the ethical implementation and utilization of conversational AI in higher education assessments

5.2.1 Ethical considerations associated with the implementation and use of conversational AI in higher education?

Students included the output of their prompts in the coursework submission, ensuring transparency and a clear description of the process. Despite their interest, students expressed concerns about the difficulty and their lack of understanding, requiring multiple explanatory sessions. However, inconsistent attendance meant some students did not fully grasp the assignment.

Ethical considerations highlight the need for education to align with work life, ensuring students can apply their learning professionally. Neglecting this may hinder their real-world effectiveness. Integrating ethics education into business curricula enhances students' ethical decision-making skills and prepares them for future challenges (Eyal, Berkovich, & Schwartz, 2011; Lopez, Rechner, & Olson-Buchanan, 2005)

5.2.2 How can AI technologies be incorporated into student assignments and integrated into assessment?

For this case study, the coursework included assessing the process of developing the report. Students used three AI tools and traditional methods, with 30% of the assignment allocated to critically evaluating the AI output and creating the report. After setting the task, one author was invited to present at a conference on embedding AI in assignments, and it was at this conference that there were other instances of academics using a similar example of assessing process as well as the outcome. However, many students struggled to provide critical reflections, often just presenting alternative outputs with little analysis. This highlights the challenge of embedding AI in assignments. Academics are catapulted into radically changing and rethinking assessment due to the popularisation of AI. The importance of co-creating and sharing new assessment methods to evaluate different student competencies is key to academic prowess and success.

6. Discussion and conclusions

6.1 Major findings

While universities struggle to manage AI at the program level, academics are attempting to innovate assessment methods, there is a lack of consensus on the ethical use of AI, and there is a need for understanding the benefits of collaboration for co-creating authentic assessment methods. Developing new forms of authentic assessment methods to evaluate student competencies requires a collaborative approach, as suggested also by the Russel group guidelines.

Academics and universities must adapt to technological advances in the AI/digital age. This case study presents an example of integrating conversational AI into coursework and assessment, highlighting the necessary shift in higher education to assess student learning outcomes effectively. It emphasizes evaluating the process, not just the outcome, and the need for ethics teaching in business curricula for consistency across programs.

In this fast-paced digital era, rapid AI advancements make it essential for academics to share best practices and co-create ethical assessment methods. Knowledge cafés provide a collaborative framework for informal conversations and sharing best practices, including ideas for new forms of authentic assessment.

6.2 Limitations

The study may have research methodological limitations in that further focus groups and interviews would have provided a deeper understanding of the complexity of AI use within student assessment and authentic assessment development and perception.

6.3 Future research

Future research on conversational AI use in education could focus on two key areas: its adoption and effectiveness in higher education and developing guidelines for embedding conversational AI use for authentic assessment in an ethical way.

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