Effective Ways Of Assessment In The AI Era

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Abstract

The integration of deep learning and machine learning algorithms has resulted in the development of advanced AI systems, presenting significant challenges across various sectors, including education. The utilization of sophisticated AI technologies and software by educators and students from diverse backgrounds has transformed teaching and learning practices. These AI systems, powered by extensive datasets, demonstrate remarkable accuracy in learning and prediction, exemplified by tools like ChatGPT that can predict answers to complex queries. The COVID-19 pandemic has further accelerated the adoption of digital platforms for exam setting, introducing new modes of assessment. However, alongside the benefits, these advancements also raise concerns regarding the effective assessment of students in alignment with educational curricula. At Lancaster University Ghana, both students and lecturers utilize AI tools for teaching and learning purposes. The problem, however, is that sometimes these tools are unethically utilized by students for academic success, especially with tasks that students are required to research and produce, thereby making it difficult for students to be effectively assessed. This paper aims to explore strategies for the effective assessment of students in the AI era, addressing the challenges posed by AI technologies. A comprehensive review of relevant literature in higher education has been conducted, with the findings offering critical insights for educators in navigating these challenges.

Keywords

Artificial intelligence, Curriculum, Assessment, Machine learning, Generative AI, Plagiarism

Introduction

Assessment is a fundamental component of the constructive alignment framework (Biggs & Tang, 2011), designed to ensure coherence between curriculum objectives, teaching and learning activities, and assessment tasks. Effective assessments in higher education are expected to adhere to core principles such as reliability, transparency, validity, relevance, and inclusivity (Earle, 2021).

The advent of Artificial Intelligence (AI) has ushered in a new era of assessment methodologies and transformative approaches within the rapidly evolving educational landscape. AI-driven strategies are increasingly supplementing and enhancing traditional assessment and evaluation methods, offering unprecedented levels of efficiency, customization, and insights into student learning (Cope et al., 2021). These innovations have significantly impacted teaching, learning, and assessment design, fostering more personalized and adaptive educational experiences.

AI offers several benefits, including enhanced data availability, personalized learning pathways, flexible and interactive teaching methods, and targeted support for disadvantaged students. However, these advancements also present challenges that require careful consideration, such as the risk of over-reliance on AI at the expense of critical thinking, potential erosion of students' soft skills, privacy concerns, and the problem of informational bias (Diri, 2023).

In transnational institutions like Lancaster University Ghana, there has been a challenge of students using AI tools to prepare their essays. This makes it difficult to determine if the work is the students'. In their examination assessments, students have essays and written short answers, but they struggle to complete the assessment because they have been using AI to support them with their course work.

This paper explores mitigation strategies to address the challenges posed by AI in assessments and student evaluations within transnational higher education like Lancaster University Ghana. It aims to offer practical solutions to ensure that AI integration enhances rather than detracts from the educational process.

Introduction

Related works

Research on effective assessment spans various domains, including education, psychology, and technology. Scholars and practitioners have explored innovative methods and strategies to enhance the assessment process, promote meaningful learning, and provide constructive feedback (Solmaz, 2023; Zhu & Wang, 2023). In Lancaster University Ghana for instance, the Moodle Learning Management System is utilised in conducting formative and summative assessments, giving timely feedback, amongst others.

According to the general study of Swiecki et al., (2022), traditional assessment (TA) practices including essays, short answer questions and multiple-choice questions have all been employed to infer knowledge from students. The study contend that these traditional practices have several problems which includes difficulty in design and execution for teachers, offering merely isolated snapshot of performance at the expense of complex perspectives on learning, unsuited to the individual's unique backgrounds, expertise and talents due to the uniformity of traditional assessment amongst others. Also, traditional assessment might follow the culture of education rather than being true to the cultures that education is meant to prepare students and it can be outdated since they evaluate abilities that people frequently outsource to intelligent systems. These challenges are applicable to transnational institutions like Lancaster University Ghana.

In the study of Dennick et al., (2009), the authors discuss the advantages of online e-Assessment such as easy monitoring of academic progress, faster, interactive, adaptive, fast marking and saves paper. In their paper, the authors outline the issues that comes with online e-Assessment with regards to costs, legal, technical challenges such as staffing and staff training costs, external hackers/viruses, system or hardware failure amongst others. The authors discussed a number of practical issues to the crucial phases of administering an exam online. Some institutions and departments utilize the online e-Assessment but unfortunately some cannot afford the cost of online e-Assessment. In Lancaster University Ghana for example, summative exams are rarely conducted online due to some of these challenges such as system or hardware failure, cyber-attacks, network and other technical challenges.

Similarly, Llamas-Nistal et al., (2013), in their paper contend that e-Assessments cannot address all assessment situations. They rather propose e-Assessments together with the classical traditional assessment approach (where students write down their responses on paper) for essay-based or constructed response assessments. This is a popular approach used by most universities especially for summative assessments. Students write the exams in

person but the grading, reporting of results and statistical analysis are performed in the digital world. This is seen as cost effective. This approach is what Lancaster University Ghana is currently practicing.

Challenge of Current Assessments

There is a higher tendency of students to plagiarize in their course work assessments, especially take-home essay-based course works. Some resort to the use of generative AI tools such as ChatGPT, Grammarly and DALL-E amongst others unethically to produce contents they are required to produce through research. This becomes a problem in that it affects the essence and principles of assessment. By so doing teachers and lecturers are not able to effectively assess student's true performance and efforts, strengths and weaknesses to enable the teachers assist and grade them accordingly. Mostly, there is a huge gap in the grades or scores they get in their coursework and that of their final examination. This is a current problem especially with the increased use of generative AI tools such as ChatGPT, Claude AI, QuillBot and other apps for student assessments. The question therefore is how teachers can truly get to know the efforts of students especially with regards to questions that they are independently required to critically and reflectively answer. Unfortunately, some students may delegate these tasks to generative AI tools. This therefore becomes a challenge and must be addressed.

Mitigation Approaches

The following applications and strategies have mitigated current assessment issues in Lancaster University Ghana, and it is recommendable that these strategies and applications be utilized by educational institutions to ensure effective teaching and learning in the AI Era.

Using AI to fight AI

Applications such as Turnitin and GPT Zero are utilized by institutions like Lancaster University and Princeton University respectively to check for plagiarism and the use of ChatGPT to unethically generate content. These AI tools rely on complex algorithm and pattern recognition to detect plagiarism. They are mostly integrated into learning management systems used in higher education institutions(Byrne, 2020). In Lancaster University Ghana, most of the coursework of the students is submitted via Moodle and plagiarism is checked in the Moodle software. This is a typical application of using AI to fight AI. Once students know that their works will be detected when they plagiarize or copy and

paste contents for submission using generative AI tools, and the implications of their actions, they will be discouraged from using such tools unethically.

Reconsideration of our methods of Assessment

A lot of recommendations have been made for In-class assessments at higher level education (Llamas-Nistal et al., 2013). The supervision of students with such assessments will give little room for any form of academic malpractice. According to the Lancaster University's Manual of Academic Regulations and Procedures (MARP) (https://www.lancaster.ac.uk/academic-standards-and-quality/regulations-policies-and-committees/manual-of-academic-regulations-and-procedures/), there is a recommendation for students to write exams which ensures the prevention of a lot of academic malpractices enhanced by the use of AI tools. In-class coursework should therefore be also encouraged and utilized rather than take-home coursework. At Lancaster University Ghana, there is encouragement and utilization of in-class course work rather than take-home coursework because it enables faculty to get to know the actual or true performance and abilities of their students. Considering error identification in codes or programs for assessments in computer science courses also helps discourage academic misconduct.

Aside essay-type questions, other forms of assessment for coursework which include role play simulation, interviews, group presentations, oral examinations, debates, time-constrained practical challenges, Open book tests, provision of short answers, Lab or observation reports, critical reviews and reflective tasks amongst others which are more authentic should be considered to give little room to academic misconduct and enable fair assessment of student's efforts.

According to Wiggins & Wiggins(2019), the purpose of authentic assessments is to evaluate or assess students' abilities or performance in real-world through meaningful tasks. These forms of assessments and evaluations are more reliable as compared to take-home essay-based and generic questions that can easily be copied, pasted and presented by students especially in this generative AI era.

Encouraging Transparency

Considering that assessment and feedback are essential parts of the learning process for students (Jiao, 2015), prohibiting AI in higher education does not appear to be a workable approach. This is because AI can help students to brainstorm but it is not supposed to do the work that a student is required to critically and reflectively produce.

Students can be made to be transparent about how they worked by using a questionnaire consisting of questions like did you use Grammarly, spell checker, generative AI tools etc. This enables them to attest to the originality of their work and attest that they have not received outside help including AI bots when they turn in an essay or test. The approach has proven effective at Lancaster University and is highly encouraged.

Encouragement of group work at the expense of Individualism

Once students get the opportunity to work in teams, they are able to ask questions and rather seek clarifications and answers from their peers which they can then proceed to work as team and make sure they all have some level of understanding which is very encouraging as compared to individualism which motivates students to unethically consult AI tools. The computer science department of Lancaster University Ghana effectively assigns projects to groups of students, and this enables the students to achieve much and understand more through teamwork.

According to Carroll (2013), group work helps to prevent plagiarism in transnational education. Encouraging group work therefore is very imperative for higher institutions. When students do not know what to do and don't have peers to seek clarifications from, the temptation to copy and paste is very high.

Education on the Proper use of AI tools

If People can use tools like Mendeley and Zotero for referencing, google for research, then why not generative tools like ChatGPT. Students and academic stakeholders therefore need to be educated on the moral and ethical use of technology in our dispensation/era (Cope et al., 2021). Resource persons and other faculty should also be consulted to offer similar education to enable us conscientize our students on the ethical use of AI and its impact on assessment in this Era. Research seminars and workshops on the ethical use of AI are tools conducted in LUG by key resource persons, and they have proven very effective.

Conclusion

The research lays the groundwork for future investigations into the complex relationship between artificial intelligence (AI) and education by offering a fundamental knowledge of these developing evaluation paradigms. Some approaches to mitigate the ineffective assessmet in our era and make it more effective, credible and meet the core principles of assessment in this AI era includes; using AI to fight AI, reconsideration of our methods and or

forms of assessments, encouraging transparency, encouraging group work at the expense of individualism, the education on the proper use of AI tools and dealing with plagiarism.

This study should progressively be shared and discussed further with all faculty members during the periodic LUG seminars and workshops over the next couple of years at Lancaster University Ghana. This will help lecturers consider more effective ways and methods to employ in effectively assessing their students.

A more individualized, effective, and perceptive method of assessing student learning is possible if artificial intelligence is successfully incorporated into educational evaluation procedures but this must be done ethically and with caution. Research in this area is expected to open up new avenues for improving the use of AI in educational assessment as technology develops.

References

Byrne, N. (2020). An Introduction to Teaching in UK Higher Education : A Guide for International and Transnational Teachers. (C. Butcher (ed.)). Taylor & Francis Group.

Carroll, J. (2013). Teaching in Transnational Higher Education. In Teaching in Transnational Higher Education. https://doi.org/10.4324/9780203930625

Cope, B., Kalantzis, M., & Searsmith, D. (2021). Artificial intelligence for education: Knowledge and its assessment in AI-enabled learning ecologies. Educational Philosophy and Theory, 53(12), 1229–1245. https://doi.org/10.1080/00131857.2020.1728732

Dennick, R., Wilkinson, S., & Purcell, N. (2009). Online eAssessment: AMEE Guide No. 39. Medical Teacher, 31(3), 192–206. https://doi.org/10.1080/01421590902792406

Diri, D. M. El. (2023). AI in Accounting Education: A Boon or a Bane in Employers' Eyes? https://thesedablog.wordpress.com/2023/12/06/ai-in-accounting-education-a-boon-or-a-bane-in-employers-eyes/

Jiao, H. (2015). Enhancing students' engagement in learning through a formative e-assessment tool that motivates students to take action on feedback. Australasian Journal of Engineering Education, 20(1), 9–18. https://doi.org/10.7158/D13-002.2015.20.1

John Biggs and Catherine Tang. (2011). Teaching For Quality Learning At University Fourt Edition (Vol. 2011). http://books.google.se/books/about/Teaching_for_Quality_Learning_at_Univers.html?id=XhjRBrDAESkC&pgis=1

Llamas-Nistal, M., Fernández-Iglesias, M. J., González-Tato, J., & Mikic-Fonte, F. A. (2013). Blended e-assessment: Migrating classical exams to the digital world. Computers and Education, 62, 72–87. https://doi.org/10.1016/j.compedu.2012.10.021

Sarah Earle. (2021). Principles and purposes of assessment in the classroom. Impact. https://my.chartered.college/impact_article/principles-and-purposes-of-assessment-in-the-classroom/

Solmaz, E. (2023). Follow-up of Artificial Intelligence Development and its Controlled Contribution to the Article: Step to the Authorship? European Journal of Therapeutics, 10–12. https://doi.org/10.58600/eurjther1733

Swiecki, Z., Khosravi, H., Chen, G., Martinez-Maldonado, R., Lodge, J. M., Milligan, S., Selwyn, N., & Gašević, D. (2022). Assessment in the age of artificial intelligence. Computers and Education: Artificial Intelligence, 3(August 2021). https://doi.org/10.1016/j.caeai.2022.100075

Wiggins, G., & Wiggins, G. (2019). The Case for Authentic Assessment The Case for Authentic Assessment . 2(November), 1990–1991.

Zhu, C., & Wang, M. (2023). How to harness the potential of ChatGPT in education? Recommended citation: Zhu , C ., Sun , M ., Luo , J ., Li , T ., & Wang , M . (2023). How to harness the How to harness the potential of ChatGPT in education? Chenjia Zhu Jiutong Luo Tianyi Li Min. 15(2), 133–152.