Studying with Emerging Technology in Higher Education: A Literature Review

Introduction 200

Today, students at higher education institutes use not only pen and paper but also rely on a variety of emerging software and hardware technologies in their daily study lives. Emergent technologies, including artificial intelligence (AI) systems and robotic assistants, have significantly contributed to improving the work of both students and teachers on campus, particularly in terms of enhancing study performance and teaching efficiency (Leoste et al., 2021). One of the most popular AI tools, ChatGPT, can immediately and precisely identify errors in programming code when users copy and paste their code into the chat column. However, while it provides convenient study assistance, it has also raised some privacy concerns on campuses. This literature review first discusses the benefits of enhanced student learning performance and teaching efficiency for educators. Subsequently, it delves into the impressive positive aspects and potential challenges related to these emerging technologies. This literature review aims to provide a comprehensive exploration of the impact of emerging technologies, including AI systems and robotic assistants, on higher education. The integration of emerging technologies, including AI systems like ChatGPT, into higher education has shown promising benefits in enhancing student learning performance and teaching efficiency, while also raising important privacy concerns that require careful consideration and responsible implementation.

**Emerging technology Advance in Student’s Study Performance**

Students can improve their learning performance in higher education tasks through the assistance of emerging technology. Various useful applications have come to our sight, such as ChatGPT, Grammarly, and Google Drive. First of all, the approaching trend of intelligent learning tools is spreading in the academic environment (McGrath et al., 2023). It means that people can obtain impressive solutions to complex problems through casual chats almost instantly (Chaudhry et al., 2023). At the meantime, a large number of universities believe that AI technology has the potential to enhance students' learning achievements (Kuleto et al., 2021) by helping students create a personalized and suitable study environment (Leoste et al., 2021). For instance, these technologies can support self-determined learning and aid in the transition from an instructor-led educational environment to a learner-based educational environment because they give students more freedom to choose their own pace and location for learning. Likewise, student from worldwide studying in open online courses (MOOC) without enrolment requirements or fees, easily schedule their class timetable and study progress by themselves (Kuleto et al., 2021). MOOC research by Rizvi et al. (2019) found that given that learning is a process, students may examine learning by recording specific encounters with learning materials like videos, quizzes, and interpersonal interactions, and then analyse how learners proceed through these materials. Online courses are instrumented such that student interactions are documented in extensive system logs, in contrast to face-to-face or hybrid learning settings.

Additionally, through data sharing on the internet and the system, AI can also customize the study plan for every user (Chen et al., 2021). Their research finds out data technique including data visualisation, machine learning, and learning sciences, it employs methods from the fields of semantics. As an illustration, AI-based competency learning, which collects crucial data from the students, may efficiently uncover insights about the students and forecast the crucial competences they can pursue, allowing institutions to take proactive action. Learning analytics also make use of the adaptable learning capabilities of AI in addition to competency-based learning. In consequence, students can aware their shortages while getting these technology’s help in study.

**Emerging technology Advance in Educator’s Teaching Methods and Tools**    
With the trend of improved emerging technology, it also changes and updates the use of teachers' teaching process as well as tools within modern university environment. One example in the educational environment of Agriculture, Food, and Natural Resources (AFNR), the research examines that upcoming technology can help teachers give students a better understanding outside of lectures, such as unmanned aerial vehicles, vertical farming equipment, and precision agriculture sensors (King et al., 2019). Research from Hartanto et al. (2019) give a specific example for variety use of unmanned aerial vehicles in agriculture industry is regard its powerful camera types. By recognising certain materials on those things, the image obtained from the hyper-spectral camera gives more details that can aid in the discovery of specific objects. Additionally, the infrared spectrum is a narrow region of light that is used by infrared cameras. By observing wild animals on the field, this camera may be used to locate living animals and aid in field harvesting. Though doing this practical observation, the students can be giving more certain professional information from their university. On the other hand, teaching and learning materials with open permitting that allow users to use, reuse, amend, remix, and keep the material for educational purposes are known as open educational resources (OER) (Crompton et al., 2020). Kim et al. (2020) prove that teachers using OER can enhance student’s self-management skills while studying on online learning platforms. They underlined the advantages of OER-supported online learning platforms as a tool for promoting students' independent learning. They emphasised the platform utilised in the study, Khan Academy, has a number of features, including a monitoring tool and adaptive evaluation materials, resulting in student’s self-evaluation outside of class. Besides, they also discovered that using OERs in i-Classroom, a mobile learning platform, helped students build important self-regulated learning skills including motivation for learning, studying management, and self-monitoring abilities.

However, OERs also facing a problem about its relative policy in some countries, lack of institutional and national policy support was most frequently cited as a barrier to the adoption of OER (Wong & Li, 2019). Wong and Li (2019) revealed that many Australian institutions' institutional strategy plans do not include OER development. Without addressing issues like intellectual property rights, quality control, and finance assistance, this restriction may have an impact on instructors' understanding of OER and desire to use them.

**Emerging Technology User’s Challenge in Privacy Issue**

While technology brings a variety of benefit to students, a serious problem regarding user’s privacy also comes to a fore. Two recent studies (Kuleto et al., 2021; McGrath et al., 2023) have highlighted that new technology introduces privacy issues that require attention and improvement, as it often carries a high potential security risk through widespread data sharing on the internet.

**Conclusion** 200

Despite the fact that

Reference

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Summary Matrix

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| Author | Date | Notes |
| Chaudhry et al. | 31 December  2023 | * (Emerging tech. Soft skills )      * learning performance * AI ChatGPT study efficiency |
| Chen et al. | April 17, 2020 | * AI studying performance :   Data shariing  customize study plan  score up & enjoy studying |
| Kuleto et al. | 18 September 2021 | * Teacher: Efficiency teaching tool * Privacy issues |
| Leoste et al. | 8 September  2021 | * Student: learning performance * Teacher: teaching efficiency |
| McGrath et al. | 2023 | * Privacy issues * Fairness |

Table

Screenshot

