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The Relationship Between Cloud-Based Ai Tool Usage and Academic Achievement of University Students in Higher Education

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ABSTRACT
Cloud-based AI tools are becoming more popular within universities with students using these tools for generating ideas, clarification, summarising, editing, coding and feedback. However, the impact of cloud-based AI tools on student achievement can be complex. Using a critical approach can help aid understanding, however if students are taking the AI at face value, this can reduce independent learning. This study was aimed to explore how students perceive the relationship between cloud-based AI tools and student achievement. This was done by conducting a qualitative and interpretive approach. Semi structured interviews were conducted with students who have used cloud-based AI tools for academic purposes. Once the data has been collected it will be analysed thematically. The key themes were looking at the perceived positives of using cloud-based AI tools, limitations, verifying the information, independent learning, assessment and guidance provided by the institution. It was not assumed that those who use the AI tools frequently will achieve better grades. This study looked at how students feel they are using the AI tools to improve their learning or how it is making it more complex. As there was no primary data provided there were no findings. To publish this study, the recruitment process, ethical considerations, interview data and analysis needs to be recorded. Themes need to be accurately reported.

Keywords: *cloud-based artificial intelligence; academic achievement; university students; qualitative research; generative AI; higher education*

1.Introduction:

Students may use AI tools for academic purposes via cloud-based AI. This can be done to gain clarification on unclear topics, produce examples, create structured notes, edit wording, translate, identify bugs in coding, and get feedback. However, this can increase accessibility to additional support outside of scheduled teaching sessions. To ensure students learn from the AI tool, they need to critically think about the accuracy of the answer, understand the process and adhere to academic standards. Academic success can be shown via attained grades, score on assessments, completing a module or being able to demonstrate learning. The relationship between using AI tools and academic success is likely to depend on why they are being used, previous knowledge, what type of task they are used to complete, if they have verified the information and any policies in place within the course. If the student uses AI tools to clarify their misconceptions, or practice a particular skill then the AI may help them learn. Using the AI tool to copy unverified information was not as helpful. Therefore, it is important to look into what students' experiences are. It is recommended to have a human centred approach to using generative AI tools in education (UNESCO, 2023). This includes looking at how private the information is, giving control to the student, verifying the information and ensuring the institution can utilise the tools. Opportunities and challenges are discussed in large language models (Kasneci et al., 2023). Using a qualitative method can gain insights into how students make decisions, verify information and the relationship they see between using AI tools and their academic experiences.

2. Problem Statement

University students are using cloud-based AI tools. However, it is important to understand how they are linking to learning and academic success. Although students may be using the same tool, they may be using it in different ways. For example, seeking clarification and verifying against course materials or simply copying. Therefore, it is important to understand how students are experiencing using cloud-based AI tools in higher education.

3. Objectives of the Research

1. To investigate how university students use cloud-based AI tools for academic learning and assessment.
2. Understand how students perceive the relationship between using AI tools and academic success.
3. Identify perceived benefits and challenges of using cloud-based AI to improve understanding, independent learning and academic success.
4. Investigate how students verify AI generated information and ensure academic integrity.
5. Explore students views on guidance provided by universities on using AI responsibly.

4. Research Questions

1. How do university students use cloud-based AI tools for academic purposes?
2. How do students perceive the relationship between using AI tools and academic success?
3. What perceived benefits and challenges do students face when using these tools to improve learning?

4. How do students verify AI generated information and make decisions around academic integrity?
5. What guidance does students believe universities should provide on using AI responsibly?

5. Literature Review

5.1 Cloud-based AI in Higher Education

Cloud-based AI tools provide services to users via an internet connected platform. Examples of AI tools include generative chatbots, writing assistants, translation tools, coding assistants, adaptive learning tools and automatic feedback tools. Different tools will have different functions, accuracy, data handling and use. Therefore, research should look into what tools the participants are using and for what purpose.

Generative AI has made universities rethink how they teach, assess and develop digital literacy. It is important to have human oversight, privacy, verification and ensure the tools are being used for educational purposes (UNESCO, 2023). Students and teaching staff should consider if the AI generated information is suitable, accurate and fits the requirements of the course.

5.2 Academic Success and Learning Processes

Academic success depends on many factors including previous knowledge, effort, quality of teaching, motivation, assessment design and access to learning resources. Some learning processes may be impacted by AI. However, just because students feel it is quicker does not mean it will improve their academic success. Although it may make tasks quicker to complete, it may not lead to long term understanding. However, comparing the explanation given by the AI tool to their readings from the course may help the learner realise they have a misconception. Large language models can be used in education (Kasneci et al., 2023). However, there are concerns regarding reliability, bias, privacy and over reliance. This means you can look into how the AI is being used effectively and for what purpose. Asking for clarification, verifying the information and practising independently are very different to simply copying.

5.3 AI Literacy and Academic Integrity

AI Literacy includes being aware that AI generated information may not always be accurate, have made up references, be biased or have unsubstantiated claims. Students also need to be aware of privacy issues; declare they have received help and adhere to the policies in place for their course. Providing examples can help researchers understand how students know what feedback is acceptable and what is not. Having clear guidelines from the institution can help reduce confusion however students also need practical skills. They need to know how to checkthe sources, compare outputs to authoritative sources, keep a record of AI use and reflect on what they have learnt. Interviews can help show if there is consistency across the courses and how students react to differing expectations.

5.4 Justification for Using a Qualitative Approach

A qualitative approach would be suitable to understand student experiences, what they perceive, their decisions and context. Semi structured interviews can provide detailed examples of when AI helped with understanding or produced misleading information. This can show how they perceive the AI to be working and why they may have different experiences. However qualitative interviews cannot show cause and effect or estimate how grades in the population would be affected.

6. Underlying Concepts

This study could be influenced by sociocultural theories. This is because tools are seen as mediators of learning. Self regulated learning can also be considered as students are encouraged to plan, monitor and evaluate their learning. This will help to understand how students have goals for using AI, evaluate the quality of the output, compare answers to course materials and determine if they need to do any further independent work. This should be used as sensitising concepts and not strict codes. This will allow for any unanticipated themes to come through. The use of AI may not automatically impact academic success. The perceived outcomes may depend on why they are being used, previous knowledge, critical thinking, verifying information, type of assessment and any policies in place for the course. The study will look into how students perceive the relationship.

7 Methodology

7.1 Research design

A qualitative, interpretivist approach was used to explore students' experiences. Semi-structured interviews used to ask participants the same questions, but allows for more questions to be asked about particular situations. When writing up the final article, include the specific type of qualitative approach, such as a qualitative descriptive design, and link it to the research questions.

7.2 Population & Sampling

The population of interest was university students who have used at least one AI tool online to complete an academic task. Purposeful sampling will used to ensure participants meet the criteria. Maximum variability will aim to be achieved by including participants from different disciplines, levels of study, genders, AI usage frequency, reasons for AI use, and familiarity with university policies. Initially, around 15-25 interviews could be carried out but the sample size should be justified based on the depth and breadth of the data collected. State how many interviews were actually carried out.

7.3 Inclusion Criteria

1. Currently undertaking a university level programme.
2. Used an AI tool online for at least one academic task.
3. Can provide informed consent and take part voluntarily.
4. Willing to be interviewed in the approved language.

7.4 Data Collection

Interviews were approximately 30-45 minutes long. These could be face-to-face or online on a secure platform. If permission is given, interviews should be recorded and accurately transcribed. If participants decline to be recorded, explain how notes were taken and used. Questions should encourage participants to give specific examples. Avoid leading questions that ensure participants agree that AI helps them achieve.

7.5 Interview Guide

1. Which AI tools online do you use for university? What do you use them for?
2. Can you tell me about a recent assignment/learning task you completed using AI?
3. How did using the AI tool help or not help with your understanding/revision?
4. Can you think of a time when the AI didn't provide a correct or helpful answer? How did you deal with this?
5. How do you verify the information, explanations and references given by the AI?
6. Have you noticed any changes in your study habits, confidence, time management or independent problem solving?
7. What rules or guidelines have been given by staff/university regarding AI use?

8. Are there any issues you have regarding fairness, privacy, authorship or academic integrity?
9. What tips would you give to someone looking to use AI without impacting their learning?

7.6 Data Analysis

A reflexive thematic analysis carried out. This followed the general steps of Braun and Clarke (2006). This included become familiar with the data, creating initial codes, developing themes, reviewing themes, defining and labelling themes, and producing the report. Code relevant parts of the transcript, identify patterns, and find differences. Select anonymised quotes to back up each theme. Remain open to any unexpected patterns. Include an audit trail to demonstrate how transcripts were created, coding decisions, theme creation, and amendments. Include reflexive notes throughout to show any assumptions made they have impacted the analysis. In the final article, explain how contradictory examples were considered and how the themes relate to the research questions.

7.7 Quality

Credibilitycould be ensured by encouraging examples,accurate transcripts, considering contr adictory examples, and asking participants for feedback on whether the summary accurately reflects the information. Dependability can be ensured by showing how decisions were made throughout the research. Confirmability can be ensured by including reflexive notes and ensuring clear links between statements and data extracts. Transferability can be ensured by describing the context of the study and characteristics of the participants. Only include what was actually done.

7.8 Ethical Issues

Ensure ethical approval or documented decision is received. Ensure participants know why they are taking part, that they can withdraw, that they were recorded, that their information is confidential, and that anonymised quotes were used. Remove any names or identifiable details from assignments. Securely store audio files and transcripts to only be accessed by the research team. Do not collect any passwords or unnecessary personal information.

8 Results & Findings

There was no data provided regarding interviews. It would be methodologically and ethically incorrect to create quotes, themes, sample characteristics and findings.

Once interviews have been carried out and analysed, replace this section with themes from the transcripts.

8.1 Areas to Consider

Area to consider Evidence Required

AI for explanations/support Extracts from transcript showing examples.

Time saving/efficiency Examples of how it saves time, completes tasks or transfers work.

Verification/Critically analysing Examples of how they verify outputs.

Over reliance/Independent thinking Examples of how it makes them work harder, less confident, less able to remember or solve problems.

Academic integrity and uncertainty regarding policies Descriptions of rules, transparency and what they can use.

Accessibility Examples of how they have good access, cost, language, discipline or knowledge.

9 Discussion

Once data has been analysed, the discussion should explain how the themes answer the research questions and relate to the literature. If participants say AI helps them, explain the situations in which they feel it helps them. Also explain if they verify the

output. If participants say it causes harm, break this down into incorrect outputs, over reliance, confusion regarding policies, and accessibility issues. Do not assume that if participants say AI helps them achieve, they have verified that they have achieved. Without collecting and analysing data regarding grades or an appropriate measure of achievement, this study cannot show that AI use has increased or decreased their marks. Interviews can show how they feel AI has helped them achieve, but cannot prove that it has.

10 Conclusion

AI tools online may be used within the academic environment of students. However, how, why and when they are used to determine whether they help them achieve. A qualitative approach can help show why students are using them, verifying outputs, how they are helping with their learning, and any issues they have with over reliance. By carrying out this study, we hope to give a contextual insight rather than assume that the more they use it the better they achieved. The conclusion should be based on the analysis of the interviews.

11 Recommendations

1. Universities should clearly state rules regarding what AI they can use, transparency, privacy, and academic integrity.
2. Teach students about AI literacy. This should include verifying sources, knowing when something has been made up, and reflecting on whether they have improved their understanding.
3. Staff should design assessments to show their thought processes, application, working and reflection.
4. Students should use AI to help with explanations and practice. However, they should independently verify key points.
5. Future studies could look at combining interviews with evidence from assessments (with permission) or using a longitudinal design to see actual achievement.

12 Limitations

As this is a research framework and no primary data has been provided, there is no local evidence from the field. Once carried out, limitations could include self-selection bias, retrospection bias, different meanings of AI use, different policies in different institutions, and difficulty linking perceived learning to actual grades. In the final article, include genuine limitations.

References

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Kasneci, E., Sessler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., Gasser, U., Groh, G., Günnemann, S., Hüllermeier, E., Krusche, S., Kutyniok, G., Michaeli, T., Nerdel, C., Pfeffer, J., Poquet, O., Sailer, M., Schmidt, A., Seidel, T., ... Kasneci, G. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. Learning and Individual Differences, 103, 102274. https://doi.org/10.1016/j.lindif.2023.102274

UNESCO. (2023). Guidance for generative AI in education and research. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000386693

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education—Where are the educators? International Journal of Educational Technology in Higher Education, 16, Article 39. https://doi.org/10.1186/s41239-019-0171-0