Proceedings of ICILLP 2025 Symposium: Property Law and Blockchain Applications in International Law and Legal Policy
DOI: 10.54254/2753-7048/2025.LD27054

# *Exploring AI's Impact on Student Motivation in Higher Education: A Six C's Perspective*

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***Abstract.*** The Artificial Intelligence (AI) technology is developing quickly and gaining applications in higher education (HE). Existing research on AI in HE is mainly focused on instructional strategies and learning outcomes, with little attention paid to motivation. However, motivation is essential in guiding teaching strategies and promoting learning outcomes. Further research is needed to understand AI's impact on motivation. This article aims to contribute to the existing literature by providing new insights and filling gaps in knowledge. Specifically, the six C's of motivation theory are adopted to guide the investigation. The global survey reports are utilized to analyze students' AI usage in HE and AI's impact on student motivation. The findings reveal that AI has been used in various cases in HE, and AI has dual impacts on student motivation in terms of control, challenge, choice, collaboration, constructing meaning, and consequences (six C's). In the future application of AI in HE, it is recommended that colleges and universities strengthen supervision and training of AI, and students should focus more on what they gain in the learning process rather than overemphasizing learning outcomes when using AI.

***Keywords:*** AI, Motivation, Six C's, Higher Education

## 1. Introduction

The emergence of AI in education has greatly aroused researchers' interest. In recent years, there has been a rapid rise in publications on AI in education worldwide [1]. AI products such as AI assistants and chatbots have displayed benefits and challenges in education [2,3]. Existing research on AI in HE is mainly focused on instructional strategies and learning outcomes, with little attention paid to motivation. However, motivation is essential in guiding teaching strategies and promoting learning outcomes. Motivation plays a fundamental role in affecting student learning and academic performance [4-6]. Further research is needed to understand AI's impact on motivation.

To provide new insights and contribute to knowledge, this study explores AI's impact on student motivation in HE. Concretely, this study adopts the six C's of motivation theory to guide the investigation and utilizes the global survey reports to examine students' AI usage in HE and AI's impact on student motivation in HE. The research questions are how AI is applied in HE, and how AI affects student motivation in HE in terms of the six C's of motivation.

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## 2. Motivation and learning

### 2.1. The concept of motivation

Motivation refers to the underlying reasons for human behavior and can be categorized as intrinsic motivation and extrinsic motivation [7]. Intrinsic motivation encourages people to invest efforts without expecting a reward, while extrinsic motivation controls the efforts people invest to receive a reward or avoid punishment. Intrinsic motivation emphasizes pleasure, interest, and challenge. Extrinsic motivation focuses on praise, punishments, and improved efficiency. When people are intrinsically motivated, they are more engaged in learning. Intrinsic motivation brings enjoyment and satisfaction, and makes people feel that learning is autonomous and that they have a sense of control over the learning process. When people feel that learning is fantastic and controllable, learning is positively related to engagement, persistence, and creativity [7].

To enhance intrinsic motivation, activity design should focus on capturing attention, stimulating curiosity, and encouraging participants to explore and learn, ultimately deriving satisfaction from the task itself. Providing challenges and meaningful choices appropriate to skill levels can foster a sense of autonomy and responsibility. To enhance extrinsic motivation, activities can incorporate external rewards, such as recognition or tangible incentives, as well as penalties for poor performance to promote goal-driven behavior.

### 2.2. The six C's and students' learning motivation

The six C's of motivation theory are defined by Turner and Paris, aiming to boost student motivation in the classroom. The theory outlines six key motivational factors that affect student engagement, behavior, and academic success in the educational context: choice, challenge, control, collaboration, constructing meaning, and consequences [8]. The main measures for choice are personal interests in a topic and decision options. For the challenge, the key metrics are setting proximal goals and providing feedback channels. Control focuses on appropriate assistance and involvement in classroom management. Collaboration emphasizes cooperation, strategy sharing, and mutual inspiration. Constructing meaning is assessed through perceptions of the value of knowledge and the setting of meaningful goals. For consequences, the key indicators are opportunities to display work and receive feedback.

The theory provides a comprehensive and student-centered framework for understanding what drives student learning motivation in educational contexts. The six C's influence student learning in how students maintain curiosity, engage with course materials, classmates, and instructors, and achieve success in study [8]. Students' learning motivation improves when they have choices in learning, face proximal challenges, gain control of the classroom, collaborate with others, construct personal meaning, demonstrate work, and receive feedback [9].

## 3. AI's impact on student motivation - analysis based on reports

### 3.1. The wide use of AI

AI has been applied to various learning scenarios for HE students, including assisting with information search, writing, note-taking, guided study, assessments, and image and slide design. In 2024 and 2025, different institutions have released global reports on the use of AI among HE students. Digital Education Council surveyed 3,839 students across 16 countries, including bachelor's, master's, and doctoral students in multiple fields of study. The report showed that over

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eight in ten (86%) of students have used AI to support their study, 2.1 AI tools were used by each student, and top AI use cases were information searching, grammar checking, document summarizing, quiz preparing, and draft creating [10]. Chegg investigated 11,706 undergraduate students across 15 countries, and based on the report, 80% of students have used GenAI to support their studies [11]. HEPI surveyed 1,041 full-time undergraduate students through Savanta about student use of GenAI tools, reporting that 92% have used AI for different learning purposes, and almost nine in ten (88%) have used GenAI for assessments [12]. AI is infiltrating students' daily learning, and students mainly utilize AI for learning support, personalized learning, assessments, and immersive participation.

### 3.2. AI's dual impacts on student motivation

AI has dual impacts on student motivation in terms of the six C's, increasing the richness and engagement of learning while also decreasing students' trust in course value and evaluation fairness. As shown in Table 1, AI can become both a promoter and a discouraging of motivation, depending on how it is applied to student learning. For choice, AI offers students more opportunities to choose interesting topics and diverse pathways. According to the Digital Education Council, over half (66%) of the students reported using AI for personalized content recommendations [10]. As a new and powerful technology, AI acts as an interest motivator. AI's new functions are attractive to students, and AI's suggestions provide more choices for students' learning paths. For the challenge, AI enables students to break through the challenging tasks with courage. Eight in ten (80%) of undergraduates reported using GenAI in supporting academic studies, and among them, over half (56%) used AI for improved understanding of complex concepts or subjects [11]. AI provides personalization and adjusts the difficulty of tasks. With the assistance of AI, students are more willing to try challenging tasks. For control, AI enhances student engagement by providing a sense of control. Over half of the students used AI research (66%), AI writing (66%), and AI live translating (56%) [10]. AI provides learning support, enhances student engagement in the classroom, and tends to transform the role of teachers. The functions of AI support student learning by providing appropriate assistance when students get stuck and feel they can't keep up with the class pace. For collaboration, AI benefits student cooperation and mutual learning by acting as a learning partner. AI facilitates collaborative learning by creating study guides, note summaries, and templates. Inspired by AI learning strategies and model sharing, students have a different collaborative learning experience with classmates and teachers.

For constructing meaning, AI boosts student engagement by providing meaningful content relevant to students' future work preparation, while it may also reduce student motivation in learning AI-driven courses. Over two-thirds (67%) of students agreed that it is crucial to acquire the knowledge and abilities to manage and use AI tools [12]. When students recognize the external benefits of a course (e.g., preparing for future job hunting and adapting to learning and working in the AI era), they are motivated to learn and become more engaged. However, AI-driven courses may reduce students' perception of the course value, thereby decreasing their learning motivation. Over half (54%) of the students questioned the value of AI-generated courses, and 55% believed that teachers' over-reliance on AI in course teaching reduced their learning value [10]. When teachers have less input in the creation of course materials, students tend to underestimate the course and become less motivated to learn. For consequences, while AI helps students improve the quality of their work, it also exacerbates concerns about the fairness of assessments. As a teaching assistant, AI can provide immediate feedback and improve the quality of students' work. However, questions about the transparency and fairness of AI assessments may reduce students' learning motivation.

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Two-thirds (60%) of students were concerned about the fairness of AI assessments, and over half (52%) worried about AI's negative impact on learning motivation [10]. When students doubt AI-graded results, their willingness to learn tends to decline. If students are not rewarded for their effort in the course, they are less likely to persist in their studies.

Table 1. AI's dual impacts on student motivation

| Motivational Factors | AI's Impacts | AI's Roles | Applications of AI Among Students |
|---|---|---|---|
| Choice | Positive | Interest motivator | Release new features |
| | | Path advisor | Suggest decisions |
| Challenge | Positive | Personalized task assistant | Explain complex subjects |
| | Negative | Cheating accomplice | Harm academic integrity |
| Control | Positive | Engagement promoter | Research & writing, generate live transcription |
| | Negative | Information thief | Undermine data privacy and ethics |
| Collaboration | Positive | Learning partner | Create a study guide, note summary, and templates |
| Constructing meaning | Positive | Goal mentor | Offer content relevance to future work |
| | Negative | Barrier | Distrust the value of AI-driven courses |
| Consequences | Positive | Teaching assistant | Provide Instant feedback, improve work quality |
| | Negative | Discourager | Doubt AI evaluations |
| | | Damager | Overemphasis on learning outcomes |

## 4. Suggestions

### 4.1. Regulation and training of AI in HE

For the challenge and control of motivation, it is suggested that colleges and universities strengthen the regulation of AI and provide necessary training for the application of AI in HE. AI may harm academic integrity and undermine data privacy and ethics in challenge and control, as is shown in Table 1. When completing difficult tasks, some students may directly use AI-generated outputs to reduce their personal effort. This behavior undermines academic integrity and needs to be regulated. Moreover, data privacy and credibility cannot be guaranteed when using AI. Top concerns among students in using AI are privacy and data security, and trustworthiness of AI-generated content [10]. Due to the lack of autonomous control, there is a risk of data leakage when sensitive information is input into AI. Moreover, the content generated by AI has not been fully verified and may be biased, containing certain illusions. There are possibilities of unintended consequences of biased AI model outputs through generalization, propagation, emergence, non-linearity, and alignment [13]. It is unethical to disseminate and disclose sensitive information without permission. Specific AI ethics is required in the educational integration of AI technology since ethics and privacy issues are critical in education [14]. With proper regulation and training of AI in HE, students can have a clear understanding of how to use AI reasonably and effectively.

### 4.2. Emphasize the gains from the learning process

In terms of consequences of motivation, students are advised to focus more on what they gain during the learning process rather than overemphasizing the learning results. As Table 1 displays, for consequence, AI's one negative impact on students' learning motivation is overemphasizing learning

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outcomes. HE Students are increasingly relying on AI to achieve rapid learning outcomes. Nearly a third (29%) of students worldwide turn to GenAI for help when they struggle with homework, and the proportion of students using GenAI to generate text has doubled from less than 30% in 2024 [11,12]. AI's instant answers can reduce students' deep thinking and efforts, leading to superficial learning. This superficial learning is dangerous because it can damage students' cognitive processing and critical thinking skills in the long run. Furthermore, if students only learn to achieve outcomes, they may lose their curiosity or desire to explore new knowledge.

## 5. Conclusions

This article deepens the understanding of AI's impact on student motivation using a six C's perspective. Specifically, guided by the six C's of motivation theory, this article analyzes the global survey reports to examine AI's impact on student motivation in terms of the six C's: choice, challenge, control, collaboration, constructing meaning, and consequences.

The findings reveal that AI has been applied to various cases in HE, and AI has dual impacts on student motivation in terms of the six C's. AI can become both a powerful enabler and a potential hindrance, depending on how it is applied to student learning. Students mainly utilize AI for tasks such as information searching, grammar checking, and document summarization. In terms of choice, AI offers students personalized learning options. In terms of challenge, AI adjusts tasks to proximal learning levels, but this can also lead to academic cheating. In terms of control, AI gives students greater control over their learning process, but this can also raise data privacy and ethical concerns. In terms of collaboration, AI facilitates collaborative learning through digital platforms and intelligent agents. In terms of constructing meaning, AI provides students with meaningful content, but it can also reduce student motivation by lowering students' perceived value of the AI-driven course. For consequences, AI provides immediate feedback and improves the work quality, but it can also lead students to question the fairness of AI-driven assessments and overemphasize learning outcomes. In the future, a balanced integration of AI in HE is essential to maximize AI's benefits while addressing issues of over-reliance, transparency, and fairness.

## References

[1] Crompton, H., & Burke, D. (2023). Artificial Intelligence in Higher Education: The State of the Field. International Journal of Educational Technology in Higher Education, 20(1).
[2] Castillo-Martínez, I. M., Flores-Bueno, D., Gómez-Puente, S. M., & Vite-León, V. O. (2024). AI in Higher Education: A Systematic Literature Review. Frontiers in Education, 9.
[3] Deng, R., Jiang, M., Yu, X., Lu, Y., & Liu, S. (2025). Does ChatGPT Enhance Student Learning? A Systematic Review and Meta-Analysis of Experimental Studies. Computers & Education, 227, 105224.
[4] Ai, T. (2025). Impact of Learning Motivation on Student Learning Outcomes from the Perspective of Educational Psychology. Lecture Notes in Education Psychology and Public Media, 99(1), 13-18.
[5] Fauzy, I., Padilah, D., Charisma Alzena, F., Azzahra, F., & Kamodin, F. (2024). Optimizing Learning by Enhancing Students' Motivation. FMDB Transactions on Sustainable Humanities and Society, 1(2), 91-99.
[6] Zhou, F., & Ahmad, R. A. H. R. (2025). The Impact of Learning Motivation on Students' Academic Performance: A Self-Determination Theory Perspective. Journal of Education, Humanities, and Social Research, 2(1), 155-163.
[7] Deci, E. L., & Ryan, R. M. (2001). Intrinsic Motivation, Psychology of. International Encyclopedia of the Social & Behavioral Sciences, Elsevier, 7886-7888.
[8] Turner, J., & Paris, S. G. (1995). How Literacy Tasks Influence Children's Motivation for Literacy. The Reading Teacher, 48(8), 662-673.
[9] Orey, M. (2001). Emerging Perspectives on Learning, Teaching, and Technology. The Global Text Project 2010.
[10] Digital Education Council. (2024). Digital Education Council Global AI Student Survey 2024. Retrieved from https://www.digitaleducationcouncil.com/post/digital-education-council-global-ai-student-survey-2024.

DOI: 10.54254/2753-7048/2025.LD27054

[11] Chegg. (2025). Global Student Survey 2025. Retrieved from https://www.chegg.org/global-student-survey-2025.
[12] HEPI. (2025). Student Generative AI Survey 2025. Retrieved from https://www.hepi.ac.uk/2025/02/26/student-generative-ai-survey-2025.
[13] Ferrara, E. (2023). Should ChatGPT be Biased? Challenges and Risks of Bias in Large Language Models.
[14] Zhang, K., & Aslan, A. B. (2021). AI Technologies for Education: Recent Research & Future Directions. Computers and Education: Artificial Intelligence, 2, 100025.