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A Study on the Mechanisms of Enhancing Learning Motivation in Educational Psychology Courses in the Context of Artificial Intelligence

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Abstract: This study investigates the mechanisms through which artificial intelligence (AI) enhances learning motivation in Educational Psychology courses. Recognizing that such courses are often characterized by abstract theories and low student engagement, the research adopts a qualitative approach based on Grounded Theory to explore students' experiences with AI-supported learning. Data were collected through semi-structured interviews with ten undergraduate students majoring in English (Education Track), all of whom had prior experience using AI tools in their studies. The findings reveal that AI influences learning motivation through multiple interrelated pathways. Specifically, AI provides cognitive support by simplifying complex concepts, enhances learning efficiency by organizing knowledge and reducing workload, and fosters interactive engagement through dialogic learning experiences. These factors collectively contribute to the satisfaction of students' psychological needs for competence, autonomy, and relatedness, thereby promoting intrinsic motivation. However, the study also identifies potential negative effects, including over-reliance on AI leading to superficial learning and reduced independent thinking, as well as issues related to trust in AI-generated content. A theoretical model is proposed to illustrate both the facilitating and inhibiting mechanisms of AI in shaping learning motivation. The results highlight that the impact of AI is dynamic and moderated by factors such as usage strategies, trust levels, and learners' initial motivation. This study contributes to the literature by providing a process-oriented understanding of AI-supported motivation and offers practical implications for the balanced and pedagogically guided integration of AI in higher education.

Keywords: Artificial intelligence (AI); Learning motivation; Educational psychology; Grounded theory; Self-determination theory

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1. Introduction

In recent years, artificial intelligence (AI) has been increasingly integrated into higher education, significantly

transforming traditional teaching and learning practices. AI-powered tools, such as conversational agents (e.g., ChatGPT, DeepSeek, Kimi, etc.), offer learners immediate feedback, personalized support, and interactive learning experiences. These features enable students to access knowledge more efficiently and engage with learning content in more flexible and dynamic ways. Meanwhile, learning motivation is widely recognized as a critical factor influencing students' academic engagement and achievement. However, Educational Psychology courses are often characterized by abstract theories and complex conceptual frameworks, which may lead to difficulties in understanding and reduced learning motivation. Therefore, exploring how AI can support and enhance students' motivation in such courses has become an important issue in contemporary educational research.

Although existing studies have examined the impact of AI on learning performance and engagement, most have focused on quantitative outcomes rather than the underlying mechanisms of motivation [1–2]. In particular, there is a lack of process-oriented research investigating how AI influences students' learning motivation in specific disciplinary contexts. In addition, potential negative effects, such as over-reliance on AI and reduced independent thinking, have not been sufficiently addressed. To fill these gaps, this study adopts a qualitative approach based on Grounded Theory and conducts semi-structured interviews with undergraduate students majoring in English (Education Track). The aim is to explore how students use AI in Educational Psychology courses and to uncover the mechanisms through which AI enhances or inhibits learning motivation. By providing a deeper, process-based understanding and proposing a theoretical model, this study contributes to both theoretical development and practical applications in AI-supported education.

2. Literature review

2.1. Learning motivation in higher education

Learning motivation has long been recognized as a central factor influencing students' academic engagement, persistence, and achievement. Among the most influential theoretical frameworks, Self-Determination Theory (SDT) emphasizes that motivation is shaped by the satisfaction of three basic psychological needs: autonomy, competence, and relatedness [3]. When these needs are fulfilled, students are more likely to develop intrinsic motivation and sustain their engagement in learning activities. In higher education, learning motivation is particularly important in courses that are conceptually demanding and abstract, such as Educational Psychology. Previous studies have shown that students often experience difficulties in understanding theoretical content, which may lead to decreased interest and reduced motivation [4–5]. Thus, identifying effective ways to support students' motivation in such contexts remains a key concern in educational research.

2.2. Artificial intelligence in education

With the rapid development of AI, its application in education has attracted increasing attention. AI-powered tools, such as intelligent tutoring systems, adaptive learning platforms, and conversational agents (e.g., ChatGPT, DeepSeek, Kimi, etc.), have been widely used to support learning. These technologies can provide personalized feedback, recommend learning resources, and facilitate interactive learning experiences. Previous research has demonstrated that AI can enhance learning efficiency, improve academic performance, and support self-regulated learning [6]. For example, AI systems can help students organize knowledge, clarify

complex concepts, and provide immediate responses to learners' questions [7]. In addition, the interactive nature of AI tools has been found to increase student engagement and participation [8]. However, some studies have also pointed out potential challenges associated with AI use, including over-reliance on technology, reduced independent thinking, and concerns about the accuracy of AI-generated content [9–10]. These mixed findings suggest that the impact of AI on learning is complex and context-dependent.

2.3. AI and learning motivation

In recent years, an increasing number of studies have explored the relationship between AI and learning motivation. Some research indicates that AI can enhance motivation by reducing cognitive load, improving efficiency, and providing timely feedback [11–12]. These features may strengthen students' sense of competence and autonomy, thereby promoting intrinsic motivation. Moreover, the interactive features of AI tools can create a more engaging learning environment, which may enhance students' sense of relatedness and participation [13]. As a result, AI has the potential to support multiple dimensions of motivation simultaneously. Nevertheless, existing studies have largely focused on quantitative measures of motivation, such as motivation scales and performance indicators, while paying less attention to students' subjective experiences and the underlying mechanisms of motivational change. What is more, limited research has examined both the positive and negative pathways through which AI influences motivation.

2.4. Research gap

Despite the growing body of literature on AI in education, several gaps remain. First, there is a lack of qualitative, process-oriented research that explores how AI influences learning motivation in specific disciplinary contexts, such as Educational Psychology courses. Second, the mechanisms through which AI affects motivation—both positively and negatively—have not been fully clarified. Third, the role of moderating factors, such as students' trust in AI and their usage strategies, remains underexplored. To address these gaps, the present study adopts a Grounded Theory approach to investigate the mechanisms of learning motivation enhancement in AI-supported learning environments. By focusing on students' lived experiences and perceptions, this study aims to provide a more comprehensive and nuanced understanding of how AI reshapes learning motivation.

3. Methodology

3.1. Research design

This study adopts a qualitative research design based on Grounded Theory, aiming to explore the underlying mechanisms through which AI influences learning motivation in Educational Psychology courses. Grounded Theory is particularly suitable for this study as it enables the generation of theoretical insights from empirical data and facilitates an in-depth understanding of participants' experiences and perceptions [14]. A semi-structured interview method was employed to collect rich, descriptive data. This approach allows flexibility in exploring participants' perspectives while maintaining consistency across interviews.

3.2. Participants

The participants consisted of 10 undergraduate students majoring in English (Education Track), all in their third year of study at a comprehensive university (**Table 1**).

Table 1. Demographic characteristics of 10 participants

Participant	Gender	Age	Major	Year of Study	AI Usage Frequency	Learning Motivation Level
P1	F	21	English (Education Track)	Year 3	Frequent	Medium–High
P2	M	20	English (Education Track)	Year 3	Occasional	Low
P3	F	21	English (Education Track)	Year 3	Frequent	High
P4	M	22	English (Education Track)	Year 3	Very Frequent	Medium (Fluctuating)
P5	F	21	English (Education Track)	Year 3	Frequent	Medium–High
P6	M	22	English (Education Track)	Year 3	Frequent	Medium–High
P7	F	21	English (Education Track)	Year 3	Occasional	Medium
P8	M	22	English (Education Track)	Year 3	Moderate	High
P9	F	20	English (Education Track)	Year 3	Increasing	Low → Medium
P10	M	22	English (Education Track)	Year 3	Structured/ Frequent	High

To ensure diversity and balance in perspectives, the sample (**Table 1**) was designed to achieve a gender-balanced composition (5 male and 5 female participants). All participants had completed or were currently enrolled in an Educational Psychology course and had prior experience using AI tools (e.g., ChatGPT, DeepSeek, Kimi, etc.) to support their learning. A theoretical sampling strategy was adopted, selecting participants with varying levels of learning motivation (high, medium, and low) and different patterns of AI usage (frequent users, moderate users, and occasional users). Data collection continued until theoretical saturation was reached, indicated by the repetition of key themes and no emergence of new categories.

3.3. Data collection

Data were collected through semi-structured interviews, each lasting approximately 30–50 minutes. The interviews were conducted either online (via Tencent Meeting or WeChat) or face-to-face, depending on participants' availability. An interview protocol was developed based on the research objectives and included the following key dimensions: 1) Learning experiences in Educational Psychology courses; 2) Patterns of AI tool usage in learning; 3) Perceived changes in learning motivation; 4) Factors influencing motivation (both positive and negative); and 5) Underlying psychological mechanisms (e.g., autonomy, competence, relatedness). All interviews were audio-recorded with participants' consent and subsequently transcribed verbatim for analysis. To ensure confidentiality, all participants were anonymized and assigned codes (P1–P10).

3.4. Data analysis

The collected data were analyzed following the procedures of Grounded Theory, including open coding, axial coding, and selective coding. In the first stage (open coding), interview transcripts were examined line by line to identify meaningful units of data. Initial concepts were generated by labeling participants' statements, resulting in a large number of descriptive codes (e.g., "reduced learning difficulty", "increased efficiency", "AI dependency", "interactive experience"). In the second stage (axial coding), relationships among the initial codes were identified and grouped into higher-level categories. These categories covered 1) Cognitive support (e.g., facilitating understanding); 2) Efficiency enhancement (e.g., saving time, organizing knowledge); 3)

Interactive engagement (e.g., dialogic learning experience); 4) Dependency and superficial learning; and 5) Trust and credibility of AI. In the final stage (selective coding), a core category was identified: AI-supported learning motivation enhancement mechanism. Around this core category, a theoretical framework was constructed, illustrating how AI influences learning motivation through multiple pathways, particularly by satisfying key psychological needs such as autonomy, competence, and relatedness. These pathways jointly contribute to the enhancement (or, in some cases, the inhibition) of learning motivation.

3.5. Trustworthiness

To ensure the rigor and credibility of the study, several strategies were employed. First, prolonged engagement with the data and iterative coding processes were conducted to ensure accurate interpretation. Second, a clear coding procedure was followed, and categories were refined through constant comparison. Third, findings were grounded in participants' original statements to minimize researcher bias. Fourth, detailed descriptions of participants and research context were provided to allow readers to assess applicability to other contexts.

3.6. Ethical considerations

All participants were informed about the purpose of the study and provided informed consent prior to participation. They were assured that their responses would remain confidential and would be used solely for academic research purposes. Personal identifiers were removed during transcription to protect participants' privacy.

4. Results

Based on the analysis of the interview data, this study identified multiple pathways through which AI influences students' learning motivation in Educational Psychology courses. Through grounded theory analysis, a set of interrelated categories emerged, including cognitive support, efficiency enhancement, interactive engagement, dependency, and trust. These categories collectively explain how AI reshapes students' learning experiences and motivational patterns.

4.1. Cognitive support and reduction of learning difficulty

One of the most prominent findings is that AI provides significant cognitive support, particularly by simplifying complex theoretical content and reducing learning difficulty. Many participants reported that Educational Psychology is "abstract" and "hard to understand," which often leads to frustration and low motivation.

For instance, P1 noted:

"*Some theories are really hard to understand just by reading the textbook, but AI can explain them in a much simpler way, so I feel less stressed when learning.*"

Similarly, P9, who initially had low motivation, described a clear turning point:

"*At the beginning, I didn't want to study because it was too difficult. But when AI explained it with simple examples, I suddenly understood, and I felt more willing to continue.*"

These findings suggest that AI reduces cognitive barriers, which in turn lowers frustration and enables students to re-engage with learning. This mechanism is particularly significant for students with initially low

motivation.

4.2. Efficiency enhancement and sense of achievement

Another important category is efficiency enhancement, as AI helps students organize knowledge, summarize key points, and complete tasks more quickly. This improved efficiency contributes to a stronger sense of achievement, which positively influences motivation.

As P6 explained:

"*AI helps me organize the content into a clear structure. When I see everything arranged logically, I feel like I can actually manage the material.*"

Similarly, P2 emphasized the role of AI in task completion:

"*Using AI makes assignments much easier to finish. I don't feel as overwhelmed, so I'm more willing to start working.*"

These findings indicate that efficiency not only reduces workload but also enhances students' perceived competence, thereby strengthening their motivation to engage in learning tasks.

4.3. Interactive engagement and increased participation

AI also promotes interactive engagement, transforming learning from a passive process into an interactive experience. Several participants described AI as a "learning partner" that supports dialogic learning.

For example, P5 stated:

"*It feels like I'm not studying alone. When I ask questions and get immediate responses, it's like having a conversation, and that makes learning more interesting.*"

P3 further emphasized the exploratory nature of this interaction:

"*I can keep asking questions and go deeper into a topic. That makes me more curious and more motivated to learn.*"

This interactive dimension enhances students' sense of engagement and participation, making learning more dynamic and sustaining their interest over time.

4.4. Dependency and superficial learning

Despite its benefits, AI also introduces potential negative effects, particularly over-reliance and superficial learning. Some participants reported that excessive dependence on AI reduces independent thinking and weakens deep understanding.

P4 clearly described this issue:

"*Sometimes I just let AI generate the answer, and I don't really think about it myself. Later, I realize I don't actually understand the content.*"

He further reflected on the long-term impact:

"*At first, it feels easier, but when I need to explain something in class, I can't. That actually reduces my motivation.*"

This suggests that while AI may increase short-term efficiency, overuse can undermine deep learning and negatively affect long-term motivation.

4.5. Trust and credibility as a moderating factor

Another important finding is the role of trust in AI-generated content. Participants' trust levels significantly

influenced how they used AI and how it affected their motivation.

For instance, P7 expressed skepticism:

"*Sometimes I feel that AI's answers are not very accurate, so I still prefer to check the textbook. I don't fully rely on it.*"

This lack of trust limited AI's impact on learning motivation. In contrast, participants who trusted AI more were more likely to integrate it into their learning process.

These findings indicate that trust acts as a moderating factor, influencing the extent to which AI can affect motivation.

4.6. Dynamic changes in learning motivation

The data also reveal that the impact of AI on learning motivation is dynamic rather than static. Different students experience different trajectories depending on their initial motivation and patterns of AI use.

For example, P9 described a clear transformation:

"*At first, I didn't want to study at all. But after using AI to understand difficult parts, I became more interested and started to study more actively.*"

In contrast, P4 experienced a decline after initial improvement:

"*In the beginning, AI made learning easier, so I felt more motivated. But later, I relied on it too much, and my motivation actually dropped.*"

Meanwhile, self-regulated learners such as P8 demonstrated a more balanced pattern:

"*I usually try to think first and then use AI to check my understanding. That way, I feel I'm improving step by step.*"

These patterns suggest that the effectiveness of AI depends on how it is used, highlighting the importance of self-regulation.

4.7. Core mechanism of learning motivation enhancement

Through selective coding, a core mechanism emerged: AI enhances learning motivation by supporting understanding, improving efficiency, and facilitating interaction, while its effects are moderated by dependency and trust (**Figures 1** and **2**).

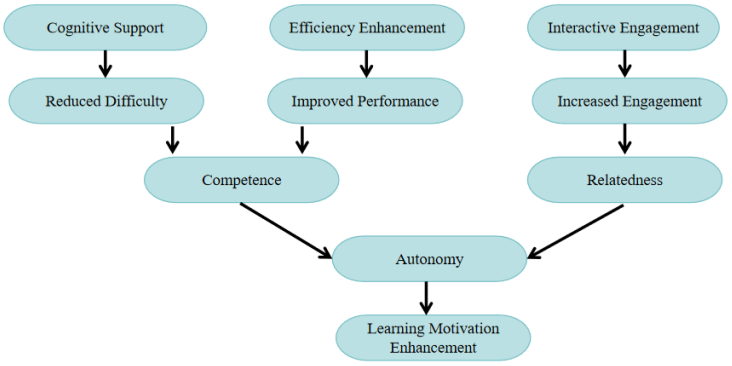

Figure 1. Positive mechanism model of learning motivation enhancement in AI-supported Educational Psychology courses

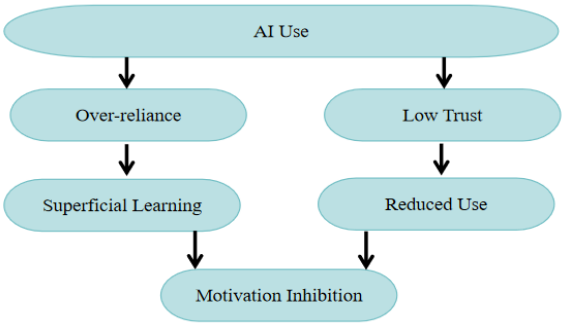

Figure 2. Negative mechanism model of learning motivation enhancement in AI-supported Educational Psychology courses

First, cognitive support reduces learning difficulty and facilitates understanding, thereby enhancing learners' sense of competence. Second, efficiency enhancement improves task performance and generates a sense of achievement, further strengthening competence. Third, interactive engagement promotes participation and creates a sense of relatedness, which sustains learning interest. These pathways collectively satisfy three basic psychological needs—autonomy, competence, and relatedness—ultimately leading to enhanced learning motivation.

At the same time, the model (**Figure 2**) also identifies two inhibitory mechanisms. Over-reliance on AI may result in superficial learning and reduced independent thinking, while low trust in AI may limit its use and effectiveness. These negative factors can weaken or even reverse the positive impact of AI on learning motivation.

Furthermore, the model (**Figures 1** and **2**) highlights the role of moderating variables such as AI usage strategies, trust levels, task difficulty, and initial motivation. These factors determine whether AI exerts a positive or negative influence on learning motivation.

5. Discussion

This study explored the mechanisms through which AI influences learning motivation in Educational Psychology courses. The findings provide important insights into both the positive and negative roles of AI in shaping students' motivational processes, and they can be meaningfully interpreted through existing theoretical frameworks, particularly Self-Determination Theory (SDT).

First, the results confirm that AI enhances learning motivation by supporting the fulfillment of three basic psychological needs—competence, autonomy, and relatedness—as proposed by Deci and Ryan (2012). Specifically, cognitive support provided by AI reduces learning difficulty and facilitates understanding, thereby strengthening students' sense of competence. This finding is consistent with previous studies showing that AI can reduce cognitive load and improve learning effectiveness. Similarly, efficiency enhancement enables students to manage learning tasks more effectively, which contributes to a sense of achievement and further reinforces competence. In addition, the interactive nature of AI tools promotes engagement and creates a sense of relatedness, supporting prior research that highlights the role of AI in enhancing learner participation and enjoyment.

Second, this study extends existing research by revealing the process-oriented mechanisms underlying

motivational changes. While previous studies have primarily focused on learning outcomes, the present findings demonstrate that AI influences motivation through multiple interconnected pathways, including cognitive, efficiency, and interaction pathways. These pathways jointly contribute to the development of intrinsic motivation by fostering interest and sustained engagement, which aligns with earlier work on the relationship between interest and learning processes. Furthermore, the findings highlight the importance of self-regulated learning, as students who actively manage their AI use (e.g., thinking before using AI) experience more stable and long-term motivational benefits. This supports prior research emphasizing the role of AI in promoting self-regulated learning.

However, this study also identifies important negative mechanisms, particularly over-reliance on AI and reduced independent thinking. These findings are consistent with recent research indicating that excessive dependence on AI tools may weaken cognitive abilities and deep learning. When students rely too heavily on AI-generated answers, they may experience superficial understanding, which can ultimately reduce their motivation. In addition, trust in AI emerged as a key moderating factor. Students who perceived AI as unreliable were less likely to use it effectively, limiting its impact on motivation. This finding echoes broader discussions on the challenges and risks of AI use in educational contexts.

6. Conclusion

6.1. Summary of key findings

This study investigated the mechanisms through which AI influences learning motivation in Educational Psychology courses using a Grounded Theory approach. Based on semi-structured interviews with 10 undergraduate students, the findings reveal that AI affects learning motivation through multiple pathways, including cognitive support, efficiency enhancement, and interactive engagement, while also being influenced by negative factors such as dependency and trust. The results demonstrate that AI can enhance learning motivation by reducing learning difficulty, improving efficiency, and increasing engagement, thereby satisfying learners' psychological needs for competence, autonomy, and relatedness. At the same time, excessive reliance on AI and concerns about its credibility may weaken its positive effects, highlighting the importance of balanced and reflective use.

6.2. Research contributions and limitations

This study makes several contributions. First, it provides a process-oriented understanding of how AI influences learning motivation, complementing existing outcome-focused research. Second, it identifies both facilitating and inhibiting mechanisms, offering a more nuanced perspective on AI-supported learning. Third, it proposes a theoretical model that can guide future research and practice.

From a practical perspective, the findings suggest that educators should encourage students to use AI as a supportive tool rather than a substitute for independent thinking. Instructional design should incorporate structured AI use, such as prompting students to reflect, question, and apply knowledge. In addition, improving students' digital literacy and critical evaluation skills is essential for enhancing trust and effective use of AI.

Despite its contributions, this study has some limitations. The sample size is relatively small and limited to a specific disciplinary context, which may affect generalizability. Future research could adopt mixed methods or larger samples to validate and extend the findings across different subjects and educational

settings.

In general, AI has significant potential to enhance learning motivation, but its effectiveness depends on how it is integrated into learning processes. A balanced and pedagogically guided use of AI is essential for achieving sustainable motivational outcomes.

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Disclosure statement

The author declares no conflict of interest.

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