

FOREIGN LANGUAGES AND VIETNAMESE

STUDENTS' PERCEPTIONS OF ARTIFICIAL INTELLIGENCE-DRIVEN TOOLS IN FOSTERING AUTONOMOUS LEARNING IN UNIVERSITY SETTINGS

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ABSTRACT: This study explores students' perceptions of Artificial Intelligence (AI)-driven tools in fostering autonomous learning at University of Foreign Language Studies, the University of Danang. Using Self-Determination Theory (SDT) as the framework, the research examines how AI tools impact students' autonomy, competence, and relatedness in their learning processes. The mixed-methods approach involved a survey of 250 students and follow-up interviews with 50 participants. The findings indicate that most students perceive AI tools as beneficial in enhancing their autonomy and competence, particularly through personalized feedback and self-paced learning. However, some concerns remain regarding the lack of structured guidance and reduced social interaction when using these tools. While AI supports learners in managing their educational journeys and improving their skills, its ability to fully replicate human interaction and provide deep feedback in subjective areas is limited. Based on these findings, educators are encouraged to integrate AI tools responsibly by offering scaffolding and fostering opportunities for human interaction, ensuring a balanced approach to promoting autonomous learning.

KEY WORDS: Artificial Intelligence; Autonomous Learning; Self-Determination Theory (SDT); AI-Driven Tools; AI in Language Learning.

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1. Introduction

In the last few years, the use of technology in education has increased significantly with Artificial Intelligence (AI) becoming an important tool for new learning methods. AI educational tools, like adaptive learning systems, smart tutoring programs, and automated feedback services, are being more widely used in universities worldwide. These technologies aim to customize learning, give quick feedback, and help students manage their own educational paths, encouraging independence in learning.

Autonomous learning, which includes setting goals, managing time, and monitoring one's learning progress, is crucial for success in today's fast-moving academic and work environments. In higher education, promoting student independence is especially important, notably in language studies, where learners are required frequently adapt and evaluate their own language skills. AI has potential to aid this change by personalizing and modifying their learning experiences.

However, the question remains whether AI tools can really promote independent learning. In Vietnam's education system, where traditional teaching often focuses on teacher guidance, the effectiveness of AI in promoting self-directed learning might vary. Additionally, how students view these technologies is key to understanding their real effects. It is essential to know how students see AI tools in connection to their learning independence to integrate these technologies successfully into university programs.

This study aims to explore the perceptions of students at the University of Foreign Language Studies, the University of Danang, regarding the role of AI-driven tools in fostering their autonomous learning. Specifically, this research involves participants from three faculties, including the Faculty of English Language Teaching, the Faculty of English, and the Faculty of English for Specific Purposes. With 250 participants, this study seeks to offer insights into how English majors perceive the usefulness and limitations of AI tools in enhancing their independent learning.

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By focusing on some students who are preparing for careers in language teaching, this research also aims to gain insights into how future educators perceive AI's role in influencing their own learning autonomy and its possible impact on their teaching methodologies. As AI tools become more common in education, it is crucial to understand not only their functions but also the perceptions and attitudes of those who will be using them in both learning and teaching settings.

The primary goal of this study is to explore students' perceptions of the role of Artificial Intelligence (AI)-driven tools in fostering autonomous learning at the higher institutional level. The research objectives are to examine how students perceive the role of AI-driven tools in enhancing their capacity for autonomous learning and also to provide recommendations for educators and institutions on how to effectively integrate AI-driven tools to promote autonomous learning in higher education settings.

2. Literature review

2.1. Artificial intelligence in education

The integration of artificial intelligence (AI) tools in higher education has transformed the landscape of teaching and learning, offering innovative solutions that enhance educational experiences. Various AI-driven tools, including adaptive learning systems, AI tutors, automated grading, and feedback systems, have emerged as pivotal components in this evolution. AI-driven tools that can support student learning are diverse and can be tailored to meet specific educational needs. Here are some key examples which are now widely known and used in education:

- *Adaptive Learning Platforms*: Tools like Smart Sparrow or DreamBox adjust the learning path based on students' responses and progress. They provide personalized instruction by adapting content difficulty and presentation style according to individual learner needs.

- *AI Chatbots for Tutoring*: Chatbots like ChatGPT or Duolingo's AI tutor provide real-time answers to student questions, explain concepts, and offer practice exercises. These chatbots mimic one-on-one tutoring sessions, making learning more interactive and immediate.

- *Intelligent Essay Grading Tools*: AI tools such as Grammarly or Turnitin assist students with grammar, spelling, and style feedback, as well as plagiarism detection. They also help teachers in evaluating student writing, saving time in grading.

- *Speech Recognition and Language Learning*: Tools like Rosetta Stone or Elsa Speak use AI-powered speech recognition to provide immediate feedback on pronunciation and fluency, which can enhance language learning.

- *AI-Powered Learning Management Systems (LMS)*: Platforms like Moodle or Canvas enhanced with AI algorithms can track student participation, analyze learning behaviors, and recommend personalized resources or content for students struggling in specific areas.

- *AI-Powered Flashcards and Spaced Repetition Tools*: Apps like Quizlet or Anki use AI to optimize the timing of reviewing information, helping students retain information longer through spaced repetition.

- *Virtual Teaching Assistants*: Tools like Jill Watson (a virtual assistant developed at Georgia Tech) provide administrative support, answering students' FAQs about course logistics, freeing up instructors for more complex inquiries.

- *AI-Powered Educational Content Generation*: Tools such as ScribeSense or Content Technologies Inc. use AI to automatically generate study materials, quizzes, and even whole textbooks based on course objectives or existing content.

- *AI-Driven Feedback Tools*: AI tools such as Kaizena offer personalized feedback on student assignments, providing more detailed comments on areas like structure, argumentation, or writing style.

- *Collaborative Learning Tools with AI*: Platforms like Slack or Microsoft Teams enhanced with AI can help manage group projects by tracking contributions, offering suggestions, and improving communication between students.

These AI-driven tools not only enhance personalization and efficiency in learning but also foster a more interactive and supportive learning environment. Among these AI-powered tools, AI tutors are

considered critical component of the AI toolkit in higher education. These intelligent systems can provide real-time assistance to students, simulating the role of a human tutor. For instance, studies have shown that AI tutors can effectively support students with disabilities by providing tailored feedback and encouragement, which enhances their learning experience (Thomas, 2024). The versatility of AI tutors, such as those powered by models like ChatGPT, allows them to engage in meaningful dialogues with students, answering questions and providing explanations that cater to individual learning needs (Çelik, 2023). This capability not only fosters a more interactive learning environment but also empowers students to take control of their learning journeys by seeking help when needed (Harry, 2023).

In addition to enhancing learning experiences, AI tools also raise important ethical considerations. The employment of AI in education necessitates careful attention to issues such as data privacy, algorithmic bias, and the potential for over-reliance on technology (Watanabe, 2023). As Watanabe (2024) discusses, the integration of AI in higher education should be approached with caution, ensuring that the human element of teaching is not overshadowed by technological advancements. Educators must remain vigilant in maintaining a balance between leveraging AI's capabilities and fostering critical thinking and creativity among students (Kestin, 2024).

As the field of AI in education continues to evolve, ongoing research is essential to understand its implications fully. Studies examining the effectiveness of various AI applications, such as intelligent tutoring systems and adaptive learning environments, are crucial for informing best practices and guiding future developments (Wang et al., 2023). The systematic review conducted by Zawacki-Richter et al. (2019) emphasizes the need for educators to engage with AI technologies actively, ensuring that their implementation aligns with pedagogical goals and enhances student learning outcomes.

In short, the integration of AI-driven tools in higher education has significantly transformed teaching and learning, offering personalized, efficient, and interactive solutions that cater to individual student needs. From adaptive learning platforms and AI-powered tutors to intelligent grading systems, these tools enhance autonomy and engagement in the learning process. However, their use requires careful attention to ethical considerations, such as data privacy and algorithmic bias. As AI continues to evolve, ongoing research and thoughtful implementation are essential to ensure that these technologies enhance educational experiences without overshadowing the critical human elements of teaching and learning.

2.2. Autonomous learning and the role of technology

Autonomous learning is defined as learners' abilities to control their own educational paths, encompassing the management of their learning, the cognitive processes involved, and the control over the content they engage with (Guan & Li, 2014). This concept highlights the role of student motivation and personal accountability, which are critical for creating an environment supporting self-directed education (Li, 2018). In higher education, the value of autonomous learning cannot be overstated, as it prepares students with the skills needed for lifelong learning, adaptability, and personal growth in an increasingly complex and fast-changing world (Dong, 2024).

The role of technology, especially artificial intelligence (AI) tools, in fostering autonomous learning is complex and significant. Autonomous learning refers to a self-driven way of learning where learners attempt to manage their own educational processes. This change is facilitated by AI technologies that provide tailored feedback, allow learning at one's own pace, and promote skill growth. The integration of AI in education not only enhances the learning experience but also helps students to become more self-sufficient and engaged in their learning.

One of the primary ways AI supports autonomous learning is through personalized feedback. AI systems can analyze how individuals learn and provide responses that match their specific styles of each learner. For instance, educational platforms with AI can assess a student's performance in real-time, determining their strengths as well as weaknesses. This instant feedback allows learners to adjust their learning strategies accordingly, helping them to understand the contents better (Quinde, 2024). Research indicates that when learning experiences are personalized, students feel more engaged and

motivated in their educational journey (Lee et al., 2022). Furthermore, the ability of AI to adapt to various learning styles ensures that different types of learners can gain benefits from customized educational experiences, thus promoting inclusivity in learning environments (Jerbi, 2023).

Along with personalized feedback, learning at one's own pace is another critical aspect of how AI tools support autonomous learning. Self-directed learning allows students to progress through educational content at their own speed, meeting individual learning preferences and schedules. AI technologies can support this by giving learners access to resources anytime and from anywhere, which helps remove traditional obstacles to education (Wang et al., 2023). Research has shown that self-paced learning models can result in better information retention and higher satisfaction among learners, as they can revisit challenging topics without the pressure of strict deadlines (Li et al., 2018). Moreover, AI systems can aid learners in setting achievable goals and monitoring their progress, encouraging a sense of responsibility and motivation to continue their studies (Lee et al., 2022).

Skill development is another key area where AI tools play a pivotal role in supporting autonomous learning. AI can facilitate the acquisition of new skills by providing interactive and engaging learning experiences. For example, AI-based simulations and virtual environments allow learners to practice real-world skills in a safe and controlled setting (Joshi, 2021). This hands-on learning approach is particularly useful in fields such as medicine, engineering, and technology, where hands-on practice is vital for mastery (Gao et al., 2020). Additionally, AI can analyze a learner's performance in these simulations, highlighting areas that require further improvement and suggesting targeted resources for skill enhancement (Adve, 2024). This feature not only accelerates the learning process but also guarantees that learners are well-prepared for practical applications of their knowledge.

2.3. Self-Determination Theory (SDT)

Self-Determination Theory (SDT) offers a comprehensive framework for understanding human motivation, development, and well-being, claiming that the fulfillment of three basic psychological needs - *autonomy*, *competence*, and *relatedness* - is crucial for optimal functioning and personal growth. Developed by Edward L. Deci and Richard M. Ryan (2008), SDT makes a distinction between different types of motivation, underscoring the importance of intrinsic motivation, coming from within the individual, as opposed to extrinsic motivation, which is fueled by demands, rewards or pressures from outside the individual (Deci & Ryan, 2008).

Autonomy refers to the need to be in charge of one's own decisions and actions. It consists of the sense of freedom and choice in one's activities, allowing people according to their values and interests. Studies indicate that when individuals perceive their environment as supportive of autonomy, they are more likely to engage in self-determined behaviors that contribute to their motivation and well-being (Deci & Ryan, 2008). For instance, in educational settings, teaching practices that support autonomy have been proved to increase student engagement and internal motivation, leading to better academic performance.

Competence involves the need to feel effective and skills when interacting with the environment. It involves the desire to overcome challenges and achieve goals, which leads to a sense of self-efficacy. Studies have indicated that when individuals experience success and receive positive feedback, their sense of competence is enhanced, which in turn boosts greater intrinsic motivation (Carlson et al., 2017). In various fields, such as health and education, the satisfaction of the competence need has been associated with improved performance and well-being (Shackleford et al., 2022).

Relatedness is the desire to feel connected to others, to have a sense of belonging and acceptance. This need underscores how social relationships and community are key for motivation and well-being. Studies suggest that meeting the need for relatedness can greatly affect individuals' motivation levels and overall satisfaction in various life domains, including education and healthcare (Avcı & Montilla, 2022). For instance, positive social settings can enhance motivation by giving individuals a sense of belonging, which is vital for their mental health (Bavare et al., 2018).

2.4. AI-driven tools and self-determination theory

The integration of artificial intelligence (AI) tools in educational contexts has sparked significant interest in understanding their impact on the three fundamental elements of Self-Determination Theory (SDT): *autonomy*, *competence*, and *relatedness*. These elements are crucial for fostering intrinsic motivation and overall well-being among learners.

Autonomy, as defined by SDT, refers to the need for individuals to feel in control of their own behaviors and goals. AI tools can enhance this sense of autonomy by providing personalized learning experiences that cater to individual preferences and learning styles. For instance, Dutt (2023) highlights that AI can facilitate autonomy in medical education by allowing students to navigate their learning paths and make choices that align with their interests and goals. Similarly, Chai et al. (2022) discusses how AI applications can empower students by enabling them to engage in self-directed learning, thereby fostering a sense of agency and ownership over their educational experiences. However, there is a potential downside; if AI tools are overly prescriptive or limit choices, they may inadvertently undermine autonomy. For example, if students feel that AI systems dictate their learning processes without room for personal input, their sense of autonomy may be compromised (Moradbakhti et al., 2022).

Competence, the second element of SDT, pertains to the need to feel effective and capable in one's activities. AI tools can support competence by providing immediate feedback and adaptive learning environments that challenge students appropriately. Xia et al. (2023) found that AI chatbots could mediate the relationship between prior knowledge and self-regulated learning, suggesting that these tools can enhance learners' competence by scaffolding their learning experiences. Furthermore, Rahayu (2024) asserts that AI can improve writing competence by offering tailored feedback that aligns with individual writing styles and goals. However, the effectiveness of AI in fostering competence may depend on the quality of the AI tool. Poorly designed AI systems that fail to provide constructive feedback or misinterpret user inputs can lead to feelings of inadequacy and frustration, thus hindering the development of competence.

Relatedness, the third element of SDT, involves the need to feel connected to others. AI tools can foster relatedness by facilitating communication and collaboration among learners. For example, Hui et al. (2019) emphasize that AI can enhance social interactions in gaming contexts, thereby supporting relatedness among players. Additionally, he also suggests that AI can create supportive social environments that promote the satisfaction of basic psychological needs, including relatedness. However, there is a risk that reliance on AI for social interactions may lead to superficial connections, potentially diminishing the quality of interpersonal relationships. Moradbakhti et al. (2022) argue that while AI can facilitate social interactions, it may not fully replace the depth of human connections necessary for genuine relatedness.

Moreover, the interplay between these three elements is critical in understanding the overall impact of AI tools on motivation and well-being. For instance, the satisfaction of autonomy and competence can enhance relatedness, as learners who feel capable and in control are more likely to engage positively with peers. Conversely, if AI tools undermine any of these needs, it can lead to negative effects on motivation and engagement. For example, if students perceive AI as a threat to their autonomy, they may be not interested in collaborative learning opportunities, thereby reducing relatedness.

The role of AI in educational contexts also raises questions about the ethical implications of its use. As AI tools become more prevalent, it is essential to consider how they may inadvertently perpetuate biases or inequalities that affect the satisfaction of psychological needs. For instance, if AI systems are designed without considering diverse learner needs, they may favor certain groups over others, thereby undermining the relatedness and competence of marginalized students. This highlights the importance of inclusive design practices that prioritize the diverse needs of all learners when developing AI tools for educational purposes.

3. Research methodology

This study adopts a mixed-methods approach to explore students' perceptions of the role of Artificial Intelligence (AI)-driven tools in fostering autonomous learning. Self-Determination Theory (SDT) will be used as the guiding framework to investigate how AI tools impact the three core dimensions of autonomy, competence, and relatedness in the learning process.

3.1. Research design

The study employed an explanatory sequential mixed-methods design to explore students' perceptions of AI-driven tools in fostering autonomous learning. In the quantitative phase, a survey was administered to gather data from students on how AI tools support their learning, with a particular focus on the key components of Self-Determination Theory (SDT): autonomy, competence, and relatedness. This phase provided a broad understanding of students' perceptions and allow for the identification of overall trends. Following this, the qualitative phase will involve semi-structured interviews with a subset of participants, offering an opportunity to gain deeper insights into their experiences and perceptions. These interviews helped contextualize the survey findings, adding depth by examining individual perspectives on how AI tools impact their autonomous learning.

3.2. Participants

This study involves 250 students from the University of Foreign Language Studies, University of Da Nang, representing the Faculty of English Language Teaching, the Faculty of English, and the Faculty of English for Specific Purposes. These students actively use a variety of AI-driven tools in their studies, such as AI-based writing assistants, language learning apps, and systems checking plagiarism. Their regular use of these technologies, ranging from automated feedback tools to interactive learning platforms, ensures that they have substantial experience with AI in educational contexts. This purposive sampling was used to focus on students who can share views on how AI tools influence their autonomous learning.

3.3. Data collection

The survey for the quantitative part of this study was designed based on the key aspects of Self-Determination Theory (SDT), focusing on students' perceptions of how AI-driven tools influence their autonomy, competence, and relatedness in the learning process. Specifically, this Likert-scale survey was adapted from the Basic Psychological Needs Scale (BPNS) which has been developed by Deci and Ryan (2000), the creators of SDT and has been widely used in various educational contexts.

In Section 1 - Autonomy: The questions look at how AI tools help students take charge of their learning. They can make choices and manage their own learning paths. An example question for this section is, "*AI tools allow me to choose the pace and direction of my learning.*".

In Section 2 - Competence: The questions assess how effectively AI tools help students feel more capable and improve their learning outcomes. For instance, students respond to statements such as, "*AI tools provide feedback that helps me improve my learning and feel more competent.*".

Finally, Section 3 - Relatedness: This focuses on how AI tools contribute to students' sense of connection within their learning environment, with questions like, "*Using AI tools helps me feel more connected to my learning community.*"

In the qualitative phase, a subset of approximately 50 participants were invited to take part in in focus group interviews to collect more in-depth information about their perceptions of how AI tools support their autonomous learning. These semi-structured interviews allowed for deeper insights into both individual and collective experiences. The group setting promoted open sharing and discussion among participants, leading to a better grasp of common topics and differing opinions. Sample interview questions include: "*Can you describe how AI tools help you take more control of your learning process?*", "*Do AI tools make you feel more capable of managing your academic work on your own? If so, how?*", and "*How do AI tools influence your sense of connection to the learning process, your classmates, or instructors?*" The interviews took place either face-to-face or via video conferencing, depending on participants' availability and preferences. All interviews were recorded and

transcribed for later analysis, ensuring a detailed examination of the data to identify key themes related to autonomy, competence, and relatedness as outlined by Self-Determination Theory (SDT).

3.4. Data analysis

The data analysis in this study involved both quantitative and qualitative methods to ensure a comprehensive understanding of students' perceptions of AI-driven tools in fostering autonomous learning. For the quantitative data, survey responses were analyzed using statistics to highlight general patterns in how students felt about autonomy, competence, and relatedness in relation to the use of AI tools. The analysis was conducted using SPSS software to ensure accuracy and robustness in the statistical findings. For the qualitative data, interview transcripts from the focus group sessions underwent thematic analysis. This process allowed for the findings of recurring themes related to students' experiences with AI tools, particularly in how these tools facilitate their autonomous learning based on the SDT framework.

4. Findings

The purpose of this study was to explore students' perceptions of AI-driven tools which contribute to fostering autonomous learning through the lens of Self-Determination Theory (SDT), which includes *autonomy*, *competence*, and *relatedness*. The results come from a survey of 250 participants and follow-up interviews with 50 students. Overall, the findings demonstrate that the majority of students perceive AI tools as beneficial in promoting their independent learning, while there are still worries about the limitations and challenges associated with these tools.

Autonomy:

Quantitative data from the survey indicate that most students perceive AI tools as enhancing their autonomy in the learning process. Approximately 80% of participants either agreed or strongly agreed with the statement that *"AI tools allow me to choose the pace and direction of my learning."* Similarly, 75% of students felt that AI tools give them more freedom to manage their learning, particularly in terms of pacing and decision-making. These findings suggest that AI-driven tools are widely viewed as enabling students to take greater control of their educational experience, supporting the key SDT component of autonomy.

In the qualitative interviews, students repeated these ideas, with many participants stating that AI tools, such as adaptive learning platforms and AI-driven tutoring systems like ChatGPT, enable them to work at their own pace and tailor their learning experiences to their specific needs. One student noted, *"ChatGPT let me go over difficult topics as many times as I need without feeling rushed, which helps me stay on track with my learning goals."* Another participant emphasized the flexibility AI tools provide, saying, *"I can study whenever I want, and I don't have to wait for a teacher's availability to ask questions. Duolingo helps me feel more in control."*

However, not all students were equally enthusiastic. A minority of participants (about 15%) expressed concerns about the autonomy provided by AI tools. Some students mentioned feeling overwhelmed by the lack of structured guidance and the need for self-discipline. One student commented, *"While these tools give me freedom, sometimes I want to have a teacher set a schedule for me. I tend to procrastinate without deadlines."* These concerns indicate that while AI tools generally support autonomy, some students may require additional scaffolding to fully benefit from this freedom.

Competence:

The second component of SDT, *competence*, was also positively perceived by most students in relation to AI tools. Survey results show that 86% of students agreed or strongly agreed that *"AI tools provide feedback that helps me improve my learning and feel more competent."* Furthermore, 82% reported feeling more confident in their ability to handle academic tasks independently due to the feedback and personalized recommendations offered by AI-driven systems.

Interview data further support these findings. Students frequently mentioned that AI tools, such as Grammarly or Turnitin or Elsa Speak, give them immediate feedback on their work, allowing them to correct mistakes and improve their performance. As one student put it, *"AI tools give me instant*

feedback, which helps me see where I went wrong and how I can improve. It makes me feel more confident because I know I'm making progress." Another student highlighted the specific benefits of AI in language learning, stating, *"It has really helped me feel more competent in my English-speaking skills."*

Despite the overall positive perception, a small portion of students (around 17%) raised concerns about the accuracy of AI feedback. Some expressed doubts about whether AI tools could fully replace human judgment in more subjective areas, such as essay writing or complex problem-solving. One student remarked, *"Grammarly can be good for grammar checks, but they don't always give meaningful feedback on my ideas or arguments. I still feel like I need a teacher for that."* This suggests that while AI tools are valuable in fostering a sense of competence, they may be less effective in areas requiring deeper critical analysis.

Relatedness:

The survey results for the relatedness component of SDT were slightly more mixed. While 70% of students agreed that *"Microsoft Teams can help me feel more connected to my learning community,"* the remaining participants were either neutral or disagreed with this statement. These findings suggest that although AI tools offer some degree of support in creating a sense of connection, they are not perceived as strongly in this regard compared to autonomy and competence.

In the interviews, students provided more insight into this aspect. Some participants reported that AI tools, such as discussion platforms and collaborative learning apps, helped them stay connected to peers and instructors, particularly in online learning environments. One student shared, *"Microsoft Teams or Google Doc make it easier to collaborate with my classmates on group projects, even when we're not physically together."* Another added, *"They also keep the discussions organized, which helps me feel part of the learning community."*

However, other students expressed concerns that AI tools sometimes reduce the sense of human connection in learning. A participant commented, *"These tools are great for individual work, but I miss the personal interaction with my teachers and classmates. It feels a bit isolating sometimes."* Another student echoed this point of view saying, *"While AI tools provide useful information, they can't replace the feeling of a real conversation with a teacher or peer."* These responses indicate that while AI-driven tools can facilitate communication, they may not fully satisfy students' need for social interaction and belonging in the learning environment.

Overall, the findings from both the quantitative and qualitative data indicate that students generally perceive AI-driven tools as beneficial for fostering their autonomous learning, particularly in terms of autonomy and competence. Most students feel that AI tools provide them with greater control over their learning and offer valuable feedback that enhances their confidence and performance. However, there are concerns among a minority of students regarding the potential lack of structure in autonomous learning and the limitations of AI in providing meaningful social connections and feedback in subjective areas.

5. Discussion

The purpose of this study was to explore students' perceptions of AI-driven tools in fostering autonomous learning, using Self-Determination Theory (SDT) as a theoretical framework. This discussion section interprets the findings from both the survey and interviews in light of the existing literature on autonomous learning, motivation, and the role of AI tools, focusing on the three key SDT components: autonomy, competence, and relatedness.

The findings of this study strongly support the idea that AI-driven tools can enhance students' autonomy in the learning process, aligning with existing research on autonomous learning. As highlighted by Guan and Li (2014), autonomous learning involves students taking charge of their educational processes, which was evident in how 80% of survey respondents agreed that AI tools allow them to manage their learning pace and direction. These findings resonate with Li (2018), who

emphasizes the importance of student control over content and process in fostering autonomous learning.

The qualitative data from this study reinforce the literature on the role of technology in promoting autonomy. Many students reported that AI tools such as adaptive learning platforms enable them to study at their own pace, reflecting the literature on personalized learning experiences provided by AI tools (Quinde, 2024). This personalized approach aligns with Self-Determination Theory, which posits that autonomy-supportive environments enhance intrinsic motivation (Deci & Ryan, 2008). The ability to tailor learning experiences helps students feel more in control, further promoting their self-directed learning.

However, the study also identified challenges related to autonomy, as some participants reported feeling overwhelmed by the freedom AI tools provide, preferring more structured guidance. This concern echoes Li's (2022) observation that while autonomy is essential, too much freedom without adequate support can be detrimental to learning, especially in self-paced environments. These findings suggest that while AI tools can promote autonomy, additional scaffolding is needed for some students to fully benefit from these tools. Educators may need to balance offering autonomy with providing sufficient structure, as over-reliance on self-discipline may undermine the effectiveness of AI tools for certain learners.

As for *competence*, the findings also indicate that AI tools significantly contribute to fostering students' sense of competence. This supports the literature on the role of feedback in enhancing competence, as AI tools offer immediate, personalized feedback that helps students monitor their progress (Rahayu, 2024). The ability of AI-driven tools like Grammarly and Turnitin to provide instant feedback aligns with Xia et al. (2023), who found that AI tools facilitate self-regulated learning by scaffolding the learning experience.

The immediate feedback provided by AI tools helps students feel more effective in their academic tasks, a key factor in promoting intrinsic motivation according to SDT (Deci & Ryan, 2008). This increased sense of competence is critical for academic success, as supported by Carlson et al. (2017), who demonstrated that when students receive positive feedback, their motivation and performance improve. The personalized feedback provided by AI tools enhances students' self-efficacy, making them feel more capable and confident in their learning abilities.

Nonetheless, some students expressed concerns about the limitations of AI feedback, particularly in more subjective tasks such as essay writing or complex problem-solving. This echoes Joshi (2021), who highlights that while AI tools are effective in providing basic feedback, they may not fully replace human judgment in areas that require deeper critical thinking. These findings suggest that while AI tools are beneficial for fostering competence, they should be used alongside human feedback, especially in tasks requiring higher-order cognitive skills.

The study's findings regarding relatedness were more mixed, with 70% of students agreeing that AI tools helped them feel connected to their learning community. This supports the idea that AI tools can facilitate communication and collaboration, particularly in online learning environments, as suggested by Hui et al. (2019). AI-driven discussion platforms and collaborative learning apps were noted by students as effective tools for staying connected with peers and instructors, which is consistent with Jerbi's (2023) work on AI fostering inclusivity in learning environments.

However, the remaining participants were either neutral or disagreed, indicating that AI tools might not fully satisfy students' need for social interaction and relatedness. As emphasized by Moradbakhti et al. (2022), while AI tools can facilitate interactions, they may not replicate the depth of human connection necessary for fostering a strong sense of belonging. Students in the qualitative interviews expressed that AI tools, while efficient, could feel isolating and lacked the personal touch of direct human interactions. This aligns with Avcı & Montilla (2022), who argue that supportive social environments are crucial for maintaining motivation and engagement, and that AI may struggle to fully replicate this aspect.

These findings suggest that while AI-driven tools can promote relatedness, particularly in online learning contexts, there remains a need for more direct human interaction to fulfill students' social needs. SDT highlights the importance of relatedness in fostering motivation, and educators should consider blending AI-driven tools with opportunities for real-time, human interactions to create a more holistic learning environment.

6. Conclusion and recommendations

Overall, students perceive AI tools as beneficial in fostering autonomy and competence, with personalized feedback and self-paced learning enhancing their learning experience. However, concerns remain about the potential for reduced social interaction and the limitations of AI in providing comprehensive feedback on more subjective tasks.

Based on the findings of the study, it is suggested that to increase the effectiveness of AI-driven tools in fostering autonomous learning, educators should consider incorporating scaffolding to guide students who may struggle with self-discipline and providing opportunities for direct human interaction to enhance relatedness. These considerations will ensure that AI tools not only support students in becoming more independent learners but also foster a sense of belonging and community, critical for motivation and academic success.

Based on the findings and discussion of this study, several key recommendations can be made to educators and institutions to effectively integrate AI-driven tools in a way that promotes autonomous learning in higher education settings. As educators, we should not deny the role of AI in education or prevent students from using these tools. Instead, we should embrace AI as a valuable resource that can enhance learning and promote autonomy. AI-driven tools have the potential to empower students by offering personalized feedback, supporting self-paced learning, and enabling collaborative opportunities. However, it is crucial to guide students in using these tools responsibly, ensuring that they complement, rather than replace, critical thinking and deeper learning processes. Educators should teach students how to leverage AI to enhance their learning while maintaining academic integrity and fostering creativity. By integrating AI thoughtfully into the learning environment, we can help students develop the skills needed to succeed in a technology-driven world, preparing them for both academic and professional challenges.

In general, students view AI tools as useful for promoting independence and competence, as personalized feedback and learning at their own pace significantly improve their educational experience. Nonetheless, there are ongoing worries regarding the decrease in social interaction and AI's limitations in delivering thorough feedback on more subjective assignments.

The study's findings recommend that to boost the effectiveness of AI tools in promoting independent learning, educators should integrate scaffolding to assist students who may find self-discipline challenging, along with creating chances for direct human interaction to strengthen connections. By considering these factors, AI tools can help students become more self-sufficient learners while also nurturing a sense of belonging.

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Nhận thức của sinh viên về các công cụ sử dụng trí tuệ nhân tạo trong việc thúc đẩy học tập tự chủ trong môi trường đại học

Tóm tắt: Nghiên cứu này nhằm tìm hiểu nhận thức của sinh viên về các công cụ sử dụng trí tuệ nhân tạo (AI) trong việc thúc đẩy học tập tự chủ tại một cơ sở giáo dục đại học ở miền Trung Việt Nam. Sử dụng Lý thuyết Tự quyết (SDT) làm khung lý thuyết, nghiên cứu này xem xét cách các công cụ AI ảnh hưởng đến quyền tự chủ, năng lực và sự kết nối của sinh viên trong quá trình học tập. Phương pháp hỗn hợp đã được áp dụng, bao gồm khảo sát 250 sinh viên và phỏng vấn nhóm với 50 người tham gia. Kết quả cho thấy phần lớn sinh viên nhận thấy các công cụ AI có lợi trong việc tăng cường năng lực học tập tự chủ, đặc biệt thông qua phản hồi cá nhân hóa và tự điều chỉnh quá trình học tập. Tuy nhiên, vẫn có một số lo ngại về sự thiếu hướng dẫn theo lộ trình và sự giảm tương tác xã hội khi sử dụng các công cụ này. Mặc dù AI hỗ trợ sinh viên trong việc quản lý quá trình học tập và nâng cao kỹ năng, khả năng của nó trong việc thay thế hoàn toàn tương tác con người và cung cấp phản hồi chuyên sâu trong một số tác vụ còn hạn chế. Dựa trên kết quả này, các nhà giáo dục được khuyến nghị tích hợp các công cụ AI một cách có trách nhiệm bằng cách cung cấp thêm hướng dẫn và tạo điều kiện cho sự phối hợp giữa người dạy và AI, đảm bảo một cách tiếp cận cân bằng trong việc thúc đẩy học tập tự chủ.

Từ khóa: trí tuệ nhân tạo; học tập tự chủ; lý thuyết tự quyết (SDT); công cụ AI; AI trong dạy học ngoại ngữ.