

People's Democratic Republic of Algeria

Ministry Of Higher Education and Scientific Research

Abbes Laghrour Khenchela- University

Faculty of Letters and Languages

Department of English



**Enhancing Self-Directed Learning through AI Tools in Higher Education
Among Master Two Students at the Department of English at Khenchela
University**

Dissertation Submitted to the Department of English in Partial Fulfilment of
the Requirements for the Degree of Master in Language and Culture.

Domain: Letters and Foreign Languages

Major: Didactic

Submitted by:

***Marir Amira**

***Làaouar Manar**

Supervised by:

***Dr Ounis Salim**

Board of Examiners

	University of khenchela	President
Dr Ounis Salim	University of khenchela	Supervisor
	University of khenchela	Examiner

2024/2025

Dedication 1

First and foremost, I thank Allah for His endless mercy, strength, and blessings that guided me throughout this journey.

To my beloved family—thank you for your unconditional love, support, and sacrifices. Your faith in me has been my greatest motivation.

To my wonderful friends, Dounia and Manar—your constant encouragement, laughter, and friendship have been a true gift during this challenging yet rewarding experience.

To my supervisor, Mr. Ounis Salim—thank you for your patience, your insightful guidance, and your belief in my potential. Your mentorship has been a key part of this achievement.

Each of you has contributed in a unique and meaningful way.

I am truly grateful for your presence in my life.

Dedication

To my beloved family—my parents, whose sacrifices lit the path for my dreams; my siblings, whose laughter kept me grounded; and my extended family, whose unwavering faith in me gave me strength. You are my foundation, and every step forward is because of your love.

To my dearest friends, the ones who stood by me through sleepless nights, moments of doubt, and small victories—your encouragement was the fuel that kept me going. You taught me the true meaning of loyalty and joy.

To my mentors and teachers, who saw potential in me even when I couldn't. Your wisdom challenged me, your patience guided me, and your belief shaped who I am today.

And finally, to anyone who has ever felt lost, unsure, or afraid to take the next step—this is for you. May you always find the courage to keep going, because even the longest journey begins with a single step.

Acknowledgements

I would like to express my sincere gratitude to Dr. Salim Ounis for his exceptional guidance, support, and encouragement throughout the course of this work. His expertise, patience, and insightful feedback have been invaluable to the completion of this project, and I am truly fortunate to have had him as my supervisor. I also extend my heartfelt thanks to the Department of English for providing a supportive academic environment and the resources necessary for conducting this research. To my friends and colleagues, thank you for your encouragement, collaboration, and the many moments of support along the way. Lastly, I am deeply grateful to my family for their unconditional love, patience, and belief in me throughout this journey.

Abstract

This study investigates how AI tools—such as ChatGPT, adaptive learning platforms, and intelligent tutoring systems—support or hinder SDL among Master two students at the department of English at Khenchela University. Specifically, it explores the roles of AI literacy and learner autonomy in shaping personalized learning experiences and educational outcomes. Adopting a convergent parallel mixed methods design, the study collected quantitative data via structured surveys (n=50) and qualitative insights through semi-structured interviews. Findings reveal that AI tools enhance students' ability to personalize learning paths, and maintain motivation. However, concerns emerged regarding overreliance and reduced metacognitive engagement as it may diminish opportunities for creative exploration and critical thinking if not appropriately integrated.

Key words: Artificial Intelligence, Higher Education, Personalized Learning, Adaptive learning platforms, Learner Autonomy.

List of acronyms and Abbreviations

AI–Artificial Intelligence

HE– Higher Education

HEIs– Higher Education Institutions

ML_Machine Learning

NLP – Natural Language Processing

ITS– Intelligent Tutoring System

ALP – Adaptive Learning Platform

LMS – Learning Management System (e.g., Moodle, Blackboard)

DL– Deep Learning

LLM– Large Language Model (e.g., ChatGPT, Gemini)

Edtch– Educational Technology

STEM –Science, Technology, Engineering, and Mathematics

OER– Open Educational Resources

MOOCs – Massive Open Online Courses

VR/AR– Virtual Reality / Augmented Reality

LA– Learning Analytics

BI– Business Intelligence (institutional data analysis

GDPR– General Data Protection Regulation (data privacy)

AIED – Artificial Intelligence in Education

UNESCO– United Nations Educational, Scientific and Cultural Organization (global policy influence)

List of figures

1. Effectiveness of AI
2. Improving learning resource Quality through AI-driven recommendations.
3. Using AI increases my motivation to engage in self-directed learning
4. AI-generated feedback keeps me motivated to continue learning
5. Autonomy and control
6. AI systems sometimes hinder my ability to explore topics creatively
7. Trust and ethics
8. I am concerned about biases in AI recommendations for learning
9. Future outlook
10. Self-learning will become more effective as AI technology advances

Contents

Dedication.....	i
Acknowledgments.....	iii
Abstract.....	iv
List of acronyms and abbreviations.....	v
List of figures.....	vi
Content	vii

General introduction

1. Background of the study.....	01
2. Statement of the problem.....	02
3. Research questions.....	03
4. Objectives.....	03
5. Research methodology and design.....	04
6. Significance of the study.....	04
7. Limitations.....	05
8. Definition of terms.....	05
9. Structure of the study.....	05

Chapter one: Artificial intelligence and self- directed learning

Introduction.....	06
1. Previous studies on Artificial Intelligence and Self-Directed Learning at the University Level.....	06
Conclusion.....	10

Chapter two: Data analysis and interpretation

Introduction.....	11
II.1 Results of the questionnaire.....	11
II.2 Results of the interview.....	17
II.2 Discussion of the results.....	19
Conclusion.....	21
General conclusion.....	22
List of References.....	23
Appendices.....	25
Appendix A: Questionnaire.....	25
Appendix B: Interview.....	30
Résumé ملخص.....	31

General Introduction

1. Background of the study

Artificial Intelligence (AI) has emerged as a transformative force in higher education, reshaping the ways students interact with content, receive feedback, and manage their learning. Simultaneously, the emphasis on *self-directed learning* (SDL) has intensified, with universities increasingly expecting learners to take ownership of their learning goals, strategies, and evaluations. These trends have converged with the rise of powerful AI tools—such as large language models (LLMs), intelligent tutoring systems, and AI-assisted writing platforms—that support various dimensions of SDL, including planning, information seeking, self-monitoring, and reflection (Yu et al., 2025; Long et al., 2025). For instance, recent studies indicate that students often use tools like ChatGPT for ideation and early-stage task support, enhancing their ability to initiate and shape learning tasks (Roe & Perkins, 2024; Zhang et al., 2024).

Despite growing enthusiasm, several critical gaps remain in understanding the relationship between AI and SDL. First, many existing studies focus on either the technological affordances of AI or the pedagogical underpinnings of SDL, with limited research on their intersection (Roe & Perkins, 2024). Second, while AI tools can support learner autonomy, they may also risk promoting dependency or reducing metacognitive engagement, especially when learners lack the skills to critically evaluate AI outputs (Long et al., 2025). Third, the factors that influence students' sustained use of AI tools for SDL—including perceptions of autonomy, usefulness, and competence—are still underexplored (Cheng et al., 2024). Lastly, there is a need to understand how diverse student populations interact with AI across disciplines, contexts, and cultures (Ogundipe et al., 2025).

This study aims to investigate how AI tools are integrated into students' self-directed learning practices at the university level. Specifically, it explores how students perceive and utilize AI in support of learning autonomy, motivation, and strategy use. Drawing on recent conceptual frameworks such as the AI-Educational Development Loop (AI-EDL) (Yu et al., 2025) and empirical insights into self-regulated and AI-literate learner profiles (Long et al., 2025), this research will examine the conditions under which AI enhances or undermines SDL. By focusing on both student experience and institutional contexts, this study seeks to contribute to a more nuanced understanding of AI's role in fostering meaningful, sustainable self-directed learning in higher education.

2. Statement of the Problem

The rapid adoption of Artificial Intelligence (AI) tools—such as ChatGPT, intelligent tutoring systems, and adaptive learning platforms—has significantly reshaped the higher education landscape. These technologies offer unprecedented opportunities to support self-directed learning (SDL) by providing personalized feedback, enhancing motivation, and enabling learners to take greater control over their educational journeys. However, emerging evidence indicates that many university students lack the necessary AI literacy to use these tools critically and effectively. Without appropriate skills in prompting, evaluating, and verifying AI-generated content, students risk becoming over reliant on these technologies, undermining the very autonomy and metacognition that SDL is meant to cultivate.

Moreover, most existing research has focused either on the affordances of AI or the theoretical foundations of SDL, with limited empirical work examining their intersection—particularly in

terms of how AI literacy interventions influence actual learning behaviors and outcomes. There is also a lack of robust, data-driven studies investigating how students integrate AI into their daily learning processes and how such integration affects their ability to set goals, monitor progress, and reflect critically.

This gap in the literature is especially pressing as universities increasingly promote learner autonomy and digital fluency. Without evidence-based strategies to support responsible and effective AI use, educational institutions may inadvertently widen disparities in student learning outcomes and digital competence. Therefore, it is essential to explore whether structured AI literacy training can enhance students' SDL capacities, encourage meaningful engagement with AI tools, and ultimately improve academic performance and learner agency.

3. Research Questions

- A.** How can artificial intelligence enhance personalized learning experiences in higher education?
- B.** What are the long-term implications of AI on the roles of educators and students in higher education?

4. Objectives of the study

- A.** To find out how artificial intelligence can enhance personalized learning experiences in higher education
- B.** To determine how artificial intelligence can enhance personalized learning experiences in higher education

5. Research Methodology and Design

This study adopts a convergent parallel mixed methods design (Creswell & Plano Clark, 2018) to explore how AI enhances personalized learning and its long-term implications on educational roles. Quantitative data will be collected through structured surveys measuring AI use, personalization, and perceptions of role changes among 50 students. Concurrently, qualitative data will be gathered via semi-structured interviews to capture in-depth experiences and perspectives. Data will be analyzed separately using descriptive/inferential statistics (SPSS) and thematic analysis (Braun & Clarke, 2006), then merged through joint displays for integration (Fetters et al., 2013). This design supports triangulation, enhances validity, and provides a holistic view of AI's educational impact. The method is well-suited for addressing both objective patterns and subjective insights, ensuring practical relevance for higher education stakeholders (Johnson & Onwuegbuzie, 2004). Ethical approval will be obtained, and all participants will provide informed consent.

6. Significance of study

This study is significant for students, educators, and administrators, as it addresses their unique needs and perspectives in the evolving landscape of higher education shaped by artificial intelligence (AI). Here's how each stakeholder group benefits:

A. Students

- **Personalized Learning:** AI can tailor learning experiences to individual needs, making education more accessible and engaging for diverse student populations.
- **Skill Development:** The study highlights how AI prepares students for an AI-driven workforce by fostering critical skills such as adaptability, problem-solving, and technological literacy.

B. Educators

- **Enhanced Teaching Practices:** Provides insights into how AI can assist educators in personalizing instruction, automating repetitive tasks (e.g., grading), and focusing on more meaningful interactions with students.
- **Role Evolution:** Explores the changing role of educators in an AI-driven environment and offers strategies for adapting to these changes while maintaining professional agency.

7. Limitation of the study

Limited Geographic Scope: This study is limited to master two students in the department of English at the university of Khenchela which could affect the applicability of the findings to a broader global context. Educational systems and AI adoption rates differ significantly across regions.

8. Structure of the study

The work is divided into two chapters,

Literature Review about Artificial Intelligence and Self-Directed Learning at the University Level. It highlights key trends, challenges, and opportunities related to AI in higher education as well as the existing gaps in the current knowledge base. Chapter two is devoted to data analysis and interpretation.

Chapter One : Previous Studies on Artificial Intelligence and Self-Directed Learning at the University Level

Introduction

This chapter is concerned with Artificial Intelligence and Self-Directed Learning at the University Level. It highlights key trends, challenges, and opportunities related to AI in higher education as well as the existing gaps in the current knowledge base.

Previous studies

The rapid expansion of the Internet of Things (IoT) has significantly transformed education by enabling seamless connectivity among devices, services, and data sources. This digital ecosystem has broadened access to educational resources across diverse geographic contexts, fostering more flexible, interactive, and inclusive online learning environments. However, effective implementation of these environments depends on robust technological infrastructure, educator preparedness, and equitable access (J. Soc. Stud. Educ. Res., 2024, pp. 305–352).

Within this evolving landscape, the Education 4.0 model and the emerging Education 5.0 approach are redefining teaching and learning paradigms. Both frameworks emphasize personalized, adaptable, and collaborative pedagogies integrating human intelligence with intelligent systems. Education 5.0, in particular, envisions a synergy between human and artificial intelligence to enhance cognitive capacities beyond traditional educational boundaries (J. Artif. Intell. Robot., 2023, pp. 29–43).

As education increasingly transitions to digital platforms, cultivating student autonomy in managing learning processes becomes paramount. Self-regulated learning (SRL) has emerged as a vital methodology to promote independence and effective learning management in both

physical and virtual settings (J. Adv. Nurs., 2025, pp. 3811–3820). The rise of online education has further accentuated the need to develop strong self-directed learning (SDL) skills, enabling students to take ownership of their learning journeys (Comput. Educ., 2014, pp. 150–160).

Artificial intelligence (AI) has attracted considerable attention in educational research due to its ability to mimic human cognitive functions such as reasoning, planning, and decision-making. Its application has led to innovative tools—intelligent tutoring systems, data mining, natural language processing, and educational robots—that support personalized learning across disciplines. AI technologies analyze student data related to interests, performance, and behavior, allowing tailored content delivery and learning activities (Orem, UT, USA, 2023, pp. 245–249).

Beyond personalization, AI automates routine tasks such as grading and instant feedback, enhancing the dynamism and efficiency of learning experiences. These capabilities foster learner autonomy and encourage active engagement in digital environments, both essential to self-directed learning (Hershey, PA, USA, 2023, pp. 146–157).

User attitudes toward digital technologies are strongly influenced by perceived usefulness and digital competence. Familiarity and perceived benefits increase active, sustainable adoption, facilitating deeper integration of AI tools into educational practice (Int. J. Hum. Comput. Interact., 2025, pp. 641–650).

The theory of self-directed learning has roots in adult education, with Malcolm Knowles (1975) pioneering its systematic study. Knowles conceptualized SDL as a process where learners take initiative—independently or with assistance—to diagnose needs, set goals, identify resources, implement strategies, and evaluate outcomes. He emphasized SDL’s importance in adulthood,

highlighting a shift from teacher-centered to learner-centered models (Arch. Dis. Child., 1996, pp. 357–359). Allen Tough further expanded this understanding by identifying “learning projects” adults undertake outside formal education to acquire or modify skills (Toronto, ON, Canada, 1971, pp. 59–64).

SDL, as defined by Kim et al., involves individuals taking responsibility for their learning within a structured framework aimed at achieving educational goals. It is viewed variously as a personal trait, an active process, or an environmental condition and is widely recognized as essential for lifelong learning. The SDL cycle begins with goal setting, resource identification, and execution, followed by continuous monitoring and strategic adjustment (Learn. Res. Pract., 2023, 9, 135–147).

Implementing SDL effectively in digital environments faces challenges such as limited direct support, motivation deficits, and underutilization of technology. Here, AI offers asynchronous support and enhances constructivist learning activities like inquiry, collaboration, and reflection, potentially overcoming these barriers (TechTrends, 2024, 68, 803–819).

A review of studies on the intersection of SRL and AI-based tools reveals a growing interest in technologies that promote autonomy and personalization in online education. Adam et al. (2017) analyzed 130 studies on SRL in virtual math education, highlighting SRL’s cyclical nature—planning, execution, and reflection—and its positive impact on engagement and achievement. Gambo and Zeeshan’s review of 15 articles demonstrated how virtual learning environments (VLEs) support SRL through automated feedback, progress tracking, and personalized instruction. Similarly, Viberg et al. (2020) reviewed 54 studies, finding that AI tools mostly focus on feedback, personalized content, and monitoring but recommended more student-centered designs.

Specifically, Alshahrani's research on AI chatbots revealed their capacity to personalize support, boost motivation, and optimize instructor time, especially in high-demand contexts. However, ethical and practical concerns remain, warranting further inquiry (Int. J. Data Netw. Sci., 2023, 7, 2029–2040). Ma et al. (2025) synthesized 37 studies showing university students primarily use AI for academic assistance, emphasizing the need for rigorously designed methodologies to maximize SDL outcomes (Educ. Inf. Technol., 2025, 30, p. 7781). Younas et al. confirmed that AI tools like intelligent tutors foster autonomy but also cautioned about risks like dependency and cognitive overload (EEE Access, 2025, 13, 38387–38403).

Despite rapid advances, the literature remains fragmented regarding AI tool classification, application, and evaluation in education. This lack of a unified framework hampers trend identification and evidence-based decision-making. While some studies address specific AI applications (e.g., chatbots like ChatGPT), a comprehensive, systematic analysis is lacking.

Moreover, although SDL is recognized as a critical competence in virtual learning, its relationship with AI has not been sufficiently explored. The European Commission's Key Competences for Lifelong Learning framework underscores the need for learners to autonomously manage knowledge acquisition—a skill increasingly vital in dynamic, technology-mediated contexts (Publications Office of the European Union, 2019).

This context highlights the need for systematic reviews that critically synthesize existing evidence to clarify which AI technologies effectively support SDL, their integration into learning stages, and related pedagogical, ethical, and practical implications. Such work can guide future research and inform educational stakeholders aiming to foster autonomy, self-regulation, and equity through AI-enhanced learning.

Conclusion

In summary, recent research strongly suggests that AI has considerable potential to enhance self-directed learning at the university level, particularly by increasing personalization, feedback, flexibility, and motivation. However, many of the promising findings are tempered by recurring concerns about overreliance, ethics, digital equity, and long-term impact. As the field grows, it is shifting from exploratory studies toward designing frameworks and models (e.g. A2PL, SRL + AI literacy synchronization, multi-agent systems) that can guide more sustainable, scalable, and ethical integration.

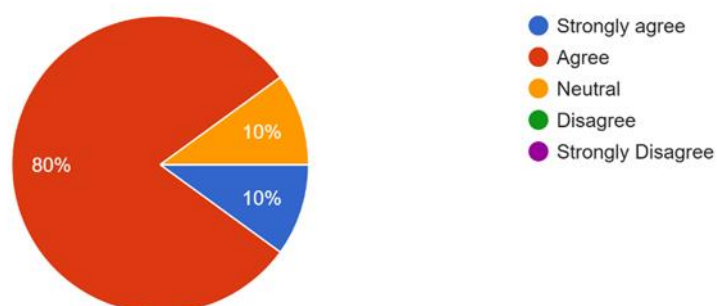
Chapter two: Data Analysis and Interpretation

Introduction

This chapter is devoted to data analysis and interpretation of the questionnaire and interview followed by a discussion of the results.

II.1. Questionnaire results

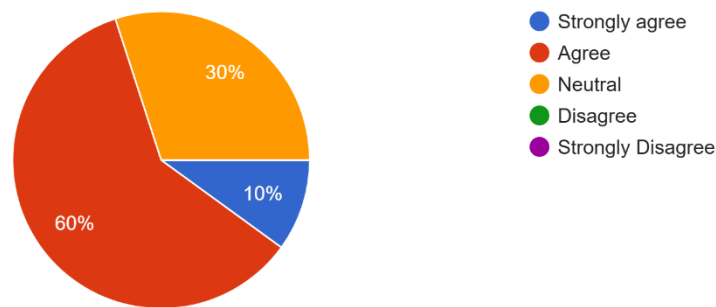
Section 1: Effectiveness of AI 1-AI tools effectively help me identify my learning needs.
10 responses



The results show that 80% of respondents agreed that AI tools are effective in helping them identify their learning needs, while 10% strongly agreed and another 10% remained neutral. Notably, none of the participants disagreed or strongly disagreed, highlighting an overall positive perception with no negative responses.

2- AI-driven recommendations improve the quality of resources I use for learning .

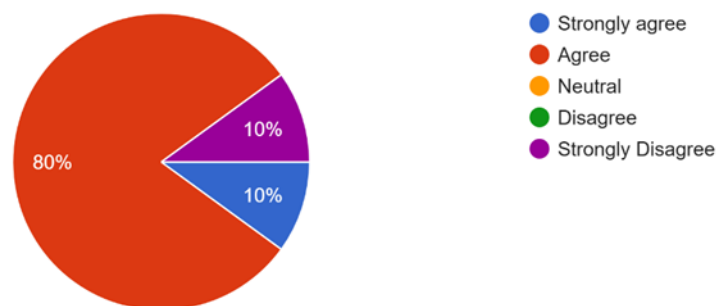
10 responses



The results show that among the ten respondents, 60% agreed that AI-driven recommendations improve the quality of the resources they use for learning, 30% were neutral, and 10% strongly agreed, while no participants disagreed or strongly disagreed, reflecting an overall positive perception.

Section 2: Motivation and Engagement 3- Using AI increases my motivation to engage in self-directed learning.

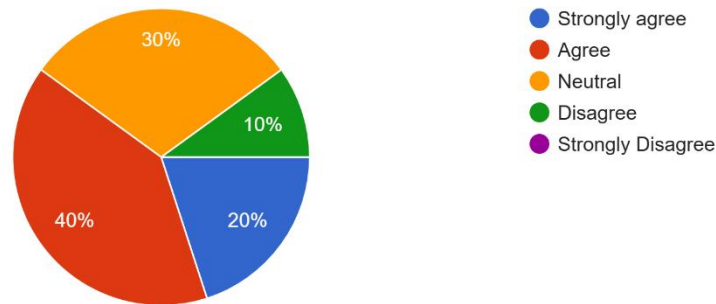
10 responses



The results show that 80% of respondents agreed with the statement *"Using AI increases my motivation to engage in self-directed learning,"* while 10% strongly agreed and 10% strongly disagreed, with no one selecting Neutral or Disagree. This distribution highlights a predominantly positive perception of AI as a motivating tool among the participants.

4- AI-generated feedback keeps me motivated to continue learning.

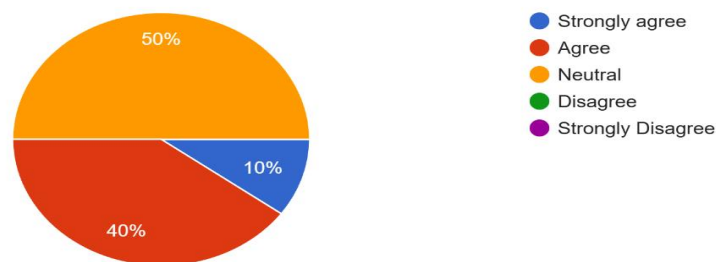
10 responses



The results show that a significant majority of the respondents found AI-generated feedback to be motivating. A combined 60% either agreed or strongly agreed with the statement that this type of feedback helps them continue learning. Only a small portion of the group, 10%, disagreed, while a notable 30% remained neutral. This data suggests that for most people surveyed, AI feedback is seen as a positive tool for motivation rather than a negative one.

Section 3:Autonomy and Control

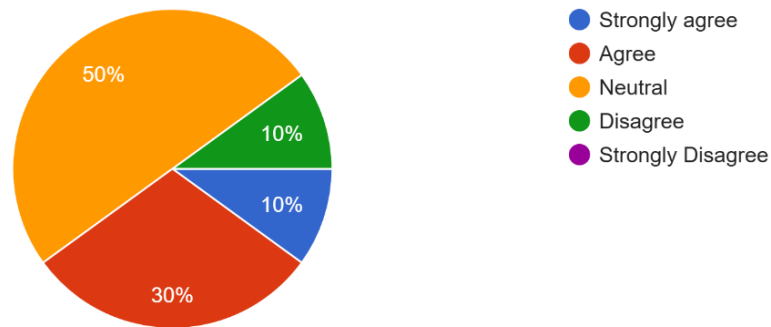
10 responses



The results show that opinions toward Autonomy and Control are generally positive or neutral, with 50% of respondents expressing a favorable view (10% strongly agree and 40% agree) and the remaining 50% maintaining a neutral stance. Notably, no participants expressed any negative sentiment, indicating a complete absence of disagreement on the topic

6-AI systems sometimes hinder my ability to explore topics creatively.[Reverse-scored]

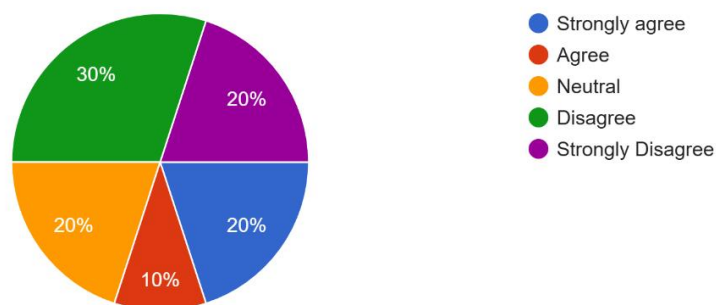
10 responses



The results show a mixed but significant response to the idea that AI systems can hinder creativity. The largest portion of respondents, 50%, remained neutral on the topic, suggesting they have not had a strong positive or negative experience. However, a combined 40% of respondents either agreed or strongly agreed that AI systems sometimes hinder their ability to explore topics creatively, indicating a notable concern. Conversely, only 10% disagreed with the statement, and no one strongly disagreed, which suggests that very few people in this group felt that AI does not hinder creativity at all.

Section 4: Trust and Ethics 7- I trust AI to keep my learning data private and secure.

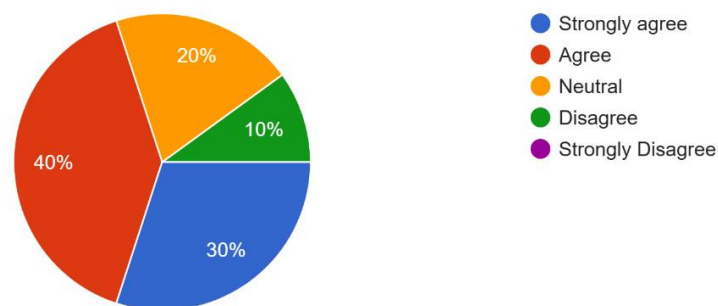
10 responses



The results show that a significant majority of respondents lack trust in AI to keep their learning data private and secure. The largest group, 30%, disagreed with the statement, and another 20% strongly disagreed, totaling 50% who expressed distrust. In contrast, only a combined 30% of the participants agreed or strongly agreed, while 20% remained neutral. This data clearly indicates widespread apprehension about AI's ability to handle sensitive personal information.

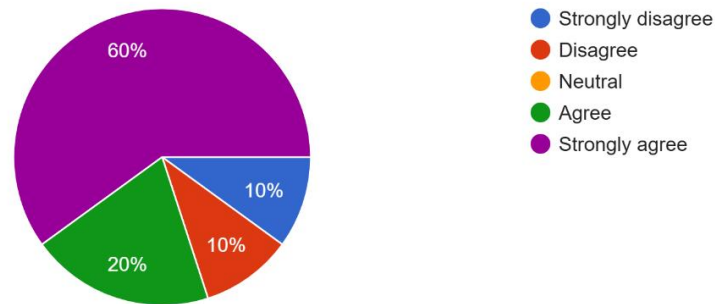
8- I am concerned about biases in AI recommendations for learning.

10 responses



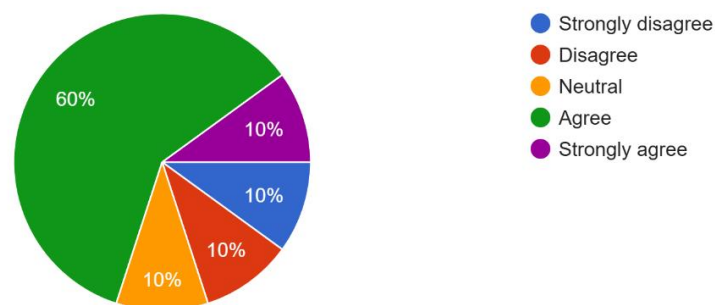
The results show a strong concern among respondents regarding biases in AI recommendations for learning. A significant majority, 70% of the participants, either agreed (40%) or strongly agreed (30%) with the statement. Only a small minority, 10%, disagreed, while 20% remained neutral. This data indicates that most respondents are aware of and worried about the potential for bias in AI systems used for educational purposes.

Section 5: Future outlook 9- AI will play a critical role in the future of self-directed learning.
10 responses



The results show an overwhelming belief that AI will play a critical role in the future of self-directed learning. A combined 80% of the respondents either strongly agreed (60%) or agreed (20%) with the statement. Only a small minority, 20%, expressed skepticism by either disagreeing (10%) or strongly disagreeing (10%). This data indicates a strong consensus among the participants about AI's significant and positive future role in education.

10- Self-directed learning will become more effective as AI technology advances.
10 responses



The results show that the majority of respondents believe that AI technology will make self-directed learning more effective. A combined total of 70% of participants either agreed (60%) or strongly agreed (10%) with the statement. Only a small minority, 20%, expressed skepticism by either disagreeing (10%) or strongly disagreeing (10%). The remaining 10%

were neutral. This data indicates a strong sense of optimism among the respondents about the future positive impact of AI on independent learning.

II.2. Interview results

1. Personal Experience

- Can you describe a time when you used AI tools (e.g, chatbots, adaptive platforms, recommendation systems) to support your self-directed learning?

What worked well, and what didn't?

A - Yes, I often use AI tools like ChatGPT and Coursera's recommendation system to enhance my learning. For example, while studying machine learning, I used ChatGPT to clarify complex concepts and generate practice problems. It worked well because I got instant explanations tailored to my level. However, sometimes the responses were too generic, and I had to cross-check with academic sources for accuracy. Adaptive platforms like Duolingo also helped me improve my English, but the exercises sometimes felt repetitive and not challenging enough for advanced learners.

b- When I used AI tools in my self-directed learning it was so beneficial for me and useful as well and I really get the information I need but sometimes feel the AI didn't get my point. so I will be obliged to explain and to make the point clear and than he will provide me with the information I need.

2. Motivation and Engagement

- How has AI influenced your motivation to pursue self-directed learning? Does it make the process more engaging, or do you find it impersonal?

a-AI has made self-learning more accessible and engaging for me. Tools like YouTube's recommendation algorithm suggest relevant courses and videos, keeping me motivated. However, at times, it can feel impersonal -like when a chatbot gives a mechanical response instead f human-like interaction. Still, the convenience of 24/7 assistance outweighs this drawback, especially when I study late at night and can't consult a professor.

b- AI did influenced my motivation because when I used it I find it so useful. So, it makes me motivated to continue my self-directed learning and for sur it make my engaging more for the process of learning.

3.Autonomy and Control

- Do you feel AI enhances or limits your ability to set and achieve your own learning goals?
Can you share an example?

-AI mostly enhances my learning by helping me structure my goals. For instance, when I wanted to learn Python, I used an AI-powered platform (like Data Camp) that adapted exercises based on my progress. This kept me on track. However, over-reliance on AI can be limiting __once, I depended too much on an AI coding assistant and realized I wasn't fully understanding the logic behind the solutions. Now, I balance AI tools with hands-on practice.

b- Well it did both, it enhances my ability and it limited as well. It enhances it with the usefulness and the information it would provide me to give more and more and it limits me because sometimes when I rely on it too much I feel like I am not enough as a person as a human being and he is more competent than me and he is really rich with information that I don't have even a little of it.

4. Challenges and Concerns

- What challenges or ethical concerns have you encountered or participate) when using AI for self-directed learning? For example, biases, privacy, or over-reliance on technology?

a- One concern is ****bias****—some AI tools favour Western perspectives, which can be irrelevant to my context as an Algerian student. Another issue is privacy Free AI tools often require data access, and I worry about how my information is used. Lastly, ****over-reliance**** is a risk—AI can make learning easier, but critical thinking may suffer if I depend on it too much. I now consciously verify AI- generated information with trusted sources.

b- In AI tools for sure it has an ethical concerns for every person he used because when we use something it's not from our own production and may be sometimes we do it purposefully like we do it on purpose. For every lines has I said before when it helps me a lot I feel like I am overline on it. Whereas, I can rely on myself to product that certain information or that certain idea.

II.3 Discussion of the Results

Question 1: How can artificial intelligence enhance personalized learning experiences in higher education?

The questionnaire results indicate that AI positively influences motivation for self-directed learning and improves the quality of learning resources through AI-driven recommendations. This aligns with the interview responses, where participants reported that AI tools like ChatGPT and adaptive platforms such as Coursera's recommendation system and Duolingo significantly enhanced their learning experiences.

For instance, one interviewee explained, “I used ChatGPT to clarify complex concepts and generate practice problems while studying machine learning. The instant explanations tailored to my level helped me learn effectively, although sometimes the responses were too generic, requiring cross-checking with academic sources.” Another participant noted that AI tools provided useful information but occasionally failed to understand nuanced queries, necessitating clarification.

These findings support previous studies emphasizing AI’s role in personalized learning environments by tailoring content to individual learner profiles, thereby fostering motivation and engagement (Viberg et al., 2020; Alshahrani, 2023). However, the limitations of AI—such as generic responses and insufficient challenge for advanced learners—highlight the ongoing need for pedagogically grounded AI designs that support deeper learning (Ma et al., 2025).

Question 2: What are the long-term implications of AI on the roles of educators and students in higher education?

The survey responses revealed mixed feelings about AI’s impact on creativity and the evolving role of AI in self-directed learning. While some participants felt AI enhanced accessibility and engagement, others expressed concerns that AI systems might limit creative exploration.

Interviewees echoed this duality. One stated, “AI has made self-learning more accessible and engaging. YouTube’s recommendation algorithm keeps me motivated by suggesting relevant courses and videos. However, chatbot responses sometimes feel impersonal, lacking the nuance of human interaction.” Another participant emphasized increased motivation due to AI’s usefulness but acknowledged the impersonal nature of AI interaction.

These perspectives reflect findings from the literature, which describe AI as a “double-edged sword” in education—valuable for productivity and personalization but potentially detrimental if it undermines independent critical thinking (Younas et al., 2025; Hershey, 2023). The results suggest that while AI will play a critical role in future learning, careful integration is necessary to ensure it complements rather than replaces the educator’s role.

General Conclusion

This study highlights the transformative potential of artificial intelligence in enhancing self-directed learning within higher education. AI tools, such as chatbots, adaptive learning platforms, and recommendation systems, offer personalized support that motivates learners, improves access to tailored resources, and helps structure learning goals. However, while AI facilitates engagement and accessibility, it also presents challenges including occasional generic responses, limited creativity, and concerns over over-reliance which may hinder deep understanding and critical thinking. Ethical considerations such as bias, privacy, and data security further emphasize the need for cautious and balanced integration of AI in educational contexts.

The findings align with existing literature that positions AI as a double-edged sword—capable of enriching learning experiences while requiring vigilant oversight to avoid dependency and to preserve learner autonomy. For institutions, addressing technological, financial, and faculty resistance barriers is essential to maximize AI's benefits while safeguarding academic integrity and student well-being.

Ultimately, AI's role in higher education is evolving rapidly, and its effective use depends on combining technological innovation with pedagogical strategies that empower students as active, critical, and independent learners.

References

- Adam, A., et al. (2017). *Application of self-regulated learning in virtual education: A systematic review*. Proceedings of the Cham, Switzerland Conference, 143–154.
- Alshahrani, S. (2023). *AI-based educational chatbots: Personalized support and ethical concerns*. *International Journal of Data Network Science*, 7, 2029–2040.
- Braun, V., & Clarke, V. (2006). *Using thematic analysis in psychology*. *Qualitative Research in Psychology*, 3(2), 77–101.
- Cheng, G., Guan, Y., & Li, Y. (2024). *Factors influencing university students' continuance intentions towards self-directed learning using AI tools*. *Applied Sciences*, 14(18), 8363. <https://doi.org/10.3390/app14188363>
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). Sage Publications.
- European Commission Directorate-General for Education, Youth, Sport and Culture. (2019). *Key competences for lifelong learning*. Publications Office of the European Union.
- Fetters, M. D., Curry, L. A., & Creswell, J. W. (2013). *Achieving integration in mixed methods designs: Principles and practices*. *Health Services Research*, 48(6), 2134–2156.
- Gambo, F., & Zeeshan, S. (2020). *Virtual learning environments supporting self-regulated learning: A systematic review*. *Journal of Educational Technology*, (details missing).
- Hershey, P. A. (2023). *AI automation in education: Enhancing learner autonomy*. Conference Proceedings, 146–157.
- Johnson, R. B., & Onwuegbuzie, A. J. (2004). *Mixed methods research: A research paradigm whose time has come*. *Educational Researcher*, 33(7), 14–26.
- Kim, K., et al. (Year missing). *Self-directed learning: Definitions and frameworks*. (Journal/Source missing).
- Knowles, M. S. (1975). *Self-directed learning: A guide for learners and teachers*. Association Press.
- Learning Research and Practice. (2023). *AI enhancing constructivist practices in education*. *Learning Research and Practice*, 9(2), 135–147.
- Long, L., Zhang, Y., Chen, Y., Zhao, J., & Huang, R. (2025). *Synergizing self-regulation and artificial-intelligence literacy: Future human–AI integrative learning*. *arXiv preprint*. <https://arxiv.org/abs/2504.07125>

- Ma, J., et al. (2025). *Who uses AI in education and for what purposes? A systematic review*. *Educational Information Technology*, 30, 7781.
- Ma, W., Adesope, O., Nesbit, J., & Liu, Q. (2025). *AI applications in higher education: A systematic review*. *Educational Information Technology*, 30, 7781.
- Ogundipe, A., Ojo, D., & Afolabi, J. (2025). *Acceptance and use of AI for self-directed research learning among postgraduates in Nigerian universities*. *Smart Learning Environments*, 12, Article 40. <https://doi.org/10.1007/s44217-025-00770-6>
- Orem, U. T., USA. (2023). *AI in education: Personalizing learning through data analytics*. *Conference Proceedings*, 245–249.
- Roe, R., & Perkins, C. (2024). *Generative AI in self-directed learning: A scoping review*. *arXiv preprint*. <https://arxiv.org/abs/2411.07677>
- TechTrends. (2024). *Challenges in digital self-directed learning: Technology adoption and motivation*. *TechTrends*, 68(7), 803–819.
- Tough, A. (1971). *Learning projects of adults*. Toronto, ON, Canada Conference, 59–64.
- Viberg, O., & Grönlund, Å. (2020). *Systematic review of AI-based tools supporting self-regulated learning*. *Journal of Educational Technology*, 54(4), 524–533.
- Viberg, O., et al. (2020). *AI tools supporting self-regulated learning in higher education: A systematic review*. New York, NY, USA Conference Proceedings, 524–533.
- Younas, M., et al. (2025). *AI technologies supporting self-directed learning: Impact on educational outcomes*. *IEEE Access*, 13, 38387–38403.
- Younas, M., Khan, S., & Ali, A. (2025). *AI for self-directed learning: Opportunities and risks*. *IEEE Access*, 13, 38387–38403.
- Yu, Z., Zhang, K., Mitra, T., & Wong, T. (2025). *Bridging classical education and AI: Introducing the AI-Educational Development Loop (AI-EDL)*. *arXiv preprint*. <https://arxiv.org/abs/2508.00970>
- Zhang, Y., Chan, C. K., & Li, H. (2024). *Understanding self-directed learning in AI-assisted writing: A mixed-methods study*. *Discover Education*, 2(1), 17. <https://doi.org/10.1016/j.dsedu.2024.100017>

Appendices

Appendix A

Student's questionnaire

This questionnaire aims to investigate how AI tools are integrated into students' self-directed learning practices at the university level. Specifically, it explores how students perceive and utilize AI in support of learning autonomy, motivation, and strategy use. By completing this questionnaire, you will contribute to the development of a broader understanding of how these resources are being used and how they may potentially affect future writing instruction in the classroom. Please note that all responses will remain anonymous and be kept confidential, and used solely for purposes of research.

Section 1: Effectiveness of AI

1-AI tools effectively help me identify my learning needs.

Strongly agree

Agree

Neutral

Disagree

Strongly Disagree

2- AI-driven recommendations improve the quality of resources I use for learning.

Strongly agree

Agree

Neutral

Disagree

Strongly Disagree

Section 2: Motivation and Engagement

3- Using AI increases my motivation to engage in self-directed learning.

Strongly agree

Agree

Neutral

Disagree

Strongly Disagree

4- AI-generated feedback keeps me motivated to continue learning.

Strongly agree

Agree

Neutral

Disagree

Strongly Disagree

Section 3: Autonomy and Control

Strongly agree

Agree

Neutral

Disagree

Strongly Disagree

6-AI systems sometimes hinder my ability to explore topics creatively. [Reverse-scored]

Strongly agree

Agree

Neutral

Disagree

Strongly Disagree

Section 4: Trust and Ethics

7- I trust AI to keep my learning data private and secure.

Strongly agree

Agree

Neutral

Disagree

Strongly Disagree

8- I am concerned about biases in AI recommendations for learning.

Strongly agree

Agree

Neutral

Disagree

Strongly Disagree

Section 5: Future outlook

9- AI will play a critical role in the future of self-directed learning.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

10- Self-directed learning will become more effective as AI technology advances.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

Appendix B

Student's interview

1. Personal Experience:

- Can you describe a time when you used AI tools (e.g ; chatbots, adaptive platforms, recommendation systems) to support your self-directed learning? What worked well, and what didn't?

2. Motivation and Engagement:

- How has AI influenced your motivation to pursue self-directed learning? Does it make the process more engaging, or do you find it impersonal?

3. Autonomy and Control:

- Do you feel AI enhances or limits your ability to set and achieve your own learning goals?
Can you share an example?

4. Challenges and Concerns:

- What challenges or ethical concerns have you encountered (or participate) when using AI for self-directed learning? For example, biases, privacy, or over-reliance on technology?

ملخص

تبحث هذه الدراسة في كيفية دعم أو إعاقة أدوات الذكاء الاصطناعي—مثل ChatGPT ، ومنصات التعلم التكيفي، وأنظمة التدريس الذكية—لتعلم الذات (SDL) لدى طلبة السنة الثانية ماستر بقسم اللغة الإنجليزية في جامعة خنشلة. وتحديداً، تستكشف الدراسة أدوار الثقافة الرقمية المتعلقة بالذكاء الاصطناعي واستقلالية المتعلم في تشكيل تجارب تعليمية مخصصة ونتائج تعليمية فعّالة. وباستخدام تصميم مدمج ومتوازي للمنهج المختلط، تم جمع البيانات الكمية من خلال استبيانات منظمة (n=50) ، إلى جانب رؤى نوعية من مقابلات شبه مهيكلة. وقد كشفت النتائج أن أدوات الذكاء الاصطناعي تعزز قدرة الطلبة على تخصيص مسارات التعلم والحفاظ على الدافعية. ومع ذلك، ظهرت مخاوف بشأن الاعتماد المفرط على هذه الأدوات، مما قد يقلل من التفاعل ما وراء المعرفي، ويُضعف فرص الاستكشاف الإبداعي والتفكير النقدي إذا لم يتم دمجها بشكل مناسب.

الكلمات المفتاحية: الذكاء الاصطناعي، التعليم العالي، التعلم المخصص