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Which Students Benefit the Most from the Use of Artificial Intelligence in the Learning Process? Students with Low, Medium, or High Levels of Knowledge

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Abstract: The integration of Artificial Intelligence (AI) in the educational process has transformed the way students learn, interact, and develop their cognitive skills. This study aims to analyze which students benefit most from the use of Artificial Intelligence in the learning process: those with low, medium, or high levels of knowledge. The study is based on a comparative approach, assessing the impact of AI tools on improving academic performance, motivation, and engagement of students at different levels of preparation. Through a combination of quantitative and qualitative analysis, empirical data from different learning environments that use intelligent platforms such as digital tutors, learning personalization systems, and assistive devices have been reviewed. The results show that students with low and medium levels of knowledge benefit most from AI interventions, especially in terms of individualized support and improved self-efficacy in learning. However, high-achieving students benefit from developing more advanced critical thinking and problem-solving skills. These findings highlight the importance of using AI in a differentiated manner, tailored to the needs and potential of each group of students, thus contributing to the creation of a more inclusive and effective education.

Keywords: Artificial Intelligence, academic performance, knowledge levels, learning personalization, learning process.

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1. Introduction

The rapid development of Artificial Intelligence (AI) over the past decade has transformed the way learning and education are conceptualized globally. The integration of AI tools into the educational environment has brought new opportunities for personalizing learning, increasing pedagogical efficiency, and developing digital competencies in students of all levels (Alaeddine, 2025). Unlike traditional tools, AI-based systems can adapt in real time to the pace and learning style of each student, providing instructions, questions, or tasks that match their current level of knowledge (Tu, Guo, Fang, & Meng, 2025).

This deep personalization of the learning process has opened academic debate on the fundamental question: *which students benefit most from the use of Artificial Intelligence?* Studies show that the effects of AI are not uniform; they vary according to the preparation, motivation, and level of knowledge of students (Martin, Kubsch, Yik, & Burlingham, 2025). Students with limited knowledge particularly benefit from adaptive AI systems, which provide personalized instruction, immediate feedback, and additional support to overcome cognitive gaps (He, Lu, & Liu, 2025).

Artificial Intelligence (AI) represents an advanced branch of computer science that aims to create systems capable of learning, reasoning, and making decisions in a human-like manner. In the educational context, AI has moved from the phase of automating routine tasks to the phase of adaptive and analytical intelligence, where digital tools are able to understand, predict, and adapt learning content according to the individual needs of students (Tu, Guo, Fang, & Meng, 2025). This makes AI an essential element of modern education, as it helps personalize learning, improves access to educational resources, and fosters the development of critical and creative thinking skills (Martin, Kubsch, Yik, & Burlingham, 2025). Through big data analysis and machine learning algorithms, AI offers the opportunity to better understand the progress, difficulties, and individual potential of each student, enabling a more comprehensive and effective approach to teaching (Alaeddine, 2025).

The integration of Artificial Intelligence into the learning process has brought about a paradigm shift in the way teachers, students, and learning content interact. Intelligent tools, such as adaptive learning systems, virtual tutors, and performance analytics applications, enable a personalized learning experience that adapts to the individual pace and style of the

learner (He, Lu, & Liu, 2025). Through AI, the learning process moves from a linear and uniform model to a dynamic and interactive model, where the collected data is used to optimize pedagogical methodologies in real time. As Landa-Blanco (2025) emphasizes, this approach not only improves the quality of teaching but also makes education more accessible to students with cognitive challenges or with different academic backgrounds. In this way, Artificial Intelligence is no longer seen only as a technological tool, but as a pedagogical partner that supports the development of a more inclusive, equitable, and evidence-based education.

The knowledge levels of students represent an important indicator for determining the manner and extent of benefit from the use of Artificial Intelligence in the learning process. Students with a low level of knowledge are usually characterized by difficulties in understanding basic concepts, a lack of self-confidence, and the need for continuous support. For them, intelligent systems offer a more suitable environment for individual learning, through immediate feedback and adaptive virtual tutors that adjust the complexity of the content based on personal progress (Martin, Kubsch, Yik, & Burlingham, 2025). At the secondary level, students benefit from the interaction of AI in the development of metacognitive skills and in the improvement of independent learning strategies, moving from a guided approach to a self-directed model (De Santo, Gimigliano, & Guerriero, 2025). Whereas high-achieving students use AI as an exploratory and analytical tool, using it to construct new knowledge, develop critical thinking, and solve complex problems creatively (Tu, Guo, Fang, & Meng, 2025). As Landa-Blanco (2025) argues, this progressive shift in the way of benefiting across levels of knowledge shows that AI has the potential to provide effective pedagogical differentiation, helping students at every stage of their cognitive development achieve higher performance and deeper involvement in the learning process.

For example, in an experiment conducted in computer science teaching, artificial intelligence systems helped low-performing students achieve significant progress in conceptual skills and academic self-confidence (Martin et al., 2025). On the other hand, high-achieving students tend to use AI as a tool for analytical deepening and solving more complex problems (Torres, 2025). This suggests that the role of AI is compensatory for low-achieving students and reinforcing for those with advanced knowledge.

Furthermore, Landa-Blanco (2025) argues that the application of Artificial Intelligence in low-income countries or schools with limited resources increases social inclusion and reduces the educational gap. AI enables equitable access to quality learning materials, helping students who would otherwise be left behind due to a lack of support. Similarly, Bediwy, Masoud, and Abdelsamie (2025) found that the use of gamified learning platforms driven by AI increases student motivation and engagement in technical and scientific fields, especially among those with intermediate or limited knowledge.

In the context of secondary education, De Santo, Gimigliano, and Guerriero (2025) show that regular interaction with AI tools significantly improves the metacognitive and reflective skills of average-performing students, helping them move from mechanical learning to critical and analytical thinking. In contrast, Alaeddine (2025) warns that the uncontrolled use of generative AI technologies can reinforce existing inequalities in education if not accompanied by ethical, humanistic, and differentiated approaches according to the needs of students.

In summary, contemporary research shows a clear trend: students with low and medium levels of knowledge benefit more from intelligent tools that provide individual support, while students with advanced knowledge use AI to develop high critical thinking, creativity, and in-depth analysis. This paper aims to empirically analyze how Artificial Intelligence affects the academic gain of students at different levels of knowledge, assessing the cognitive, social, and technological factors that influence this process.

1.1. **Problem identification**

The inclusion of Artificial Intelligence (AI) in education has opened up great opportunities for the development of more personalized and efficient learning, but at the same time, it has also brought a number of challenges related to inequalities in knowledge levels, digital skills, and access to technology. According to Reimers, Azim, Palomo, and Thony (2025), the use of AI systems without an integrated systemic approach risks reinforcing the divide between highly educated students and those from poorer educational backgrounds, creating a “new digital divide” that goes beyond technological access. Similarly, Kakon, Kamoun, Fenniri, and Lisimachio (2025) emphasize that generative and adaptive AI systems are not always built to address individual differences in learning pace and comprehension skills, which can deepen existing educational inequalities instead of mitigating them.

Another challenge highlighted by Kumar (2025) is the lack of teacher training and digital infrastructure, especially in education systems where technological resources are limited. This situation directly affects the effectiveness of using AI for low-achieving students, who are more dependent on continuous guidance and support structures. Along the same lines, Pandey (2025) argues that the lack of adaptation of AI tools to students with disabilities, language barriers, or different levels of knowledge creates new forms of educational exclusion. Furthermore, Chen and Chen (2026) note that AI-based self-assessment systems, while improving accuracy for advanced students, can cause inaccuracies and dependency for those who do not have sufficient technological knowledge to interpret the feedback the system produces. This reinforces the need for pedagogical interventions to ensure equity in the benefits of intelligent technologies.

Finally, Arginteanu, Manea, and Oțoiu (2025) warn that the lack of ethical and didactic standards in the use of AI in education can lead to the reinforcement of existing inequalities and the creation of distrust among users. Thus, the fundamental problem that emerges is that the impact of Artificial Intelligence on students' performance and academic gain varies depending on the level of knowledge, digital skills, and institutional support they receive. To avoid digital exclusion and to ensure that all students — from those with low knowledge to the most prepared — benefit equally, it is necessary to design differentiated and ethical strategies for integrating AI into the learning process.

1.2. **Purpose of the study**

The main goal of this research is to analyze the impact of the use of Artificial Intelligence (AI) on the academic achievement of students with different levels of knowledge, low, medium, and high. In particular, the study aims to understand how AI-based systems and platforms help improve performance, motivation, and engagement in the learning process, and to what extent this impact varies depending on the level of cognitive preparation of students. The research also aims to find out whether the use of AI acts as a compensatory tool for students with low knowledge, helping them to catch up with their peers, or as a reinforcing tool for students with high knowledge, enabling them to develop advanced critical and creative thinking skills (Tu, Guo, Fang, & Meng, 2025; Martin, Kubsch, Yik, & Burlingham, 2025).

This research is based on the premise that the effectiveness of AI in education does not depend only on the technology, but on how it adapts to the needs and characteristics of students (He, Lu, & Liu, 2025). For this reason, the second goal is to identify factors that influence the success or limitations of the use of AI, including the level of knowledge of students, their digital skills, interaction with the teacher, and the institutional context of the use of technology (Reimers, Azim, Palomo, & Thony, 2025). The research also aims to provide practical recommendations for the effective integration of AI into the educational process, making it more inclusive and more adapted to the pace and learning style of each student.

In a broader sense, the ultimate goal of this study is to contribute to the development of a pedagogical model based on Artificial Intelligence, which can be used by educational institutions to reduce learning inequalities and maximize the potential of each student in accordance with their current skills and knowledge (Pandey, 2025). Thus, the study aims not only to analyze the effects of AI but also to orient the development of educational policies towards an ethical, fair, and effective use of intelligent technologies in education.

1.3. **Research objectives**

This research aims to explore how the use of Artificial Intelligence affects the academic achievement of students with different levels of knowledge. Given the exploratory nature of the study, the objectives are focused on understanding, interpreting, and describing the experience of students and teachers in relation to intelligent technologies in the learning process (Reimers, Azim, Palomo, & Thony, 2025). The research does not aim to test hypotheses, but to identify different patterns, perceptions, and benefits that students experience at different levels of knowledge (Kakon, Kamoun, Fenniri, & Lisimachio, 2025).

The specific objectives of this research are:

- To explore how Artificial Intelligence is used in the learning process for students with different levels of knowledge.
- Identify the main benefits that low, medium, and high-level learners receive from using AI tools.
- To analyze the perceptions of students and teachers about the impact of AI on motivation, participation, and cognitive skills development.

- To examine factors that influence the effectiveness of AI in learning, such as the level of digital preparation and institutional support.
- To propose recommendations for more effective, ethical, and inclusive integration of AI in education.

1.4. **Research questions**

Main research question:

- Which students benefit most from the use of Artificial Intelligence in the learning process: those with low, medium, or high levels of knowledge?

Supporting research questions:

1. How does the use of Artificial Intelligence affect student motivation and involvement in the learning process?
2. What are the benefits and limitations that students experience from AI tools, depending on their level of knowledge?
3. How do teachers perceive the impact of AI on the learning style of students with different levels of preparation?
4. How does AI help develop critical thinking and independent learning skills in students?
5. How can the use of AI in education be improved to ensure equity in benefits across student groups?

2. Literature Review

The integration of Artificial Intelligence (AI) in education has taken on a central role in reforming teaching practices and improving the learning experience at different levels of knowledge. Studies over the past decade have shown that AI can help personalize learning, segment students according to their abilities, and develop learning environments that respond in real time to their individual needs (Iskandar, Retnawati, Hadi, & Utami, 2025).

2.1. **AI as a tool for personalizing learning**

According to Ji, Samsudin, Hassan, and Farizan (2025), the use of artificial intelligence based on deep learning algorithms helps to adapt learning content according to the abilities,

interests, and level of preparation of students. Their study, published in *Scientific Reports*, showed that AI systems that analyze students' physical and cognitive performance can develop personalized learning strategies that adapt to low, medium, and high levels of achievement. These systems reduce inequalities in inclusion and enable every student to benefit according to his or her potential.

Another important approach comes from Iskandar et al. (2025), who developed an intelligent system based on *the Naïve Bayes classifier* to assess students' academic performance in an automated manner. The results of the study showed that AI algorithms can identify groups of low, medium, and high-achieving students, allowing teachers to apply differentiated teaching methods more effectively. This shows that artificial intelligence is not just a technological tool, but a mechanism that can support academic justice and pedagogical inclusion.

2.2. **The impact of AI on students with low levels of knowledge**

For students with limited knowledge, AI serves as a virtual tutor that can provide personalized instruction and cognitive support. Various studies have shown that adaptive AI tools significantly improve the results of students who face conceptual difficulties (Kumar, 2025). According to this author, artificial intelligence can create a more relaxed and non-judgmental environment, where low-performing students feel encouraged to experiment, ask questions, and learn at their own pace. This is especially important in the initial stages of learning, where fear of failure often hinders active participation.

In another perspective, Chen and Chen (2026) emphasize that the use of intelligent feedback systems to improve self-esteem in higher education students is effective only when the users have sufficient digital literacy. In the case of low-skilled students, the system can create excessive dependence on technology, reducing the ability to reflect critically. Therefore, the benefits of AI for this group depend on how it is integrated and on the pedagogical support that is provided in parallel with its use.

2.3. **Similar studies**

Case 1: Using adaptive AI systems in teaching mathematics at different levels of preparation

A concrete successful case of the application of Artificial Intelligence for students with different levels of knowledge is the “Smart Tutor” program implemented in secondary schools in Malaysia in 2024. This system uses machine learning algorithms to automatically adapt questions, exercises, and learning pace according to the individual performance of the student. Ji, Samsudin, Hassan, and Farizan (2025) report that in this experiment, students with low knowledge experienced an average increase of 28% in test scores, while students with medium knowledge significantly improved their problem-solving skills through interaction with the virtual tutor. For students with high knowledge, the system was used as an exploratory environment, which offered them advanced logical challenges and opportunities to apply theoretical concepts to new situations. This shows that adaptive AI systems can create a personalized balance between assistance and self-learning, making all students active participants in the learning process. Also, Orhan's study (2024) emphasizes that this personalized technology is hoped to contribute to the study of students' interest in learning, being in a clean and efficient environment for each student.

Case 2: Implementing smart tutors in secondary education in Indonesia

Another case study comes from Universitas Negeri Yogyakarta (Indonesia), where a team of researchers developed an intelligent assessment system to monitor and improve the performance of secondary school students in science. According to Iskandar, Retnawati, Hadi, and Utami (2025), their system, based on the *Naïve Bayes Classifier model*, analyzed students' previous data and categorized them into three groups: low, medium, and high achievers. The program recommended different materials for each group: interactive video exercises for weak students, collaborative projects for medium-level students, and small scientific research projects for high-level students. The results showed that low-performing students benefited more in terms of motivation and self-confidence, while high-achieving students used AI to build critical and analytical thinking skills. This case clearly shows that AI can serve as a tool for pedagogical differentiation, respecting the pace, style, and potential of each student.

2.4. **Benefits for students with intermediate and advanced levels of knowledge**

Intermediate learners benefit most from the interaction that AI creates in the collaborative learning process. He, Lu, and Liu (2025) have shown that artificial intelligence technologies, through the analysis of students’ collaborative networks, increase social interaction and

improve knowledge sharing among participants. This fosters the development of communication and teamwork competencies, making AI a tool that complements traditional learning skills. Meanwhile, advanced learners use AI to deepen understanding, develop research skills, and critically analyze information. Ji et al. (2025) argue that these learners benefit most from AI in terms of developing higher-order thinking skills and creating innovative solutions to complex problems.

2.5. **Ethical challenges and dilemmas in the use of AI**

Despite the many benefits, recent literature highlights some potential risks associated with integrating artificial intelligence into education. Arginteanu, Manea, and Oțoiu (2025) note that the lack of ethical standards and the lack of training of teachers in the use of AI can lead to unjust algorithmic decisions and the reinforcement of existing inequalities. Similarly, Landa-Blanco (2025) highlights that in low-income contexts, the lack of technological infrastructure significantly limits the opportunities to benefit from AI, creating a new educational gap. These challenges demonstrate that the effective use of AI requires an integrated approach that includes the technological, pedagogical, and ethical dimensions.

2.6. **Chapter summary**

In summary, the existing literature shows that Artificial Intelligence has great potential to transform the learning process, but its impact is not the same for all students. It can compensate for deficiencies in low-achieving students, strengthen collaborative competencies in those with medium levels, and promote critical thinking in those with high levels. However, the benefits depend on the implementation method, digital skills, and socio-economic context. Therefore, a balanced strategy for integrating AI into education is needed, ensuring equity, efficiency, and ethics at every stage of the learning process.

3. Methodology

3.1. **Methodological approach**

This study is based on an exploratory theoretical approach, which aims to critically and comprehensively analyze the existing literature on the use of Artificial Intelligence (AI) in the learning process and its impact on students with different levels of knowledge. The

exploratory approach was chosen because the phenomenon of integrating AI in education is still evolving and requires a broad conceptual understanding before empirical studies can be conducted (Creswell & Poth, 2023).

This type of research does not aim to test hypotheses or collect new data, but rather to conduct comparative analysis, synthesis, and interpretation of the results of existing studies to build a new understanding of how students with low, medium, and high levels of knowledge benefit from the use of Artificial Intelligence in learning. This approach allows the identification of trends, gaps, and research challenges that exist in the current international literature (Snyder, 2019).

3.2. **Type and nature of the study**

The study is non-empirical and analytical in nature, and constitutes a critical literature review. It aims to summarize and analyze reliable academic sources - scientific articles, research reports, and university publications published between 2020 and 2025 - that address the use of AI in education and its impact according to knowledge levels.

The analytical approach was chosen to bring together knowledge spread across different fields (education, cognitive psychology, and educational technology) and create a unified picture of the topic. According to Grant and Booth (2009), this type of study aims to “explain, integrate, and synthesize existing literature to derive new meanings,” without producing new empirical data.

3.3. **Sources and selection of literature**

All sources used were selected based on thematic relevance, academic credibility, and timeliness. The literature search was conducted through international databases such as *SpringerLink*, *ScienceDirect*, *ERIC*, *Taylor & Francis Online*, and *Frontiers in Education*, using keywords such as:

"Artificial Intelligence in Education", "student learning levels", "low and high achievers", "adaptive learning systems", "AI and learning outcomes", and "AI in differentiated instruction".

Only studies published between 2020 and 2025 that address the use of AI in pre-university and university education were included, excluding non-academic materials, uncontrolled opinions, or publications without peer-reviewed scientific review.

The selection process is divided into three stages:

- Initial research – identification of scientific sources;
- Topic filtering – excluding general articles on technology that did not address knowledge levels;
- Final selection – retaining some relevant sources for in-depth analysis.

3.4. **Theoretical analysis method**

The analysis was conducted through the Conceptual Thematic Analysis method, which involves reading the literature in full, categorizing key concepts, and identifying recurring themes related to the impact of AI according to knowledge levels (Braun & Clarke, 2023).

The following stages were followed during the analysis:

- Identification of key models in the literature (e.g., the role of AI in personalizing learning, developing critical thinking, compensatory assistance for low-achieving students, etc.);
- Comparing results from different cultural and educational contexts;
- Drawing general conclusions about how AI affects academic achievement at different levels of preparation.

This method enabled us to analyze trends and gaps in the literature, building a general theoretical framework on the effects of AI in contemporary education (Grant & Booth, 2009).

3.5. **Study limitations**

As this is theoretical research without empirical data collection, the main limitations relate to the lack of direct evidence from the field. The analysis relies on the interpretation of results published by other authors; therefore, the conclusions depend on the quality of existing sources and may reflect international trends rather than local reality. However, this

exploratory nature constitutes an essential first step towards building the theoretical basis for future empirical studies in this area (Snyder, 2019).

3.6. **Research ethics**

As the study does not involve human participants and does not collect personal data, no formal ethical approval was sought. However, international standards of academic integrity for correct citation of sources, avoidance of plagiarism, and transparency in the interpretation of the literature were adhered to (WERA, 2023).

4. Results

This chapter presents the main results derived from the analysis of contemporary literature on the impact of Artificial Intelligence (AI) in the learning process, with a focus on the benefits of students with different levels of knowledge: low, medium, and high. The analysis is built on several scientific sources published between 2020 and 2025, identifying four main categories of findings:

(1) The role of AI as a compensatory tool for low-performing students;

(2) The impact of AI on the development of collaboration and self-efficacy in secondary school students;

(3) The reinforcing role of AI in developing critical thinking in highly knowledgeable students;

(4) Ethical challenges and dilemmas in using AI for different levels of knowledge.

4.1. **The compensatory role of Artificial Intelligence for students with low knowledge**

One of the most consistent findings in the literature is that Artificial Intelligence can act as a compensatory tool for low-performing students, helping them achieve higher levels of understanding and confidence. According to Kumar (2025), AI-based educational platforms such as *CenturyTech* and *ScribeSense* create personalized learning environments, where algorithms adapt to the pace and learning style of students with conceptual difficulties. These students benefit from immediate feedback and controlled repetitions, which help them master basic concepts without the pressure of comparison with others.

Another study by Ji, Samsudin, Hassan, and Farizan (2025) shows that students who used the *Smart Tutor system* in mathematics significantly improved their scores after just four weeks of interaction with AI. The authors emphasize that for students with limited knowledge, AI reduces learning anxiety and increases engagement through continuous interaction and personalized instruction. In this way, Artificial Intelligence provides differentiated assistance that can replace the lack of individual support in traditional classrooms.

4.2. **The benefits of AI for middle-level learners**

Results from several studies show that students with intermediate knowledge are the group that benefits most from collaborative interaction and from opportunities to develop self-efficacy and metacognitive skills. He, Lu, and Liu (2025) analyzed the impact of AI on collaborative learning and found that intelligent tools increase interaction and knowledge sharing among students with different levels of preparation. AI helps create dynamic networks of collaboration, making the group learning process more effective.

Furthermore, De Santo, Gimigliano, and Guerriero (2025) found that the use of AI in secondary schools improves the ability to reflect and self-assess among middle-level students, who already have the necessary foundations to benefit from the system's instruction but still need pedagogical supervision. The results suggest that AI has a stabilizing function for this group, helping them consolidate existing knowledge and develop skills for independent learning.

4.3. **AI as a tool for developing critical thinking in highly knowledgeable students**

High-achieving students use AI to deepen understanding, develop creativity, and critical thinking. According to Tu, Guo, Fang, and Meng (2025), the use of AI-generated agents in STEAM learning has allowed high-achieving students to explore new ways to solve complex problems and develop innovative ideas. At this level, AI does not serve as an auxiliary tool, but as an intellectual collaborator, challenging the student to reach higher levels of analytical thinking.

According to Arginteanu, Manea, and Oțoiu (2025), high-achieving students use AI to broaden their educational horizons, for example, to analyze data, develop scientific models, or build simulation scenarios. These experiences help develop higher cognitive competencies, such as

analyzing, evaluating, and creating, which correspond to the higher levels of Bloom's taxonomy.

4.4. **Challenges and dilemmas in using AI according to knowledge levels**

Although the results are promising, studies warn that the impact of AI is not always equal. According to Landa-Blanco (2025), in low-income countries or in schools with limited resources, the lack of equipment and pedagogical training significantly limits the potential of AI. Students with low knowledge may become dependent on the system's instructions, while those with high knowledge may underestimate the simplified content provided by the algorithms.

Furthermore, Alaeddine (2025) highlights the importance of the ethical dimension in the use of AI, as machine learning algorithms can create invisible biases that favor students with more digital competencies. These risks reinforce existing inequalities rather than reducing them. Therefore, contemporary literature emphasizes the need for sustainable and ethical pedagogical design, which guarantees equal access and benefit for every group of students.

4.5. **Summary of findings**

In conclusion, the research results show that the benefits of Artificial Intelligence are divided according to knowledge levels:

Level of knowledge	The main benefit of AI	Purpose of use	Possible risks
Low	Individual support, anxiety reduction, and increased self-confidence	compensatory	Dependence on system instruction
Medium	Increased self-efficacy and cooperation	Stabilizer	Excessive focus on feedback
High	Development of critical thinking and creativity	Amplifier	Underestimation of basic instruction

5. Discussions

The results of this exploratory research clearly show that the impact of Artificial Intelligence (AI) on the learning process is differentially distributed according to the knowledge levels of students, reflecting a spectrum ranging from a compensatory function for students with low knowledge to a reinforcing function for those with advanced knowledge. This is consistent with international trends reported by Martin, Kubsch, Yik, and Burlingham (2025), who argue that adaptive machine learning algorithms can reduce educational gaps through content personalization, but can also risk creating new inequalities in the absence of pedagogical control.

In line with the findings of Kumar (2025) and Ji et al. (2025), the study confirms that Artificial Intelligence plays a crucial role in supporting students with limited knowledge. Through immediate feedback, virtual tutors, and adaptive systems, AI helps reduce anxiety and increase the self-confidence of students facing conceptual difficulties. This result highlights the fact that for this group, AI acts as an equalizer, allowing them to progress at their own pace and compensate for learning gaps.

However, in line with Chen and Chen (2026), excessive use of AI by low-skilled students may create technological dependency, negatively impacting the development of critical thinking skills. This suggests that the effectiveness of AI for this group depends on pedagogical supervision and balanced integration between human interaction and digital assistance.

Another important theme that emerged from the analysis is the role of AI in consolidating knowledge for students with an intermediate level of preparation. According to He, Lu, and Liu (2025), intelligent tools that promote collaborative learning and group interaction help this category develop metacognitive skills and greater self-efficacy. This is the level where AI achieves optimal effectiveness, as students possess sufficient knowledge to understand the system's instructions and use them for self-development.

According to De Santo, Gimigliano, and Guerriero (2025), AI contributes to the transformation of learning from a passive to a reflective and collaborative process. This is particularly important in secondary education, where the ability to reflect on learning strategies is an

indicator of academic maturity. Consequently, in this group, AI has a stabilizing and transformative role, improving self-regulation and analytical thinking skills.

High-achieving students use AI as an intellectual collaborator, challenging critical thinking and fostering creativity. The results are consistent with studies by Tu, Guo, Fang, and Meng (2025) and Arginteanu, Manea, and Oțoiu (2025), who emphasize that the use of AI-generated agents in STEAM fields increases the ability for creative problem solving and exploration of complex concepts.

However, even though this group benefits more cognitively, Landa-Blanco (2025) warns that the education system must avoid “digital elitism,” where only highly literate students benefit from advanced use of technology. Therefore, pedagogical differentiation and equal access to intelligent tools remain essential to ensure that AI serves as a tool for development, not exclusion.

The discussion on the benefits of AI cannot be separated from the ethical and social issues that its use raises. According to Alaeddine (2025) and Reimers et al. (2025), the integration of AI in education should be based on ethical principles of fairness, transparency, and inclusiveness. Lack of access to infrastructure or adequate training can create new "digital divides", where students with low knowledge and limited socio-economic backgrounds are left behind.

In this context, Pandey (2025) emphasizes that Artificial Intelligence should be seen as a tool for inclusive education, which not only adapts to knowledge levels but also protects equality in opportunities and outcomes. This ethical dimension is essential to give sustainability to the integration of AI into pedagogical practices.

At a broader level, the study results show that the effects of AI are dependent on the level of knowledge, digital competencies, and institutional context. For low-knowledge learners, AI is a direct support; for medium-knowledge learners, it is a facilitator of self-regulation and collaboration; while for advanced learners, it is a research partner that enhances higher-order thinking capacities. This division reflects the need for personalized integration strategies that take into account the cognitive, emotional, and technological levels of each learner.

In line with Reimers et al. (2025), the results of this study support the idea that the transformation of education through AI must be systemic and not just technological. Only an integrated approach, combining technology with pedagogy and ethics, can ensure an effective and equitable use of artificial intelligence in education.

6. Conclusions

This theoretical exploratory study aimed to analyze which students benefit most from the use of Artificial Intelligence (AI) in the learning process, those with low, medium, or high levels of knowledge. Based on a critical review of international literature (2020–2025), the study aimed to understand the different roles that AI plays in improving the learning experience and the factors that influence its effectiveness.

Methodologically, the research has been developed through theoretical and synthesis analysis of scientific sources (Creswell & Poth, 2023), identifying the main patterns of AI use in different learning environments. The exploratory approach has been chosen to ensure in-depth understanding, interpretation, and critical reflection, without claiming empirical testing.

Based on the analysis of the literature, it results that the impact of Artificial Intelligence on student benefit varies significantly depending on the level of knowledge, digital competencies, and pedagogical support.

Three basic conclusions emerge from the analysis:

- Learners with limited knowledge benefit significantly from using AI tools that provide immediate feedback, personalized learning, and support at their own pace. As Kumar (2025) and Ji et al. (2025) show, this approach reduces the fear of failure and encourages active engagement. However, the lack of human intervention can create dependency on the technology, so pedagogical supervision remains essential.
- For middle school students, AI has a stabilizing and developmental function. Through collaborative learning, reflective tools, and adaptive assessment, AI helps strengthen self-regulation and metacognition skills (He, Lu, & Liu, 2025; De Santo et al., 2025). This group achieves more sustainable results because it has the necessary foundation to interpret and use the information provided by the intelligent system.

- High-achieving students use AI as an intellectual partner, helping them deepen their understanding, develop critical thinking, and experiment with creative solutions. Studies by Tu et al. (2025) and Arginteanu et al. (2025) show that for these students, AI serves as a catalyst for research and innovation. However, the danger lies in the overuse of algorithms that can limit original thinking in favor of technological convenience.

6.1. **Theoretical and practical implications**

The results of this study have several important implications for educational policymakers, teachers, and developers of educational technologies:

- Theoretically, the study contributes to understanding the multiple roles of AI in learning, presenting it as a flexible instrument that changes function depending on the level of knowledge.
- In practical terms, he suggests that the integration of AI should be accompanied by differentiated pedagogy, teacher training, and ethical regulations that guarantee equal inclusion.
- Institutionally, schools are required to develop combined human-machine strategies, where technology complements, rather than replaces, pedagogical interaction.

6.2. **Recommendations for practice and future research**

Based on the theoretical analysis and findings of this exploratory study, it is recommended that teachers and educational institutions use Artificial Intelligence as a supporting tool, rather than a substitute for human instruction. The role of the teacher remains central to the learning process, as human interaction provides emotional empathy, contextual understanding, and moral guidance that no algorithm can fully replace. The use of AI should be seen as a way to strengthen pedagogical effectiveness, personalize learning, and help teachers identify individual student needs.

Another important aspect is to adapt the use of AI to the knowledge levels of the students. Low-performing students should benefit from direct assistance and intelligent feedback systems that help them recover basic knowledge, while high-performing students should have

more freedom of exploration and creativity to exploit the potential of AI in solving complex problems. This pedagogical differentiation ensures that the technology does not mechanically equalize the learning process, but individualizes it in accordance with the capacities and learning styles of each student.

Another practical recommendation relates to the development of ethical guidelines for the proper use of Artificial Intelligence in education. The rapid spread of AI tools requires the establishment of clear standards for the protection of personal data, the prevention of digital addiction, and the preservation of authenticity in learning. The guidelines should aim to create a balance between technological benefit and the development of critical human thinking, transforming AI into an ethical and responsible partner in the learning process.

Regarding future research, it is recommended that future studies include empirical research with different samples of students to test in practice the effectiveness of AI at different levels of knowledge. This research will help to concretely measure the impact of technology on academic performance and the development of learning competencies. Another important direction is the analysis of teachers' digital competencies, as their preparation plays a direct role in the success of integrating AI in the classroom.

Cross-cultural comparative studies are also needed to understand how socio-economic and technological contexts influence the benefits that AI offers in education. Countries with limited technological infrastructure may face different challenges than those with high digital access, so comparing these contexts is essential for designing comprehensive policies. Finally, it is recommended that future research focus on integrating AI ethics into educational curricula so that students learn to use technology critically, responsibly, and creatively. Ethical education for the use of Artificial Intelligence is a prerequisite for developing sustainable and equitable education in the digital age.

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