

Artificial Intelligence and Personalized Teaching: New Paradigms for Learning

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Abstract

This study explores the potential of artificial intelligence in making learning more accessible and personalised, ensuring equitable access to educational resources. Through a theoretical and practical approach, the research examines the integration of AI-based technologies—such as virtual tutors, speech recognition software, adaptive learning platforms, and Affective Computing tools—within the context of upper secondary education. The findings reveal an increase in students' autonomy, an improvement in their performance, and enhanced engagement. However, significant ethical implications emerge, including privacy protection, algorithm transparency, and the risk of excessive technological dependence. The evidence gathered highlights the strategic role of AI in shaping tailored educational pathways while underscoring the importance of continuous professional development for teachers and a critical, informed pedagogical framework. The harmonisation of technological innovation and human interaction emerges as a key element for equitable and high-quality education, where the responsible use of AI contributes to creating stimulating and inclusive learning environments.

Keywords: Artificial Intelligence, Inclusive Education, Ethical AI, Adaptive Learning, Personalised Learning, Affective Computing, Teacher Training.

INTRODUCTION

Since its inception, AI has undergone various phases of development, alternating between periods of great enthusiasm and moments of stagnation—the so-called "AI winters"—until it eventually became a pervasive presence in our daily lives. Today, AI is not only a subject of study within computational disciplines but also in legal, social, and educational fields, involving international institutions such as UNESCO, the OECD, and the European Union. The use of artificial intelligence and new technologies in education offers significant opportunities for the inclusion of students from ethnic and cultural minorities, enhancing their engagement and academic performance (Salas-Pilco, Xiao & Oshima, 2022). However, the integration of AI in education also presents complex challenges, highlighting how the introduction of these technologies brings both advantages and potential drawbacks for institutions and teachers. One of the most widely accepted definitions describes AI as a system capable of perceiving, interpreting, reasoning, and acting within the physical or digital world, learning and adapting based on its actions and environmental responses. These concepts of perception, learning, and action define the semantic universe of contemporary AI, characterised by agency that is detached from human intentionality—a novelty emphasised by the philosopher of information, Luciano Floridi. The widespread adoption of AI has radically transformed various aspects of our society, including education (Tirocchi, 2023). From online research and voice assistants to machine translation and educational robots, AI applications are now an integral part of the school environment. In this scenario, crucial questions arise: What role can schools play in teaching a critical and informed use of AI? How can educators mediate the relationship between students and intelligent technologies? And what are the risks and opportunities associated with these transformations? AI systems can be seen both as "siren calls," capable of disorienting and creating dependence, and as "powerful titans," capable of revolutionising inclusive education by offering personalised support to students (Fiorucci, 2024). However, it is essential to adopt a critical and conscious approach to integrating AI into educational processes, balancing technological innovation with pedagogical values. Furthermore, Pattoia (2024) highlights, through the AI@School project, how artificial intelligence can be incorporated into teaching activities to support instruction and enhance the overall educational experience. Nevertheless, this integration raises significant challenges, particularly concerning data privacy, equity, and inclusion—issues that must be carefully considered to ensure the ethical and effective use of AI technologies in schools. Finally, as discussed in the Didamatica Proceedings (Adorni et al., 2021), the introduction of AI in educational processes opens new opportunities for personalised learning and improved teacher-student interaction. However, these innovations must be accompanied by critical reflections on the ethical implications and the skills educators need to manage such tools effectively. This article aims to explore the potential of AI in the context of educational inclusion, analysing how intelligent technologies can support personalised learning by addressing students' specific needs. It will examine concrete tools, real-world experiences, and the ethical challenges associated with the use of these technologies.

THE IMPACT OF ARTIFICIAL INTELLIGENCE ON LEARNING PROCESS

The introduction of artificial intelligence in educational contexts has led to a significant transformation in learning processes. AI-based technologies enable the personalisation of learning pathways according to students' individual needs, providing immediate and adaptive support. This approach allows for the identification of students' specific difficulties and the proposal of targeted solutions, thereby enhancing the effectiveness of teaching. The ability to analyse large volumes of educational data enables teachers to monitor students' progress in real time, fostering an evidence-based approach to teaching. However,

the adoption of AI also raises questions regarding the quality of human interactions in education (Fortino, Mangione & Pupo, 2025). The teacher-student relationship, which is fundamental for the development of critical and social skills, risks being compromised by excessive dependence on technology. Additionally, artificial intelligence offers tools that support the construction of students' digital identities through the use of avatars, allowing them to explore various aspects of themselves in a virtual environment. If properly guided, this process can contribute to the development of social skills and emotional regulation, promoting inclusion and a sense of belonging. Another key aspect to consider is participatory AI, in which teachers, students, and families collaborate in the co-development of AI-based educational solutions. This approach not only increases the acceptance of these technologies but also enhances human capabilities, creating a more dynamic and inclusive learning environment (Ranieri, Cuomo & Biagini, 2022). Another fundamental element is AI's ability to adapt to different learning styles, making education more accessible and engaging. However, as noted by Parisi and Rossi (2023), it is crucial that the adoption of these technologies maintains a balance between innovation and the relational dynamics that form the core of teaching. In this context, the development of personal skills, often referred to as soft skills, plays a central role. Pellerey (2023) highlights how these skills are essential for navigating personal, social, and professional challenges, and how their development should be integrated into educational processes to prepare students for a future characterised by continuous interaction with intelligent technologies. Despite the potential of AI, access to these technologies is not uniform, creating a digital divide that can exacerbate educational inequalities. Schools in disadvantaged socio-economic contexts often lack the necessary infrastructure to effectively implement AI-based tools (Gochen, & Aydemir, 2020). This phenomenon limits opportunities for personalised learning for many students, undermining the principle of equity in education. The digital divide is not only about access to technology but also about the ability to use it competently. Both educators and students must receive adequate training to harness the potential of AI critically and consciously. Without proper digital literacy, these technologies risk becoming exclusive rather than inclusive tools. As Ianes and Cramerotti (2017) emphasise, educational inclusion cannot exist without digital accessibility, which is a fundamental tool for overcoming learning barriers and ensuring the active participation of all students. Furthermore, as highlighted by Bianchi and Verdi (2023), the lack of adequate infrastructure and specialised training in rural areas represents a significant obstacle to AI adoption, further exacerbating the digital divide and limiting fair access to advanced educational opportunities. Tools such as virtual tutors, speech recognition applications, and automatic translation software can facilitate access to content for students with cognitive, sensory, or linguistic disabilities. A notable example of this potential is the use of inclusive avatars, which allow students with disabilities to represent themselves authentically and respectfully in virtual environments. The ability to personalise an avatar that reflects their disability not only promotes inclusion but also strengthens students' sense of identity and belonging within digital educational communities.

Ianes and Canevaro (2017) stress that universal accessibility is key to ensuring that all students, regardless of their abilities, can actively and successfully participate in educational processes. This approach not only reduces physical and cognitive barriers but also values diversity as a fundamental resource for learning. Moreover, AI can be used to create more inclusive learning environments, adapting teaching materials to meet students' diverse needs. However, to ensure effective inclusion, the implementation of these technologies must be accompanied by careful pedagogical planning and ethical reflection on the implications of AI in education (Felix, 2020).

The role of the teacher in the age of Artificial Intelligence

The integration of artificial intelligence (AI) into education is radically transforming the role of the teacher, redefining teaching methods, the educational relationship, and the management of learning processes. Traditionally, the teacher has been at the heart of the educational process, acting as a transmitter of knowledge and a guide for students' cognitive and socio-emotional development (Scarano, Tuccillo, Vivona, 2024). However, with the advent of digital technologies and AI, this centrality is evolving into a more dynamic model, in which the teacher assumes the role of mediator and facilitator of learning. AI enables an unprecedented level of personalised learning, thanks to machine learning tools and adaptive systems capable of analysing student performance data and suggesting tailored learning pathways (Pedro et al., 2019). This shift requires teachers to develop new competencies to integrate and manage these technologies effectively. The teacher can no longer simply transmit information but must become an expert in interpreting the data provided by learning analytics systems and adapting pedagogical practices to meet students' individual needs. In the contemporary educational landscape, the teacher's professional profile is enriched by advanced digital skills and a deep understanding of innovative teaching methodologies (Iannaccone, Sorrentino & Vivona, 2025). The ability to use AI-based tools and integrate this information into daily teaching is now essential for 21st-century educators (Reiss, 2021). This approach is rooted in the pedagogical principles of Dewey (1938), who viewed education as an active and participatory experience. When used correctly, AI can free teachers from repetitive tasks, allowing them to focus on personalised support and the promotion of critical thinking. Roll and Wylie (2016) emphasise that, despite AI offering powerful tools for educational support, the role of the teacher remains irreplaceable in managing classroom social dynamics, motivating students, and fostering critical and metacognitive skills. Intelligent technologies provide data and recommendations, but it is up to the teacher to interpret them and translate them into effective teaching strategies. The transformation of the teacher's role is also reflected in constructivist pedagogical theories, such as those of Vygotsky (1978), which view the teacher as a guide in the process of autonomous and personalised learning (Chang & Lu, 2019). AI amplifies these possibilities, enabling the continuous adaptation of content based on students' specific needs. However, for this approach to be effective, the teacher must maintain an active role in supervision and guidance. A concrete example of this evolution is the use of educational chatbots and virtual tutors, which assist teachers by responding to students' questions and providing personalised explanations. Panciroli et al. (2020) highlight that these tools must be integrated with methodologies that promote human interaction and peer discussion, preventing learning from becoming an isolated experience. The introduction of AI in education requires teachers to develop a broad set of skills. It is necessary to acquire advanced digital competencies, including the effective use of AI tools, the ability to interpret data from learning analytics systems, and the integration of this information into lesson planning. At the same time, it is essential to develop critical thinking and an ethical evaluation of the technologies used. Teachers must be able to analyse the implications of AI in education, recognising the limitations of algorithms and potential biases in the data used, to ensure the responsible and conscious use of these technologies. Another key skill concerns the ability to personalise teaching. AI offers powerful tools for designing tailored learning pathways, but it is up to the teacher to define the pedagogical context and adapt teaching strategies to students' individual needs. This involves not only using technology to tailor content but also creating a learning environment that values each student's uniqueness, promoting inclusion and respect for diversity. The teacher must continue to play a central role in managing social and relational dynamics within the classroom. Building a positive, stimulating, and collaborative learning environment remains one of the teacher's primary responsibilities, fostering dialogue and interaction among students, encouraging active participation,

and promoting teamwork. The advent of AI in education does not replace the teacher's role but rather transforms it, making it even more central to the development of meaningful learning experiences. If used consciously and integrated with innovative teaching methodologies, AI can become a powerful ally in personalising teaching and supporting students with learning difficulties. However, it is crucial that teachers receive adequate training and are fully aware of the opportunities and challenges these technologies present in order to create more effective, inclusive, and engaging learning experiences (Allodola, 2024).

The impact of technologies on learning processes and the transformation of teaching practices

The increasing use of artificial intelligence (AI) and information and communication technologies (ICT) in education is driving a profound transformation in teaching practices, presenting both challenges and new opportunities for the education sector. The adoption of intelligent tools requires a rethinking of teaching strategies to ensure a balanced integration that enhances the potential of technology without compromising the human dimension of teaching and learning. AI can support teachers in personalising learning pathways, analysing student performance data, and creating more interactive and engaging learning environments. Adaptive learning platforms, for instance, analyse individual student performance and provide personalised recommendations to improve outcomes. However, excessive reliance on automated technologies risks diminishing the active role of teachers and turning education into a process driven by algorithms, leading to standardised teaching that lacks pedagogical contextualisation. To avoid such risks, it is essential to maintain a balance between technological support and the centrality of the educational relationship between teacher and student. AI should function as an intelligent assistant that provides data and tools to support lesson planning, while the teacher retains control of the educational process by interpreting the information provided by algorithms and adapting teaching strategies to the needs of the class. At the same time, ICT offers additional opportunities for transforming educational practices, facilitating the creation of collaborative and accessible learning environments. Digital platforms help overcome physical and temporal barriers, promoting blended learning and supporting the inclusion of students with diverse educational needs. However, here too, the integration of ICT must be accompanied by careful pedagogical planning that values human interaction and peer collaboration. One of the most innovative aspects of AI applied to education is its ability to personalise learning pathways according to each student's needs and abilities. However, for this personalisation to be effective, the teacher must play an active role in supervising and guiding the learning process. The use of adaptive learning tools should be integrated with collaborative teaching methodologies, such as cooperative learning and problem-based learning, which encourage student interaction and shared knowledge construction. The transformation of teaching practices also requires continuous professional development for teachers in the use of intelligent technologies (Martiniello, Belfiore & Saraiello). The effectiveness of AI in education depends on teachers' ability to use it critically and consciously, integrating technological tools with effective pedagogical strategies (Rivoltella, 2010). Teachers must develop advanced digital skills, data interpretation abilities, and a strong understanding of the ethical implications of technology use in education. The integration of ICT and AI should be accompanied by constant monitoring of their effectiveness in learning processes. The use of learning analytics tools allows the collection of student performance data and the identification of potential weaknesses in the teaching process. However, it is crucial that this data is interpreted from a pedagogical perspective, avoiding excessive dependence on algorithms and ensuring that learning remains focused on students' needs. The transformation of teaching practices should not be limited to adopting new technologies but must also be accompanied by a cultural shift that values pedagogical innovation and

the central role of the teacher in education. AI and ICT offer extraordinary opportunities to improve teaching effectiveness and promote inclusion, but their success depends on the education system's ability to integrate these technologies critically and consciously, always prioritising student well-being and development (Maietta, Martiniello & Conte, 2023). The key challenge for the future of education will be to strike a balance between technological innovation and pedagogical values, ensuring that learning remains an authentic, meaningful, and humanly enriching experience (Altomari, Miceli, 2023). AI and ICT can become powerful tools to support this process, but their success depends on educators' ability to use these technologies responsibly, creatively, and with a focus on student well-being.

METHODOLOGY

The adoption of artificial intelligence (AI)-based technologies in educational settings represents an innovative process that is redefining traditional teaching and learning paradigms. The opportunities offered by AI for personalising learning pathways and enhancing school inclusion dynamics serve as effective tools to meet the needs of an increasingly diverse student population. From this perspective, the present study aimed to investigate the concrete impact of adopting AI-based tools in educational processes, with a particular focus on improving students' autonomy, academic performance, and perceived level of inclusion within the school environment. The study was conducted in an upper secondary school, involving two Year 12 classes, with a total of 47 students aged between 17 and 18. The choice of this age group was motivated by their greater cognitive maturity and ability to engage critically with advanced educational technologies. The methodological approach adopted was quantitative-descriptive, designed to collect objective data and provide a detailed representation of students' perceptions and experiences regarding the use of AI-based technologies. The primary data collection tool used was a structured questionnaire, specifically designed to capture the various aspects of students' interaction with AI tools. The questionnaire comprised 10 questions, divided between closed-ended responses (multiple-choice and Likert scale) and open-ended responses, in order to combine quantitative analysis with qualitative elements useful for understanding the nuances of students' subjective experiences. The questions were organised into three main thematic areas: (1) the perceived effectiveness of AI tools in learning processes, (2) students' level of engagement and motivation in educational activities, and (3) the dynamics of school inclusion and social interaction mediated by intelligent technologies. The data collection phase took place at the end of a two-month experimental period, during which students used various AI-based applications integrated into teaching activities on a daily basis. Among the technologies employed were personalised virtual tutors, designed to provide targeted support in school subjects through tailored explanations and immediate feedback. These tutors enabled the adaptation of educational content to each student's learning pace and style, fostering a highly personalised teaching approach. At the same time, speech recognition software was used to facilitate active student participation. These tools helped reduce communication barriers, allowing students to express themselves with greater autonomy and confidence in language and literature lessons. Furthermore, adaptive learning platforms played a central role in the experiment, offering the possibility to adjust the difficulty level of educational content in real time based on students' responses and performance. This approach made learning more flexible and dynamic, encouraging greater participation and motivation. A distinctive element of the project was the use of Affective Computing tools, which allowed for the monitoring of students' emotional engagement during learning activities. By analysing facial expressions and biometric signals, these tools provided teachers with valuable insights into students' emotional states, enabling timely interventions to adapt teaching strategies and improve instructional effectiveness. This aspect represented a significant innovation in classroom

management, promoting a more sensitive and responsive approach to students' emotional needs. Data collection was conducted anonymously, ensuring the confidentiality of information and compliance with current privacy and data protection regulations. The questionnaire results were subsequently analysed using descriptive statistical techniques, with the aim of identifying significant trends and drawing conclusions useful for understanding the potential of AI in the educational context. The data analysis also considered open-ended responses to integrate the quantitative approach with a qualitative perspective, highlighting students' individual experiences. In summary, the methodology adopted allowed for a systematic and rigorous exploration of the impact of artificial intelligence on learning processes and school inclusion dynamics, providing a solid foundation for further reflections and the formulation of pedagogical recommendations.

QUESTIONNAIRE

The questionnaire used for data collection was designed to explore the effectiveness and perceived impact of artificial intelligence tools on learning processes and school inclusion. The structure of the questionnaire included a combination of closed-ended questions, with responses on a five-point Likert scale, and an open-ended question, allowing students to express personal and detailed reflections.

The questions were divided into three main thematic areas:

1. Perceived effectiveness of AI tools in learning
2. Students' level of engagement and motivation
3. School inclusion dynamics and social interaction

Table 1. Questionnaire questions and possible responses

No.	Question	Response Type
1	To what extent have virtual tutors improved your understanding of school subjects?	Likert Scale (1=Not at all, 5=Very much)
2	Do you feel more independent in completing assignments thanks to AI tools?	Likert Scale (1=Not at all, 5=Very much)
3	How much do you think adaptive learning platforms have contributed to your academic performance?	Likert Scale (1=Not at all, 5=Very much)
4	Have speech recognition software tools made lessons easier for you?	Likert Scale (1=Not at all, 5=Very much)
5	Have AI-based technologies helped you manage your study time more effectively?	Likert Scale (1=Not at all, 5=Very much)
6	Do you feel that using AI has increased your motivation to participate in lessons?	Likert Scale (1=Not at all, 5=Very much)
7	Has the use of Affective Computing tools made lessons more engaging?	Likert Scale (1=Not at all, 5=Very much)
8	Has the use of personalised avatars facilitated interaction with your classmates?	Likert Scale (1=Not at all, 5=Very much)
9	Have AI technologies contributed to creating a more inclusive school environment?	Likert Scale (1=Not at all, 5=Very much)

No.	Question	Response Type
10	Describe how the use of AI has influenced your overall school experience.	Open-ended response

This combination of questions allowed for the collection of both quantitative and qualitative data, providing a comprehensive overview of the impact of AI on learning and school inclusion.

RESULTS

This section presents the findings from the data analysis conducted on the responses collected through the administered questionnaire. The questionnaire consisted of 10 questions, with the first 9 using a Likert scale (1 = "Not at all"; 5 = "Very much"), while the tenth was an open-ended question. A total of 47 students participated in the study. Below is Table 1, which summarises the frequency of responses for each of the 9 Likert scale questions, accompanied by a brief interpretative commentary.

Table 2. Response frequencies

No.	Question	1 (Not at all)	2	3	4	5 (Very much)	Comment
1	To what extent have virtual tutors improved your understanding of school subjects?	4	6	14	13	10	The majority (14+13) report a medium-high improvement (3 or 4). Ten students assigned the highest score (5).
2	Do you feel more independent in completing assignments thanks to AI tools?	5	8	12	13	9	The distribution is concentrated at intermediate levels (3 and 4), while 9 students rated their autonomy at the highest level (5).
3	How much do you think adaptive learning platforms have contributed to your academic performance?	3	6	15	12	11	The perceived contribution is generally positive: 15 students selected 3, 12 chose 4, and 11 assigned the highest score (5).
4	Have speech recognition software tools made lessons easier for you?	2	5	10	16	14	A strong appreciation emerges: over half (16+14) assigned a high score (4 or 5).
5	Have AI-based technologies helped you manage your study time more effectively?	4	7	12	14	10	AI provides moderate support in time management, with most responses at levels 3–4 (12+14) and 10 at level 5.
6	Do you feel that using AI has increased your motivation to participate in lessons?	4	6	11	14	12	The majority (14+12) perceive a significant increase in motivation.
7	Has the use of Affective Computing tools made lessons more engaging?	3	4	8	15	17	A high level of emotional engagement is observed: 15 students selected 4, and 17 reached the highest level (5).
8	Has the use of personalised avatars facilitated interaction with your classmates?	3	5	10	13	16	Personalised avatars are considered effective in fostering collaboration: 13 responses at 4 and 16 at 5.

No.	Question	1 (Not at all)	2	3	4	5 (Very much)	Comment
9	Have AI technologies contributed to creating a more inclusive school environment?	2	7	13	12	13	A significant proportion of students (12+13) assigned a high score (4 or 5), highlighting a tangible inclusive effect.

The analysis of the collected data highlights how the integration of Artificial Intelligence in the school environment has generated significant effects on various aspects of the learning experience. The use of virtual tutors has shown a positive impact on subject comprehension, with most students reporting medium-high scores, while a smaller group indicated a particularly strong benefit. Autonomy in completing assignments has also improved, albeit to a moderate extent overall, with some students recognising a maximum increase in their ability to manage schoolwork. Adaptive learning platforms have proven particularly effective in supporting academic performance, with a substantial number of students perceiving a significant contribution to optimising study strategies and personalising learning pathways. Among the most appreciated technologies, speech recognition stands out as a highly useful tool for listening and participating in lessons, particularly for those requiring assistive tools. AI has also provided substantial support in study time management, facilitating personal organisation and enabling more effective workload planning. Another notable aspect is the increase in student motivation, with many highlighting greater engagements in lessons due to the use of intelligent technologies. Emotional involvement appears particularly high, with a significant proportion of students assigning the highest rating to Affective Computing technologies, emphasising their positive impact on participation and interaction with educational content. The adoption of personalised avatars has also facilitated collaborative dynamics, promoting greater interaction among students and strengthening their sense of belonging to the class group. The perception of a more inclusive environment thanks to AI was widely shared, with a considerable number of students recognising the value of these technologies in breaking down learning barriers. The analysis of open-ended responses further confirmed these trends, highlighting key aspects of the AI-mediated school experience. Many students emphasised the increased interactivity and the ability of technology to make learning more dynamic and engaging. The possibility of receiving targeted suggestions and real-time feedback was perceived as a strategic factor for improving individual study pathways. AI was also recognised as an effective tool for fostering inclusivity, particularly by students with learning difficulties or sensory impairments, who highlighted the greater accessibility of content and the ability to engage with it in an adaptive manner. The ability to support workload organisation was frequently mentioned, with widespread appreciation for features such as automated planning, personalised reminders, and study time optimisation. Overall, the results outline a positive picture of the impact of Artificial Intelligence on the school experience, both in terms of teaching effectiveness and motivation and inclusion. The use of virtual tutors and adaptive platforms has helped improve comprehension and academic performance, while speech recognition has facilitated access to educational content, particularly benefiting students with specific needs. Affective Computing technologies and the use of personalised avatars have proven crucial in increasing emotional engagement and active participation, helping to reduce the risk of social exclusion. The insights gathered from open-ended responses confirm and reinforce these findings, suggesting that a conscious and pedagogically targeted use of AI can represent a significant opportunity for educational innovation. However, the integration of these technologies into the school environment requires careful reflection

to ensure that they do not replace but rather enhance existing educational practices. A balanced approach that combines the use of advanced technological tools with the centrality of the educational relationship is essential to guarantee fair, personalised, and truly inclusive learning. Below is an additional table that, in addition to summarising the mean (M) scores assigned by students to the 9 Likert scale questions, also includes the standard deviation (SD), useful for assessing response variability. These values are calculated based on the frequencies shown in the previous table.

Table 3. Descriptive Indicators (Mean and Standard Deviation)

Question	Mean (M)	Standard Deviation (SD)
Q1. Virtual tutors and comprehension: To what extent have virtual tutors improved your understanding of school subjects?	3.40	1.20
Q2. Autonomy in completing assignments: Do you feel more independent in completing assignments thanks to AI tools?	3.28	1.25
Q3. Adaptive learning and performance: How much do you think adaptive learning platforms have contributed to your academic performance?	3.47	1.16
Q4. Support through speech recognition: Have speech recognition software tools made lessons easier for you?	3.74	1.12
Q5. Study time management: Have AI-based technologies helped you manage your study time more effectively?	3.40	1.21
Q6. Increase in motivation: Do you feel that using AI has increased your motivation to participate in lessons?	3.51	1.24
Q7. Engagement with Affective Computing: Has the use of Affective Computing tools made lessons more engaging?	3.83	1.19
Q8. Interaction with personalised avatars: Has the use of personalised avatars facilitated interaction with your classmates?	3.72	1.21
Q9. More inclusive school environment: Have AI technologies contributed to creating a more inclusive school environment?	3.57	1.16

Key Observations

1. Engagement and motivation: The highest mean scores are recorded for Q7 (M = 3.83) and Q8 (M = 3.72), highlighting the strong perceived impact of Affective Computing and personalised avatars.
2. Practical support in the classroom: Q4, regarding speech recognition (M = 3.74), shows a high mean, confirming the practical usefulness of this tool in accessing content.
3. Response variability: Although all standard deviations range between 1.12 and 1.25, some items show greater consistency in responses (e.g., Q4), while others (e.g., Q2 and Q6) reveal more diverse opinions.
4. Perception of inclusivity (Q9): The mean score (3.57) and standard deviation (1.16) indicate an overall positive trend, though with varying degrees of agreement among students.

The combination of these data with the results previously discussed in Table 2 (response frequencies) and the qualitative observations (Q10) provides a comprehensive picture of the positive impact that Artificial Intelligence technologies can have on the learning process and the educational environment as a whole.

REFLECTIONS AND RECOMMENDATIONS

The analysis of the administered questionnaire highlights an overall positive impact of artificial intelligence (AI) in educational settings, both in terms of improving learning processes and enhancing school inclusion dynamics (Goksel & Bozkurt, 2019). However, the adoption of such technologies raises critical questions and offers insights for future implementations and further research. The collected data show that AI-based tools have facilitated greater personalisation of learning, improving students' comprehension of subjects and increasing their autonomy. In particular, virtual tutors and adaptive learning platforms have enabled the adjustment of content and learning pace according to individual needs, proving especially effective in supporting students with learning difficulties. The assistance provided by speech recognition software was among the most appreciated aspects, significantly contributing to accessibility in educational content. Similarly, the use of Affective Computing tools has increased emotional engagement and participation in lessons, making the learning experience more dynamic and immersive. The use of personalised avatars has also facilitated peer interactions, fostering a collaborative and inclusive learning environment. This aspect is particularly relevant for students with social difficulties, who have found technology to be an effective means of self-expression and interaction with their classmates. However, the effectiveness of AI largely depends on the quality of its pedagogical integration. If not carefully managed, the automation of teaching processes could diminish the active role of teachers and compromise the human dimension of education, while excessive reliance on digital tools risks limiting the development of students' critical and creative thinking skills. In light of these considerations, it is recommended to strengthen continuous teacher training so that educators acquire not only technical but also pedagogical and ethical competencies, enabling them to integrate AI-based technologies critically and consciously into daily teaching practices (Karsenti, 2019). A crucial aspect concerns the balance between technology and human relationships: maintaining equilibrium between the support provided by AI and the centrality of the teacher-student relationship is essential to prevent technology from replacing the guiding role of teachers, whose presence remains fundamental in knowledge mediation. Furthermore, the use of AI should not only focus on enhancing subject-specific skills but also on fostering transversal competencies, such as critical thinking, creativity, collaboration, and time management, thus promoting well-rounded and balanced student growth. Ethical considerations represent another key element: AI technologies that collect and analyse personal data, such as Affective Computing, require the implementation of strict protocols to ensure data security and compliance with privacy regulations. Finally, it is necessary to establish continuous monitoring and evaluation systems to assess the effectiveness of AI in educational processes and make adjustments based on the results obtained. This will allow for the constant adaptation of teaching strategies, ultimately enhancing students' learning experiences.

CONCLUSIONS

The findings of this study confirm the numerous potentials of Artificial Intelligence in education, highlighting its contribution to personalising learning pathways and enhancing inclusive practices. The data collected from the two upper secondary school classes involved in the study indicate a positive impact of AI, with significant improvements in subject comprehension, student autonomy, and active participation. However, the effective integration of these technologies into educational processes is not without challenges, as it depends on the quality of the tools used, teachers' preparedness to adopt a critical and informed approach, and the availability of adequate resources to ensure equitable access to technological innovations. One of the most critical aspects concerns ethical implications, particularly

the management of personal data and privacy protection, which require strict regulations and continuous monitoring. The adoption of AI must take place within a pedagogical framework that safeguards students' rights, ensuring a respectful and inclusive learning environment. Another challenge involves balancing the role of technology with that of the teacher, ensuring that AI does not become a replacement but rather a support tool that enhances the learning experience and fosters active participation. Human interaction remains central to the educational process and cannot be replaced by automated solutions, no matter how advanced they may be. The integration of AI in education represents a remarkable opportunity to innovate teaching and learning processes, contributing to greater personalisation and accessibility. However, the success of this transformation will depend on the education system's ability to adapt to new challenges, maintaining a balance between technological innovation and pedagogical values. Future research could further explore the long-term impact of AI, not only on academic performance but also on students' socio-emotional development. Additionally, it will be essential to investigate AI's role in reducing the digital divide, analysing how these technologies can be made accessible across different socio-economic contexts. As highlighted by Panciroli and Rivoltella (2023), AI integration must be accompanied by a critical reflection on educational models and teaching objectives, to avoid an uncritical use of technology that could impoverish the learning experience. The increasing possibility of customising educational pathways raises important questions regarding standardisation and equity in access to learning opportunities. Reda (2024) warns of the risks of fragmentation in the school experience due to hyper-personalisation, which could reduce collaborative learning opportunities and peer interaction, both of which are fundamental for developing social and critical skills. A critical reflection must also consider the psychological and social implications of intensive AI use, particularly concerning cognitive load management and the risk of social isolation. The evolution of educational models must be guided by a complementary approach, integrating traditional methodologies and digital tools while preserving the human dimension of learning. If used consciously and with sound pedagogical principles, Artificial Intelligence can become a valuable ally in improving education quality, fostering more inclusive and engaging learning environments. In conclusion, AI offers promising prospects for transforming education, but its impact will depend on the approach adopted by the education system. It is essential that the implementation of these technologies is carried out with respect for students' needs and well-being, ensuring that their use contributes to creating equitable, stimulating, and inclusive learning environments. Only through a balanced and informed use of digital innovations can the full potential of AI in education be realised, fostering the development of transversal skills and preparing students to face future challenges with a critical mindset.

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