

***Exploring Pre-service Teachers' Perspectives on
Integrating Artificial Intelligence in Education***

Dimitris Panagou

PhD Candidate

Georgios Stylos

Teaching Staff

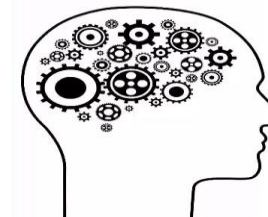
Konstantinos T. Kotsis

Professor

Laboratory of Education and Teaching Physics,

Department of Primary Education,

University of Ioannina



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Introduction

Defining AI in Education:

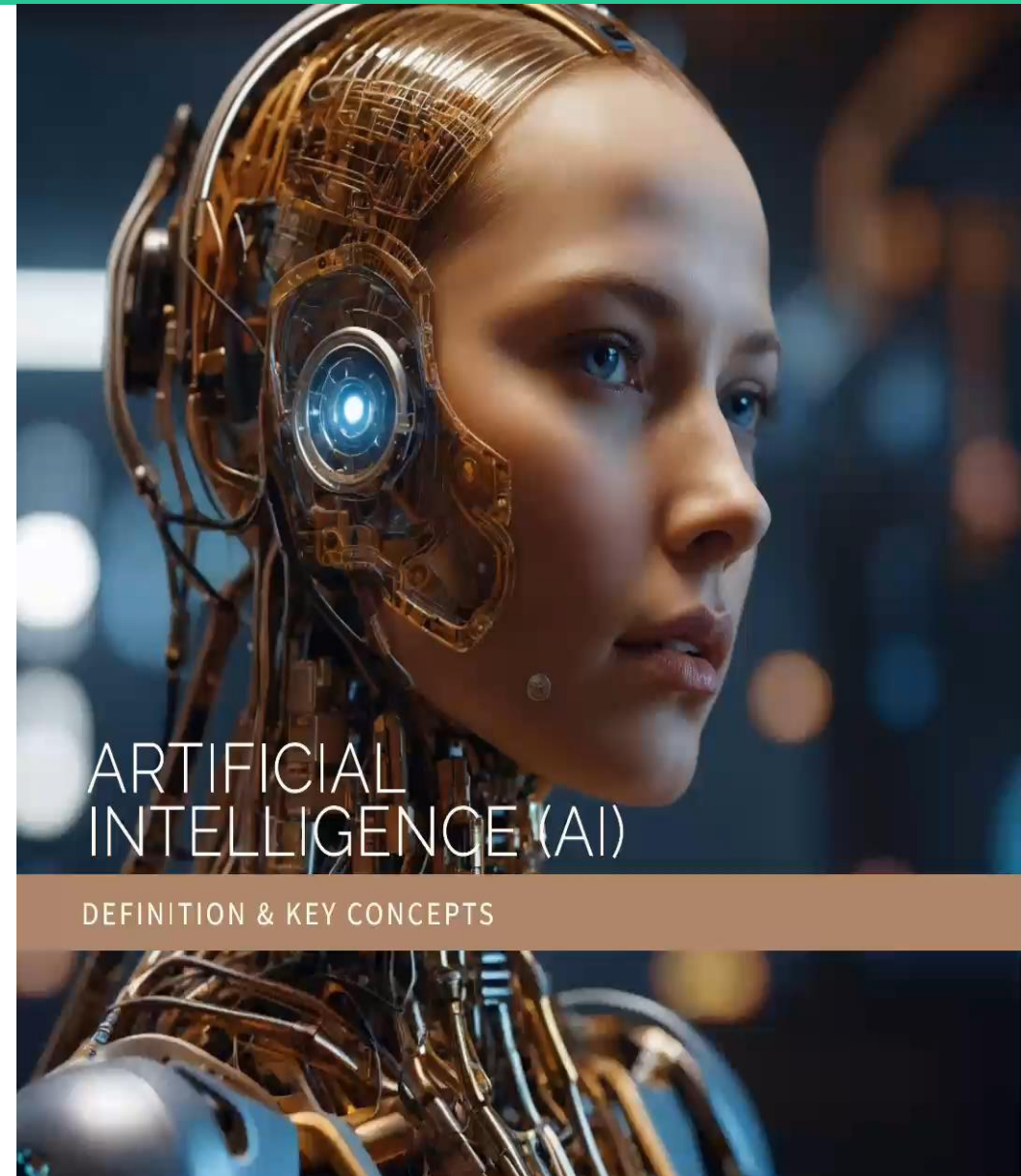
The use of artificial intelligence (AI) in education improves the teaching and learning process through the use of computer learning and advanced systems. Using these tools, large amounts of data can be processed, personalized study plans can be developed, administrative tasks can be streamlined, and relevant information can be delivered to students and teachers more efficiently (Chen et al., 2020; Pedro et al., 2019).

Global Education Shift:

Education is experiencing rapid, unprecedented changes driven by Artificial Intelligence (Luckin & Holmes, 2016).

AI as a Present-Day Reality:

AI is no longer just a futuristic concept; it's a powerful, current force transforming teaching and learning practices (Guilherme, 2019).



Theoretical Framework



Key Areas of Impact

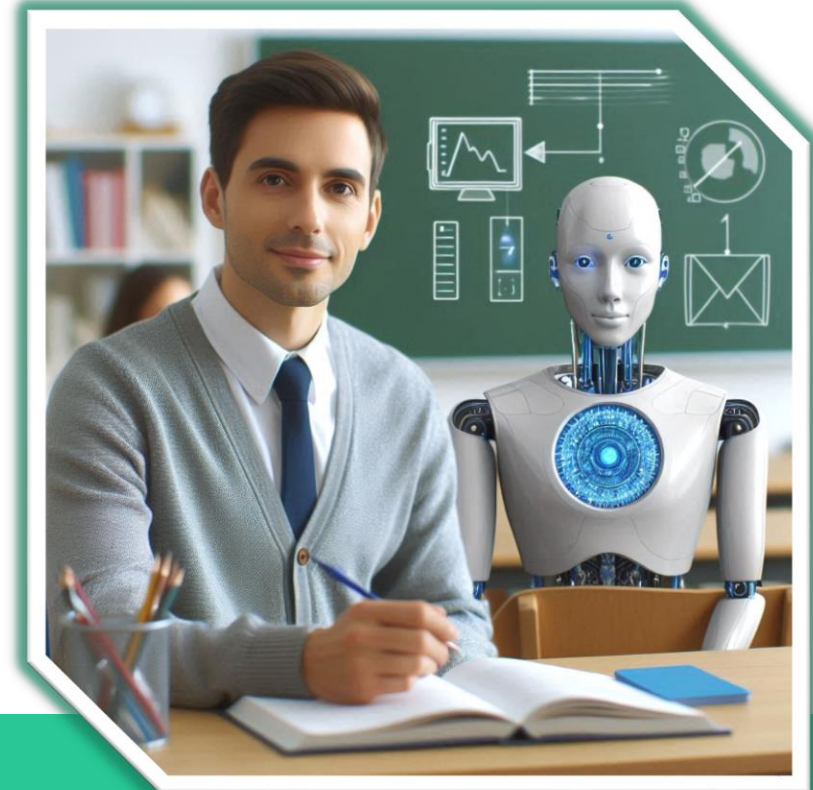
A shift from traditional methods: AI technology is being introduced into schools, influencing:

- **Personalized learning experiences:** AI applications can customize learning programs to meet the needs, learning styles, and paths of each student. By analyzing student performance data, these systems create learning opportunities that support differentiated learning, helping students learn better (Pratama et al., 2023).
- **Data-driven instruction:** AI systems can analyze education data to identify patterns and trends, providing teachers and administrators with insights to improve curriculum design, student support services, and overall education improvement (Guan et al., 2020).



- **Automated administrative tasks:** AI can take care of time-consuming tasks like grading, scheduling, and keeping track of attendance, so teachers can spend more time teaching and interacting with students (Parycek et al., 2023).

- **Interactive virtual environments:** These platforms use AI to continuously assess student progress and adjust content and difficulty levels accordingly. By enabling learners to adapt, they are continuously challenged, promoting better retention and mastery of skills (Alam & Mohanty, 2022). **AI tutors and chatbots:** Virtual tutors and chatbots provide round-the-clock support by answering students' queries, providing practice exercises, and providing additional resources. In addition to supporting learning outside of the classroom, these tools also provide immediate assistance when needed (Alam, 2021).



The Promise and Challenges

While AI offers immense potential to revolutionize education, it also presents challenges, including ethical concerns, data privacy issues, and the need for educators to develop new skills.

As we explore AI's role in education, it is essential to balance technological advancements with the preservation of the human touch that is central to effective teaching and learning.

Role of Pre-Service Teachers:

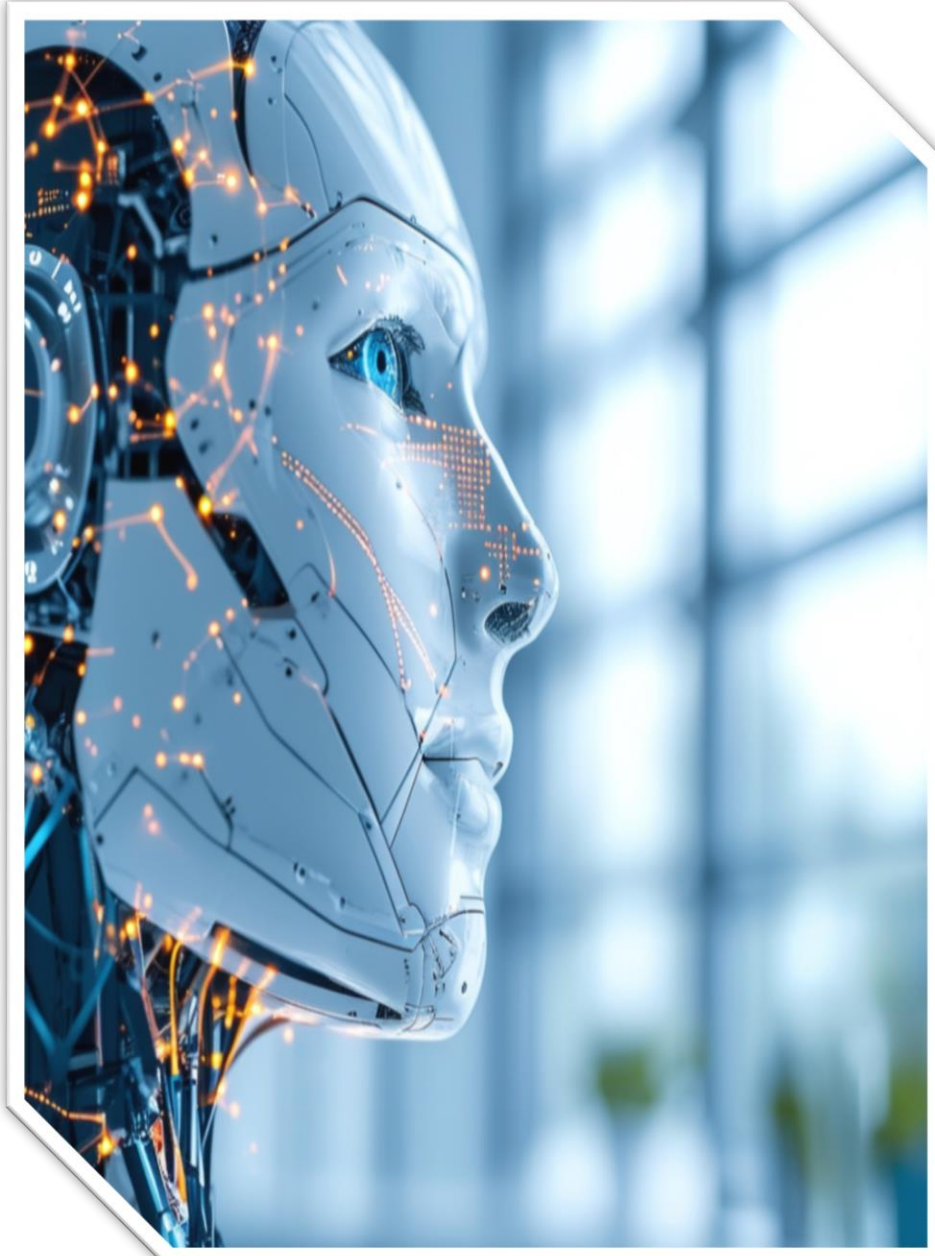
- Must master pedagogical and content knowledge
- Develop a deep understanding of how AI can enhance learning
- Stay aware of AI's limitations and ethical considerations

Critical Juncture for Emerging Educators:

It is important for pre-service teachers to balance the promises of artificial intelligence with the realities of the classroom

In education, technology must become an empowering tool, not a replacement for the human touch

The Promise and Challenges



Role of Pre-Service Teachers:

Changeover from learners to educators, pre-service teachers hold a unique, pivotal position in the educational landscape (Haseski, 2019). Implications with fresh perspectives and a future-oriented mindset are integral for blending upcoming technologies such as AI into education (Ayanwale et al., 2024).

Pre-Service Teachers Influence the Future of Teaching:

As is well known, artificial intelligence is on the horizon in classrooms globally, being poised to the forefront of implementation by pre-service teachers (Pu et al., 2021). At the end of it, pre-service teachers are not simply adjusting to the current educational framework but also constructing the future of teaching.

Pre-Service Teachers Bridging Theory and Practice:

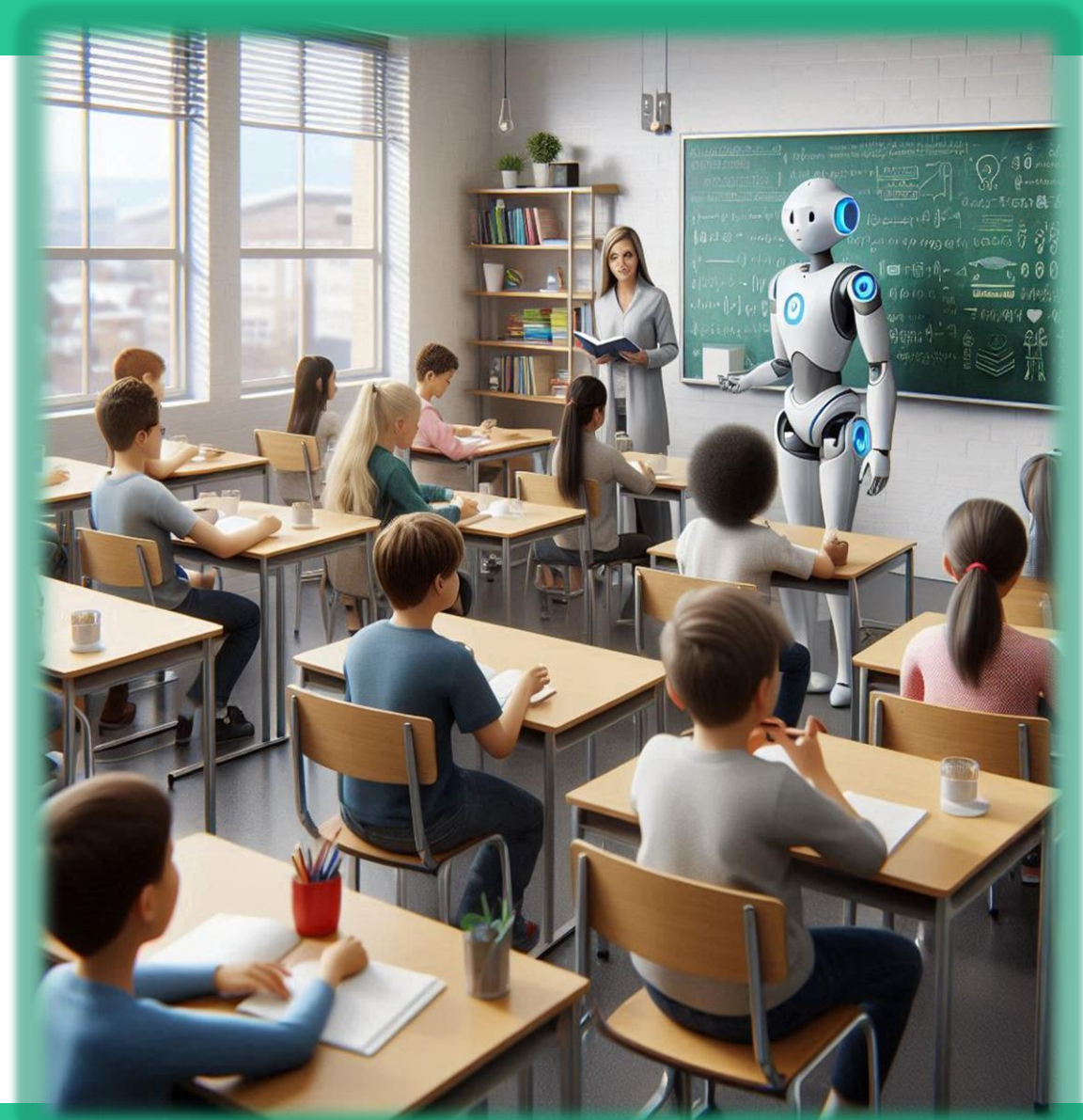
Pre-Service Teachers perspectives provide a critical link between theoretical advancements in AI and practical classroom applications and their insights are vital for guiding educational policies, curriculum design, and teacher training programs (Zhang et al., 2023).

Education must ensure that AI enhances learning:

It's essential to understand pre-service teachers' views to ensure AI is used to truly enhance learning, and a balanced approach is needed to preserve human elements like empathy, creativity, and critical thinking in teaching.

Incorporating Pre-Service Teachers' Voices:

Including their perspectives in discussions about AI in education helps align technological innovations with the core values of education, and this alignment fosters environments where both teachers and students can thrive.



Scope/Aims of the research



Objective of the Research:

Explore Pre-Service Teachers' Perspectives:

- Focus on how pre-service teachers view the integration of AI into educational practices.
- Engage with their attitudes, concerns, and expectations regarding AI's role in education.



Comprehensive Understanding:

- Examine the nuanced views of emerging educators on AI's potential to shape the future of education.
- Go beyond simply identifying support or opposition, exploring how AI could enhance or challenge traditional teaching methods.

Significance of the topic

Identify Areas of Concern:

We highlight potential concerns of preservice teachers regarding ethical implications, data privacy issues, and the risk of diminishing the human connection in education.

Practical Implementation Insights:

This study explores how pre-service teachers perceive AI in the classroom, focusing on its potential as a tool for personalized learning, automating routine tasks, and enhancing student engagement. By examining these perspectives, the research aims to understand how AI can support teaching and improve educational outcomes.

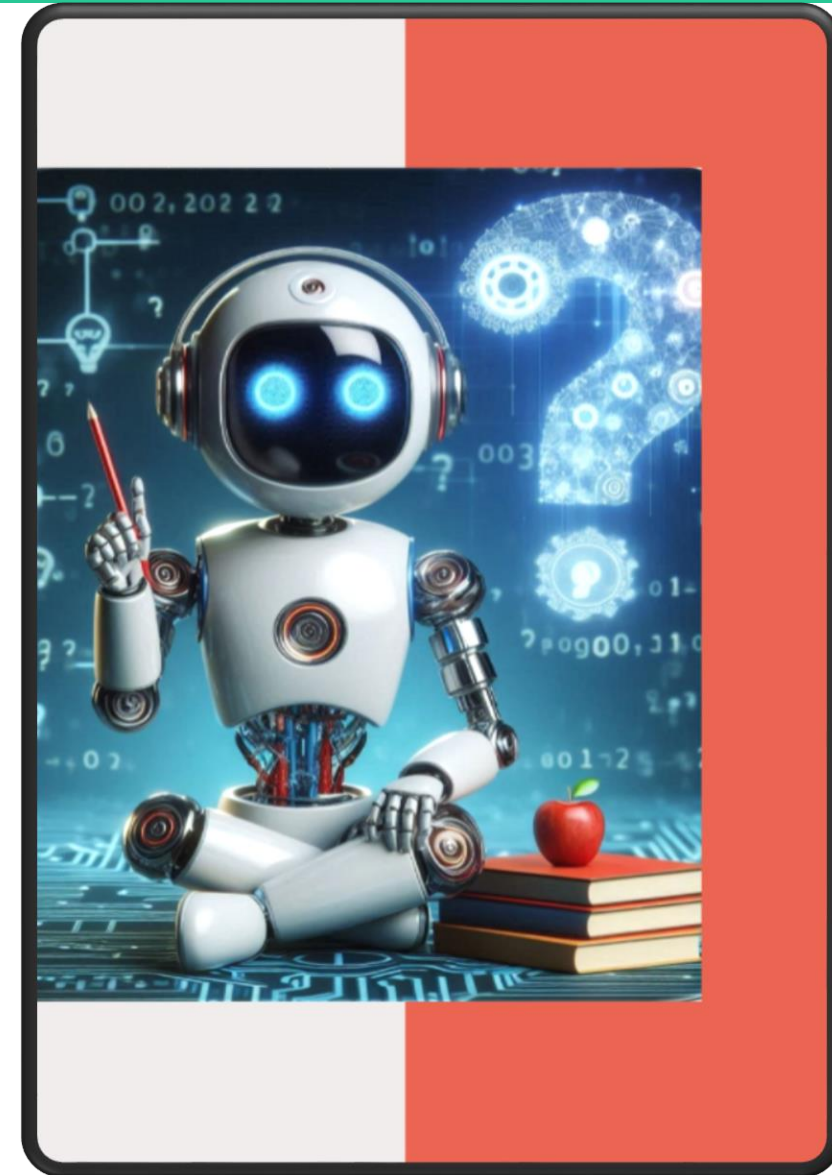
Contribute to AI-Driven Strategies:

Additionally, this study seeks to provide insights that will guide the development of AI-driven educational strategies. It emphasizes the importance of aligning AI integration with core pedagogical values to ensure it not only supports but also enhances the learning environment.



Research Questions

- a) How do pre-service teachers perceive the role of artificial intelligence in education?
- a) How do pre-service teachers envision the ethical implications of using artificial intelligence in education, particularly concerning student and personal data privacy?
- b) In what ways do pre-service teachers feel prepared or unprepared to integrate AI-driven tools and technologies into their future classrooms?



Methodology

Instrument

This study used a structured questionnaire to gather data (20 Questions), utilizing a 5-point Likert scale survey {(a)Strongly Disagree, (b)Disagree, (c)Neither Agree or Disagree, (d)Agree, (e)Strongly Agree} to measure pre-service teachers' perspectives about artificial intelligence in education. Before the candidates completed the survey, a language expert reviewed its translation for accuracy.

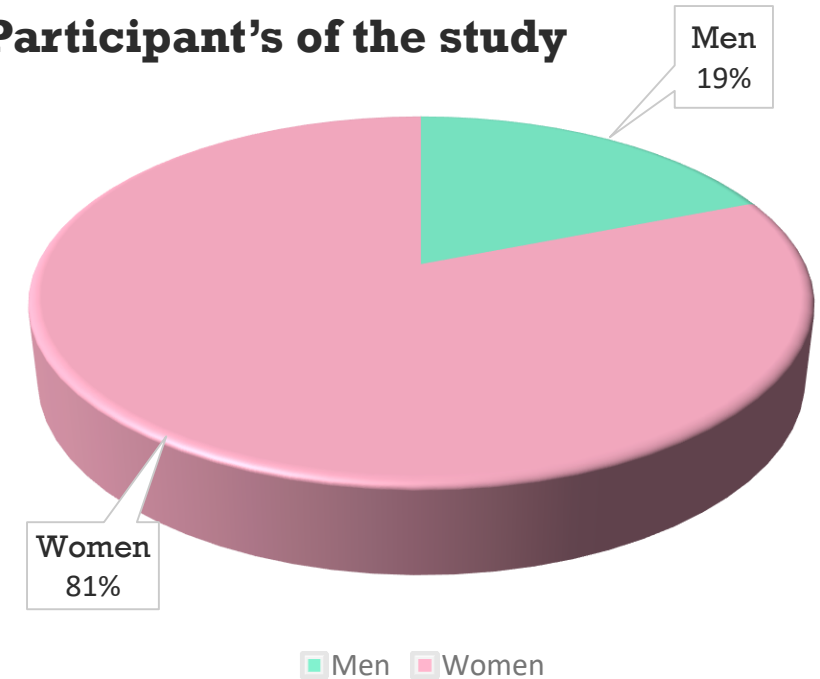
In the study, data were collected during the 2023-2024 academic year early semester at the University of Ioannina.

The questionnaire was carefully designed, drawing questions from two established surveys that thoroughly analyzed the subject matter (Antonenko & Abramowitz, 2023; Haseski, 2019). Afterward, they were formed and analyzed, ensuring a comprehensive approach to data collection.

Participants

Study participants were (N=121) first-year students from the department of primary education at university of Ioannina 19% of the population were men (23), and 81% were women (98).

Participant's of the study



Data analysis

This study utilized convenience sampling to gather data from Greek pre-service teachers enrolled in the Primary Education Department at the University of Ioannina. Before the study commenced, all participants received information about the study's aim and content. Subsequently, the researchers presented consent forms to all participants, and each individual willingly agreed to participate.

Quantitative descriptive data analysis was conducted to summarize the responses, allowing for the identification of central tendencies, dispersion, and patterns within the dataset (Mishra et al., 2019).

The research data was analyzed using the IBM SPSS Statistics 29.0 statistical program (Field, 2013; Wagner, 2019) and Microsoft Office Excel spreadsheets (Abbott, 2014). The internal consistency and reliability of the questionnaire were assessed using Cronbach's alpha coefficient, which yielded a value of 0.75 (Tavakol & Dennick, 2011).

(5) Artificial intelligence has the potential to pose a threat to human existence :			
		Frequency	Percent
Valid	Strongly Disagree	4	3,3
	Disagree	17	14,0
	Neither Agree/ Disagree	33	27,3
	Agree	43	35,5
	Strongly Disagree	24	19,8
	Total	121	100,0

Questions of the Research

(2) I am familiar with the possibilities of artificial intelligence:

		Frequency	Percent
Valid	Strongly Disagree	11	9,1
	Disagree	32	26,4
	Neither Agree/Disagree	56	46,3
	Agree	20	16,5
	Strongly Agree	2	1,7
	Total	121	100,0

(3) Artificial Intelligence has the potential to enhance our standard of living by providing us with innovative solutions :

		Frequency	Percent
Valid	Strongly Disagree	3	2,5
	Disagree	8	6,6
	Neither Agree/Disagree	39	32,2
	Agree	46	38,0
	Strongly Agree	25	20,7
	Total	121	100,0

(6) To what degree do you agree with the assertion that the implementation of artificial intelligence carries the potential risk of diminishing human interpersonal interaction?

		Frequency	Percent
Valid	Strongly Disagree	2	1,7
	Disagree	12	9,9
	Neither Agree/ Disagree	26	21,5
	Agree	41	33,9
	Strongly Agree	40	33,1
	Total	121	100,0

(3) Artificial Intelligence has the potential to enrich the educational experience :

		Frequency	Percent
Valid	Strongly Disagree	3	2,5
	Disagree	8	6,6
	Neither Agree/Disagree	39	32,2
	Agree	46	38,0
	Strongly Agree	25	20,7
	Total	121	100,0

(I2) Artificial Intelligence used to as a support tool for teachers :			
		Frequency	Percent
Valid	Strongly Disagree	3	2,5
	Disagree	14	11,6
	Neither Agree/Disagree	43	35,5
	Agree	45	37,2
	Strongly Agree	16	13,2
	Total	121	100,0

(II) Artificial Intelligence will replace teachers with robots :			
		Frequency	Percent
Valid	Strongly Disagree	15	12,4
	Disagree	29	24,0
	Neither Agree/Disagree	37	30,6
	Agree	28	23,1
	Strongly Agree	12	9,9
	Total	121	100,0

Discussion



Need for Comprehensive Pre-Service Teachers Training and Support:

Participants highlighted the necessity for:

Extensive teacher training

Support in navigating the evolving landscape of AI in education

Recognition of challenges posed by AI, particularly in terms of:

- Accessibility,
- Equity.

Addressing the Digital Divide:

Concerns about ensuring all students benefit from AI-driven tools, regardless of socio-economic background.

Stress on the risk of exacerbating existing inequalities if the digital divide is not addressed.

Foundational Insights:

The perspectives of pre-service teachers provide a valuable foundation for:

- Developing AI integration strategies,
- Aligning AI with core educational values,
- Ensuring technology enhances, rather than disrupts, the learning experience.

Complex Interplay of Pre-Service Teachers Perspectives:

Participants are keen on leveraging AI to enhance student learning outcomes, recognizing its potential for:

- Personalizing education,
- Making learning more adaptive and responsive to individual needs.

Concerns: Despite the enthusiasm, Pre-Service Teachers expressed concerns about:

Ethical implications,

Potential depersonalization of education.

Balanced Approach to AI:

AI should complement, not replace, the human element of teaching.

- Importance of maintaining the teacher's role as a guide and mentor,
- Emphasis on enhancing, not diminishing, the relational aspects of education through AI.



Conclusion



In conclusion, the exploration of pre-service teachers' perspectives on integrating Artificial Intelligence in education reveals a nuanced understanding of both the opportunities and challenges that lie ahead.

Potential of AI in Education:

Participants recognize AI's ability to:

- Revolutionize education,
- Provide personalized learning experiences,
- Enhance student engagement.

Caution Against Overreliance on Technology:

Emphasis on preserving the human touch, which is central to effective teaching.

Importance of a balanced approach:

- Leverage AI's capabilities,
- Safeguard the essential relational dynamics in education.

Call for Robust Training and Equitable Access:

- Commitment to ensuring AI benefits are widely shared,
- Avoid exacerbating existing educational inequalities,
- Need for comprehensive training to equip educators with the skills to integrate AI effectively.

Guiding Future Development of AI in Education:

Pre-Service Teachers Perspectives provide a critical foundation for:

- Policymakers
- Educators
- Technologists

Collaborative efforts needed to shape AI's role in education.

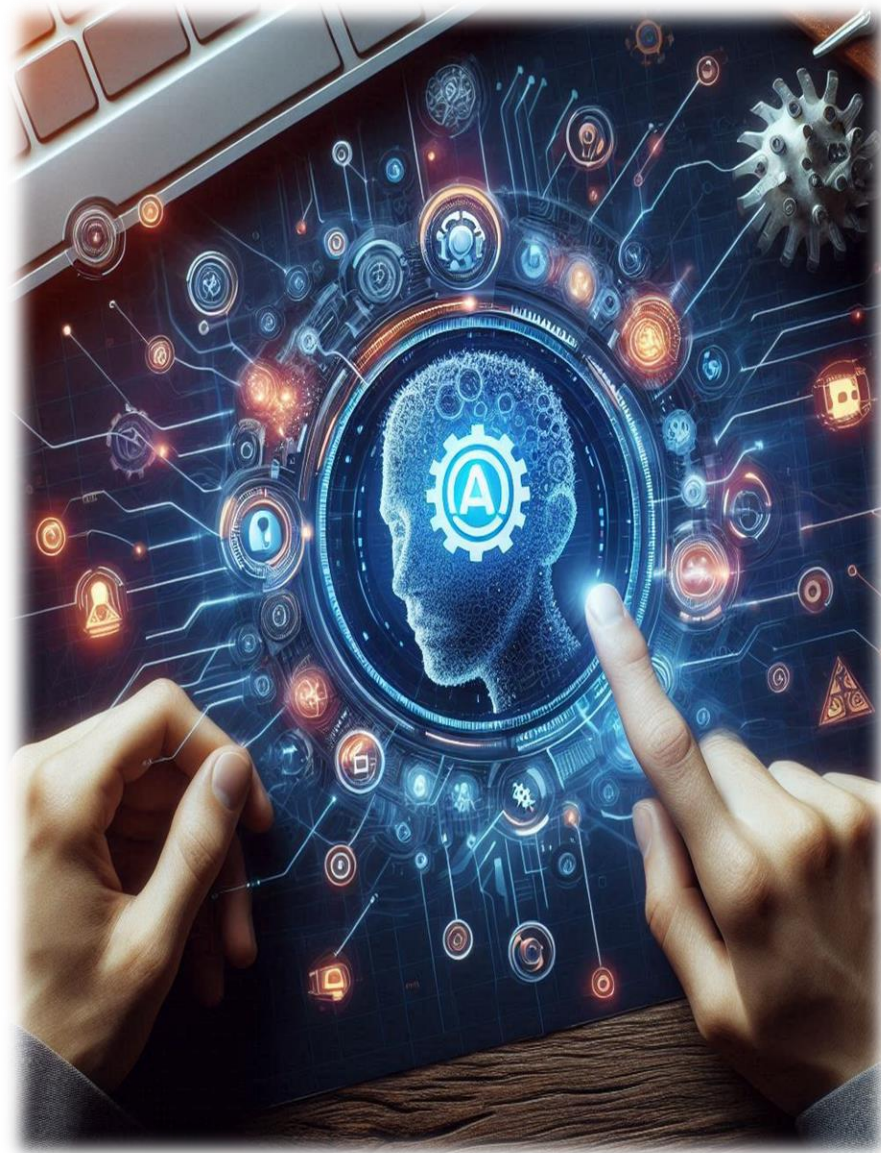
Prioritizing Innovation and Inclusivity:

Aim to create an educational environment where AI:

- Serves as a powerful tool
- Enhances, rather than replaces, the unique contributions of teachers to the learning process



Recommendations For Future Research



Longitudinal Studies:

We could track pre-service teachers' evolving attitudes and competencies from training to professional practice.

We must provide insights into how initial perceptions of AI influence classroom implementation.

We must examine how ongoing exposure to AI tools shapes instructional strategies over time.

Impact of AI Across Diverse Educational Contexts:

- Explore AI integration in schools with varying resources and student demographics.
- Identify best practices and potential barriers in different environments.
- Ensure AI-driven innovations are accessible and beneficial to all students.

Ethical Challenges of AI in Education:

Investigate concerns of Pre-Service Teachers regarding:

- Data privacy
- Algorithmic bias
- Potential for AI to exacerbate educational inequalities

Guide the development of policies and frameworks that ensure AI use is:

- Fair
- Transparent
- Aligned with core educational values

Final Thoughts

Pivotal Moment in Education:

The integration of AI marks a critical point in the evolution of teaching and learning. Artificial Intelligence promises to make education more personalized, efficient, and accessible.

Importance of a Balanced Approach:

Challenges Moving Forward:

The key challenge is striking the right balance between:

- Harnessing AI to support and amplify the work of teachers.
- Safeguarding the values that make education a deeply human endeavor.

Roadmap from Pre-Service Teachers' Insights:

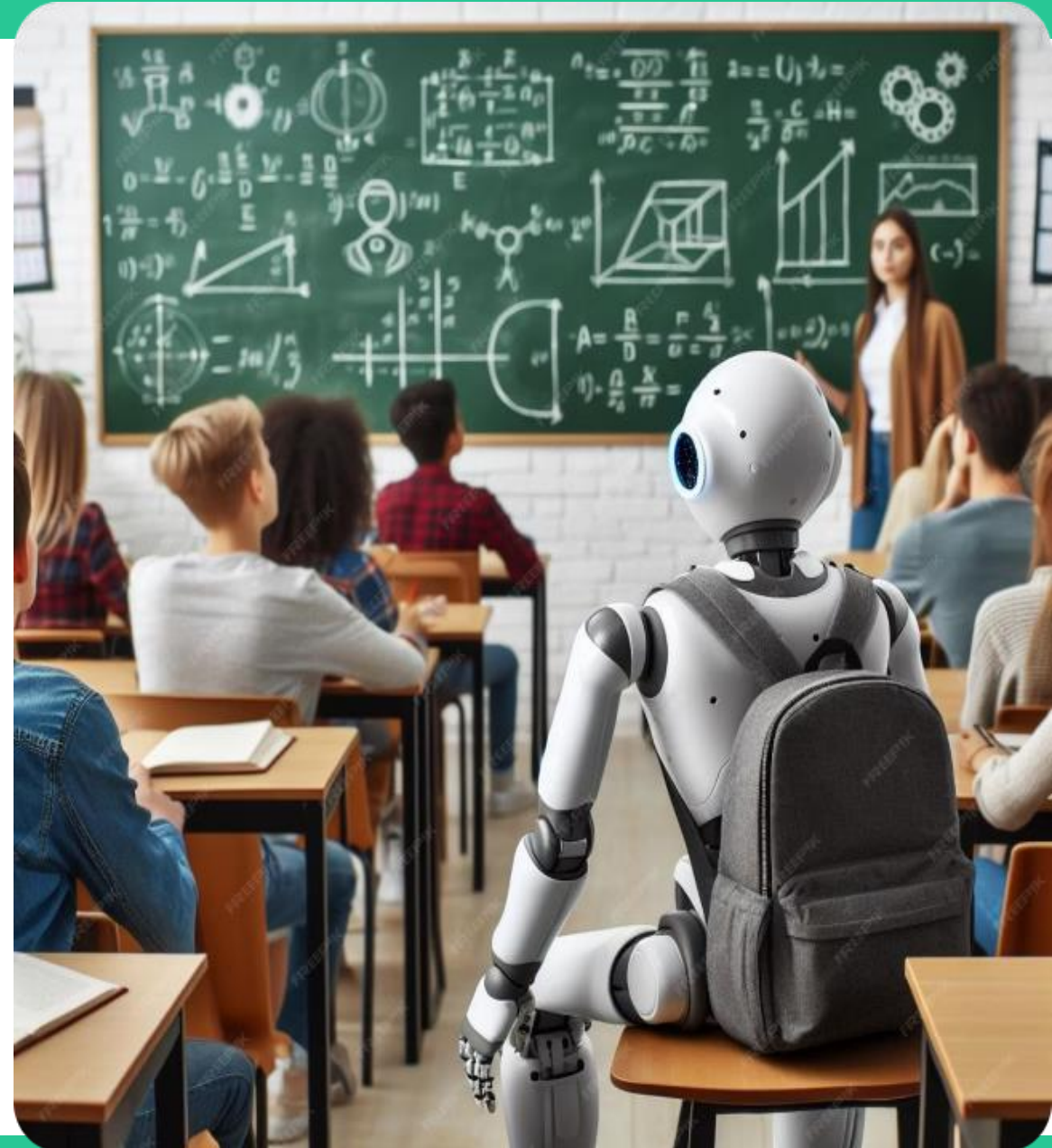
Emphasize the importance of:

- Comprehensive training for educators
- Addressing ethical considerations
- Ensuring equity in AI access and implementation

Shaping the Educational Future:

By embracing these perspectives, we can:

- Shape a future where AI is a powerful tool for innovation.
- Maintain the irreplaceable role of teachers as mentors and guides of student growth.



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THANK YOU!



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