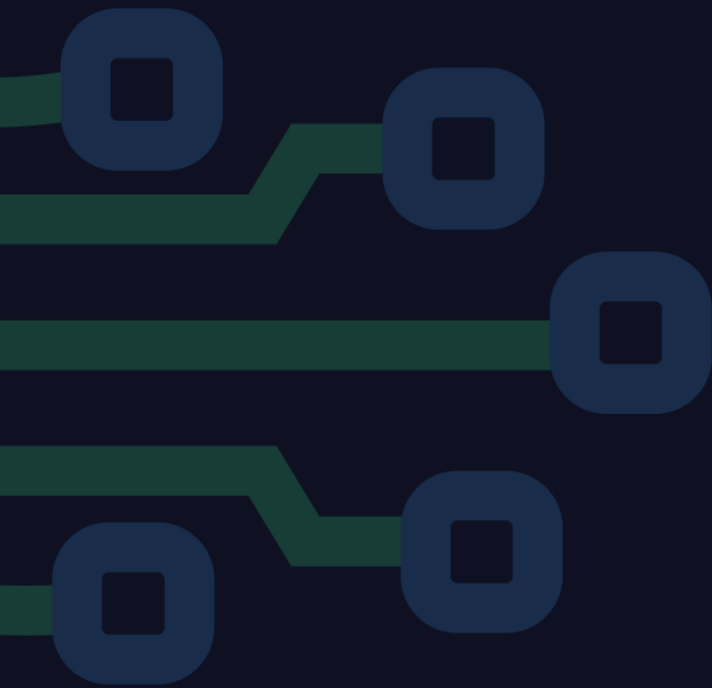


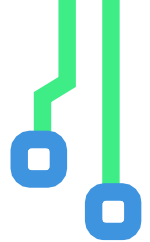
Bridging challenges, enhancing education

A comprehensive understanding of the current use, challenges, and opportunities of AI and ML in the educational sector.



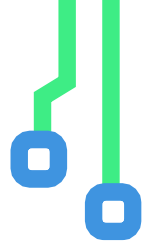
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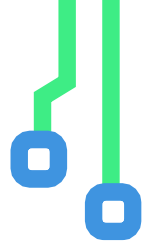
## Document History

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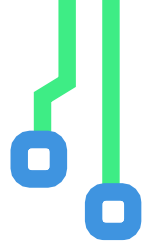


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## Introduction

The M{AI}L project aims to integrate AI and Machine Learning technologies, specifically tools like Teachable Machine, into classroom teaching to enhance educational outcomes. A crucial step involves understanding teachers' experiences, challenges, and support needs in adopting such technologies. To gain insights into the practical application of AI in education, data was collected through **questionnaires** and **focus groups** with teachers from **Greece, Italy, Portugal** and **Türkiye**.

This analysis compares teachers' perceptions of integrating AI and ML into their teaching practices across different countries. The findings reflect the unique contexts and challenges faced by educators in each region, providing a comprehensive understanding of how AI tools are currently used in classrooms, the difficulties teachers encounter and their suggestions for improving the integration of AI into the educational process. The aim of this report is to inform the development of tailored resources and strategies that will better support teachers in using AI technologies to improve student learning outcomes.



*Figure 1 Project partner's countries*

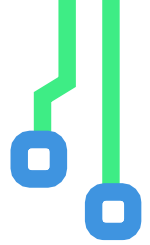
M{AI}L



# Questionnaires

Survey Analysis





## Objectives

The following chapter presents an analysis of the survey responses gathered from educators in different countries. The survey aimed to:

### Explore

the current usage of AI/ML tools in classrooms, particularly how educators are incorporating these technologies into their teaching practices to enhance student engagement and learning outcomes.

### Identify

the challenges and barriers faced by teachers, such as lack of access to technology, insufficient training, and concerns regarding AI ethics and its application in education, to provide actionable insights for overcoming these obstacles.

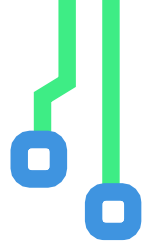
### Gather

practical suggestions from educators on how to improve training programs, access to AI tools, and school infrastructure to facilitate the successful integration of AI/ML in the educational environment.

## Methodology

These surveys were held in person at four educational institutions between May and October 2025, involving a **total of 49 teachers** from various subjects and grade levels.

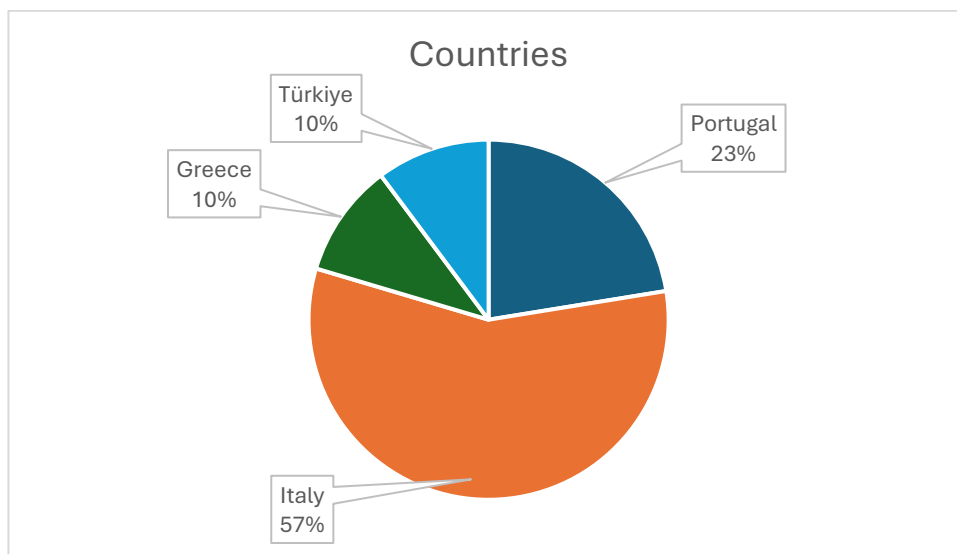
In these surveys, INOVA+ played a central role in coordinating and executing the activity by developing and overseeing the guidelines for collecting data from teachers. INOVA+ ensured that the data collection process was standardised across all involved schools. The guidelines established served as the framework for the associated schools to follow in gathering information. Additionally, INOVA+ was responsible for analyzing the collected data, interpreting the findings, and applying them to achieve the project's objectives.



The associated schools, including **Istituto Tecnico Economico e Tecnologico “Girolamo Caruso” (IT)**, **Agrupamento de Escolas José Estevão (PT)**, **Chania Directorate of Primary Education (GR)** and **Özel Fide Ortaokulu (TR)**, were tasked with collecting data from their educators in line with the guidelines provided. These schools played a crucial role in the success of the report by ensuring that the data was gathered accurately and consistently.

## Key findings

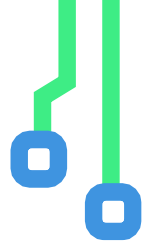
### 1. Country



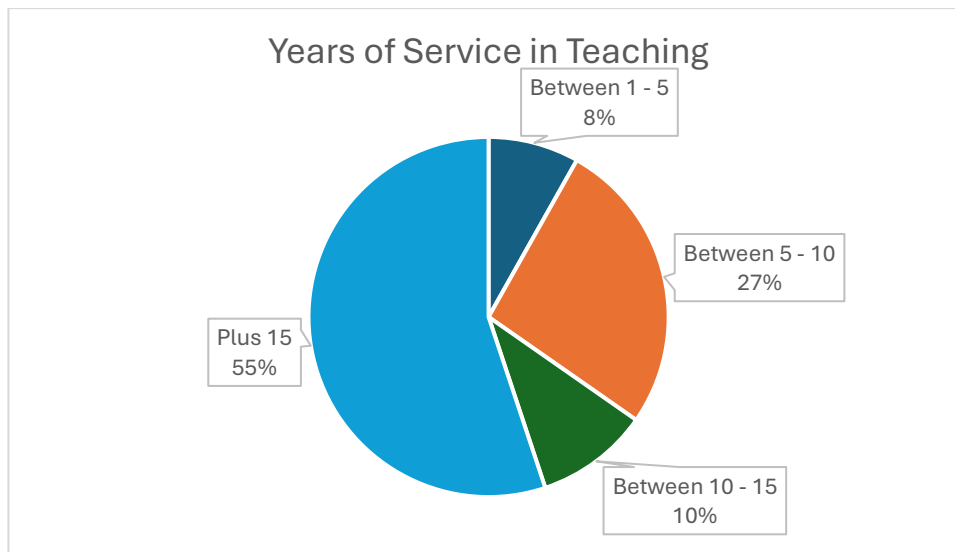
*Figure 2 Distribution of respondents by country*

This figure illustrates the proportion of participating teachers from each partner country (Italy, Portugal, Greece, and Türkiye), providing an overview of the geographical representation within the study sample.

The responses to Question 1 indicate that Italy has the largest share of participants, with 28 respondents (57% of the total), followed by Portugal with 11 respondents (23%). Greece and Türkiye each contributed 5 respondents, representing 10% of the total responses, respectively.



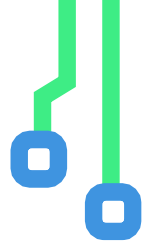
## 2. Years of Service in Teaching



*Figure 3 Years of service in teaching*

This figure presents the distribution of respondents according to their years of teaching experience.

The responses to Question 2 indicate that the majority of teachers have more than 15 years of experience, with 27 respondents accounting for 55% of the total. The second-largest group comprises teachers with 5–10 years of experience (13 respondents, 27%). A smaller proportion reported 10–15 years of service (5 respondents, 10%) and 1–5 years of experience (4 respondents, 8%).



### 3. School area

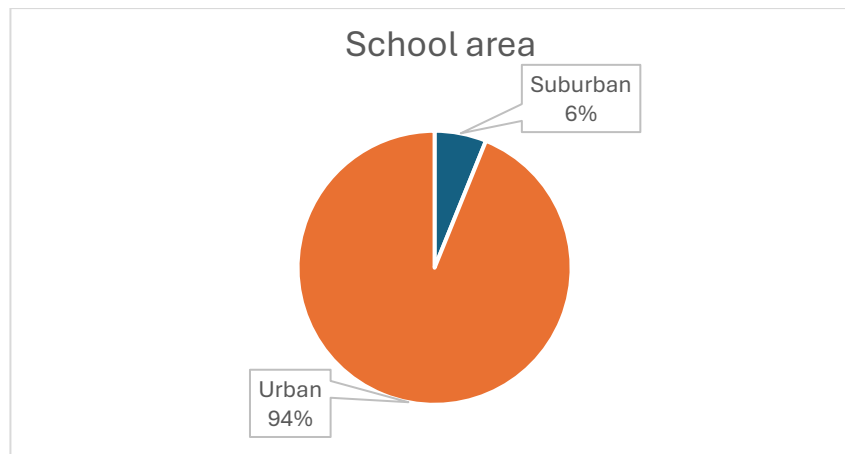


Figure 4 School area

This figure presents the distribution of respondents by school area. The responses to Question 3 indicate that the vast majority of teachers are from urban schools (46 respondents, 94%), while a small minority are from suburban schools (3 respondents, 6%).

### 4. Do you use any AI/ML tools in class?

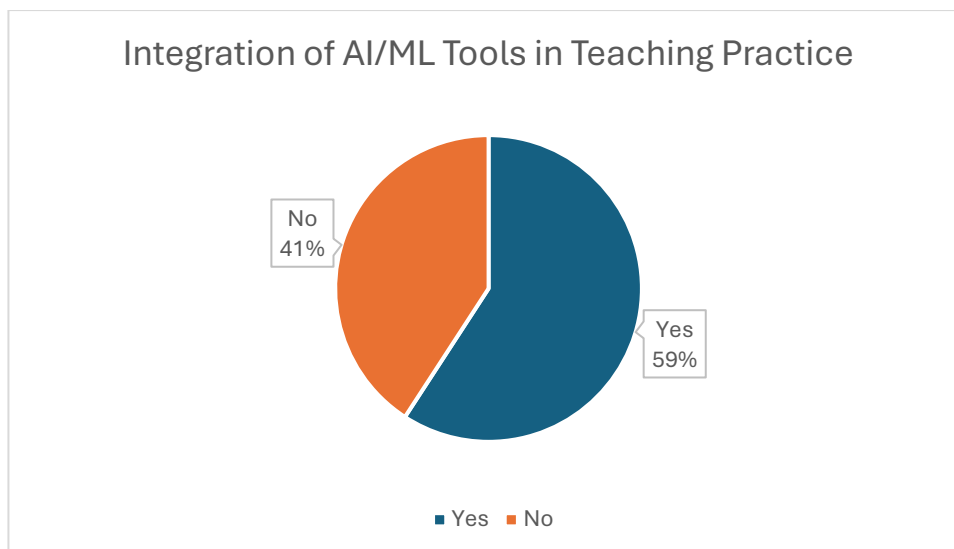
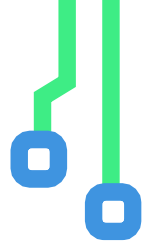


Figure 5 Use of AI/ML tools in classroom teaching

This figure shows the proportion of teachers who reported using Artificial Intelligence (AI) and Machine Learning (ML) tools in their classroom practice.



The responses to Question 4 indicate that the majority of respondents (29 participants, 59%) use AI/ML tools in class, while 20 respondents (41%) reported not using such tools in their teaching.

### 5. How often do you use AI or ML tools in your classroom?

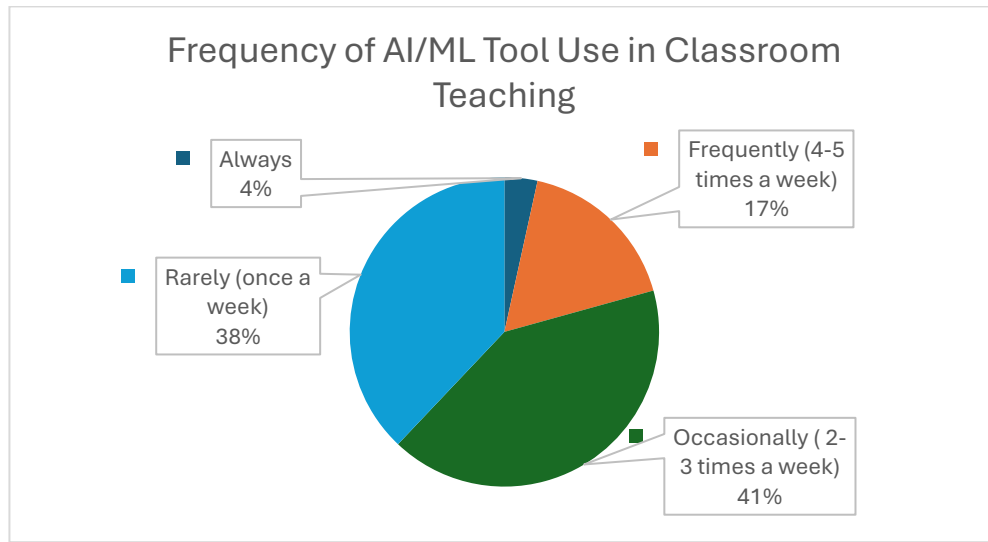
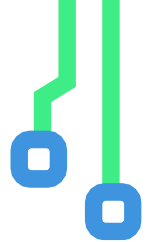


Figure 6 Frequency of AI/ML tool use in classroom teaching

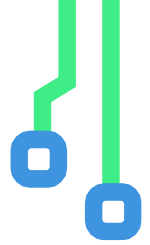
This figure illustrates how frequently teachers reported using Artificial Intelligence (AI) and Machine Learning (ML) tools in their classroom practice.

The responses to Question 5 show that the majority of respondents use AI/ML tools occasionally (two to three times per week), with 12 respondents accounting for 41% of the total. Teachers reported using such tools rarely (once per week), with 11 of them (38%) indicating this frequency, while a smaller group indicated frequent use (four to five times per week), with 5 respondents (17%). Only 1 respondent (4%) reported using AI/ML tools consistently.



## 6. Which AI/ML tools do you currently use in your classroom?

Tool/AI/ML Solution	Number of Mentions	Percentage of Total Responses (n=29)
<b>ChatGPT</b>	15	52%
<b>Copilot</b>	7	24%
<b>Canva AI</b>	5	10%
<b>Suno</b>	3	10%
<b>Gemini</b>	3	10%
<b>Dall-E/ Dall-E 2</b>	2	7%
<b>Magic School AI</b>	2	7%
<b>Bing Image Creator</b>	2	7%
<b>Gamma</b>	2	7%
<b>Padlet</b>	2	7%
<b>Diffit</b>	1	3%
<b>Synthesia</b>	1	3%
<b>Scratch + AI Extensions</b>	1	3%
<b>Tome</b>	1	3%
<b>WordArt</b>	1	3%
<b>WordCloud Generator</b>	1	3%
<b>QuillBot</b>	1	3%
<b>SlidesAI</b>	1	3%
<b>Meta AI</b>	1	3%
<b>Photomath</b>	1	3%
<b>Geogebra</b>	1	3%

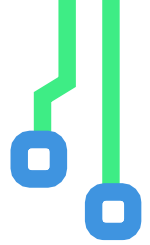


<b>Interactive Manuals</b>	1	3%
<b>Kahoot</b>	1	3%
<b>Teams</b>	1	3%
<b>Class Notebook</b>	1	3%
<b>Virtual Assistant</b>	1	3%
<b>Google Docs/Translate</b>	1	3%
<b>Virtual Reality</b>	1	3%
<b>Deepseek</b>	1	3%
<b>NotebookLM</b>	1	3%

*Table 1 AI/ML Tools Currently Used by Teachers in the Classroom*

This table presents the Artificial Intelligence and Machine Learning (AI/ML) tools currently employed by teachers in their classroom practice. The analysis is based on 29 responses to Question 6, in which teachers were asked which AI/ML tools they currently use in their classrooms. ChatGPT is by far the most widely used tool, with 15 mentions, representing 52% of the total responses. Copilot follows, with 7 mentions, accounting for 24%. Other tools, such as Suno, Gemini, Canva, Magic School AI, Bing Image Creator, and Gamma, were mentioned by 2–3 respondents each (7–10%), while a variety of additional tools, including Padlet, Synthesia, Scratch + AI Extensions, Tome, WordArt, WordCloud Generator, Diffit, DALL·E/DALL·E2, QuillBot, SlidesAI, Artguru, iLoveSong.ai, Interactive Manuals, Kahoot, Teams, Class Notebook, Virtual Reality, Virtual Assistant, Meta AI, Photomath, Geogebra, Notebook LM, DeepSeek, QuickDraw, and Canva AI, were each cited by a single respondent (3%).

These findings indicate that although ChatGPT and Copilot dominate classroom use, there is still considerable diversity in the AI/ML tools employed by teachers. This reflects a growing but varied adoption of AI technologies in education, with educators experimenting with a broad range of applications to support different teaching and learning needs



7. In which subjects do you use AI/ML to support teaching? Select all that apply.

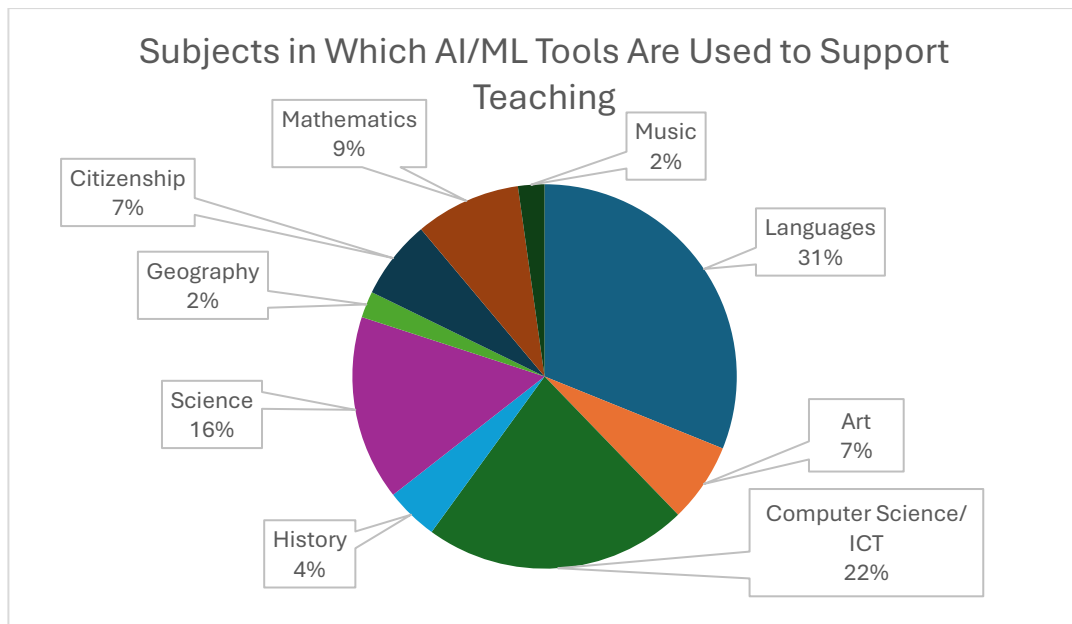
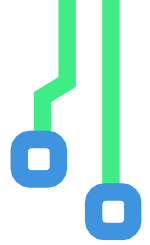


Figure 7 Subjects in Which AI/ML Tools Are Used to Support Teaching

Based on the responses to Question 7, AI/ML tools are predominantly employed in language teaching, accounting for 31% of the mentions (14). They are also widely used in Computer Science/ICT and Science, representing 22% (10) and 16% (7) of responses, respectively. In contrast, the application of AI/ML tools is less frequent in Mathematics (9%), Arts (7%), Citizenship (7%), History (4%), Music (2%), and Geography (2%).

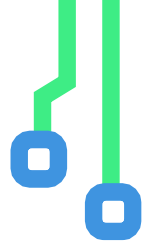
These findings suggest that, although AI/ML technologies are increasingly integrated into education, their use remains concentrated in specific subjects, particularly languages and Computer Science. Other disciplines are gradually adopting these tools, indicating a growing but uneven integration of AI/ML across the curriculum.



## 8. How do you integrate AI/ML into your lesson planning and execution?

The responses highlight a wide range of ways in which AI/ML tools are used in the classroom. Most teachers report integrating Artificial Intelligence mainly in the **planning phase of their lessons**, using tools such as ChatGPT to design lesson plans, generate ideas, translate materials into multiple languages for foreign students, and create differentiated versions of texts, exams, and visual resources. AI is frequently used to **develop teaching materials and digital content**, including presentations, quizzes, posters, songs (e.g., through platforms like Suno), videos, and infographics, which make lessons more dynamic and appealing to students. Another common practice is the **personalization of instruction**, where teachers employ AI-powered platforms to adapt learning materials to different student levels and specific needs, particularly for students with learning difficulties (DSA/BES), and to provide immediate, adaptive feedback.

Several respondents also mentioned integrating AI into **project-based and collaborative learning**, encouraging students to use AI tools during teamwork, research, and creative writing activities, such as generating lyrics, visual prompts, and essays for analysis and oral presentations. AI and ML are additionally used to **support assessment and monitoring**, helping teachers collect and analyze student performance data, identify learning gaps, and adjust teaching strategies accordingly. Some teachers also emphasize using AI during **laboratory lessons and practical exercises**, as well as in **real-time classroom support**, where chatbots and virtual assistants serve as tools to improve students' language proficiency and engagement. Overall, AI and ML are viewed as valuable resources for enhancing efficiency, creativity, and personalization in both lesson planning and classroom execution.



## 9. What are the biggest challenges you face when using AI/ML in the classroom?

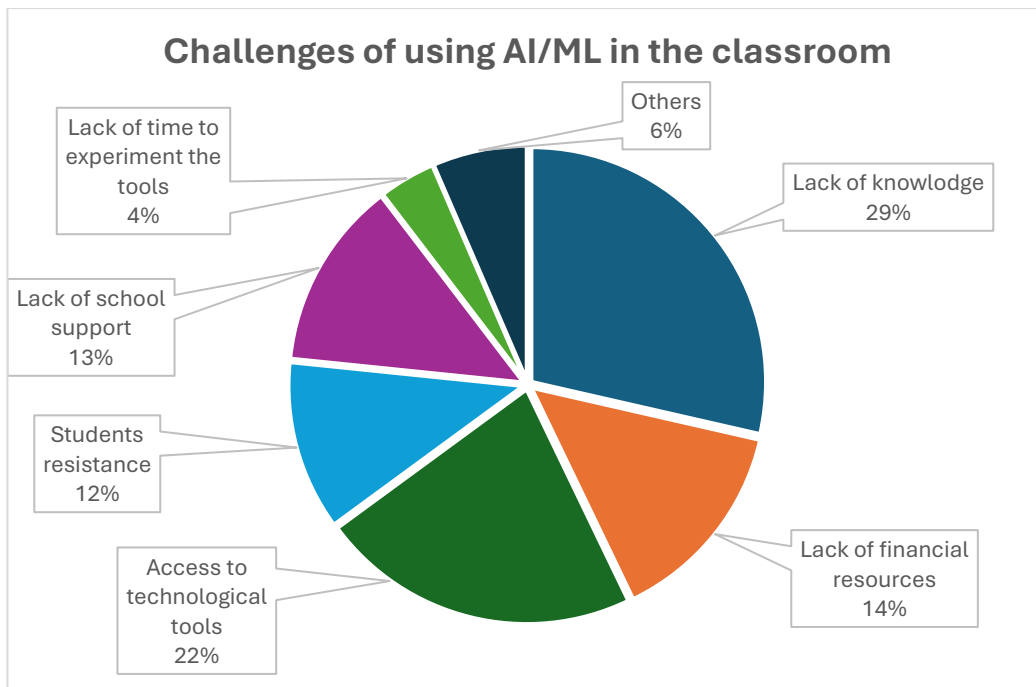
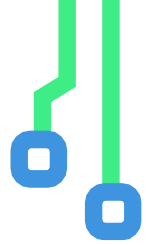


Figure 8 Challenges Faced by Teachers When Using AI/ML in the Classroom

This figure presents the main challenges reported by teachers when integrating AI and Machine Learning (AI/ML) tools into classroom practice. Based on 77 responses, the data collected from Question 9 shows that the biggest challenge teachers face when using AI/ML in the classroom is the lack of knowledge, with 22 mentions (36%), suggesting a need for more training and professional development to effectively utilise AI/ML tools. The second most common challenge is access to technological tools, mentioned by 17 respondents (22%). Lack of financial resources was identified by 11 respondents (14%), pointing to budget constraints in adopting these technologies, while 10 educators (13%) affirmed lack of school support, and 9 educators (12%) mentioned students' resistance as a challenge. Other difficulties included lack of time to experiment with AI tools (3 mentions, 4%) and other challenges (5 mentions, 6%), indicating additional barriers not captured in the main categories.

In conclusion, the responses to Question 9 highlight that the main barriers to using AI/ML in the classroom are teachers' lack of knowledge, limited access to technological tools, and financial constraints. Other significant challenges include insufficient institutional support, student resistance, and limited time to experiment with the tools, indicating multiple obstacles that hinder



the integration of these technologies in education. Addressing these challenges through targeted training, improved access to technology, and supportive school policies will be vital for enabling effective and equitable integration of AI/ML in education.

#### 10. How open do you feel the school leadership (e.g., directors) is to integrating AI and ML technologies into the classroom?

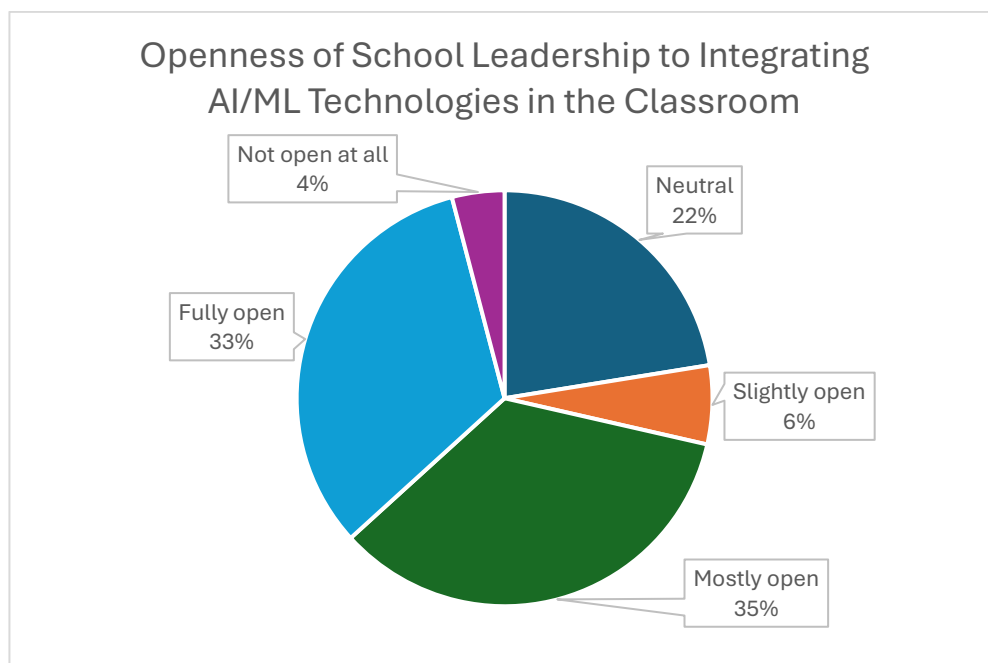
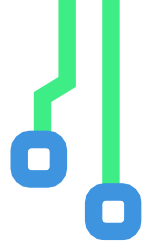


Figure 9 Openness of School Leadership to Integrating AI/ML Technologies in the Classroom

This chart illustrates teachers' perceptions of how open their school leadership (e.g., directors) is to integrating AI and ML technologies in the classroom. The responses to Question 10, based on 49 participants, reveal that school leadership is generally perceived as highly supportive of integrating AI/ML technologies into the classroom. A total of 17 respondents (35%) indicated that leadership is *mostly open*, while 16 respondents (34%) considered it *fully open*. Meanwhile, 11 respondents (22%) selected *neutral*, 3 respondents (6%) perceived leadership as *slightly open*, and only 2 respondents (4%) described it as *not open at all*.

Overall, these results indicate a strongly positive attitude among school leaders towards the adoption of AI/ML in education. This openness provides a solid foundation for fostering innovation and driving the digital transformation of schools. By leveraging this supportive environment,



initiatives can be more effectively implemented to enhance teacher capacity, strengthen pedagogical integration of AI tools, and ensure that the use of AI/ML becomes a sustainable and systemic element of school development.

### 11. How do you deal with technical difficulties when using AI/ML?

The responses highlight a variety of strategies used by teachers to handle technical difficulties when using AI/ML in the classroom. Many teachers rely on IT support, either from the ICT teacher or IT department, and some escalate issues when needed. Others take a more independent approach, such as conducting personal research online, consulting guides and forums, or asking colleagues for help.

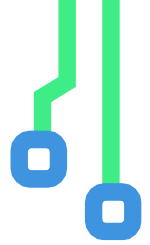
Some teachers adopt structured troubleshooting methods, such as reading documentation, keeping troubleshooting logs, and following systematic software engineering practices. A few respondents also reported using AI itself to resolve specific technical problems or automate repetitive tasks like grading.

Flexibility and preparedness were recurring themes. Several teachers emphasized the importance of having *backup plans*, including low-tech or no-tech alternatives like printed materials or class discussions, to ensure lesson continuity when software or internet access fails. Others highlighted the value of adaptability, turning technical issues into learning opportunities to discuss AI limitations and critical thinking with students.

Collaboration and peer support also emerged as key strategies. Teachers often work together, sharing solutions and seeking advice from colleagues with more technical expertise. Some even involve students with stronger digital skills to help their peers or assist in troubleshooting.

A few respondents mentioned that they rarely use AI/ML due to a lack of appropriate infrastructure (e.g., no computers or reliable internet in the classroom) or insufficient training in AI/ML use. Others stated that they do not face major technical difficulties, as their main challenge lies in applying AI/ML effectively to enhance student learning rather than in managing technical issues.

Overall, the responses show that while technical difficulties remain a barrier for some teachers, most demonstrate adaptability, persistence, and resourcefulness. They rely on collaboration,



research, and flexible lesson planning to ensure that AI/ML tools can be integrated effectively and sustainably into their teaching practice.

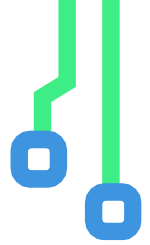
## **12. What additional resources or training do you believe would be helpful to improve your use of AI/ML in the classroom?**

The responses emphasise the need for comprehensive training and better resources to support the integration of AI/ML in the classroom. Teachers are seeking training on key AI/ML tools, as well as open access to these tools to improve their use. Many respondents highlighted the importance of long-term seminars with specific goals for gradual classroom implementation and practical training on AI tools. Additionally, there is a demand for more resources such as tablets, virtual reality glasses, and updated equipment to facilitate AI usage.

Respondents also suggested the need for guides, sample curricula, and training materials on AI ethics to support teachers in using AI responsibly. Online resources such as webinars and local meetups are seen as crucial for fostering collaboration and idea-sharing among educators. Furthermore, some teachers pointed out the value of peer learning, noting that students could play a role in helping their teachers learn about AI.

There is also interest in using AI to enhance lesson content, such as the use of video generation AI for lesson resources. Overall, responses point to a clear need for ongoing training, specialised workshops, ethical guidelines, and improved equipment to ensure that AI/ML tools can be effectively integrated into the educational environment.

To conclude, the responses to Question 12 highlight that teachers are seeking a variety of training resources to improve their ability to integrate AI/ML into the classroom. Key needs include training on AI/ML tools, better equipment like tablets and virtual reality glasses, and long-term seminars. Teachers also emphasise the importance of practical training, including sample curricula, online courses, and workshops. There's a strong focus on understanding AI tools, using AI in the classroom, and ethical AI usage, as well as the value of peer learning through online groups or meetups. Overall, the responses suggest a clear need for more structured training, hands-on experience, and updated technology to effectively implement AI/ML in education.



### **13. What do you think is necessary to improve the implementation of AI/ML in your teaching environment?**

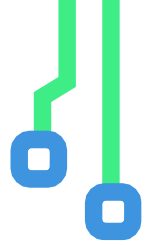
The responses highlight several key areas that need attention to improve the integration of AI/ML in the classroom. Infrastructure remains a major concern, with many teachers pointing to the need for reliable internet access, updated devices, and adequately equipped classrooms that allow students to interact directly with technology. Several respondents also mentioned the need for financial resources to ensure equal access to digital tools and sustainable implementation.

Another recurring theme is the need for stronger technical support, both from IT departments and peer networks. Teachers expressed that collaboration and the creation of communities of practice would be valuable for sharing experiences, solving problems, and maintaining motivation in the use of AI/ML tools.

A significant number of teachers emphasised the importance of training and professional development. Respondents called for hands-on, practical workshops tailored to specific subjects (e.g., Science, Language, ICT), focusing on how AI/ML tools can be used for lesson planning, grading, feedback, and content creation. There was also a clear demand for AI literacy and prompt engineering training, helping teachers make effective use of generative AI and design better learning experiences.

Additionally, teachers identified the need for ethical and pedagogical training, covering issues such as algorithmic bias, data privacy, and responsible AI use in education. Some also stressed the importance of having access to secure, institutionally approved AI platforms to ensure compliance with school policies and data protection regulations.

Respondents highlighted that simple, accessible learning resources, such as step-by-step tutorials, video guides, and ready-to-use classroom examples, would help make AI/ML integration more approachable, especially for teachers with limited technical experience. Regular refresher courses were also mentioned as a means to maintain competence and stay up to date with rapid technological developments.



Finally, teachers noted that supportive school leadership and digital policies are essential to promote a culture of innovation and responsible AI use. The availability of time for lesson planning and structured collaboration among teachers were seen as key enablers for success.

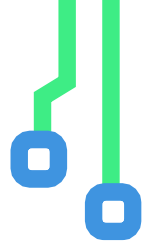
To conclude, the responses to Question 13 emphasise that effective AI/ML integration depends on a comprehensive strategy combining modern infrastructure, ongoing professional development, ethical guidance, and institutional support. Teachers strongly advocate for practical, context-specific training and collaborative networks, supported by adequate digital and financial resources. Overall, the findings point to a shared understanding that AI/ML can transform education, but its success relies on well-prepared educators, secure systems, and a supportive school ecosystem.

#### **14. What types of AI/ML tools would you like to have more access to for use with your students?**

The responses reveal a broad interest in using **AI/ML tools** across different aspects of classroom activities. Many educators mentioned using **AI assistants** like **ChatGPT** and **digital assistants** to support classroom management and lesson delivery. Specific tools, such as **Diffit**, **Google Gemini**, **Quizizz**, and **Magic School AI**, were noted for enhancing student engagement, while others highlighted **AI for image/video production**, **creative writing**, and **storytelling** as valuable resources for fostering creativity.

Teachers also expressed the need for **AI-powered platforms** that support **personalised learning**, such as tools for **adjusting reading levels**, **vocabulary recommendations**, and providing **instant feedback** on student writing. Additionally, there was interest in **adaptive learning systems**, **intelligent tutoring**, and **automated grading tools** to improve learning outcomes.

Despite the wide range of tools mentioned, some educators felt uncertain about which tools would be most useful or indicated that while they had access to AI tools, they lacked sufficient **familiarity** to use them effectively. There were also calls for more **training** to become more proficient with these tools. Furthermore, many teachers emphasized the need for **better equipment**, such as **computers** and **tools for running models**, to enhance the teaching experience.



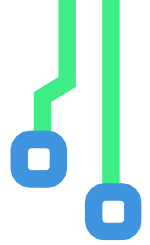
To conclude, the responses to Question 14 show that teachers see a wide range of AI/ML tools as crucial for improving classroom integration. Key tools include AI assistants like ChatGPT, personalised learning tools, and creative applications for tasks like image/video production and coding. Teachers also highlighted the importance of adaptive learning platforms and intelligent tutoring systems to create a more personalised learning experience. There is a strong desire for better access to tools, specialised training, and improved technical support to effectively implement AI/ML in the classroom.

### 15. What additional support would you like to receive to increase the effectiveness of AI/ML in teaching?

The responses indicate that teachers seek a broad range of **training** and **resources** to better integrate AI/ML tools into their classrooms. There is a noticeable emphasis on **general and specific knowledge** regarding the use of AI tools, with many teachers requesting both **basic and specialised knowledge** on how to use these tools effectively in their teaching practices. Some respondents specifically mentioned the need for **pre-planned lesson materials**, such as **handbooks** or **manuals**, to guide their lessons and help them incorporate AI tools into their existing curricula.

Additionally, there is a strong demand for **practical, hands-on training** that enables teachers to work directly with AI tools. Teachers also expressed the need for **ready-to-use lesson templates** and **ongoing mentorship** to build their confidence and skills in utilising AI in the classroom. The responses underscore that simply knowing how to use the tools is not enough—**guidance** and **support** from experts and peers are crucial to making the integration process smoother.

Furthermore, respondents expressed a need for **interactive materials**, as well as **AI-based software** that supports the teaching and learning process. **Training materials on AI ethics** were also highlighted as essential, indicating that teachers want to ensure AI tools are used in an ethically responsible manner. There was also a recurring theme of the importance of **IT support**, particularly in schools lacking dedicated IT departments. Many respondents noted that the **lack of IT support** makes it more challenging to implement AI tools effectively, and support from the **IT department** would be beneficial.



In terms of accessibility, many teachers mentioned the need for **free access to digital tools** and **application licenses** to reduce the barriers to adopting AI tools. **Free tools** and **time to explore AI/ML** were also requested, highlighting the importance of **resources** that are not only cost-effective but also accessible to teachers with varying levels of experience.

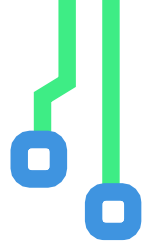
**Specialised training** in specific subjects, such as **physical education**, was another key area mentioned by some teachers. This suggests that there is a desire to understand how AI can be used across various fields, beyond just core subjects like **language** or **science**. Some respondents also noted the importance of **training with specialised technicians**, indicating that technical issues are a common challenge that could be alleviated with expert support.

Lastly, there was a strong emphasis on the need for **ongoing training** to ensure that teachers remain up to date with the rapidly evolving AI/ML landscape. This included calls for **workshops**, **online courses**, and **seminars** to provide continuous professional development. Teachers also expressed interest in **collaborative platforms** where they could share their experiences, best practices, and challenges with their peers. This suggests that a **community-driven approach** to AI/ML integration would be beneficial for teachers to feel supported in their learning journeys.

To conclude, the responses to Question 15 emphasise that training is crucial for improving AI/ML implementation in the classroom. Teachers seek detailed guidance on AI/ML tools, pedagogical approaches, and hands-on training with ready-to-use lesson templates. Better infrastructure, including stronger internet, updated devices, and IT support, was also highlighted. Additionally, teachers called for specialised training, free access to tools, and ongoing professional development. The responses suggest that improving resources, technical support, and pedagogical guidance is key to effectively integrating AI/ML in education.

## 16. Suggestion/Comments

One respondent mentioned that it would be easier if AI tools did not require separate sign-ups and logins, suggesting that a school-specific login would be more convenient, especially for younger students who struggle with remembering usernames and passwords. There was also appreciation for the survey, with some expressing gratitude and noting that they have no further comments. One



teacher expressed interest in exploring the possibilities of using AI tools in physical education classes, and another indicated they had nothing to add.

## Conclusion

The survey highlights that while there is a strong interest in integrating AI/ML tools into education, there are several areas where support is needed. Most teachers are already using AI tools like ChatGPT for lesson planning, content creation, and student engagement. However, the frequency of use varies, and many teachers are still in the early stages of incorporating AI into their classrooms. Training is the most requested need, with educators seeking both general knowledge and specialised training on AI tools, as well as hands-on support.

There is also a clear demand for ready-to-use resources, such as lesson templates and ethical AI guidelines. Teachers also expressed the need for better infrastructure, including updated devices, reliable internet, and IT support, to effectively implement AI/ML tools. Despite the enthusiasm for AI, challenges such as limited access to technology, knowledge gaps, and technical issues remain. Teachers also face difficulties related to security and software failures, particularly in schools with limited IT support. To address these issues, respondents emphasised the importance of ongoing professional development and collaboration through peer support networks.

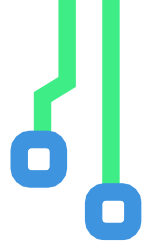
In conclusion, while AI/ML tools are seen as a valuable resource for enhancing education, successful integration will require targeted training, improved infrastructure, and stronger support for both teachers and students. With these in place, AI has the potential to significantly transform the teaching and learning experience.



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# Focus Group

Survey Insights from teachers on the integration of AI and ML in the classroom.



## Objectives

The following chapter present an analysis of the focus group discussions held with teachers from Italy, Portugal, Greece and Turkey. Focus group sessions were conducted to:

### Explore

teacher's experiences with the integration of AI and ML in teaching practices, particularly the use of tools like Teachable Machine, to understand how these technologies are being applied in classrooms.

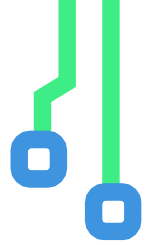
### Identify

challenges and barriers faced by teachers, including issues like lack of adequate training, limited infrastructure and ethical concerns, in order to provide practical solutions for improving the adoption of these technologies.

### Gather

concrete suggestions from teachers on how to improve manuals and training programmes, with the goal of creating more effective support tools to facilitate the successful application of AI and ML in the educational environment

The analysis explores the key challenges, barriers and support needs identified by educators, as well as their suggestions for improving the use of AI in teaching.



## Methodology

Focus groups were held in-person at three educational institutions between early May and October 2025, involving a **total of 25 teachers** from various subjects and grade levels:

Country	Participants	Subjects
<b>Portugal</b>	8 teachers	ICT, Maths, Sciences, Literature, Arts
<b>Greece</b>	12 teachers	Computer Science, English, French, Music, Language, Science
<b>Türkiye</b>	5 teachers	English, Turkish, Social Sciences, Maths, Science
<b>Italy</b>	9 teachers	Computer Science, Construction, Systems and Networks, English, Physics, Design

*Table 2 Overview of Focus Group Participants by Country and Subject Area*

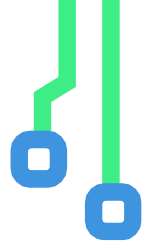
Each session was moderated by an assigned facilitator, following a semi-structured format focused on teachers' experiences with AI/ML tools, the manual's usability, and prospects.

## Key findings

### 1. Current use of AI/ML in teaching

In **Portugal** (Agrupamento de Escolas José Estêvão), teachers reported a diverse use of AI tools across various subjects, such as creating educational content (texts, images) and using AI tools in subjects like English, Citizenship, Music and ICT. However, the integration of AI is not uniform, with some teachers using it regularly and others just beginning to explore its potential.

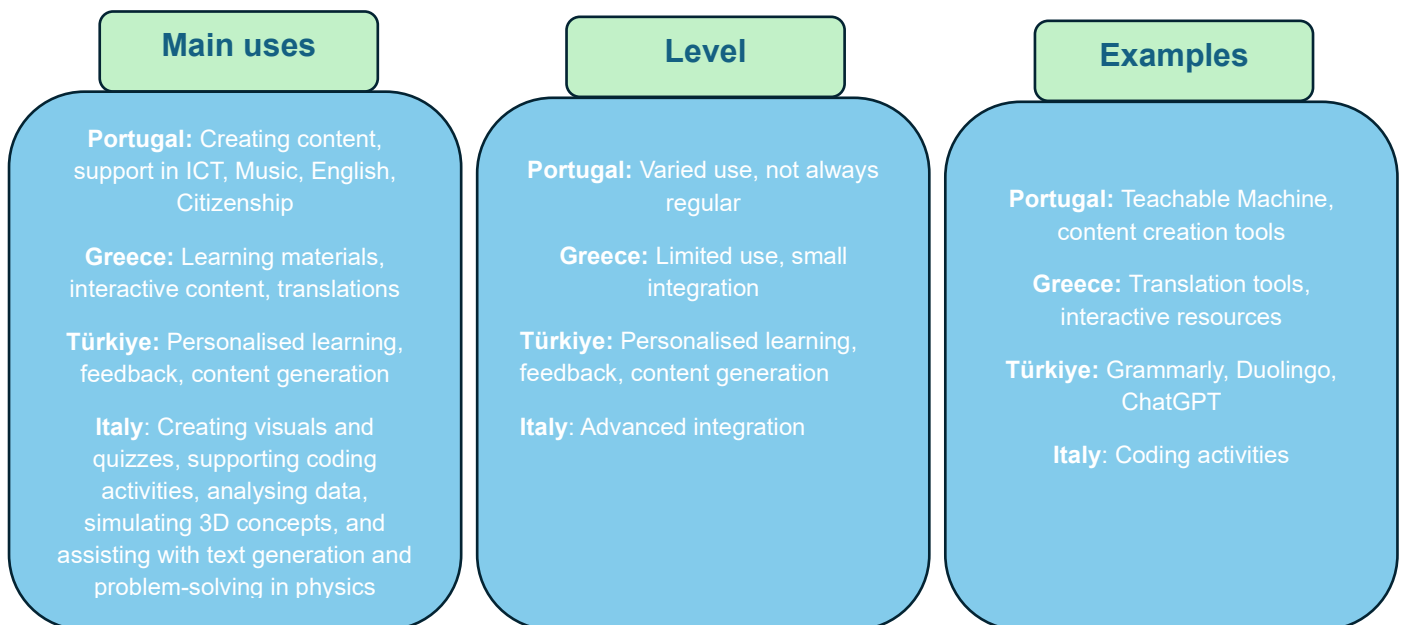
In **Greece** (15<sup>th</sup> Primary Education) AI and ML tools were used mainly for creating learning materials, interactive content and automatic translations. AI tools were seen as versatile, with the

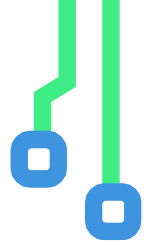


potential to enhance differentiated instruction and support learners with disabilities. However, many teachers still used AI tools on a small scale, with limited integration into the curriculum.

In **Türkiye** (Fide schools), teachers reported a limited but growing use of AI tools such as Grammarly, Duolingo and ChatGPT for personalised learning, feedback and content generation. Most uses were teacher-led, such as administrative support, and AI was viewed as a supplementary tool rather than an integrated part of the teaching process.

In **Italy**, teachers reported a variety of uses of AI/ML tools in their teaching, from generating images and videos as visual stimuli to creating personalized quizzes, supporting coding activities, analyzing student performance data, and simulating complex concepts with 3D models. Some also use AI for text generation and correction and for guiding problem-solving processes in subjects such as physics.





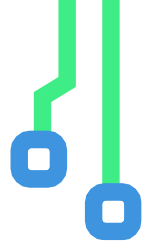
## 2. Challenges and barriers

In **Portugal**, teachers from the Agrupamento de Escolas José Estêvão, identified several significant challenges in adopting AI in education. Key barriers included the **lack of training**, which hindered teachers' ability to effectively use AI tools, and **limited internet access**, which posed an additional obstacle in classrooms where connectivity was unstable. Teachers also pointed to **insufficient infrastructure**, making it difficult to integrate AI tools on a broader scale. Furthermore, resistance to AI adoption was noted, primarily due to a **lack of understanding** of the technology. In response to these challenges, teachers called for increased **leadership support** to help overcome these barriers and facilitate AI integration in schools.

In **Greece**, the challenges reported by teachers were similar to those in Portugal, including **lack of training** and **limited access to resources**. However, Greece's teachers also raised concerns about the **ethical use** of AI, particularly regarding the suitability of AI tools for younger students. There was specific worry about AI tools being too complex or inappropriate for younger learners, as well as the risk of **misuse by students**, such as **plagiarism**. These ethical concerns were deemed important to address to ensure the responsible use of AI in educational settings.

Teachers in **Türkiye**, similarly, faced challenges related to **technical limitations**, particularly **unreliable internet** and the **lack of devices** in schools. These issues created significant barriers to using AI effectively in classrooms. In addition to these technical difficulties, teachers in Turkey expressed concerns about the **ethical implications** of using AI tools, particularly around **misuse by students**. They also highlighted time constraints as a key challenge, with teachers struggling to adapt AI tools to the needs of younger students, given the **tight schedules** and **curricular demands**.

In **Italy** teachers face several challenges: insufficient training, lack of time for experimentation, difficulty aligning AI tools with official curriculum, concerns about data privacy, and resistance from colleagues or families. In some cases, school leadership is supportive but does not provide concrete resources.



Despite the differences in their respective contexts, all four countries identified a **lack of training** and **limited access to technology** as major obstacles to the successful adoption of AI in education.

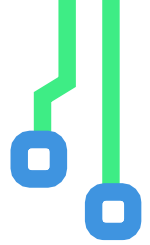
*"The lack of training is a major barrier to the effective use of AI in education."*  
— Agrupamento de Escolas José Estêvão

### 3.Support and training materials

In **Portugal**, teachers from the Agrupamento de Escolas José Estêvão highlighted the importance of **targeted training** on AI tools, particularly through **practical workshops** and **peer support**. They emphasised the need for **face-to-face training** during the initial adoption phase of AI tools, with the suggestion that **online courses** be offered for more **specialised and ongoing training**. This approach would allow for a balance between foundational learning and more advanced, subject-specific knowledge.

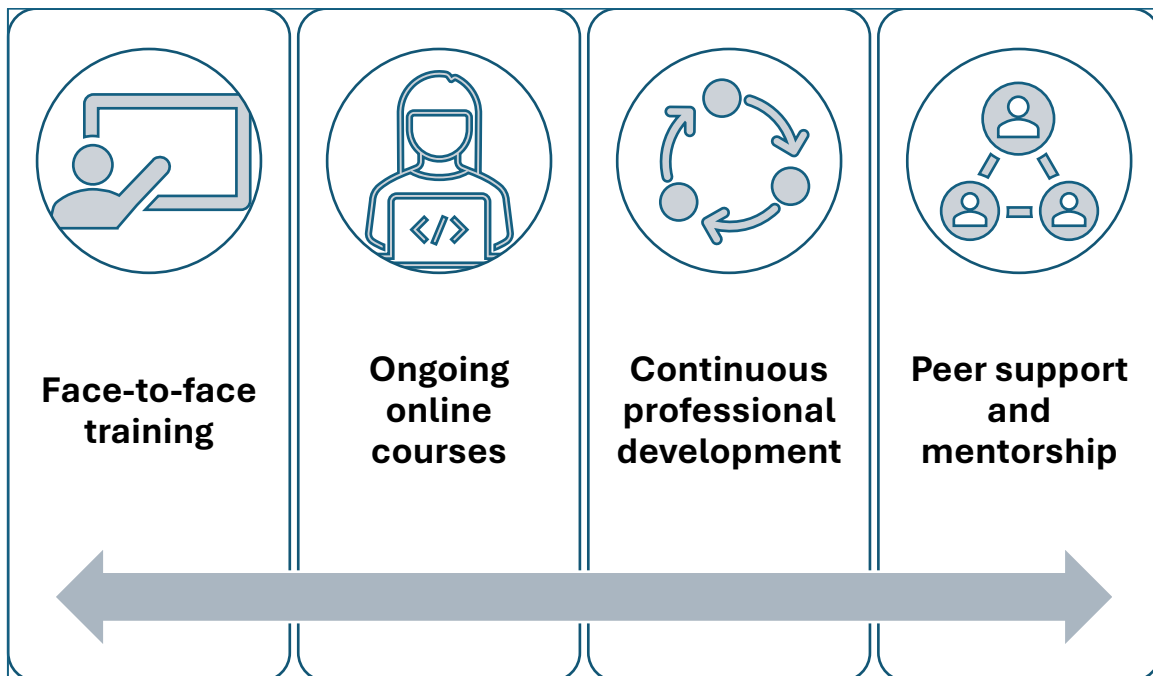
Teachers in **Greece**, from the 15th Primary Education, expressed a similar need for **subject-specific workshops** and **mentorship** from more experienced educators. They placed a strong emphasis on **continuous professional development** (PD) to ensure that teachers remained up to date with the latest AI tools and practices. In particular, there was a call for resources to be made available, especially **AI tools suitable for younger learners**, to facilitate the integration of AI into classrooms and ensure that it was accessible to all students.

In **Türkiye**, teachers called for structured, **hands-on training** that was tailored to specific subjects. They also suggested appointing **AI mentors or coordinators** within schools to provide on-demand support and guidance, allowing for real-time assistance as teachers began to incorporate AI tools. Additionally, teachers in Turkey recommended regular in-service training focused on the **ethical use** of AI tools, ensuring that teachers could guide students responsibly when using AI technologies.



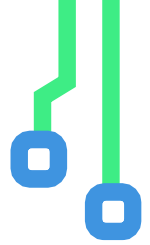
In **Italy**, teachers expressed the need for practical workshops, step-by-step video tutorials, downloadable guides, and ready-made activities. There is a strong demand for peer exchange, interdisciplinary projects, and institutional recognition for innovative teaching practices

*"Teachers requested guides or toolkits to help evaluate which AI tools are safe, effective, and developmentally appropriate for their learners."* — Fide Schools



#### 4. Suggestions for improvement

In **Portugal**, teachers from the Agrupamento de Escolas José Estêvão emphasised the need for **user-friendly AI tools** that are specifically tailored for educational purposes. They also stressed the importance of providing continuous professional development (CPD) to help teachers keep pace with evolving technology. They also suggested fostering peer collaboration to encourage the sharing of best practices and promote mutual learning among educators. The teachers also emphasised the importance of **strong leadership support** in creating a culture that promotes AI adoption within schools.



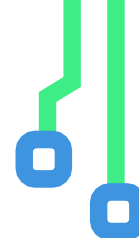
Teachers from the 15th Primary Education in **Greece** called for increased funding for AI tools and the hiring of additional educators to ensure that the integration of AI is both effective and sustainable. They also recommended appointing a dedicated **AI coordinator** in schools to oversee AI-related initiatives and provide support as needed. The teachers also stressed the need for **multilingual AI tools** to cater for students' diverse linguistic backgrounds, which would improve accessibility. They also noted the importance of peer-sharing platforms, as these would allow teachers to exchange resources, ideas and experiences related to AI implementation.

Teachers from Fide Schools in **Türkiye** proposed the development of **subject-specific AI training modules** to better align AI tools with the curricula of individual subjects. They also recommended appointing AI coordinators in schools to provide support and guidance on integrating AI tools. Furthermore, the teachers emphasised the need to allocate time during professional development sessions for teachers to explore AI tools and familiarise themselves with their practical applications. They also suggested incorporating **AI literacy** into the student curriculum to prepare learners for a future in which AI technologies will play a central role.

**Italian** teachers from **ITET Girolamo Caruso** suggested integrating AI/ML into official curricula, increasing access to updated tools, recognizing and rewarding innovation, and creating structured but flexible guidelines. They also propose forming teacher networks and collaborating with universities and experts.

*"The lack of "AI is not going anywhere. We must learn how to guide students in using it ethically and creatively." — Fide Schools*

A comparison of the four countries reveals that, although they all recognise the importance of training and support, their specific approaches reflect their unique needs. Portugal emphasises fostering a culture of leadership support to integrate AI more organically into the school environment. Greece, on the other hand, highlights the logistical challenges of funding and accessibility of resources, particularly emphasising the need for multilingual tools to ensure inclusivity. Meanwhile, Türkiye focuses on practical, subject-specific training and integrating AI



literacy for students, reflecting a more hands-on, long-term approach. Italy highlights the importance of the introduction of AI/ML into the official curricula, but also the importance of the training and collaboration. These differences suggest that, although the overall goal of AI integration is shared, each country is navigating its own set of contextual challenges relating to leadership, resources and practical classroom implementation.

## Challenges and suggestions

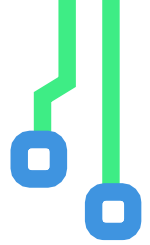
The table below presents the main challenges identified in integrating AI into education, along with suggestions and recommendations for overcoming them.

Challenge	Suggestions/Recommendations
Lack of practical training	Develop hands-on, age and subject -and subject-specific training modules
Limited access to devices and the internet	Improve infrastructure and ensure equitable access
Time constraints for AI integration	Allocate dedicated professional development for AI workshops
Ethical concerns and lack of policies	Incorporate ethical guidelines and AI usage policies
Low digital literacy and confidence	Provide mentorship and peer-sharing platforms
Monitoring student misuse of AI	Train students on responsible AI use and plagiarism awareness
Resistance from colleagues	Promote awareness campaigns, share success stories, and involve stakeholders in discussions

*Table 3 Challenges and suggestions for improvement*

## Conclusion of the focus group

The focus group sessions conducted with teachers from Portugal, Greece, Türkiye and Italy revealed diverse perspectives on the integration of AI and ML tools in teaching. Most participants highlighted the challenges faced due to a lack of practical training and insufficient technological infrastructure in schools. Resistance to adopting AI was noted in some cases, primarily due to a lack of understanding of the technology and concerns around ethical issues, such as the risk of



plagiarism and misuse of tools by students. However, most teachers recognised the potential of AI tools to improve personalised learning and support students with special educational needs.

Among the most common challenges identified were the lack of adequate training and the scarcity of resources, such as devices and quality internet access. To overcome these barriers, teachers suggested implementing continuous training programmes, focusing on practical workshops, mentorship support, and fostering a school culture that encourages responsible AI use. The need for clear ethical guidelines on AI usage was also emphasised, particularly to ensure the tools are appropriate and safe for students.

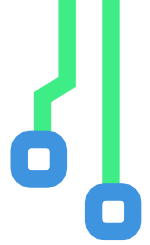
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# Conclusion

Questionnaires and focus groups





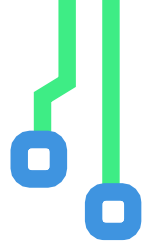
## Conclusion

The analysis of data from both the **questionnaires** and the **focus groups** provides a comprehensive view of the current state and challenges of implementing AI/ML in education. Both sources of data revealed **strong engagement with AI tools**, especially ChatGPT, which was widely used for content creation, lesson planning, and engaging students. However, the frequency of use varied significantly, with many teachers still in the early stages of integrating these technologies.

The questionnaires indicated that while many teachers already use AI in various subjects, the integration is not uniform across schools and countries, reflecting the diversity in available infrastructure and training. The focus groups further explored these issues, identifying common barriers such as a lack of practical training and limited infrastructure, which hinder the widespread adoption of AI tools. In addition, teachers emphasised the importance of continuous support, whether through in-person training, mentorship, or the creation of resources that can be directly used in the classroom, such as guides and adapted lesson plans.

Both the questionnaires and the focus groups highlighted the need to improve access to AI tools and enhance practical training. The most common recommendation was to offer more targeted training programmes that focus on the real needs of teachers, along with creating platforms for sharing best practices to promote collaboration among educators. These findings point to a clear need for ongoing support, improved infrastructure, and tailored educational resources to ensure that the integration of AI/ML in schools becomes an efficient and sustainable practice.

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