

**aug  
MENTOR**

**Policy Briefs**

**Augmented Intelligence for  
Pedagogically Sustained Training and  
Education**

[augmentor-project.eu](http://augmentor-project.eu)

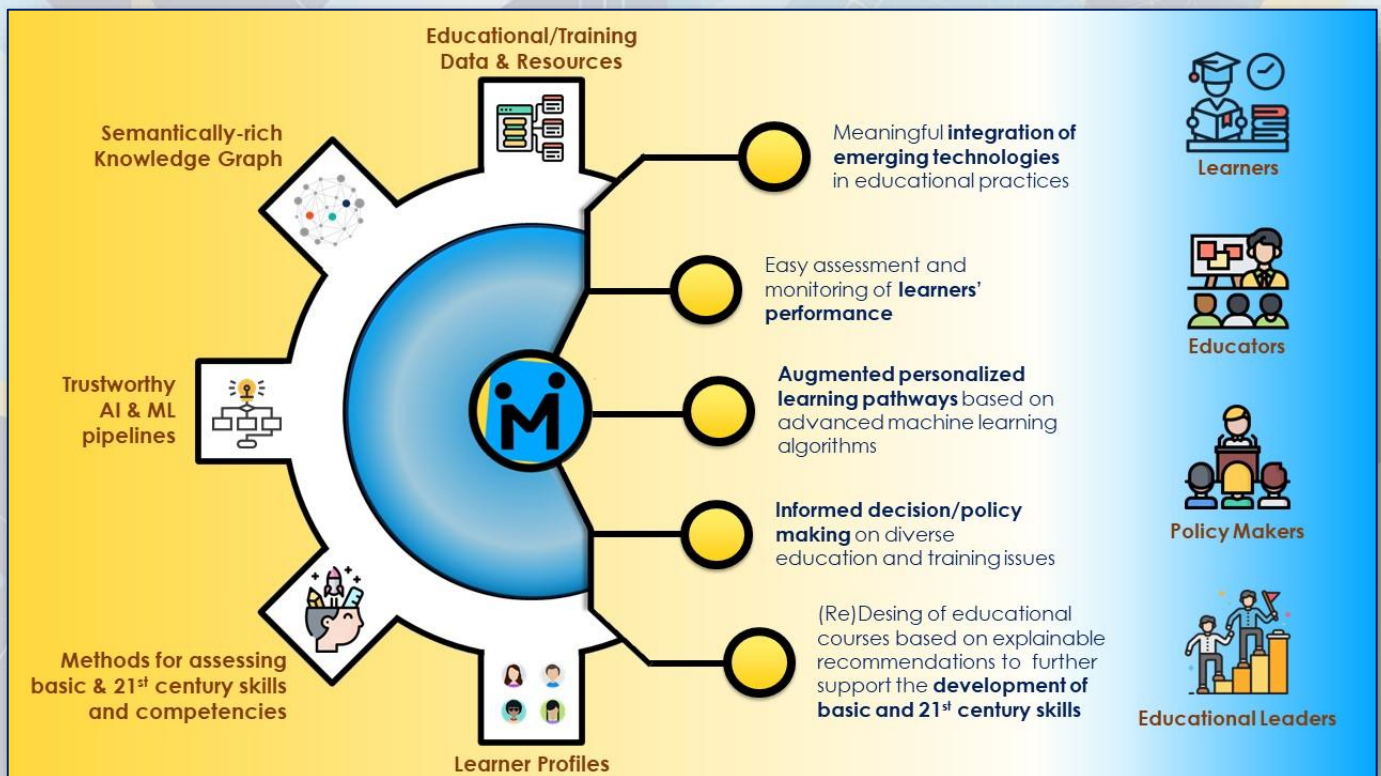


 **Funded by  
the European Union**

# augMENTOR Policy Briefs

The **augMENTOR** EU project sought to enhance educational practices, empower educators to design more effective courses, and enable learners to maximize their potential. To achieve that, it set out to integrate **emerging technologies** into a pedagogical framework focused on developing both basic and **21st-century skills**. By combining innovative pedagogical strategies with advanced AI solutions, **augMENTOR** delivered a solution that enhances educational practices, empowers educators, and enables learners to maximize their potential.

## THE AUGMENTOR OVERALL APPROACH



Throughout its lifetime, the project touched upon several aspects of education focusing particularly on the effective introduction of Artificial Intelligence technologies. It had three policy brief releases based on the evolution of the project which are all presented as separate sections in this document. Our briefs were structured so to follow a meaningful progression path starting from introducing the basic EU policies about AI in education, moving on to introducing AI in education through dedicated pedagogies and concluding with the actual use of AI tools in the teaching and learning process. Each section presents a set of recommendations for different educational policy makers and stakeholders based on the work done in the **augMENTOR** project.

# Introducing Artificial Intelligence in education: EU Policies

## Digital Education Action Plan - Action 6

Ethical guidelines on the use of AI and data in teaching and learning for educators

*"There is a growing need for researchers, educators and students to have a basic understanding of AI and data use to be able to engage positively, critically and ethically with this technology and to exploit its full potential."*

## Digital Education Action Plan - Action 8

Updating the European Digital Competence Framework to include AI and data-related skills

*"Citizens need to acquire a basic understanding of new and emerging technologies, including AI, to be able to engage confidently, critically and safely with them"*

## Artificial Intelligence for Europe

*"AI is changing the nature of work: jobs will be created, others will disappear, most will be transformed."*

*Modernisation of education, at all levels, should be a priority for governments. All Europeans should have every opportunity to acquire the skills they need. Talent should be nurtured, gender balance and diversity encouraged."*

## EU INITIATIVES

High-Level Expert Group on AI

European AI Alliance

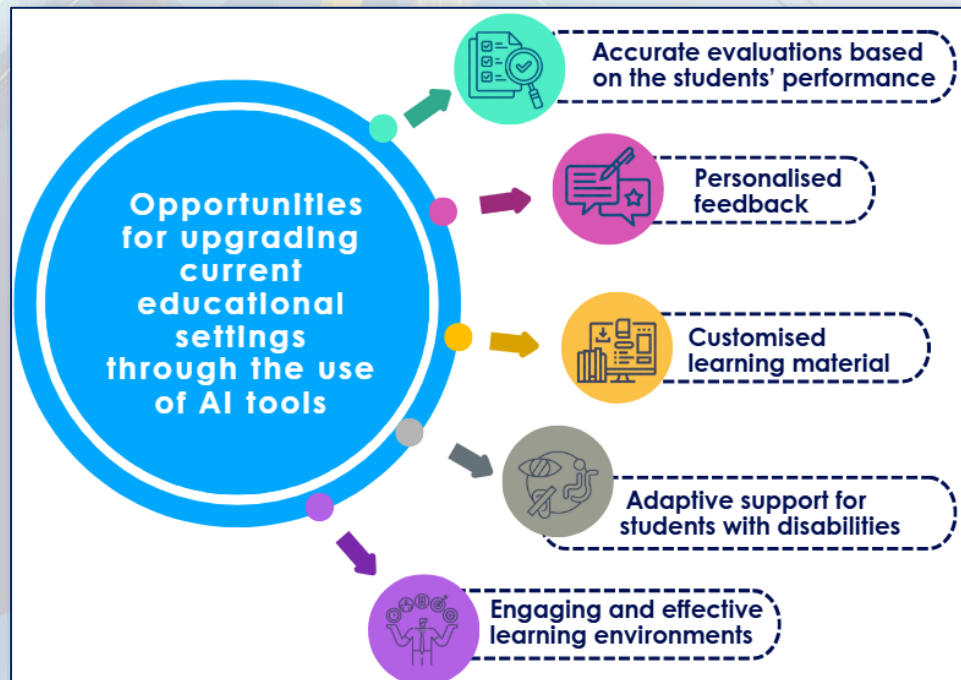
AI WATCH

EU Artificial Intelligence Act

## EU PUBLICATIONS

### OPPORTUNITIES AND TRENDS

augMENTOR aims to introduce AI in educational settings leveraging the benefits it offers while being aligned with current EU trends, the challenges faced by the educational community and actions already taken towards the ethical and responsible use of these technologies.



# INTERNATIONAL STAKEHOLDERS & EDUCATIONAL POLICY MAKERS

## Offer capacity building for educators & Institutions

Refurbish existing educational frameworks, or even publish new ones, to introduce the use of AI technologies in educational settings and demonstrate how to integrate AI in education effectively by offering new innovative educational practices and approaches to educators.

## Alignment strategies for educational bodies & technological companies

Develop alignment strategies that include common guidelines to support the effective collaboration and communication between educational bodies and technological companies.

## Raise awareness on AI ethics standards

To ensure the responsible integration of AI technologies in education, it is important to raise awareness and promote AI ethics standards for education aligned with guidelines from different experts and initiatives at European and global level.

# NATIONAL STAKEHOLDERS & EDUCATIONAL POLICY MAKERS

## Re-design and update of existing curricula to introduce the use of AI tools

AI-tools interweaved in curricula can support educators by offering useful insights about performance and skills development while they could also support self-regulated and personalised learning, thus boosting learners' performance.

## Design new Continuous Professional Development (CPD) courses

CPD courses based on EU frameworks and AI-enhanced curricula can support practitioners on how to use AI-tools effectively and ethically. CPDs are an essential key to bring effective changes through the proper preparation and training.

## Offer a practical guide for the ethical use of AI tools in education

A practical guide for the ethical use of AI tools in education designed based on EU guidelines while addressing the needs of educational communities could ensure educators are well-equipped to integrate AI technologies responsibly in their teaching.

# EDUCATIONAL ORGANISATIONS, EDUCATIONAL ASSOCIATIONS, EDUCATORS & TRAINERS

## Introduce a helpdesk for educators and trainers about the use of AI

Offering assistance on demand to educators, helping them address specific questions and/or concerns could be a powerful tool to address their needs. Educational organisations could offer a support system that will empower educators to effectively use AI in their teaching, enhancing educational outcomes.

## Exchange educational material & implementation ideas in integrating AI in education

To foster innovation and the practical application of AI in education, it is recommended that educational communities create open repositories to facilitate sharing and exchange of knowledge and resources related to AI-tools among educators.

# Core Pedagogical Strategies in augMENTOR

## ADAPTIVE LEARNING & PERSONALISED EDUCATION

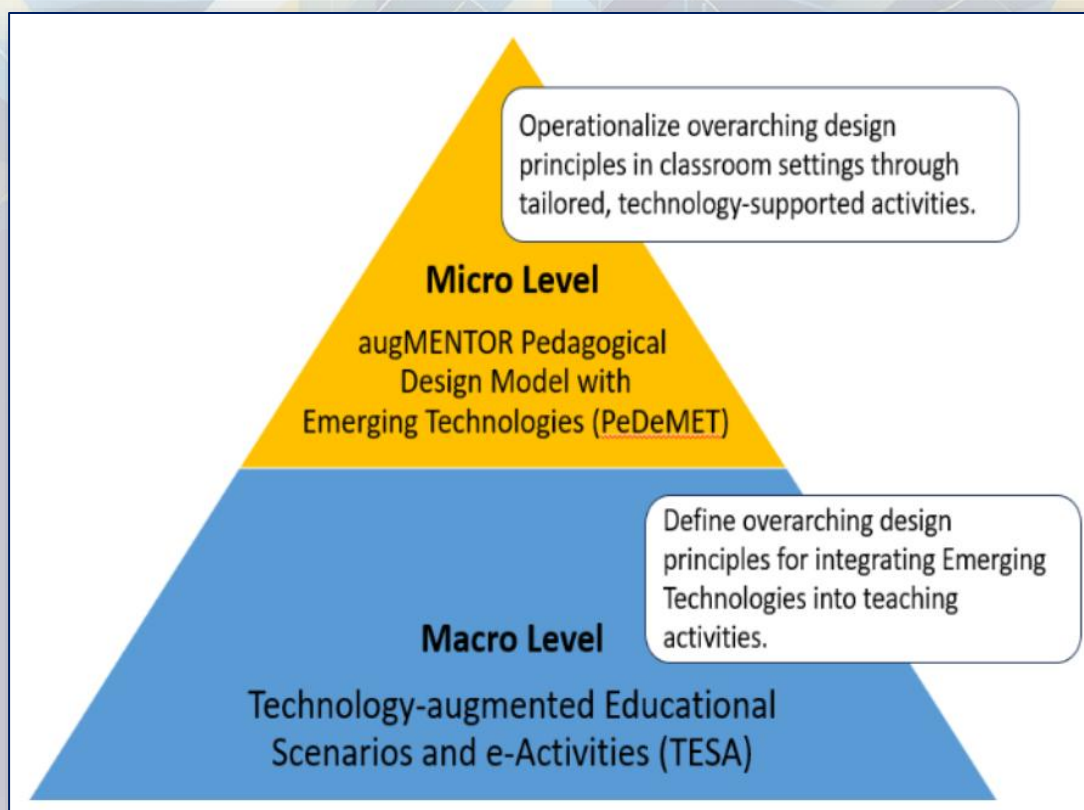
augMENTOR seeks to empower both students and educators, using AI-driven technology to make informed decisions about the learning process. Using the student's activity profile and the analysis of the learners' activity (learning analytics), the augMENTOR solution can track progress and refine learning progression paths to meet the needs of each student.

## TRANSVERSAL SKILLS THROUGH AI

Leveraging advancements in Hybrid Intelligence (HI), which combines human and AI strengths, augMENTOR supports the 4Cs (Communication, Collaboration, Critical thinking, and Creativity). Our AI-based solution helps teachers and learners assess and regulate learning activities effectively, enabling more complex objectives through human-AI collaboration.

## INTEGRATING AI IN PEDAGOGICAL APPROACHES

The augMENTOR Pedagogical Framework integrates AI into education by addressing gaps in existing models like Technological Pedagogical Content Knowledge (TPACK) and ADDIE. Drawing on Activity Theory and creative pedagogy principles, the **framework balances technological and pedagogical dimensions to enhance teaching and learning**. It introduces TETPACK, incorporating Emerging Technologies into teacher competencies, and Technology-augmented Educational Scenarios (TESA), a data-driven model for classroom-level practices. By combining theoretical insights with practical applications, the framework fosters cohesive, technology-enhanced learning experiences. Its holistic approach considers educators, learners, content, and context, offering innovative tools to create meaningful, outcome-focused educational interventions.



# SUPPORT THE INTEGRATION OF EMERGING TECHNOLOGIES (ET), AND ENHANCE EDUCATORS' ABILITIES TO USE AI IN ENRICHING LEARNING EXPERIENCES

Educators need comprehensive training to integrate Emerging Technologies and AI into teaching effectively. Our Pedagogical Framework addresses this need by combining theory and practice to foster innovative, inclusive, and ethical teaching methods. Aligned with the EU AI Act, it emphasizes AI literacy and responsible use, mitigating risks like bias and misinformation while unlocking AI's potential for personalized learning. Through professional development, mentorship, and practical tools, augMENTOR equips educators to navigate regulatory challenges, enhance and create impactful, technology-driven learning experiences. To successfully train educators with the Pedagogical Framework created, a set of key methods need to be applied.



## EMBEDDING AI IN EDUCATIONAL PROGRAM DESIGN

Integrating AI and Emerging Technologies into education requires more than training educators; it necessitates **updating curricula to embed AI in program design**. The Pedagogical Framework provides guidelines to address cognitive, instructional, and technological needs, ensuring AI tools foster essential competencies like creativity, critical thinking, and collaboration.

The augMENTOR Pedagogical Design Model with Emerging Technologies (PeDeMET) offers a holistic curriculum redesign approach, integrating elements such as:

- **Needs Analysis** to assess cognitive and instructional requirements.
- **Content Delineation** to align educational themes with learner needs.
- **Tool Integration** for effective use of AI and ICT in teaching.
- **Outcome Identification** focusing on knowledge and the 4Cs.
- **Learning Strategies** rooted in creative pedagogies.
- **Assessment Methods** emphasizing feedback and continuous improvement.
- **Contextual Placement** ensuring relevance to real-world environments.

## SUPPORTING AI-ENHANCED PEDAGOGICAL TOOLS

The augMENTOR Pedagogical Framework supports integrating AI tools into education to enhance teaching, foster student engagement, and develop transversal competencies. Key challenges include educator readiness, infrastructure gaps, ethical concerns, and curriculum alignment. Recommendations include:

- **Educator Training:** Provide specialized AI training, focusing on PeDeMET and TESA models, and improve AI literacy.
- **Infrastructure Development:** Equip schools with devices, software, and reliable internet while collaborating with developers to align tools with augMENTOR methodologies.
- **Ethical AI Use:** Ensure data privacy, eliminate biases, and support inclusivity.
- **Curriculum Integration:** Align AI tools with competency-based learning goals and facilitate adaptive learning experiences. Implementation strategies emphasize professional development, infrastructure enhancement, ethical AI deployment, stakeholder engagement, and continuous feedback to refine practices.

# INTRODUCING 21ST CENTURY SKILLS IN THE LEARNING PROCESS

The augMENTOR framework emphasizes integrating 21st-century skills, **focusing on the 4Cs: Critical thinking, Collaboration, Creativity, and Communication.** These transversal competencies are vital for future readiness and adaptability in dynamic, interdisciplinary workplaces. To assess the 4Cs, augMENTOR employs **rubrics, participatory design workshops practical guides** to help educators integrate and evaluate the 4Cs within their courses. This approach ensures nuanced, context-sensitive assessment and supports the broader application of transversal competencies in diverse learning scenarios.

## FIVE TIPS FOR ASSESSING THE 4Cs



## INTERNATIONAL STAKEHOLDERS & EDUCATIONAL POLICY MAKERS

### ESTABLISH GLOBAL BENCHMARKS

To facilitate the integration of transversal competencies through the augMENTOR solution, we firstly identified the main transversal competencies of the international frameworks of the 21st century skills and then we focused on the 4Cs conducting a thorough literature review to identify the main components of each competency.

### IMPLEMENTATION STRATEGIES

- Develop further cross-national pilot programs to test the augMENTOR framework in different educational contexts.
- Continue to publish findings and associated case studies to promote best practices and encourage iteration around the augMENTOR solution

## EDUCATORS, TRAINERS & EDUCATIONAL ORGANISATIONS

### ENCOURAGE PROFESSIONAL DEVELOPMENT OF THE 4CS

To enhance educator proficiency in using the augMENTOR framework, ongoing training is recommended through workshops, online courses, and professional development sessions. Strategies include creating tailored resources, establishing collaborative online spaces, offering certifications with incentives, collecting best practices, and providing ongoing support via Q&A sessions, social media, and forums.

### FOSTER PERSONALISED LEARNING

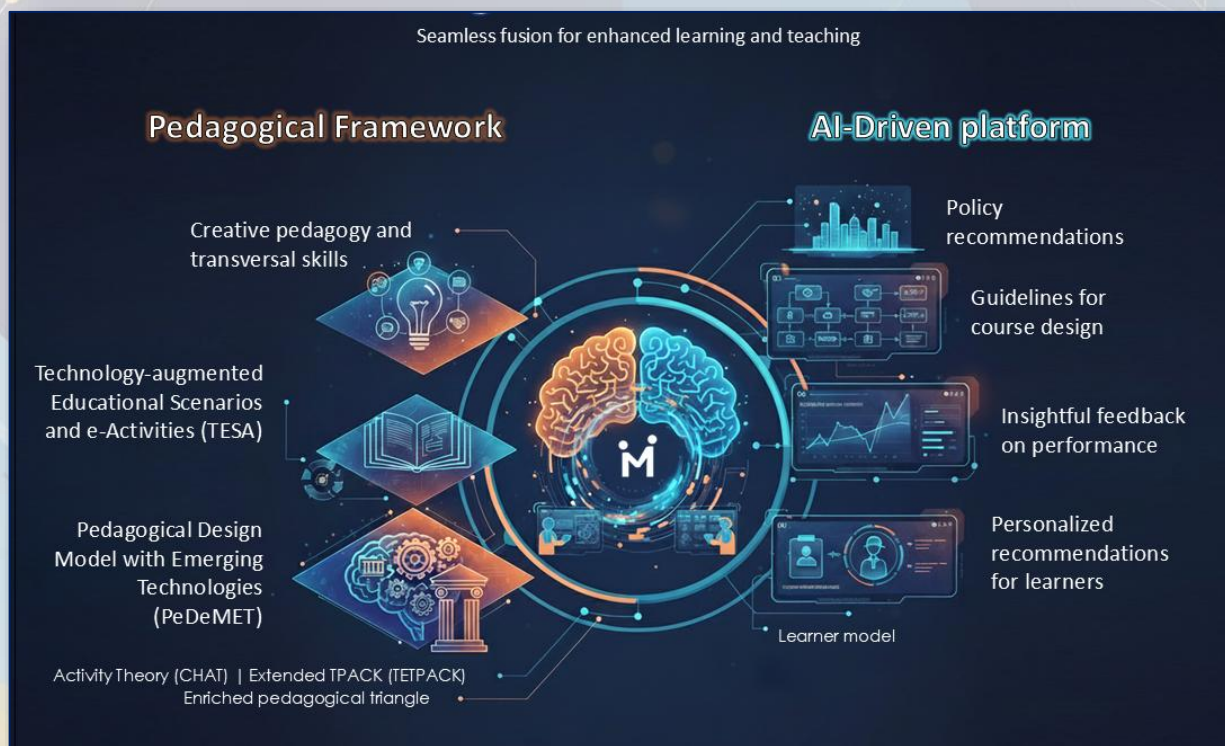
The augMENTOR solution enables educators to personalise learning by leveraging rubric-based data and formative assessments. By aligning teaching strategies with the Learner Model, educators can design targeted interventions, support struggling students, and empower high achievers. This data-informed approach fosters teacher agency and enhances the focus on 4Cs competencies in personalised learning.

### ITERATE THROUGH FEEDBACK LOOPS

Support teacher and learner development by using insights, feedback, and learning analytics. Conduct post-assessment meetings to review analytics, provide feedback, and set goals. Review and update augMENTOR rubrics to maintain effectiveness and alignment with learning objectives. Incorporate learner feedback on augMENTOR tools and rubrics into the refinement process, ensuring their experiences and perspectives are included.

# The augMENTOR SOLUTION

This third and final section builds on the project's technical development, pilot implementation, and policy dialogue across Europe. It translates the principles of trustworthy and pedagogically grounded Artificial Intelligence (AI) into concrete guidance drawn from real educational settings, highlighting how AI can meaningfully support teaching, learning, and institutional decision-making.



The augMENTOR solution aims to bring transformative change to education by seamlessly weaving modern technology into the way we teach and learn. It does so by offering a coherent model comprised of a state-of-the-art pedagogical framework and an AI-boosted platform that supports educators and learners throughout the learning process. By mixing new teaching methods with advanced artificial intelligence, augMENTOR helps educators design advanced courses and helps students maximize their potential.

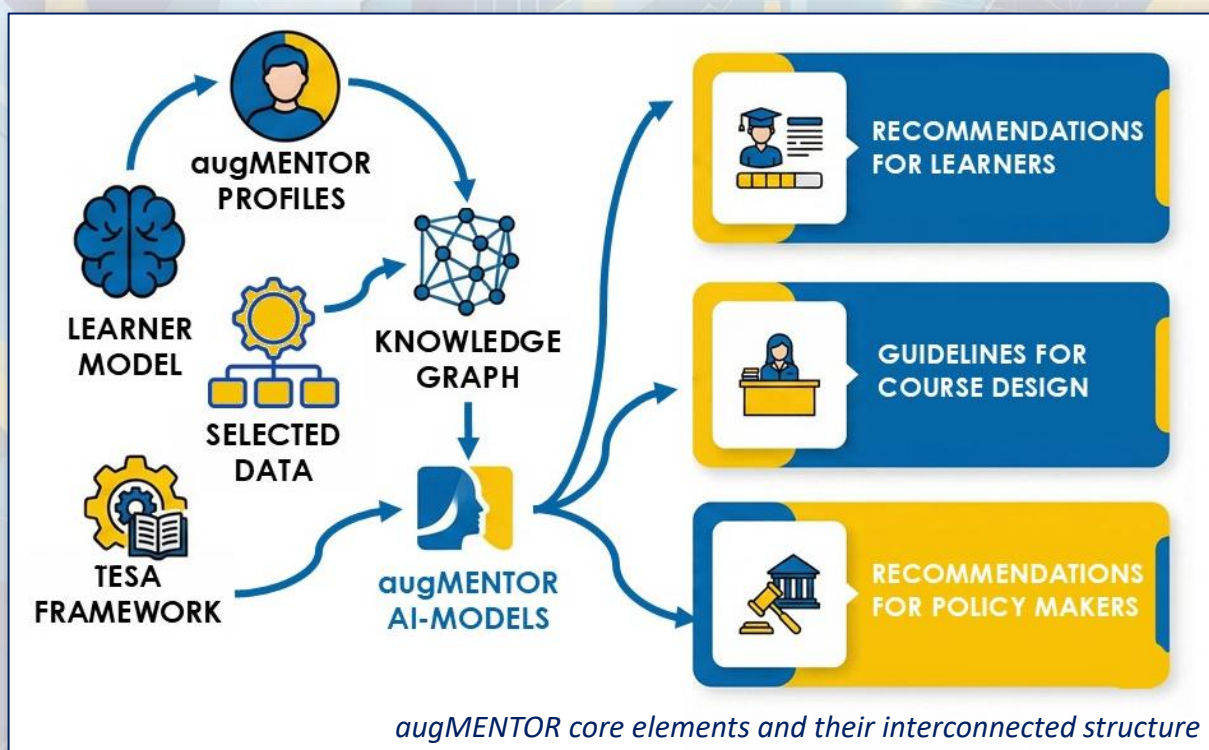
## THE AUGMENTOR PLATFORM

**augMENTOR** transforms heterogeneous learning data into meaningful, explainable, and pedagogically grounded insights by interweaving learner profiles, information from a dynamic knowledge graph and the Technology-augmented Educational Scenarios and e-Activities pedagogical framework (TESA). It supports the learning process on three different levels:

- Recommendations for learners** to improve their performance and skills
- Course design guidelines for educators** to support them in creating inclusive courses for diverse classes
- Recommendations for policy makers** and education stakeholders to inform decision making for curriculum design and future courses.

augMENTOR creates detailed **learner profiles** by looking at more than just academic performance. It considers a learner's engagement and in-course activities. It gathers a wide range of information from surveys, grades, and in-course behavioral metrics to create these profiles. This process uses advanced machine learning to group learners with similar characteristics, forming the basis for the predefined augMENTOR profiles.

**Recommendations** are designed by aggregating performance data, the augMENTOR profiles, and course descriptions, while all insights are evidence-based and aligned with the TESA (Technology Enhanced Student Assessment) framework produced by the project. Using all these dimensions, augMENTOR ensures that policies range across diverse educational contexts while being pedagogically sound, transparent and directly linked to real data.



## AUGMENTOR ACTIVITIES

### PILOT IMPLEMENTATION



4 Pilots



~700 Learners & Educators Involved

### POLICY MAKING WORKSHOPS



8 Policy Making Workshops



~120 Participants Involved

## INTERNATIONAL STAKEHOLDERS & EDUCATIONAL POLICY MAKERS

### **Promote explainable, pedagogically meaningful learning analytics**

Meaningful AI integration requires interpretable, pedagogically relevant analytics. augMENTOR pilots demonstrated that opaque data hinders instructional decisions. Consequently, explainable, pedagogically grounded systems are essential to support professional judgement and reflective teaching.

### **Safeguard human oversight to prevent deskilling and protect pedagogical integrity**

To preserve professional agency and prevent deskilling, AI must be positioned to augment rather than replace human judgement. Stakeholder insights confirm that maintaining this oversight is essential to ensure AI reinforces ethical, contextual, and emotionally informed pedagogy.

### **Promote accessible, multimodal AI systems to ensure equity in AI supported learning across Europe**

Learners with literacy challenges or disabilities often struggle to utilise AI recommendations without human mediation. Consequently, framing accessibility-by-design and multimodal features as core conditions is essential for ensuring equitable, inclusive AI adoption.

### **Advancing future-oriented STEM Education through 21st century skills & explainable AI**

Strengthening STEM education requires enhancing quality and inclusivity by integrating 21st century skills within flexible pedagogical frameworks. augMENTOR findings confirm that explainable, ethically grounded AI supports this transformation through personalised learning and formative assessment, suggesting international policy could leverage such platforms to align advanced digital skills with educator empowerment and robust governance.

### **Promote sustainability and digital sovereignty in AI-Enabled education**

To align AI adoption with long-term sustainability and autonomy, the environmental impact and reliance on non-European infrastructure needs to be addressed. Stakeholders warn that ignoring these factors strains resources and compromises strategic control, necessitating that sustainability and digital sovereignty be framed as complementary dimensions of responsible, resilient AI education.

## NATIONAL STAKEHOLDERS & EDUCATIONAL POLICY MAKERS

### **Strengthen national teacher training frameworks to build AI literacy and competence among educators**

Although educators increasingly use AI, augMENTOR findings indicate that uncertainty in interpreting insights persists, stemming from a skills gap rather than resistance. To prevent the pedagogical value of AI from remaining under-realised, national policies need to systematically embed AI literacy into teacher training, enabling educators to critically interpret and contextualise automated insights.

### **Promote tools that increase trust in AI generated recommendations through explainability features**

While learners valued recommendations, concerns regarding standardisation and opaque criteria highlight a critical need for visible assessment logic. Consequently, national AI strategies need to prioritise transparency to ensure that automated assessments reinforce trust and pedagogical legitimacy.

## NATIONAL STAKEHOLDERS & EDUCATIONAL POLICY MAKERS

### **Strengthen usability, and technical reliability as conditions for pedagogical benefit**

Learners praised the platform's usability, yet technical barriers at the early stages of the pilot like system freezing or navigation difficulties highlighted that pedagogical benefit is inextricably linked to reliability. Consequently, inconsistent performance or complex access can drive disengagement, rendering even valuable recommendations ineffective.

### **Align regulatory frameworks with classroom realities through practical implementation guidance**

To ensure AI regulations are practically relevant, policy intentions could be effectively translated into everyday pedagogical practice. Stakeholders indicate that educators often struggle to interpret regulatory requirements, viewing frameworks as abstract reference points rather than supportive instruments. Consequently, national policies could prioritise bridging regulatory objectives with classroom realities through clear, practice-oriented guidance.

## EDUCATIONAL ORGANISATIONS, ASSOCIATIONS & EDUCATORS

### **Position AI as a pedagogical companion that supports, rather than replaces, human judgment**

Evidence from augMENTOR pilots suggests AI recommendations are most valuable as starting points for dialogue rather than definitive judgements. Since educators used these outputs to facilitate reflection and scaffolding, AI's primary value lies in informing human reasoning rather than automation. Therefore, organisations could frame AI as a pedagogical companion, ensuring human judgement and relational pedagogy remain central.

### **Use AI recommendations to strengthen continuous, iterative learning cycles**

augMENTOR pilots indicate that AI tools are most effective when integrated into the regular teaching rhythm rather than applied retrospectively. Educators valued timely insights for formative assessment and early intervention, enabling adjustments to pacing and workload. Consequently, AI can support continuous learning by structuring activities into shorter cycles that promote positive habits and reduce cognitive overload.

### **Expand recommendations beyond learners to include course design recommendations for educators**

Educators suggest that recommendations should extend beyond learner performance to address course structure and pedagogical design. As learner progress is shaped by task quality and scaffolding, course-level insights can support reflective practice and prevent the misattribution of instructional design issues to learner deficits.

To ensure meaningful contribution, AI recommendations must transcend surface metrics and align with authentic skills development. As augMENTOR pilots indicate, reliance on quantitative data alone risks ambiguity. Consequently, grounding AI in pedagogical frameworks is essential to capture the true depth of learner engagement rather than merely observable activity patterns.

### **Align AI insights with authentic pedagogy and 4Cs development**

# augMENTOR

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## WANT MORE?

Visit the extended version of our policy briefs in the website to find more information about:

- Dedicated strategies about implementing the presented briefs
- The introduction of AI in educational settings
- Current EU policies and trends.



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The augMENTOR project (GA No. 101061509) is funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. The European Union cannot be held responsible for them.