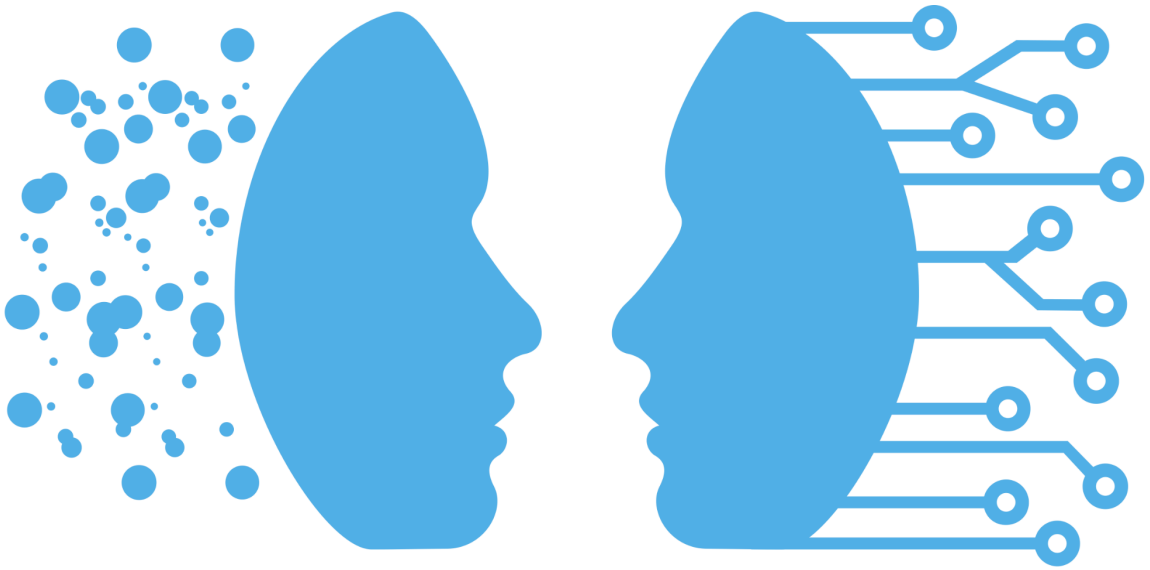
Co-funded by the European Union

Human2AI

Erasmus+
Enriching lives, opening minds.

Application of Generative AI in Schools

Vademecum



Human2AI

March 2025

Human2AI – Bring Generative AI applications to Secondary Schools
Project Reference: 2023-1-DE03-KA220-SCH-000161772
Disclaimer: 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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.

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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.

Disclaimer: 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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.

Content

Content 3
1. Introduction 4
Initial Considerations 4
Purpose and Scope of the Document 5
2. Challenges and Risks' Mitigation Strategies 5
Privacy and Data Security Risks 5
Bias and Fairness Concerns 6
Accountability and Transparency Issues 6
Threats to Educator and Student Autonomy 7
Accountability and Transparency in GenAI Systems 7
Copyright and Intellectual Property Risks 8
Teacher and Student Autonomy in the GenAI Era 8
3. Integration of AI into School Curricula 9
Some Areas of Application 9
1. Interactive teaching and personalised learning with AI 13
2. The role of the teacher and AI as a teaching partner 14
3. Inclusive personalisation: AI in the service of accessible education 15
4. Formative assessment and monitoring of learning 15
5. A new approach to the study: the impact of AI on learning 17
6. Working on error: cultivating human skills in the age of AI 17
Some Operational Models 18
1. Experimenting with AI Creativity 18
2. Creating Digital Content with Generative AI 19
3. Integrating and Reprocessing Digital Content with Generative AI 19
4. Collaborating using generative AI tools 20
5. Interacting with others using generative AI tools 21
4. Turnkey Use Case: A Workshop on the Application of AI in the Humanities 22
Example of Application 23

Project Reference: 2023-1-DE03-KA220-SCH-000161772
Disclaimer: 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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.

1. Introduction

Initial Considerations

Generative AI (GenAI) is considered a transformative technology of the 21st century, driving significant advancements across sectors—from reshaping individual skill demands to revolutionizing education and business applications. As its influence grows, understanding its various benefits becomes essential for acquiring its potential.

For individuals, adapting to an AI-driven world means prioritizing skills like creativity, problem-solving, and critical thinking to remain competitive in a shifting labor market. These competencies empower people to leverage AI as a collaborative tool (rather than a disruptive force). Meanwhile, businesses are already experiencing significant changes through GenAI's ability to personalize customer engagement, automate processes, and enhance decision-making. By tailoring products and services to user preferences, GenAI boosts satisfaction and retention of clients, while its automation capabilities streamline operations, reduce errors, and free human workers for more meaningful and not repetitive tasks. In addition, the creative industries are witnessing a new digital era as GenAI generates art, music, code, expanding the boundaries of human creativity. Similarly, healthcare benefits from AI's diagnostic precision and personalized treatment recommendations, improving patient outcomes. Equally transformative is GenAI's role in promoting accessibility, breaking down barriers for individuals with disabilities through tools like voice recognition and real-time translation.

For the purposes of this research, it should be highlighted that almost nowhere is GenAI's impact more promising than in education. By analyzing learning styles and progress, GenAI enables personalized instruction, adapting content to each student's needs and fostering deeper engagement. It also promotes creativity and critical thinking by exposing students to diverse perspectives and complex problem-solving scenarios. Beyond the classroom, AI streamlines administrative tasks like grading and resource allocation, allowing educators to focus on mentorship and tailored support. For special education, GenAI is crafting individualized learning plans and providing assistive technologies to ensure inclusivity. Its ability to detect learning difficulties early ensures timely interventions, preventing minor issues from escalating. Moreover, AI is capable of facilitating cross-cultural collaboration and granting access to worldwide educational resources, enriching students' perspectives and learning possibilities. Through real-time feedback and rapid content iteration, GenAI keeps materials relevant and aligned with up-to-date standards, while monitoring systems help identify at-risk students, reducing dropout rates through proactive support. Allogether, these advancements illustrate GenAI's capacity to not only enhance existing systems but also redefine what's possible for all involved stakeholders (learners, educators, and society).

Project Reference: 2023-1-DE03-KA220-SCH-000161772
Disclaimer: 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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.

Purpose and Scope of the Document

As stated in the previous part, the integration of GenAI in education brings tremendous potential, but also requires careful navigation of challenges and approaches in implementing the technology. Section 2 of this Vademecum will address critical risks including data privacy vulnerabilities, algorithmic bias, and threats to educator autonomy - not to discourage adoption, but to empower schools with practical mitigation strategies that preserve ethical standards.

By examining these challenges and presenting actionable solutions, the document will try to provide educators with the framework needed to implement GenAI responsibly.

In continuation, section 3 will explore how educators can strategically integrate GenAI across six key roles—from dynamic assessor to Socratic opponent—transforming it from a passive tool into an active pedagogical partner that enhances personalized learning, fosters critical thinking, and expands educational accessibility. Here, a special attention will be made on demonstrating how AI can elevate rather than replace human-led instructions. Finally, it will be shown how integration of GenAI in school curricula can empower teachers to design AI-augmented lessons that meet diverse learner needs while preserving the irreplaceable human elements of mentorship, creativity, and ethical judgment.

The last section of the document will showcase the workshop model demonstrating how AI can become a powerful tool in humanities education when guided by intentional pedagogy. By focusing on prompt engineering and critical analysis of literary texts, it is shown that students can develop both technical AI literacy and essential human skills. The replicable 20-hour structure which will be presented will provide schools with a ready framework for integrating AI across disciplines, balancing theoretical foundations with collaborative creation.

2. Challenges and Risks' Mitigation Strategies

The use of GenAI technologies in educational settings introduces a range of challenges that need careful consideration and definition of mitigation strategies to ensure responsible implementation. All challenges that will be commented on in the continuation of this section can affect not only the effectiveness of GenAI in education but also the ethical integrity of the educational environment.

Privacy and Data Security Risks

One of the most pressing risks associated with the integration of GenAI in education is the protection of student data. As educational institutions increasingly rely on AI tools, the security of sensitive student information becomes paramount. Improper handling of data could lead to breaches of privacy, unauthorized access, or exploitation of personal data.

Disclaimer: 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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.

Key Risks:

- Data Exposure: Sharing excessive or unnecessary student data with GenAI platforms could compromise privacy.
- Inadequate Protection: Without robust security measures, student data could be vulnerable to cyberattacks or misuse.
- Lack of Transparency: Students and parents may not fully understand how their data is used or the extent of its exposure.

Mitigation Strategies:

- Implementing secure data storage and anonymization practices can help safeguard privacy.
- Clear communication regarding data usage policies and informed consent procedures is critical to ensure transparency and build trust.
- Regular audits of data handling practices to ensure compliance with privacy regulations can mitigate security risks.

Bias and Fairness Concerns

Bias in GenAI systems is a significant challenge that can encourage inequality in educational outcomes. AI algorithms trained on biased data can reinforce existing stereotypes, leading to unfair treatment of certain groups of students, especially minorities from marginalized backgrounds.

Key Risks:

- Bias in Data: GenAI systems may unintentionally replicate societal biases embedded in historical data or in the data collection process.
- Unintended Discrimination: Biased algorithms can lead to discriminatory practices, such as over (or under) representing particular student groups in content.

Mitigation Strategies:

- Incorporating fairness metrics into AI evaluations to measure potential biases and ensure fairness.
- Regularly updating training data to reflect different perspectives and avoid occurrence of stereotypes.
- Manual oversight and content review by educators to ensure that AI-generated materials align with fairness principles.

Accountability and Transparency Issues

As GenAI becomes more integral to educational processes, it is essential to ensure transparency and accountability. Without these, the trust that students, parents, and educators place in AI tools can be undermined.

Project Reference: 2023-1-DE03-KA220-SCH-000161772
Disclaimer: 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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.

Key Risks:

- Suspicious Decision-Making: Lack of clarity around how AI algorithms arrive at their conclusions can lead to distrust in the technology.
- Misuse of GenAI: Without accountability mechanisms, GenAI tools could be misapplied, leading to unintended educational consequences.

Mitigation Strategies:

- Educational institutions must disclose how GenAI algorithms operate, what data they use, and their limitations to promote transparency.
- Accountability policies and regular audits of AI systems ensure ethical compliance and address any misuse of GenAI tools in the classroom.

- Training teachers to evaluate and interpret GenAI decisions ensures that human judgment remains central in educational settings.

Threats to Educator and Student Autonomy

Another risk of GenAI in education is losing the autonomy of both educators and students. If GenAI is not implemented with care, it could limit teachers' ability to make decisions or diminish students' independence in their learning.

Key Risks:

- Teacher Dependence: Over-reliance on GenAI could reduce teachers' ability to make independent decisions, especially if AI tools are seen as authoritative.
- Loss of Student Agency: GenAI-driven personalization may limit student choice and autonomy, caused by AI which can determine learning paths that may not align with their interests or needs.

Mitigation Strategies:

- GenAI should be positioned as a tool that supports and augments the work of teachers, not a replacement for human involvement in the learning process.
- Encouraging teachers to retain control over educational decisions and ensure that GenAI recommendations are adaptable according to pedagogical goals.
- Ensuring that students are empowered to make choices about their learning while using GenAI tools to provide guidance and supplementary resources.

Accountability and Transparency in GenAI Systems

Key Risks:

- Teachers may not fully comprehend the underlying algorithms or data inputs of the GenAI systems they use, which can lead to reliance on potentially inaccurate or biased outputs. This lack of understanding could result in the unintentional misapplication of educational tools, potentially undermining the educational goals of the institution.

Project Reference: 2023-1-DE03-KA220-SCH-000161772
Disclaimer: 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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.

- The complexity of GenAI algorithms can make unclear how decisions are made, where the justification behind decisions is not easily understood by teachers, students or parents.

Mitigation Strategies:

- Teachers must gain an understanding of the GenAI systems they are using, including the nature of algorithms and data inputs. Ongoing professional development is essential for ensuring that teachers can critically evaluate GenAI outputs and align them with educational objectives.
- Teachers should simplify the explanation of GenAI decisions using concrete examples to help stakeholders understand how these systems make recommendations. Clear communication regarding the limitations and potential biases in the systems is crucial to maintaining trust.
- Stakeholder Engagement: Teachers should actively involve students and parents in the decision-making process, discussing how GenAI is being used, its role in educational outcomes, and requiring feedback.
- Continuous evaluation of GenAI systems through regular audits and reviews of outcomes ensures the system remains accurate, relevant, and aligned with educational standards.

Copyright and Intellectual Property Risks

Key Risks:

- The use of GenAI-generated content in education raises important concerns regarding copyright and intellectual property (IP) rights. Since GenAI tools often rely on vast datasets, determining ownership and proper attribution of content can be complex.
- Many educational institutions are unaware of the varying copyright laws in different jurisdictions, leading to misuse of copyrighted material.

Mitigation Strategies:

- Educators should only use GenAI tools and platforms that adhere to copyright and intellectual property laws. Teachers need to verify licensing agreements and usage permissions before utilizing any generated content.
- Educators should ensure proper attribution of GenAI-generated content, recognizing the contributions of the algorithms and developers behind the tools.
- It is vital to incorporate lessons on copyright, intellectual property, and ethical sourcing into the curriculum. Teachers should help students understand how to cite sources correctly and navigate ethical content use.
- Teachers should be trained on intellectual property rights, including patents, trademarks, and copyright laws.

Teacher and Student Autonomy in the GenAI Era

Project Reference: 2023-1-DE03-KA220-SCH-000161772
Disclaimer: 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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.

Key Risks:

- One of the most pressing risks of integrating GenAI into education is the potential loss of both teacher and student autonomy.
- Teachers may feel pressured to rely on GenAI recommendations, compromising their professional judgment and decision-making capabilities.
- Students might become overly reliant on GenAI tools, undermining their ability to think critically and independently.

Mitigation Strategies:

- Teachers must retain their primary role as decision-makers in the classroom. GenAI should be viewed as a supplementary tool that enhances, rather than replaces, human instruction. Educators should be empowered to adjust GenAI-generated recommendations based on their professional expertise and knowledge of individual student needs.
- Teachers should design assignments and activities that promote independent learning and critical thinking, encouraging students to engage with GenAI as a resource, not an ultimate source of truth.
- Teachers should integrate discussions on the ethical use of GenAI into their curriculum, encouraging students to critically assess the societal implications and potential ethical dilemmas of using AI technologies in education.
- Collaboration and Reflection: Teachers should engage in ongoing discussions with colleagues and AI experts about the responsible use of GenAI, examining how it fits within pedagogical frameworks and how to maintain a balance between human-led teaching and AI assistance.

3. Integration of AI into School Curricula

Some Areas of Application

ROLE AT	SCOPE OF APPLICATION	DESCRIPTION	USE
Dynamic Assessor	**Interactive teaching and personalised learning with AI**	Artificial intelligence offers tools to personalise educational content, making it accessible to students with different needs. Through technologies such as speech recognition and virtual reality, AI ensures an inclusive and stimulating environment, reducing physical, cognitive and social barriers.	Teachers - In the classroom

Project Reference: 2023-1-DE03-KA220-SCH-000161772
Disclaimer: 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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.

Co-designer	**The role of the teacher and AI as a teaching partner**	AI becomes a design ally for teachers, supporting them in creating innovative educational experiences. From designing activities based on concrete problems to organising simulations and role-plays, artificial intelligence enables the development of educational paths that promote critical thinking and active participation.	Teachers - Outside the classroom
Personal Tutor	**Inclusive Personalisation : AI in the Service of Accessible Education**	Artificial intelligence takes on the role of a personalised tutor, analysing student activity data to adapt teaching materials, assessment methods and exercises to each student's specific needs. It also provides immediate feedback to stimulate more effective and engaging learning.	Students - In the classroom
Guide on the Side	**Formative assessment and monitoring of learning**	AI supports formative assessment by helping teachers and students monitor progress through detailed data. It provides insights into gaps and suggestions for adapting educational paths, fostering continuous and personalised learning.	Teachers - Outside the classroom
Study Buddy	**A new approach to the study: the impact of AI on learning**	AI acts as an interactive study companion, engaging students in a continuous dialogue that spans all stages of learning, from exploration to synthesis. It stimulates critical and creative thinking, promoting greater understanding and autonomy.	Students - Outside the classroom
Socratic Opponent	**Working on error: cultivating human skills in the age of AI**	AI takes on the role of a critical opponent, prompting students to reflect on mistakes as learning opportunities. This approach reinforces soft skills such as critical thinking, creativity and problem-solving, which are essential for consciously interacting with technology.	Students - In the classroom

Project Reference: 2023-1-DE03-KA220-SCH-000161772

Disclaimer: 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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.

Exploratorium	· **Experimenting with AI Creativity** · **Creating Digital Content with Generative AI**	Artificial intelligence generates an environment of discovery, where students and faculty can use advanced tools to experiment with data, text, images and sound. Students explore the potential of AI to develop creative and innovative content, learning to understand the technical principles, limitations and practical applications of emerging technologies.	Students
Possibility engine	· **Integrating and Reprocessing Digital Content with Generative AI**	Artificial intelligence helps explore new ways to express ideas or adapt existing content. With the ability to reinterpret information and combine elements in innovative ways, AI stimulates creativity and enables customized solutions to meet specific needs or explore diverse contexts.	Students
Collaboration coach	· **Collaborating using generative AI tools** · **Interacting with others using generative AI tools**	AI helps teams work more effectively by providing tools to create content, analyze data, and develop innovative solutions. By acting as a technological mediator, AI fosters communication, productivity and skill sharing among team members. It fosters the development of communication skills, but also requires critical reflection on the limitations and responsibilities associated with its use.	Students and teachers

1. Interactive teaching and personalised learning with AI

Current pedagogical theories emphasise the importance of transforming classrooms into dynamic spaces where students can take a central role in their own learning. This model, which is essential for fostering deep learning, is based on the idea that students learn more effectively through practical experience, experimentation and the solving of real problems, rather than through passive methods of knowledge transmission. Interactive teaching encourages students to actively participate, interacting with content, their peers and teachers, going beyond simply listening or reading.

Project Reference: 2023-1-DE03-KA220-SCH-000161772
Disclaimer: 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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.

In this scenario, artificial intelligence (AI) offers a significant contribution, especially in the personalisation of educational paths. By analysing data generated by students, such as how they interact with learning materials, test results and study preferences, AI systems can identify each individual's needs, difficulties and learning styles. These tools make it possible to adapt materials, exercises and assessment methods to meet the specific needs of each student. Moreover, with the ability to provide immediate feedback and targeted guidance, AI guides students on a more effective and challenging educational path, helping to build a tailored learning experience.

2. The role of the teacher and AI as a teaching partner

In this context, teachers are increasingly being led towards a true design of educational experiences. The introduction of advanced technologies such as artificial intelligence (AI) and Large Language Models (LLMs), including ChatGPT, represents a significant opportunity to stimulate active learning. LLMs can be used to facilitate structured discussions, create realistic scenarios for simulations or role-plays, and design problem-based activities that stimulate critical thinking and practical application of acquired knowledge.

With the increasing use of AI in education, the academic landscape has also begun to investigate its integration into teaching in depth. In particular, Italian pedagogical models, such as those of Panciroli and Rivoltella, distinguish three fundamental approaches to the use of AI in education:

- **Educating on artificial intelligence**: provide students with an in-depth understanding of the processes underlying products created by AI, including data, algorithms and mechanisms of operation.
- **Educating with artificial intelligence**: using AI to support creativity, decision-making, personalised tutoring, evaluation and feedback.
- **Educating artificial intelligence**: promoting ethical reflection and critical analysis of algorithmic behaviour and its implications.

AI-based tools do not just provide content, but offer active support in teaching practice. Teachers are called upon to develop skills in designing learning paths that encourage active participation, critical thinking and collaboration. In this context, LLMs become true teaching partners, able to support teachers in creating innovative and personalised learning experiences, thus improving teaching effectiveness and responding to students' individual needs.

3. Inclusive personalisation: AI in the service of accessible education

The use of Large Language Models (LLM) in education enables a higher level of personalised learning. These tools can support teachers in creating diverse learning

Project Reference: 2023-1-DE03-KA220-SCH-000161772
Disclaimer: 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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.

materials that take into account the specific needs of students, such as learning styles, skill levels and personal interests. Texts, quizzes, reflection activities and study scenarios can be adapted to ensure an engaging and focused learning experience, increasing student motivation and participation.

The integration of artificial intelligence into the education system also emphasises the importance of inclusion. AI makes it possible to adapt content and methodologies to individual needs, overcoming physical, cognitive and social barriers that often limit access to learning. Tools such as voice recognition, virtual assistants and augmented and virtual reality technologies improve accessibility, enriching the educational process with intuitive and immersive content. In particular, these solutions are crucial for learners with disabilities, offering personalised responses that help overcome specific difficulties.

A significant contribution is made by virtual tutors, designed to adapt to the needs of each student. Thanks to their ability to analyse responses and identify learning patterns, these tools modify educational content in real time, providing a more effective and targeted experience. A crucial feature of virtual tutors is their ability to offer immediate feedback: whereas in a traditional context feedback takes longer, these tools allow students to immediately understand mistakes made and improve their learning.

The flexibility of virtual tutors is a further advantage, as they are available at any time, overcoming the time constraints of classroom lectures. Moreover, they are able to adapt teaching strategies to personal preferences, presenting content in visual, aural or hands-on formats according to individual needs. This approach ensures greater effectiveness in understanding and assimilating information, contributing to an educational experience tailored to each student.

4. Formative assessment and monitoring of learning

Artificial intelligence is transforming the educational landscape, especially when it comes to formative assessment. Large Language Models (LLM) and generative artificial intelligence (AIg) systems offer innovative tools to provide immediate feedback to students on answers and quizzes, highlighting areas for improvement. This approach allows teachers to reduce the operational burden of designing and managing assessment moments, allowing them to focus more on adapting lessons to the real needs of students and optimising learning paths.

AI makes possible in-depth monitoring of student progress by collecting and analysing data on interactions, learning outcomes and learning paths. Through automated reports, AI systems can summarise student performance, highlighting trends and suggesting targeted teaching strategies. This approach makes it possible to identify not only the skills acquired, but also those that require further consolidation, thus defining a more structured educational path focused on specific needs.

AI can also design customised tests based on identified gaps, providing additional assessment contexts to reinforce learning. This process ensures continuous and structured feedback, providing targeted opportunities for students to address their difficulties and progress more effectively.

Disclaimer: 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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.

AI-based tutoring systems represent a highly customised educational method capable of offering tailor-made support to students. Thanks to their ability to analyse data and identify trends in performance, these virtual tutors provide additional explanations, practical exercises and homework assistance, even in the absence of the teacher. Students can thus receive targeted help that adapts to their skill level and preferences, ensuring an educational experience tailored to their needs.

AI tutoring tools also benefit teachers, who can analyse large amounts of data to better understand students' learning patterns and plan customised interventions. This approach allows teachers to spend more time on direct interaction with students, aimed at explaining mistakes, highlighting strengths and solving critical issues.

A concrete example of the effectiveness of AI in tutoring concerns the analysis and production of texts. AI systems can automatically correct written tasks, analysing aspects such as grammar, syntax, vocabulary and textual coherence. In addition, speech recognition tools can support language learning, helping students to improve pronunciation and listening comprehension.

These systems also make it possible to adapt the difficulty of the proposed activities: students with advanced skills can be challenged with more complex exercises, while those who need additional support can receive activities calibrated to reinforce the basics. However, it is crucial that the progress monitored by AI is always critically evaluated by teachers, who can supplement the data collected with qualitative observations and broader reflections.

5. A new approach to the study: the impact of AI on learning

The advent of Large Language Models (LLM) and artificial intelligence technologies is redefining the traditional concept of studying, transforming it into a dynamic and interactive process. Studying is no longer seen as a solitary activity, but as a constant dialogue spanning all stages of learning: exploration, cognitive processing and consolidation. During the exploration phase, students actively interact with AI tools to construct knowledge. This two-way approach stimulates critical thinking, as the answers provided by the AI are contextualised and invite further reflection on the topics addressed. Students do not merely receive information, but actively participate in a dialogue that enriches the learning process.

AI expands the possibilities of adopting a transdisciplinary approach, allowing students to explore concepts and connections between different disciplines in a contextualised and dynamic way. This method not only fosters the integration of knowledge from various fields, but also encourages new ideas and innovative solutions, bridging the gap between theoretical knowledge and the practical applications required in the real world. Tools such as LLM encourage students to develop critical and creative thinking, stimulating the ability to analyse complex problems from multiple perspectives. By being able to experiment with connections between different concepts, students are better prepared to tackle real-world challenges in innovative and collaborative ways.

Project Reference: 2023-1-DE03-KA220-SCH-000161772
Disclaimer: 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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.

The introduction of AI in the educational context also redefines the role of teachers, who become designers of learning experiences. Educators must design pathways that promote active and engaging learning, integrating AI tools as a support for personalisation and innovation. However, to fully exploit the potential of AI, it is essential to ensure the ongoing training of teachers, providing them with the time and resources they need to acquire skills in the use of these technologies.

6. Working on error: cultivating human skills in the age of AI

With the widespread use of artificial intelligence (AI) in trades, professions and social life, some human skills are at risk of being progressively marginalised. Skills such as creative thinking, problem-solving, the ability to synthesise and critical thinking, which form the core of soft skills, may be considered less necessary due to the support provided by AI. However, education cannot afford to sacrifice these fundamental skills, which are indispensable for tackling complex challenges, verifying information and generating original ideas.

Rather than excluding AI from the educational environment, the education system must embrace these tools by creating spaces where students can actively train their cognitive and social skills. Autonomous creativity, exploration of complex content, and critical analysis skills must be constantly cultivated, not only to ensure personal growth, but to prepare students to interact with AI consciously and strategically.

Interaction with AI offers an ideal context for turning error into an educational resource. Technological tools allow students to receive immediate feedback and work on their weaknesses in an iterative manner. This approach to formative assessment shifts the focus from the end result to the learning journey, encouraging reflection and continuous growth. The teacher's role remains central: they must guide students in recognising the value of error and use it as a lever to develop deeper skills.

In a world where AI excels in accuracy and conformity, it is crucial to recognise and value what makes human intelligence unique. Empathy, intuition, creativity and adaptability are elements that no algorithm can replicate. Education must reward these qualities, promoting divergent thinking and encouraging students to explore innovative solutions. Students must be assessed for their ability to innovate, imagine and create. In this scenario, technology does not replace human beings, but stimulates them to excel in their distinctive skills.

Some Operational Models

1. Experimenting with AI Creativity

AI as a tool to explore and reinterpret content, stimulating cultural innovation.

Objectives:

- Understanding the potential and creative limits of AI.
- Developing critical thinking and imaginative skills.
- Promoting the responsible and conscious use of AI in innovation processes.

Disclaimer: 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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.

Activities:

- Use generative AI tools to transform texts or data into new creative forms (e.g. adaptations, remixes, mash-ups).
- Critically analysing results, identifying biases and limitations.
- Reflecting on the impact of AI in creative and cultural processes

Suggestion:
Suggest that students use generative AI to transform a literary, historical or philosophical text into a new creative form (e.g. a modern-style adaptation or mash-up with a contemporary theme). After generating the results, lead a class discussion to analyse the content produced by the AI, highlighting biases, limitations and creative opportunities.

2. Creating Digital Content with Generative AI

AI as a tool for devising and developing innovative digital content, stimulating creativity and technological curiosity.

Objectives:

- Understand the principles and capabilities of generative AI tools.
- Develop skills in the creative use of technology for the production of innovative content.
- Stimulating curiosity, creativity and critical analysis skills towards emerging technologies.

Activities:

- Use generative AI tools to create digital content (text, images, music, or graphics).
- Exploring the technical capabilities of tools and experimenting with creative applications.
- Critically analysing produced content to assess its quality, limitations and potential.

Suggestion:
Suggest that students use generative AI to develop a digital content (e.g. a narrative text, a graphic poster or a melody). Afterwards, lead a class discussion to discuss the technical functioning of the tools used and assess the quality and potential of the results produced.

3. Integrating and Reprocessing Digital Content with Generative AI

AI as a tool for generating new interpretations, adaptations and transformations of existing content, offering creative and customised alternatives.

Disclaimer: 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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.

Objectives:

- Understand the techniques and potential of AI in content editing and adaptation.
- Develop critical and analytical skills to assess the quality and implications of changes brought about by AI.
- Promoting a reflexive approach towards the use of AI as a creative tool.

Activities:

- Use AI tools to combine and modify existing digital content.
- Adapting content to specific contexts (e.g. linguistic, cultural, or didactic) or to different target audiences.
- Critically analysing the revised results, evaluating their coherence, relevance and quality.

Suggestion:
Invite students to choose an existing piece of content (e.g. narrative text, video or presentation) and use generative AI to rework it, modifying it to suit a new context or audience. Afterwards, organise a discussion to analyse the technical and creative implications of the modifications, assessing their quality and consistency.

4. Collaborating using generative AI tools

AI as a tool to support teamwork, improve communication and foster collective problem solving.

Objectives:

- Understand the practical applications of generative AI in teamwork contexts.
- Develop skills in integrating AI tools to foster productivity and collective problem solving.
- Stimulate a mindset of innovation, problem-solving and effective communication.

Activities:

- Use generative AI tools to create shared content, analyse complex data and develop collaborative solutions.
- Integrate AI tools into teamwork platforms to improve productivity and communication between team members.
- Discuss the results obtained and reflect on the effectiveness of AI in facilitating collaborative work.

Disclaimer: 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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.

Suggestion:
Organise a group activity in which students use generative AI tools to tackle a complex problem (e.g. analysing a historical issue or developing a creative project). During the activity, stimulate discussion among team members to evaluate the effectiveness of collaboration and the usefulness of AI tools.

5. Interacting with others using generative AI tools

AI as a tool to support and enhance social interactions, ensuring effective and respectful communications.

Objectives:

- Understanding the workings of AI tools in social interactions.
- Develop skills in the responsible use of AI tools for effective and respectful communication.
- To stimulate critical reflection on how AI can influence social and relational dynamics.

Activities:

- Use chatbots and virtual tutors to simulate conversations, resolve doubts or develop communication skills.
- Analysing the responses generated by AI to assess their relevance, effectiveness and compliance with the social context.
- Reflect on the ethical and technical limits of AI-mediated interactions, proposing improvements or strategies for informed use.

Suggestion:
Propose an exercise in which they interact with a chatbot or virtual tutor to simulate a social situation (e.g. a discussion, a confrontation or a request for support). Afterwards, lead a collective reflection on the strengths and weaknesses of the generated responses, highlighting technical limitations and ethical implications.

4. Turnkey Use Case: A Workshop on the Application of AI in the Humanities

This workshop explores the use of artificial intelligence (AI) as a tool to support learning and critical analysis, with an approach that can be replicated in different school disciplines.

The main objective is to develop **prompt engineering** skills, i.e. the ability to interact with AI models by means of targeted instructions, and to apply these skills to analyse complex

Disclaimer: 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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.

content, generate papers and enrich analyses with visual elements. Students learn to use AI consciously, recognising the limitations, errors and potential of the tool.

Workshop Objectives

- Develop the ability to interact effectively with AI through specific prompts.
- Use AI to support critical analysis of text or data.
- Strengthen critical skills in identifying AI limitations (errors, hallucinations).
- Stimulate collaboration and teamwork.
- Promoting autonomy in the use of innovative technologies.

Structure and Methodology

1. **Theoretical lessons (in presence):**
    - Introduction to prompt engineering for writing and visual creation.
    - Technical knowledge for interacting with AI.
2. **Practical work:**
    - Division into groups with specific objectives.
    - Application of prompts for analysis and production.
2. **Comparison and feedback:**
    - Guided sessions to discuss results and improve approaches.
2. **Final production:**
    - Production of a paper (e.g. critical text, visual analysis).

Key Competences Developed

- **Techniques:** Prompt engineering and interaction with AI.
- **Criticism:** Recognition of errors and evaluation of results.
- **Collaborative:** Communication and teamwork.
- **Creative:** Creation of original AI-supported content.

Example of Application

Context

Theme: 'The birth of the modern character'.
Novels analysed: Cervantes' *Don Quixote*, Stendhal's *The Red and the Black*, Dostoevsky's *Crime and Punishment*, Verga's *Mastro Don Gesualdo*, Balzac's *Eugénie Grandet*, Defoe's *Moll Flanders* (in English).

Project Reference: 2023-1-DE03-KA220-SCH-000161772
Disclaimer: 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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.

Laboratory Structure

The workshop consists of several stages, with a total duration of 20 hours, divided between theoretical lessons, practical activities and discussion sessions. Students work in groups to foster collaboration and dialogue.

1. **Introduction to Prompt Engineering (4 hours total)**
    - Two face-to-face lectures by experts introduce the basic concepts of prompt engineering for the generation of textual and visual content.
    - The main functions of AI are illustrated, explaining how to set effective requests (prompts) and how to influence responses by changing parameters, such as temperature.
2. **Text Analysis and Prompt Generation (6 hours total)**
    - Each group receives a novel to analyse, choosing from the following titles: *Don Quixote* by Cervantes, *The Red and the Black* by Stendhal, *Crime and Punishment* by Dostoevsky, *Mastro Don Gesualdo* by Verga, *Eugénie Grandet* by Balzac and *Moll Flanders* by Defoe (in English).
    - Students use AI to explore the plot, analyse the characters and contextualise the novel in relation to the author's era and poetics.
    - During this phase, students fill in a logbook, recording observations on AI responses, language differences, accuracy of answers and recognising any errors or hallucinations.
2. **Creation of the Critical Essay Outline (4 hours total)**
    - After the analysis, the groups develop an outline for the critical essay with the support of the AI. This phase allows them to reflect on how to guide the AI in generating relevant content, comparing approaches with and without specific critical readings.
    - Students test how much AI can be influenced by provided sources or generic requests, thus developing a critical approach to the use of the tool.
2. **Critical Essay Production and Image Creation (6 hours total)**
    - The groups draft the critical essay, integrating AI-generated insights with personal reflections. In parallel, they use AI to create illustrative images to enrich their final work.
    - This phase consolidates the technical and creative skills acquired, highlighting the value of the human contribution in the elaboration of content.
2. **Presentation and Final Comparison (2 hours)**
    - Each group presents its work to the rest of the class and the experts. This presentation is an opportunity to reflect on the process followed, the obstacles encountered and the results achieved.

Project Reference: 2023-1-DE03-KA220-SCH-000161772
Disclaimer: 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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.

Methodology

- **Logbook:** Students record observations on interactions with the AI (e.g. responses influenced by parameters such as temperature, language differences, errors, hallucinations).
- **Comparison of approaches:** Analysis with and without critical readings to highlight differences and assess AI reliability.

During all phases, the logbook is a key tool. Students note observations on the interaction with the AI, such as:

- The variation of answers depending on the language used.
- The impact of parameters such as temperature in content generation.
- Any errors or inconsistencies in the results provided by the IA.
- Considerations on how one's contribution improved the output.

Role of Teachers

- **Humanities professors:** They support the identification of topics and the formulation of prompts.
- **Technical experts:** They provide knowledge on how AI works and assist during practical sessions.

Project Reference: 2023-1-DE03-KA220-SCH-000161772
Disclaimer: 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 or the National Agency. Neither the European Union nor the granting authority can be held responsible for them.