



WP4 Ethical and inclusive use of AI

Task 1: Analysis of Risks of AI in Education and Training in France

Delivery date: 05/03/2025



Co-funded by
the European Union

Project acronym:	AIRED
Project full title:	AIRED Artificial Intelligence reshapes education
Action type:	KA220-VET - Cooperation partnerships in vocational education and training (KA220-VET)
Grant agreement no.:	2024-1-FR01-KA220-VET-000256094
Deliverable name:	Ethical framework -Risks analysis
Distribution level:	Private
Responsible author(s)/partner:	Sarah Hönigsber & Sabrine Mallek, ICN Business School
Contributing author(s) / partner(s):	- -
Reviewed by:	Partners
Total number of pages:	17

Revision history

Number	Date	Description
V0	25/02/2025	Draft
V5	04/03/2025	Final
V6	05/03/2025	Final - Correction
V7	16/03/2025	Final - Correction

Statement of Originality

This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation, or link.

Copyright



This work is licensed by the **AIRED** Consortium under a Creative Commons Attribution-ShareAlike 4.0 International License, 2023. For details, see

<http://creativecommons.org/licenses/by-sa/4.0/>

The AIRED Consortium consists of: HAIKARA, ECOLE D'ENSEIGNEMENT SUPÉRIEUR PRIVE I.C.N. PROFEXCEL.NET, CENTRO DE ESTUDIOS AEG-ARROKA S.L.

Disclaimer

All information included in this document is subject to change without notice. The Members of the **AIRED** Consortium make no warranty of any kind with regard to this document, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. The Members of the Consortium shall not be held liable for errors contained herein or direct, indirect, special, incidental or consequential damages in connection with the furnishing, performance, or use of this material.

Funding Acknowledgement

The **AIRED** project has received funding from the European Union EACEA.A – Erasmus+, EU Solidarity Corps under Grant Agreement n. 2024-1-FR01-KA220-VET-000256094

Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

AI in Education – A French Perspective

Motivation - National AI Strategy and Policy Initiatives in France

France has made AI a national priority, including its application in education. The government launched a National Strategy for Artificial Intelligence (SNIA) in 2018 with the aim of positioning France as a leader in AI while safeguarding its economic and digital sovereignty (DNE-TN2, 2024). An updated phase of this strategy (2021–2022) emphasized upscaling education and training and developing trustworthy AI systems (Van Roy et al., 2021). In line with this, the Ministry of Education has supported pilot projects to integrate AI in schools. For example, through the Partnership for Innovation in AI (P2IA) program, the ministry backed tools like Lalilo – an AI-driven reading platform that adapts to each child’s level and pace (DNE-TN2, 2024). Additionally, the Ministry of Education has launched an open data platform¹, to promote transparency and innovation in the educational sector. This platform provides access to a wide range of datasets related to national education, enabling researchers, educators, and developers to create data-driven tools and analyses. Such initiatives illustrate France’s proactive approach to leverage AI’s benefits for personalized learning, while doing so under guided conditions.

International guidance has also informed French policy. UNESCO’s AI and Education: Guidance for Policy-Makers (2021) urges a “humanistic approach” and recommends inclusive, equitable use of AI in education, as well as safeguards like data transparency and auditability (DNE-TN2, 2024). A recent French AI Commission report in 2024 issued 25 recommendations for safe AI development – including calls for teacher training and ethical guidelines in schools (AI Commission, 2024). The report emphasizes the importance of nationwide AI education and awareness, advocating for public debates and initiatives to enhance understanding of AI’s societal impact. It also calls for integrating AI training into school and university curricula, introducing specialized courses and interdisciplinary programs such as AI + Biology or AI + Law. Beyond formal education, the commission stresses the need for lifelong learning and workforce upskilling, ensuring that employees, civil servants, and professionals receive continuous AI training to remain competitive. Lastly, the report highlights the potential of AI-driven personalized education, using adaptive technologies to support individual student needs and optimize learning experiences.

One high-profile attempt to deploy AI was the Ministry’s plan for an AI-powered homework helper app called MIA for secondary schools, which needed to be stopped due to pushbacks (AFP, 2024; Duboust, 2024), emphasizing the caution required when deploying AI on a national scale without widespread stakeholder support. Another notable example is the launch of the French AI chatbot “Lucie.” Designed for use in educational or research applications, Lucie was developed to reflect European values and offer an alternative to prevailing non-European AI models. It was quickly suspended after its release due to nonsensical responses and factual inaccuracies (La Tribune, 2025).

Professional and Ethical Challenges in Practice

Collin and Marceau (2021) discussed that the integration of AI in education raises significant **ethical and justice-related concerns**, particularly regarding data privacy, decision-making autonomy, and equity. They highlighted that AI-driven educational tools often rely on large

¹ data.education.gouv.fr

datasets, which can introduce biases and compromise student and teacher privacy if not managed transparently. Additionally, they argued that the development of AI in education is predominantly led by private corporations rather than educational institutions, leading to a lack of pedagogical expertise in AI design. This raises concerns about the fairness and inclusivity of AI systems, as inadequate representation in design teams can result in biased outcomes. These concerns are underscored by the persistent inequalities observed in the French educational system. The 2018 International Program for Learning Assessment (PISA) report revealed that the French education system is highly inequitable. Specifically, France is among the countries where socio-economic background most significantly influences student performance. This suggests that without careful consideration and inclusive design, AI integration in education could perpetuate or even exacerbate existing disparities (Morin, 2019). Furthermore, Collin and Marceau (2021) emphasized that increasing automation in education risks diminishing teachers' professional judgment and students' agency, shifting decision-making power from educators to AI-driven systems. To address these issues, they advocated for incorporating ethical considerations into AI development and usage, ensuring that AI supports rather than replaces educational roles, and integrating critical AI literacy into teacher training programs.

2022 Association Française pour l'Intelligence Artificielle (AFIA) emphasized the importance of **explainability**: teachers need to understand and trust AI-driven recommendations about their students in order to effectively use them (DNE-TN2, 2024). If an algorithm's decisions aren't transparent, teachers cannot integrate them meaningfully into teaching. This underscores a key professional challenge – ensuring AI systems are interpretable and augment (rather than undermine) a teacher's expertise.

Bias and equity concerns are especially prominent. AI models trained on historical data may inadvertently perpetuate stereotypes or inequalities present in society (Verger, 2024). An AI tutor might learn from past data that students in under-resourced areas performed poorly (due to limited internet access or support) and then unfairly predict lower success for similar students, thereby reinforcing a cycle of disadvantage (Verger, 2024). Another scenario shows how a system adapting exercise difficulty could misinterpret a student's slower response (perhaps due to a disability) as a lack of ability – offering only trivial tasks and “*degrading the learning experience*” for that student (Verger, 2024). These cases illustrate how algorithmic biases can harm learners by misjudging their potential, making fairness and non-discrimination critical requirements in AI design. Indeed, experts note that bias mitigation and regular audits of educational AI are necessary to ensure inclusive outcomes (Verger, 2024).

Teachers in France have expressed concerns about the **dehumanization of education** if AI tools are overused, potentially weakening teacher-student relationships and even threatening educators' roles (French Government, 2021). However, national policy emphasizes a "co-pilot" approach, ensuring that AI supports teachers rather than replacing them. AI is envisioned as a tool to automate repetitive tasks, such as grading and instant feedback, freeing educators to focus on mentoring, critical thinking, and interactive learning. Yet, successfully integrating AI in classrooms requires significant teacher training. Educators must develop new digital competencies to use AI effectively and recognize its limitations. The national strategy, backed by France's €700 million investment in AI education and workforce training, underscores the need for widespread AI literacy, structured teacher training, and interdisciplinary AI programs to ensure a thoughtful and controlled adoption of AI in education (French Government, 2021).

The EU-funded AI4T project (2021–2024) exemplified this by training over a thousand teachers in France and partner countries on AI's context, uses, and challenges in education (AI4T Project, 2024). Such efforts aim to build professional confidence in using AI responsibly, addressing both human-factor risks (such as lack of preparedness and over-reliance on technology) and technical risks (like algorithmic bias and privacy concerns). The project highlighted the need for structured teacher training to prevent AI tools from being adopted without sufficient pedagogical understanding, ensuring that educators can critically assess AI's strengths and limitations. It also stressed the importance of transparency and ethical considerations, advocating for clear guidelines from educational authorities to regulate AI's role in classrooms. Additionally, AI4T underscored the risk of inequitable access to AI tools, recommending GDPR-compliant, open-source resources to ensure widespread and fair adoption. By addressing these challenges, the initiative sets a framework for responsible AI integration in education.

Overview of Risks of AI in Education in France

- **Data Privacy Risks:** AI-driven educational tools rely on large datasets, which can compromise student and teacher privacy if not handled transparently (Collin & Marceau, 2021).
- **Bias and Equity Concerns:** AI models trained on historical data may reinforce stereotypes, misjudge student potential, or disadvantage underprivileged students (Verger, 2024).
- **Lack of Pedagogical Oversight:** AI development is often led by private corporations rather than educators, raising concerns about fairness, inclusivity, and misalignment with educational needs (Collin & Marceau, 2021).
- **Automation Risks:** Over-reliance on AI could reduce teachers' professional judgment and diminish student agency, shifting decision-making power from educators to AI-driven systems (Hönigsberg et al., 2024).
- **Explainability Challenges:** AI systems must be interpretable and transparent, ensuring that teachers understand and trust AI-driven recommendations before integrating them into learning (AFIA, 2022).
- **Misuse in Student Evaluation:** AI-powered assessment tools must meet strict fairness, transparency, and accountability requirements, as incorrect or biased evaluations could negatively impact student outcomes (European Commission, 2021).
- **Dehumanization of Education:** Teachers in France fear AI overuse could weaken teacher-student relationships and erode the human aspect of learning, requiring a co-pilot approach where AI supports but does not replace educators (French Government, 2021).
- **Need for Teacher Training:** Educators require AI literacy and digital competencies to use AI effectively, avoid over-reliance, and critically assess AI tools' strengths and limitations (AI4T Project, 2024).
- **Regulatory and Ethical Considerations:** Structured AI governance policies, transparency requirements, and bias audits are necessary to ensure responsible AI integration in education (European Commission, 2021).

Professional Practices: The Impact of AI on Educators and Trainers in France

- **Shifting Teacher Roles:** AI is increasingly automating tasks such as grading and feedback, allowing teachers to focus more on mentorship, critical thinking, and

personalized student interactions (French Government, 2021). However, this shift requires educators to develop new digital competencies to effectively integrate AI in classrooms (AI4T Project, 2024; Hönigsberg et al., 2024).

- **Challenges in Explainability and Trust:** Teachers need to understand AI-driven recommendations about their students in order to integrate them effectively into their teaching practices. However, many AI tools lack transparency, making it difficult for educators to fully trust their outputs (AFIA, 2022).
- **Risk of Over-reliance on AI:** Without proper training, there is a risk that educators may over-rely on AI-based recommendations for student assessments, which could lead to biased or flawed educational outcomes (Verger, 2024).
- **Teacher Training and AI Literacy:** To address these challenges, initiatives like the EU-funded AI4T project (2021–2024) have focused on training educators in France and across Europe on AI literacy, responsible AI use, and ethical considerations in education (AI4T Project, 2024).
- **Concerns About Dehumanization:** Some educators in France worry that increased AI integration might reduce the human connection in teaching, making education overly mechanized and impersonal (French Government, 2021). National policies emphasize a "co-pilot" approach, where AI supports teachers rather than replacing them, ensuring that human expertise remains central in classrooms.

Case Studies: AI Applications and Their Risks/Benefits in France

Several real-world cases in France highlight both the potential benefits and pitfalls of AI in education. See Table 1 for a summary.

AI in Pre-primary Education (École Maternelle, Ages 3–6)

AppLINOU (LINUMEN Project) – Emergent Literacy/Numeracy Assistant (DNE-TN2, 2020): Developed by the University of Lorraine and partners under the e-FRAN LINUMEN research project, AppLINOU is a tablet-based tool to help maternelle teachers assess and boost young children's early reading and math skills. It provides an adaptive learning path: children play through 20+ activities while the app gives feedback and adjusts to their skill level. In a pilot (2018–2020) with 750 preschoolers across 72 classes in 32 schools, teachers used AppLINOU regularly over two years. The project aimed to personalize learning and reduce skill gaps linked to socio-economic background. The research suggests that AppLINOU has a positive effect on children's literacy and numeracy development, especially when teachers embrace the tool and when it is implemented in supportive school environments.

Another example is Kaligo a Handwriting Learning App (Kalingo, 2025): Kaligo invented by a French startup Learn&Go and supported by the Ministry of Education support, is an AI-powered application for children ages 3–7 (maternelle through early primary) to practice handwriting on tablets. It uses machine learning to recognize a child's pen strokes and letter formations, providing instant feedback and personalized exercise sequences.

Furthermore, there are humanoid robots (NAO) as interactive social Companions (SoftBank Robotics & ERM, 2021): Experimental use of AI-driven robots in French maternelles has shown how embodied agents can support early learning and inclusion. For example, the NAO robot (a small humanoid from SoftBank Robotics) was piloted in nursery classes in the Dijon

school district as a “teacher’s assistant.” Educators were trained to have NAO lead group greetings, sing rhymes, and conduct simple word or motion games with children. Researchers from INSHEA (the national institute for special-needs education) observed these trials and reported strong engagement: the young children paid attention to NAO and enjoyed interacting with it, indicating the robot was an effective complement to the teacher. Early trials noted that not all children respond positively – e.g. one study found a few children eventually disengaged from the robot. There are also concerns about relying on AI for caregiving or teaching; thus, these robots are used under teacher supervision as supplementary tools to enrich interactive play, not replace human educators. Despite these challenges, France’s experiments with NAO illustrate the potential of AI companions to make learning more interactive and inclusive at the pre-primary level.

AI in Primary School (École élémentaire , Ages 6–11)

One positive example is the adoption of adaptive learning platforms in early education. Lalilo, mentioned above, provides personalized reading exercises for primary students, adjusting to each child’s progress (DNE-TN2, 2024). Further, teachers using Lalilo have reported that it helps modify how they teach reading based on each student’s level, essentially offering differentiated instruction at scale. This demonstrates AI’s benefit in tailoring learning experiences – something difficult to achieve in large classes without technology. Early pilots of such systems (some under P2IA) show improved engagement in reading practice, though comprehensive evaluations are ongoing. The key is that these tools are introduced with teacher oversight, and in France they are vetted through ministry-supported trials to ensure they align with curriculum standards and equity goals (DNE-TN2, 2024).

AI in Lower Secondary Education (Collège, Ages 11–15)

Kassis Collège (Projet ACTIF) is an AI-driven, in-class teaching tool co-developed by INSA Rennes (IRISA–IntuiDoc lab) and Learn&Go under the government-funded ACTIF research project (e-FRAN, 2025). Designed for grades 7–9, it enables teachers to create digital exercises (e.g., drawing science diagrams or solving geometry problems on tablets) and uses AI to analyze, group, and visualize student responses in real-time with clustering and heatmaps. This allows for instant feedback and discussion of misconceptions. In trials, interactive quizzes with stylus tablets showed high student engagement, but an experimental study in 5e science classes found that learning gains were comparable to reading illustrated texts, emphasizing the need for structured guidance over mere tech integration. The project continues, with Kassis being adapted for web browsers to expand accessibility.

AI in Upper Secondary Education (Lycée, Ages 15-18)

MIA Seconde – AI-Powered Personalized Learning for High Schools (IGÉSR, 2025): MIA Seconde is an adaptive learning platform launched by the French Ministry of Education in collaboration with EvidenceB and cognitive science researchers to provide AI-driven tutoring in math and French for seconde (10th grade) students. It personalizes practice through adaptive algorithms, adjusting difficulty levels based on student performance and response time. The 2023–2024 pilot across 150 high schools showed mixed results: while students appreciated the large exercise bank and video mini-lessons (MIA Tube), teachers found content alignment and engagement issues. A nationwide rollout to 800,000 students, initially planned for September 2024, was delayed to 2025 due to technical and pedagogical refinements. Concerns include student motivation gaps, teacher workload (dashboard

management, AI interpretation), and data transparency, highlighting the need for stronger integration within classroom pedagogy. Despite challenges, MIA Seconde represents France's largest national AI education initiative, aiming to combat learning gaps and dropout risks through personalized digital tutoring.

AI in higher Education (Grand Ecole, Université, Ages 18+)

The rise of highly advanced generative AI tools in late 2022 (e.g., OpenAI's ChatGPT and Google's Gemini) sparked a new wave of AI adoption in French education. Unlike traditional AI systems, generative AI creates original content—from text to videos and images—that closely resembles human-produced work. In the case of text, its outputs are often indistinguishable from human writing, while the latest advancements in video and image generation produce results nearly identical to real recordings and photographs (Banh & Strobel, 2023; Feuerriegel et al., 2024). As a result, these AI systems can generate essays and assignment responses, raising immediate concerns about academic integrity (Dwivedi et al., 2023). By early 2023, leading institutions took action – Sciences Po (Paris) became one of the first universities to ban ChatGPT and similar AI tools for coursework, citing the risk of plagiarism and fraud (De Clercq, 2023). The university warned that any uncredited use of AI-generated content in essays or presentations would be considered academic misconduct, with penalties up to expulsion (De Clercq, 2023). This reaction illustrates how AI's capabilities can directly clash with traditional assessment methods. French schools and universities are now wrestling with how to maintain rigorous standards in the face of AI that can do students' work. Some educators see an opportunity to evolve practices (for example, more oral exams or in-class writing to ensure originality), while others remain wary of AI's influence on student learning habits. The “AI, do my homework” debate in France encapsulates a classic risk-benefit tension: these tools can assist learning and creativity, but if misused, they may erode essential skills or ethical norms (AFP, 2024; De Clercq, 2023). As a result, French educational authorities are both exploring AI's pedagogical uses and issuing guidelines to mitigate misuse (e.g., advising teachers on detecting AI-written work and updating honor codes).

International research overwhelmingly supports the idea that generative AI is here to stay, and instead of prohibiting its use, students must be taught to engage with it responsibly. Scholars emphasize that generative AI literacy—understanding when and how to apply generative AI while critically assessing its outputs—is crucial for preparing future knowledge workers (Southworth et al., 2023; Hönigsberg et al., 2024). While concerns about misinformation and bias exist (Susarla et al., 2023), banning AI tools outright is not a viable long-term solution. Instead, research suggests that higher education should integrate AI into learning environments, helping students develop the skills needed for ethical and effective AI collaboration (van Slyke et al., 2023; Aler Tubella et al., 2024). Teaching responsible AI usage, rather than restricting access, ensures that students can navigate the evolving digital landscape with critical awareness and adaptability.

A study conducted at ICN Business School examined the integration of Generative AI into master's-level coursework, involving two classes with a total of 88 students (Hönigsberg et al., 2024): The assignment required students to co-create a business idea using ChatGPT, treating the AI as a brainstorming partner, consultant, or even a virtual CEO. The study found that Generative AI improved ideation and creativity, helping students generate more structured and refined business concepts. AI-assisted brainstorming sped up the process, allowing students to explore multiple angles efficiently. Additionally, students gained practical experience with AI prompting and became more aware of AI's role in business

decision-making. However, some students over-relied on AI-generated content, showing less critical engagement with the results. In some cases, the outputs were accepted without proper evaluation, leading to superficial analysis or blind trust in AI suggestions. This highlights the need for structured guidance to ensure AI is used as a supportive tool rather than a replacement for critical thinking. The study reinforces that Generative AI can enhance business education when properly integrated, but students must be trained to approach AI critically and responsibly to maximize its benefits while mitigating risks.

France 	Germany 	School Type EN	Age Range	AI Example	Citation
École maternelle (TPS, PS, MS, GS)	Kindergarten (optional)	Pre-primary (not mandatory)	3–6	AppLINOU – Adaptive early literacy/numeracy assistant (University of Lorraine, e-FRAN LINUMEN). Piloted in 32 schools, improving learning outcomes.	DNE-TN2, 2020; Kaligo, 2025; SoftBank Robotics & ERM, 2021
				Kaligo – AI-based handwriting app (Learn&Go), Ministry-supported, offering personalized pen stroke feedback.	
				NAO – Humanoid robot as social learning companion (SoftBank Robotics), tested in nursery classrooms for interactive play.	
École élémentaire (CP, CE1, CE2, CM1, CM2)	Grundschule (1.–4. Klasse)	Primary school	6–11	Lalilo – Adaptive AI for early reading instruction (France, under P2IA trials). Uses speech recognition and personalized feedback to tailor exercises based on student progress. Piloted with teacher oversight.	DNE-TN2, 2024
Collège (6e, 5e, 4e, 3e)	Sekundarstufe I (Hauptschule, Realschule, Gymnasium 5.–10. Klasse)	Lower secondary	11–15	Kassis Collège – AI-powered real-time exercise analysis tool for middle school (INSA Rennes & Learn&Go). Uses clustering & heatmaps for instant feedback in science & math, piloted in 5e.	e-FRAN, 2025
Lycée (Seconde, Première, Terminale)	Sekundarstufe II (Gymnasium Oberstufe, Berufsschule)	Upper secondary	15–18	MIA Seconde – AI-assisted personalized learning for Seconde (10th grade) in France, focused on Math &	IGÉSR, 2025

	, Fach-obersc hule)			French. Ministry-supported, piloted in 2023-24, but facing some content/usability challenges.	
Université / Grandes Écoles / IUT	Universität / Fach-hochsc hule /Berufs-akad emie	Higher Education	18+	ChatGPT & Generative AI – Used in business schools and universities for ideation and coursework. Mixed academic reception: Sciences Po banned AI tools in 2023, while others integrate AI literacy into learning.	Hönigsberg et al., 2024

Table 1: Case Studies Summary

Regulatory and Governance Landscape

Regulation is a critical piece of addressing AI risks in education, and France operates within the broader European regulatory framework while also taking national initiatives. At the European level, the EU Artificial Intelligence Act (AI Act) will set strict rules on AI systems according to risk level. Notably, EU negotiators have agreed to ban certain AI applications in schools deemed too dangerous – for example, emotion recognition in educational institutions and any AI that exploits vulnerabilities of children (DNE-TN2, 2024). AI systems used for student evaluation or guidance may fall under a “high-risk” category, meaning they must meet rigorous requirements for transparency, human oversight, and fairness before deployment (DNE-TN2, 2024). The AI Act’s risk-based approach – prohibiting the most harmful uses and demanding safeguards for others – aligns with France’s intent to create a “trusted AI” ecosystem in education. French experts see this law as essential for protecting fundamental rights while still allowing innovation (DNE-TN2, 2024). In anticipation of the AI Act, France’s data protection authority, the CNIL, has already issued guidelines on AI and launched a sandbox to help ed-tech providers comply with privacy laws (CNIL, 2022). The CNIL emphasizes that student data must be handled with GDPR-compliant care – for instance, using data minimization and securing parental consent where appropriate – and that schools adopting AI ensure vendors follow these rules.

The AI Act further classifies AI applications in education as high-risk if they are used for student evaluation, learning outcome assessments, or determining access to educational opportunities (European Commission, 2021): Such systems must comply with strict transparency, data quality, and accountability requirements, ensuring that AI does not reinforce bias or make unfair decisions. AI-driven educational tools must also guarantee human oversight and provide explainable decision-making processes that students and educators can contest. These safeguards aim to protect students' rights while enabling the responsible integration of AI in education.

French regulators are also targeting online safety for minors and transparency. In 2021, the CNIL published recommendations to strengthen the protection of minors online, which cover educational platforms and AI tools used in schools (CNIL, 2021). And in late 2023, France approved new guidelines via its cybersecurity agency (ANSSI) for certifying the security of AI systems, reflecting concerns about AI-driven cyber risks and data leaks (ANSSI, 2024). At the Council of Europe level (which France participates in), specific attention has been given

to AI in education through a human rights lens. A November 2022 Council of Europe study, “Artificial Intelligence and Education: A critical view through the lens of human rights, democracy and the rule of law,” identified pressing challenges of deploying AI in classrooms and called for protective actions (Holmes et al., 2022). It urged that students’ right to privacy and data protection be paramount when introducing AI, echoing earlier CoE guidelines on children’s data in education settings (Holmes et al., 2022).

Furthermore, the French government is setting up institutional oversight for AI’s risks at a high level. In early 2025, it announced the creation of INESIA, a national institute dedicated to evaluating and securing AI across sectors (Campus France, 2025). While not focused directly on education, INESIA’s mission – to scientifically assess AI impacts and safety – will likely encompass algorithms used in schools and universities as well. This reflects France’s continuous work on strong governance frameworks to accompany the growing use of AI, especially in sensitive domains like education. In summary, the regulatory landscape in France comprises European rules (like the AI Act), national data protection enforcement (CNIL), ethical guidelines, and emerging oversight bodies – all converging to manage the risks of AI in education while allowing its benefits to be realized in a controlled, rights-respecting manner.

Key Insights from Surveys and Interviews

Interviews

The interviews conducted for this study reveal a nuanced and evolving relationship between educators and artificial intelligence in the French educational context. While participants came from different teaching backgrounds and levels of experience, they shared a cautious but curious approach to using AI tools in their work. Their use of AI remains largely exploratory—characterized by trial and error, and a search for practical benefits amidst technological uncertainty.

One of the strongest shared impressions was that AI is a potentially powerful support tool rather than a replacement for human educators. Teachers described using generative AI tools such as ChatGPT to assist with tasks like drafting lesson plans, generating exercises, creating report card comments, or simply looking up quick definitions and synonyms. These uses, while relatively basic, already hinted at the potential for AI to reduce cognitive workload, support content creation, and facilitate differentiated instruction—particularly in classrooms with students of varied abilities and needs.

Yet, this optimism was tempered by several reservations. A major theme across interviews was the challenge of “talking” to AI tools effectively. Teachers expressed frustration with the difficulty of crafting the right prompts and the inconsistency of AI-generated outputs. Many noted that the information provided by AI often had to be carefully fact-checked and adjusted, which added an extra layer of work rather than saving time. The lack of reliable sources or bibliographic transparency also limited AI’s usefulness for research tasks or teaching resources.

Educators also observed a growing reliance on AI among students, particularly in take-home assignments. There was concern that students often used AI without critical thinking, copying answers directly and misunderstanding the role of such tools. This led some teachers to begin exploring AI more intentionally—partly to better guide their students in using it responsibly, but also to understand its capabilities and limitations firsthand.

A further concern was the digital divide. In schools located in disadvantaged areas, not all students have consistent access to digital devices or stable internet connections. This uneven access risks deepening existing educational inequalities, as students with more resources are better positioned to benefit from AI tools.

Despite these challenges, the interviews reflected a strong interest in learning more about AI, particularly from experts outside the traditional education system. Teachers expressed a clear need for structured, high-quality training that moves beyond anecdotes or superficial use cases. They were especially interested in understanding the ethical foundations of AI, its design principles, and how to use it meaningfully in diverse classrooms.

Across all interviews, one message was consistent: AI should be developed and integrated as a co-pilot in education—one that supports, but does not override, the teacher's role. For these educators, the promise of AI lies in its ability to amplify good teaching, not replace it. With the right training, ethical guardrails, and inclusive design, AI could become a lasting ally in the effort to offer more personalized, equitable, and engaging learning experiences.

Survey

The survey conducted among 23 education professionals in France offers valuable insights into their perspectives on the adoption of AI in education, as well as the associated risks and concerns.

When it comes to AI usage, responses indicate a growing but varied level of integration in professional practices. While most participants use AI weekly (9), a significant number engage with it only rarely (7), and a smaller group relies on it daily (4). Notably, just one respondent reported never using AI (1), reflecting its increasing presence in education. Looking ahead, there is a clear trend toward broader AI adoption—a majority of respondents plan to increase their use of AI (15), while a smaller group remains uncertain (7), and only one participant ruled out expanding their AI usage (1). Interest in AI is similarly strong, with most respondents expressing curiosity or enthusiasm (9). While some are already comfortable using AI tools (3), others are keen to receive training to better leverage AI in their work (7), though a minority remain uninterested (2).

Despite this openness to AI, the survey highlights several critical concerns. Data security and compliance stand out as a key issue, with nearly half of respondents expressing low confidence in AI's ability to adhere to data protection laws (11), while others saw its compliance potential as moderate (6) or strong (6). Another pressing issue is bias in AI-driven learning personalization, with most respondents rating AI's ability to tailor learning experiences as only moderately effective (11). Some saw great potential (7) in AI-driven personalization, but others viewed it as ineffective or even problematic (5).

On the practical side, AI is widely recognized as a useful tool for automating repetitive administrative tasks, such as grading and attendance tracking. A large majority of respondents believe AI can effectively streamline these processes (14), with only a few doubting its impact (3). However, opinions are more divided on AI's ability to optimize teaching methodologies—some see it as highly beneficial (7), while others remain skeptical about its contribution to instructional strategies (7).

The findings suggest that while AI is gaining traction in the French education sector, educators remain cautious about its ethical implications, fairness, and compliance with

regulations. There is a clear demand for more structured AI training and policy clarity, ensuring that AI enhances education without reinforcing existing biases or compromising professional autonomy.

Recommendations and Context-Specific Solutions for AI in Education in France

Building on France's proactive national AI strategy, the challenges identified in professional practices, and insights from educators, it is clear that while AI holds great potential to enhance education, it must be integrated thoughtfully and ethically. To ensure a responsible and effective deployment of AI in French schools and universities, the following key recommendations emerge:

1. Strengthening AI Literacy for Educators and Students

AI literacy is foundational for both educators and students to navigate the opportunities and risks associated with AI in education. Research on AI integration in higher education highlights that incorporating AI into coursework enhances students' critical engagement and understanding of AI capabilities (Hönigsberg et al., 2024). Applying this insight, AI literacy programs should be systematically introduced at all levels of education in France, ensuring that students and teachers alike can critically assess AI-generated content, recognize biases, and make informed decisions about when and how to use AI tools. Training should go beyond technical skills to include ethical considerations, AI governance, and awareness of data privacy regulations.

2. Leveraging Long-Term Student Data for Effective AI Educational Solutions

Long-term collection and analysis of student work data are pivotal in developing effective AI-driven educational solutions. A notable example is Carnegie Mellon University's Cognitive Tutor program, an intelligent tutoring system that supports guided learning-by-doing in subjects like algebra (Koedinger et al., 1997; Ritter et al., 2007). Initially implemented in the early 1990s, this program underwent continuous testing and expansion, growing from 75 schools in 1998–1999 to over 1,400 by 2003. This extensive data collection enabled researchers to refine the program iteratively, enhancing their understanding of teaching and learning processes and aiding students in mastering algebraic concepts. In the French educational context, adopting a similar approach necessitates a commitment to transparent and ethical data practices. Ensuring that student data is collected and processed with respect for privacy is essential to maintaining trust among educators, students, and parents (Boissière and Bruillard, 2021). To support this, the French government has established the Open Platform for French Public Data². This platform promotes transparency and innovation in public services, enabling stakeholders to access and utilize data responsibly. However, challenges persist regarding the quality of the available data. Inconsistencies or irregular updates may limit the usefulness of the information for researchers and developers. Additionally, the quantity of data remains limited, potentially hindering comprehensive analysis and the development of robust AI-driven educational solutions. To address these challenges, it is recommended that the French government and educational institutions implement robust data governance frameworks that ensure regular updates. Furthermore, expanding the scope of data collection to encompass a broader range of educational metrics can enhance the depth and applicability of AI applications in education.

² data.education.gouv.fr

3. Enhancing AI Explainability and Transparency in Education

Teachers must be able to trust AI-driven recommendations before integrating them into their pedagogical approaches. AI tools must be interpretable and auditable to be meaningful in education (DNE-TN2, 2024). France should encourage the development and certification of AI tools that offer clear explanations for their recommendations, enabling teachers and students to understand how AI arrives at its conclusions. This aligns with general AI literacy frameworks that advocate for responsible AI integration through explainability and ethical usage (Southworth et al., 2023).

4. Promoting Bias Mitigation and Equity in AI-Powered Learning

AI models trained on historical data risk perpetuating societal biases and reinforcing existing educational inequalities (Verger, 2024). To counteract this, educators should adopt bias-aware teaching practices and actively monitor AI-driven tools for potential disparities. Teachers and trainers can implement bias mitigation strategies by cross-checking AI-generated assessments with their own professional judgment, ensuring that AI does not unfairly disadvantage certain student groups. To foster more equitable AI usage, educators can encourage diverse data representation in AI-supported learning activities and provide alternative assessment methods when AI-driven evaluations seem biased. Additionally, regular classroom discussions on AI fairness can help students critically engage with AI-based recommendations. Schools and training institutions should also establish best practices for reviewing AI tools, ensuring that they perform fairly across diverse student populations. By integrating bias awareness into teacher training programs, educators can become proactive in identifying and addressing AI-related inequities, ensuring that AI serves as an inclusive tool rather than reinforcing disadvantages.

5. Ensuring Ethical AI Use and Responsible Data Practices

Concerns about student data privacy remain a major challenge in AI adoption for education (Collin & Marceau, 2021). With nearly half of surveyed educators expressing low confidence in AI's ability to comply with GDPR and national data laws, teachers and trainers must be proactive in safeguarding student data. When using AI-driven tools, educators should prioritize data minimization practices, ensuring that only essential student information is processed. They should also familiarize themselves with GDPR principles and encourage transparent communication with students and parents about how AI tools handle personal data. To enhance trust and accountability, educators can advocate for AI tools with built-in privacy protections, such as local data processing options, minimal retention policies, and clear opt-out mechanisms. Schools and training institutions should also develop internal guidelines to help teachers assess whether an AI tool aligns with data protection best practices before implementing it in the classroom.

6. Implementing AI as a “Co-Pilot” Rather than a Replacement for Educators

To address fears of dehumanization and over-reliance on AI, teachers and trainers should adopt a “co-pilot” approach, where AI assists but does not replace educators (French Government, 2021). AI can be leveraged to automate administrative tasks—such as grading, attendance tracking, and personalized feedback—allowing teachers to dedicate more time to critical thinking exercises, mentorship, and interactive learning. However, it is crucial to ensure that AI tools are used to enhance student connection rather than isolate learners. Educators should prioritize technologies that facilitate collaboration and communication,

avoiding those that merely individualize content delivery without fostering interaction. This approach aligns with the perspective that personalized learning should center on human connections and shared experiences, rather than solely on digital adaptation. By focusing on collective learning experiences, teachers can maintain a sense of community and engagement, even when integrating AI tools (France, 2020). Additionally, educators should maintain control over final pedagogical decisions to ensure that AI remains a supportive tool rather than an authority in the classroom. As demonstrated in studies on AI-supported education, such as the AI4T project (2021–2024), structured training is essential to help teachers use AI effectively while avoiding over-reliance on automated systems. Educators should be trained to interpret AI-generated insights critically, cross-check AI-driven assessments with their own evaluations, and use AI-enhanced learning as a complement to traditional teaching methods.

7. Developing AI-Integrated Teaching Strategies and Assessment Models

Higher education institutions have already begun integrating AI into coursework, particularly in business schools (Hönigsberg et al., 2024). However, AI-assisted learning should not be confined to specific disciplines. Teachers and trainers across all subjects should explore how AI can enhance lesson planning, provide adaptive learning experiences, and support differentiated instruction. At the same time, educators should ensure that AI-driven teaching strategies do not diminish fundamental skills such as critical thinking, analytical reasoning, and problem-solving. AI-aware assessment models should be designed to balance AI-generated insights with human-led evaluations, ensuring that students develop the ability to work alongside AI without becoming over-dependent on automated feedback. Educators should also consider alternative assessment methods, such as project-based learning, oral examinations, and collaborative tasks, to complement AI-powered grading tools.

8. Encouraging the Use of Transparent, Teacher-Friendly AI Tools

For educators to integrate AI effectively, they need access to AI tools that are transparent, explainable, and adaptable to their teaching styles. Teachers should prioritize open-source, GDPR-compliant AI tools that allow for greater customization and oversight, ensuring that AI applications are aligned with pedagogical goals rather than being driven by proprietary corporate interests.

Before adopting a new AI tool, educators should conduct a simple evaluation by asking:

- How does this AI tool make decisions?
- What kind of data does it collect, and how is it stored?
- Does it allow human oversight, or does it make automated decisions that cannot be adjusted?

By choosing AI tools that prioritize transparency and ethical considerations, educators can retain control over technology while maximizing its benefits for students.

9. Supporting Research on AI in Education and Best Practices

AI in education is still evolving, and best practices will continue to emerge. Educators should actively participate in peer-learning networks and AI literacy communities to share strategies, troubleshoot challenges, and refine AI integration techniques. Schools and training centers can facilitate this by organizing regular workshops, discussion groups, and case study reviews to explore what works and what doesn't. By staying informed and continuously reflecting on

AI's role in education, teachers can shape AI's future in the classroom, ensuring that it enhances learning while maintaining human-centered education values.

Sources

1. AFP (Agence France-Presse). (2024). Schools targeted with AI learning apps despite experts' doubts. *France 24*.
<https://www.france24.com/en/live-news/20241214-schools-targeted-with-ai-learning-apps-despite-experts-doubts>
2. AI Commission. (2024). *IA: Our ambition for France* [Artificial Intelligence Commission Report]. French Government.
<https://www.info.gouv.fr/upload/media/content/0001/09/02cbcb40c3541390be391feb3d963a4126b12598.pdf>
3. AI4T Project. (2024). *Empowering teachers with AI4T resources* [Leaflet]. AI4T.
<https://www.france-education-international.fr/en/document/ai4t-leaflet-en>
4. Aler Tubella, A., Mora-Cantalops, M., & Nieves, J. C. (2024). How to teach responsible AI in higher education: Challenges and opportunities. *Ethics and Information Technology*, 26(3), 1–14. <https://doi.org/10.1007/s10676-023-09733-7>
5. ANSSI (Agence Nationale de la Sécurité des Systèmes d'Information). (2024). *Security recommendations for a generative AI system (ANSSI-PA-102, Version 1.0)*.
<https://cyber.gouv.fr/guide-ia-generative>
6. Banh, L., & Strobel, G. (2023). Generative artificial intelligence. *Electronic Markets*, 33(63), 1–17. <https://doi.org/10.1007/s12525-023-00680-1>
7. Boissière, J., & Bruillard, É. (2021). Chapitre 13. Intelligence artificielle dans l'éducation : une place à trouver. In J. Boissière & É. Bruillard (Eds.), *L'école digitale, une éducation à apprendre et à vivre* (pp. 289–317). Armand Colin.
8. Campus France. (2025). The French government creates a national institute to assess and secure AIs. Retrieved March 3, 2025, from
<https://www.campusfrance.org/en/actu/creation-d-un-institut-national-pour-l-evaluation-et-la-securite-de-l-ia>
9. CNIL. (2021, June 1). *La CNIL publie 8 recommandations pour renforcer la protection des mineurs en ligne*. Commission Nationale de l'Informatique et des Libertés. Retrieved March 3, 2025, from
<https://www.cnil.fr/fr/la-cnil-publie-8-recommandations-pour-renforcer-la-protection-des-mineurs-en-ligne>
10. CNIL. (2022). *CNIL proposes a new “sandbox” to support digital innovation in the field of education*. Commission Nationale de l'Informatique et des Libertés. Retrieved March 3, 2025, from
<https://www.cnil.fr/fr/la-cnil-propose-un-nouveau-bac-sable-pour-accompagner-l-innovation-numerique-dans-le-domaine-de>
11. Collin, S., & Marceau, E. (2021). L'intelligence artificielle en éducation : enjeux de justice [Chronique]. *Formation et profession*, 29(2), 1–4. <https://doi.org/10.18162/fp.2021.a230>
12. De Clercq, G. (2023). Top French university bans use of ChatGPT to prevent plagiarism. *Reuters*.
<https://www.reuters.com/technology/top-french-university-bans-use-chatgpt-prevent-plagiarism-2023-01-27>
13. DNE-TN2. (2020). Littératie et NUMératie Emergentes par le Numérique : le projet e-FRAN LINUMEN. *Éducation, numérique et recherche*. <https://doi.org/10.58079/o34o>
14. DNE-TN2. (2024). Intelligence artificielle et éducation : Apports de la recherche et enjeux pour les politiques publiques (édition 2024) [Billet]. *Éducation, numérique et recherche*.
<https://edunumrech.hypotheses.org/10764>
15. Duboust, O. (2024). 200,000 French students to benefit from the rollout of MIA, an AI-powered revision app. *Euronews*.
<https://www.euronews.com/next/2024/02/01/200000-french-students-to-benefit-from-the-rollout-of-mia-an-ai-powered-revision-app>

16. Dwivedi, Y. K., Kshetri, N., Hughes, L., Slade, E. L., Jeyaraj, A., Kar, A. K., ... Wright, R. (2023). "So what if ChatGPT wrote it?" Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. *International Journal of Information Management*, 71. <https://doi.org/10.1016/j.ijinfomgt.2023.102642>
17. e-FRAN. (2025). Logiciel pédagogique Kassis Collège. *e-FRAN*. Retrieved March 3, 2025, from <https://e-fran.education.gouv.fr/kassis-college/>
18. European Commission. (2021). *Proposal for a regulation laying down harmonized rules on artificial intelligence (Artificial Intelligence Act) and amending certain union legislative acts (COM/2021/206 final)*. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021PC0206>
19. Feuerriegel, S., Hartmann, J., Janiesch, C., & Zschech, P. (2024). Generative AI. *Business & Information Systems Engineering*, 66(1), 111-126.
20. France, P. E. (2020). Three tips for personalizing in a pandemic. *Paul Emerich France*. <https://www.paulemerich.com/blog/three-tips-for-personalizing-in-a-pandemic>
21. French Government. (2021). *Stratégie nationale pour l'intelligence artificielle – 2e phase* [National AI Strategy – Phase 2]. *Ministère de l'Économie, des Finances et de la Relance*. <https://www.enseignementsup-recherche.gouv.fr/sites/default/files/2021-11/dossier-de-presse--strat-gie-nationale-pour-l-intelligence-artificielle-2e-phase-14920.pdf>
22. Hönigsberg, S., Watkowski, L., & Drechsler, A. (2024). Feeding two birds with one scone: Teaching students AI literacy alongside regular IS topics by integrating generative AI into assignment design. *CACAI 2024 Proceedings*.
23. Holmes, W., Persson, J., Chounta, I.-A., Wasson, B., & Dimitrova, V. (2022). Artificial intelligence and education: A critical view through the lens of human rights, democracy and the rule of law. *Council of Europe*. <https://rm.coe.int/artificial-intelligence-and-education/1680a859cf>
24. IGÉSR (Inspection générale de l'éducation, du sport et de la recherche). (2025). La classe de seconde : Étape-clé pour l'élève en termes scolaires, d'orientation et d'engagement, entre un collège qui évolue et des offres nouvelles au lycée (No. 23-24 002C). *Ministère de l'Éducation nationale, de l'Enseignement supérieur et de la Recherche*.
25. Kaligo. (2025). *Kaligo: L'application d'écriture manuscrite pour tablettes*. Retrieved March 3, 2025, from <https://www.kaligo-apps.com/fr/>
26. Koedinger, K. R., Anderson, J. R., Hadley, W. H., & Mark, M. A. (1997). Intelligent tutoring goes to school in the big city. *International Journal of Artificial Intelligence in Education*, 8, 30–43.
27. La Tribune. (2025). Après des réponses absurdes, l'IA française « Lucie » ferme temporairement. *La Tribune*. <https://www.latribune.fr/technos-medias/informatique/apres-des-reponses-absurdes-l-ia-francaise-lucie-ferme-temporairement-1016881.html>
28. Morin, V. (2019). PISA 2018: Les élèves français légèrement au-dessus de la moyenne de l'OCDE dans un système toujours très inégalitaire. *Le Monde*. https://www.lemonde.fr/societe/article/2019/12/03/pisa-2018-les-eleves-francais-legerement-au-dessus-de-la-moyenne-de-l-ocde-dans-un-systeme-toujours-tres-inegalitaire_6021440_3224.html
29. Ritter, S., Anderson, J. R., Koedinger, K. R., & Corbett, A. (2007). Cognitive Tutor: Applied research in mathematics education. *Psychonomic Bulletin & Review*, 14(2), 249–255. <https://doi.org/10.3758/BF03194060>
30. SoftBank Robotics & ERM. (2021). *NAO, a humanoid robot as a therapeutic mediator for young people with autism*. *SoftBank Robotics & ERM*. https://aldebaran.com/wp-content/uploads/2021_nao_autism_en.pdf
31. Southworth, J., Migliaccio, K., Glover, J., Glover, J. N., Reed, D., McCarty, C., Brendemuhl, J., & Thomas, A. (2023). Developing a model for AI across the curriculum: Transforming the higher education landscape via innovation in AI literacy. *Computers and Education: Artificial Intelligence*, 4. <https://doi.org/10.1016/j.caeai.2023.100127>

32. Susarla, A., Gopal, R., Thatcher, J. B., & Sarker, S. (2023). The Janus effect of generative AI: Charting the path for responsible conduct of scholarly activities in information systems. *Information Systems Research*, 34(2). <https://doi.org/10.1287/isre.2023.ed.v34.n2>
33. Van Roy, V., Rossetti, F., Perset, K., & Galindo-Romero, L. (2021). *AI Watch - National strategies on artificial intelligence: A European perspective, 2021 edition. EUR 30745 EN*, Publications Office of the European Union, Luxembourg. ISBN 978-92-76-39081-7, <https://doi.org/10.2760/069178>
34. Van Slyke, C., Johnson, R. D., & Sarabadani, J. (2023). Generative artificial intelligence in information systems education: Challenges, consequences, and responses. *Communications of the Association for Information Systems*, 53. <https://doi.org/10.17705/1CAIS.05301>
35. Verger, M. (2024, May 29). Using AI in the classroom to recommend exercises to students: What is the benefit, what are the biases? *The Conversation*. <https://www.sorbonne-universite.fr/en/news/using-ai-classroom-recommend-exercises-students-what-benefit-what-are-biases>