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BEFORE AND AFTER CHATBOTS

The Great Metamorphosis of School and Work

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What is it? This is a scientific dissemination website that studies the impact of new technologies on the world of work. Changes today are very fast and exponential. Professions are not static but very dynamic, so the ongoing evolutions can make them obsolete, transform them, or create entirely new ones. What skills will be necessary to face all this? Upskilling and reskilling, but not only.

Why? After 25 years of research, I have realized that to go beyond the boundaries, numbers are not enough. Traditional approaches are obsolete and tied to the old way of doing research. Today, we need to study the weak signals that are right before our eyes but that we see without really noticing. Stopping to consider these signals and imagining multiple possible futures will be the task of Frontiere. Traditional sources respond in real-time but only photograph the present. Today, however, there is a need to make predictions at least five years ahead, without neglecting the past and without forgetting that every topic addressed has a history to consider.

Who is it for? It's easy to make long-term predictions that cannot be verified. I am convinced that the research world needs an immediate confrontation with the world of education and orientation, and with young people who risk studying for professions that may not exist in a few years. They will be here to exchange opinions with the undecided, the disoriented, and those who intend to start over. Young people need to understand that there is a world above and a world below in the job market. A world of those who program algorithms (few and well-paid) and those who work for algorithms (many and poorly paid). We need to understand what to do to escape a job market that risks condemning young people to €1,000 per month salaries for life.

How will it be? Each topic will be addressed with light publications, with a strong emphasis on temporal depth. The publications will be accompanied by short videos (elivri) that get straight to the point. There will be an open chat for young people on the future scenarios of work, the profiles required, and the necessary skills.

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Before and after Chatbots

The Great Metamorphosis of School and Work

The Silent Revolution:

When Artificial Intelligence Enters the Classroom and the Office

Generative Artificial Intelligence (GAI) is completely revolutionizing our world. It is not a technology of the future—it is here, now, and it is profoundly changing two fundamental pillars of our society: school and work. Every day, 2.6 billion messages are sent on ChatGPT alone, while the Italian AI market grew by 58% in 2024, reaching 1.2 billion euros.

A silent but powerful transformation is taking place in Italian classrooms. Nearly 8 out of 10 students already use Artificial Intelligence to study, do homework, or simply explore new knowledge. 37% of Italian students used ChatGPT during the 2024-2025 school year, with impressive peaks during final exams.

But this revolution also hides pitfalls. MIT studies reveal a concerning phenomenon called "cognitive debt": the more we rely on AI to think for us, the more we risk weakening our natural mental abilities. It's like having a muscle that atrophies if we don't use it.

The challenge is not to ban these tools—now impossible—but to learn to use them wisely. The Italian school system is experimenting with innovative approaches, such as having students perform calculations by hand and then using GAI to correct the procedures, combining the best of human reasoning with the power of technology.

In the world of work, the impact is even more dramatic because it will influence 60% of jobs in advanced economies. Goldman Sachs predicts that it could automate the equivalent of 300 million full-time jobs by 2030, but it could also increase global GDP by 7%.

The truth is complex: some professions are disappearing while completely new ones are emerging that did not exist even five years ago and are now among the most in-demand.

Our country is demonstrating a surprising ability to adapt. The use of AI at work has increased from 12% in 2024 to 46% in 2025—a 34 percentage point jump that marks the transition from experiment to daily practice. Italian companies that have embraced this technology show an integration capacity above the European average.

In this rapidly evolving scenario, two types of fundamental skills are emerging. On one hand, AI Literacy—knowing how to dialogue effectively with GAI, understanding its limits, using it as a tool for enhancement rather than replacement. On the other, Human Skills—those deeply human abilities such as empathy, creativity, and critical thinking that no machine can replicate.

Paradoxically, the more technology advances, the more these human qualities become precious. 83% of workers believe that AI will make human skills even more important.

But there is one skill that stands above all others: Learning Agility. It is not simply the ability to learn new things, but the ability to unlearn, adapt, and continuously reinvent oneself. In a world where past strategies may no longer work in the current context, this becomes the meta-skill that will allow us to navigate uncertainty.

The central message is clear: we must not fear this transformation, but guide it with wisdom. AI is not the enemy of humanity; it can become its most powerful ally if we know how to use it while keeping the dignity and unique potential of human intelligence at the center.

The challenge is ambitious but exciting: to build a future where technology and humanity dance together, where AI enhances our abilities instead of replacing them, where tools serve humans and not vice versa. It is a responsibility that concerns all of us, now more than ever.

1. Impact on School

School in the Era of Chatbots

Generative Artificial Intelligence (GAI) is radically transforming the Italian educational landscape, placing the school system at the crossroads of an epochal shift that requires new teaching and pedagogical approaches. Far from being a mere technological novelty, GAI represents a profound change that is redefining how students and teachers interact with knowledge.

One of the most discussed phenomena in the GAI era is the so-called "cognitive debt."(1) This term describes the tendency to forgo the thinking process to simply obtain answers, without understanding why those answers are correct. In other words: the more we rely on ChatGPT to produce ideas and texts, the less our brain activates for functions of memory, planning, and self-regulation.(2)

However, research from MIT reveals concerning aspects. Studies conducted on hundreds of university students show a negative correlation between frequent use of AI and academic performance. Students who make intensive use of ChatGPT show greater procrastination, memory loss, and worse academic performance. This groundbreaking research measured the brain

activity of students using ChatGPT, revealing a "decrease in learning abilities" and reduced brain activity even when subsequently working independently. This phenomenon indicates a progressive reduction in the autonomous activation of internal cognitive resources. The use of ChatGPT seems to fuel procrastination, with students delaying study by relying on AI to complete tasks at the last minute. This behavior results in a reduced ability to memorize and compromises the development of critical thinking.(3)

The ordinary and unconscious use of common Large Language Models (LLMs), such as ChatGPT, multiplies our ability to produce texts but compromises our cognitive abilities; while reducing our effort in generating texts, our ability to critically evaluate information decreases, accumulating a "cognitive debt" that erodes our thinking skills. At first, we feel stronger, but what happens next? Even well-intentioned scholars propose accepting LLMs as true "permanent cognitive prostheses," to be structurally integrated into our daily routines. Without specific strategies, without a different interaction experience, this is not advisable. Therefore, it is necessary to define and disseminate better ways to use AI, as a leaven for thought, a dialogical and reflective stimulus, to actively explore alternatives, generate complex questions, compare perspectives, and expand consciousness. We should cultivate self-regulation, rather than weakening its cognitive basis. If we then relate this risk of increased passivity to the fact that this "cognitive prosthesis" is intrinsically opaque, centrally manipulable, and outside our control, the scale of the threat increases; cognitive debt leads us toward a more closed society.(4)

The crucial question that emerges is: are we becoming more "digital amphibians," capable of living in new informational environments, or do we risk mental atrophy?(5)

The massive use of AI chatbots raises fundamental questions: do these tools make us smarter, or do they delude us into thinking we are, gradually turning

off some neural sparks? Scientific research suggests that the answer is not unambiguous and largely depends on how we use these tools.

Indeed, despite the potential benefits, the use of GAI involves critical issues, primarily related to implementation costs and the need for basic digital skills to interact with it. Among the main risks is a potential negative effect on students' learning abilities. For example, losing the habit of doing calculations and solving arithmetic problems, which AI can do very quickly, students might see a decrease in their mathematical reasoning skills? Therefore, the use of AI in education must be carefully evaluated and balanced.(6)

In all this, I would say that the most critical age group remains those under 13 years old (with many proposing 16 years old), where the risks far outweigh the benefits, followed by adolescents aged 13-17 who, although active users, need specific protections and adult supervision for safe and aware use of these technologies. Developing brains are at higher risk.

We have very little knowledge about the long-term effects of these AI chatbots, especially on children. This gap represents one of the greatest scientific and ethical challenges of our time, requiring massive investments in longitudinal research before it is too late to correct any damage to the development of entire generations.(7)

The Role of School Self-Regulation

The school emerges as the determining actor in this scenario, potentially playing an important role in self-regulation.

The proposal to impose analog calculation using chatbots for the correction of procedures represents an extremely valid pedagogical approach that could resolve the paradox of Artificial Intelligence, for example, in

mathematics education. This strategy combines the benefits of manual reasoning with the effectiveness of automated feedback.

The analog method developed by Camillo Bortolato has demonstrated its effectiveness in mathematics teaching, based on consolidated neuroscientific principles. Manual calculation offers several fundamental benefits.

Development of Neural Networks: Manual calculation activates specific brain networks involved in numerical processing and mathematical reasoning. As research has shown, mathematical learning involves the construction of mental images of quantities rather than the mere manipulation of numbers.(8)

Children are born with innate numerical skills such as subitizing (immediate recognition of small quantities) and numerical acuity. The analog method leverages these natural abilities, allowing children to develop mental calculation as the foundation of the correct path for learning mathematics.(9)

Prevention of Digital Dependence: maintaining the obligation of manual calculation prevents "cognitive laziness" and the atrophy of mathematical reasoning skills, problems documented in the excessive use of AI.

The use of chatbots for the correction of procedures represents a significant pedagogical innovation that overcomes the limits of traditional correction: immediate and personalized feedback: AI systems can provide instant feedback on mathematical procedures, identifying specific errors and offering targeted suggestions. This allows students to correct their mistakes immediately without waiting for the teacher's correction.

Unlike simply evaluating the final result, chatbots can analyze each step of the procedure, identifying where the error occurred and providing detailed

explanations. This approach recognizes the "generative nature of error and its didactic value." Specialized math chatbots, such as Math GPT, have demonstrated effective correction capabilities when it comes to verifying procedures rather than generating solutions. They can identify calculation errors, incorrect logical steps, or incomplete procedures and explain them. It's like being assisted by an older friend who explains your mistakes without making you anxious.(10)

The Homework Machine

Gianni Rodari's reference to the "homework machine" takes on new meanings today: modern chatbots can create content from a simple command, but this does not necessarily translate into a loss of students' cognitive abilities.

The key lies in the evolution of teaching: instead of proceeding with bans, the educational system must embrace an aware approach that transforms AI from a threat into an opportunity. As highlighted by recent research, it is more important than simply accessing information to know how to retrieve it, how to use it, and above all, its reliability.(11)

What is evident is that our relationship with information is changing. In short, the way we interact with and retrieve it is changing. Because these chatbots dialogue with us (agentification), they help us develop critical thinking. Certainly, more important than the information itself is how it is retrieved (the ability to query a digital archive), how it is used, and, most critically, its reliability.

The data show concrete signs of change in the information ecosystem. Intelligent digital tools, such as GAI notebooks, allow users to write

instructions to the computer and thus generate texts, images, and multimedia content without any effort.

Traffic on Wikipedia has increased by 50% in one year, but not due to user interest: the increase is mainly due to bots downloading content to train AI models, putting pressure on the online encyclopedia's infrastructure.(12)

Librarians will change, and consequently, libraries, which, in addition to becoming digital, are becoming important centers of social inclusion.

The Revolution of "Copy and Paste 2.0"

The most significant change concerns what researchers define as "copy and paste 2.0"(13) students no longer copy existing content but collaborate to generate new material, which may be factually questionable but completely original. While the Internet offered simple access to global information, AI provides unprecedented text generation capabilities, autonomous research skills, and synthesis powers that can produce detailed reports in minutes.(14)

Students are moving from being consumers of information to AI-assisted content creators, entering the era of Content Creators. This transformation is confirmed by usage data: with the reopening of schools, there has been a sharp increase in the use of ChatGPT, which reached 78.3 billion interactions as of September 18, 2025.

GAI represents one of the most significant innovations of our time, but it has fundamental limitations that raise crucial questions about reliability and the trust we can place in these systems. The two main problems characterizing generative AI are "hallucinations" (false information)(15) and "bias" (incorrect prejudices),(16) both phenomena that compromise the accuracy and fairness of the generated outputs.

GAI represents a powerful but imperfect tool that requires a balanced approach between innovation and prudence. The key to responsible adoption lies in recognizing current limitations while continuing to invest in the development of more reliable and equitable systems.

So how much are we willing to rely on content generated by others, without questioning its origin, structure, and intent?

The change represents what researchers call "copy and paste 2.0": that is, students no longer copy existing content but collaborate to generate new material that may be factually questionable but completely original and (almost) indistinguishable from what a human would have produced.

The fundamental difference lies in the ability. While the Internet offers "simple" access to global information, AI provides unprecedented text generation capabilities, autonomous research skills, and synthesis powers that can navigate hundreds of websites and produce detailed reports in minutes. Students are moving from being consumers of information to AI-assisted content creators (it's the era of Content Creators).

The transition from distrust to integration will also depend on the ability of teachers, who must be supported by the school system, to educate on the aware use of AI, exactly as happened with the adoption of the Internet: not to reject the tool, but to learn to know it, to question it, and to use it actively rather than passively.

Chatbots, with ChatGPT's "Study and Learn" mode, are increasingly becoming cognitive tutors. OpenAI has designed an environment that interrupts the flow of automatic responses and instead encourages gradual learning, guided by strategic questions, personalized paths, and verification moments.

Educational chatbots act as personalized tutors available 24/7, providing immediate support for clarifications, instant feedback, and progress monitoring. Particularly significant is the launch of ChatGPT's "study mode," which uses Socratic method techniques to guide students in understanding rather than providing pre-packaged solutions. AI-based tutors are increasingly used to provide personalized instruction to students. By offering a variety of interactive tools and resources, AI-based tutors can bridge knowledge gaps and adapt to the individual learning style and pace of each student, ultimately increasing engagement. It has been shown that students who used an online AI-based tutor achieved learning results 2 to 2.5 times higher than those who did not use an AI-based tutor.(17)

Even Gemini's "Guided Learning" mode encourages delving into the "how" and "why" of a concept instead of immediately jumping to the answer. In short, it is about accompanying the user in discovering a concept. Not only that, it is capable of providing "personalized" accompaniment.

The Evolution of Educational AI Tools

In short, we are well beyond Aladdin's lamp's three wishes. Naturally, we are dealing with very different GAIs with sometimes very different approaches. Imagine having four different assistants, each with their own personality and strengths: ChatGPT - The Jack of All Trades; Claude - The Deep Thinker; Gemini - The Google Friend; Grok - The Rebel. The ecosystem of AI tools is diversifying significantly. In addition to generalist chatbots like ChatGPT, Claude, Gemini, and Grok, specialized solutions such as Perplexity AI are emerging, which stands out as an enhanced search engine and for its very careful use of sources. This tool is particularly suitable for scientific research and thesis writing, deeply analyzing articles and studies from the academic circuit.

We must educate students not only in the use of AI but also in the ability to recognize its limits, to integrate different sources, and to recover the active role of knowledge. To overcome this, it is necessary to specify the type of desired sources, the language, the geographical origin, or even the orientation (academic, journalistic, popular) of the resources to be consulted.

Is there a school before chatbots and a school after chatbots? Certainly yes, we are at an epochal change. Something is about to change forever. GAI has already entered school and study without us noticing, just as it happened with the Internet.

The Data Doesn't Lie

The big numbers tell us. The usage data between May and June (last classroom assignments, "year-saving" oral exams, and final exams) 2025 released by ChatGPT are enlightening.

The data on the use of ChatGPT during the May-June 2025 period, corresponding to the crucial phase of final exams and end-of-year assessments in the Italian school system, reveal an unequivocal reality: artificial intelligence has become an indispensable study companion for students.

According to the first comprehensive study published by OpenAI, in collaboration with Harvard and the National Bureau of Economic Research (NBER), based on the analysis of 1.5 million conversations between May 2024 and June 2025, the numbers tell a story of explosive growth. ChatGPT reached 2.6 billion daily messages in June 2025, compared to 451 million in May 2024, a nearly sixfold increase in just one year.

The correlation between school calendars and ChatGPT usage is evident from traffic data. During the 2024-2025 school year, 37% of Italian students used ChatGPT, with particularly high penetration in the 18-24 age group, which represents about 35% of the population.

The analysis of the May-June 2025 period reveals specific behaviors related precisely to exams. One in three students admits to having planned to use ChatGPT during the final exams: 23% were sure they would use it, while 12% would do so only in case of panic. Even more significant, 19% of students regularly used AI to cheat during class assignments and tests, without ever being caught.

The May-June 2025 numbers represent more than just statistics: they show the emergence of a new normal, in which artificial intelligence becomes an integral part of the educational process, albeit in a still unstructured way. With 8.8 million Italians using ChatGPT monthly and growth showing no signs of slowing, the Italian school system faces the need to redefine teaching approaches and evaluation methodologies. The boom in usage during the 2025 exams thus marks a turning point: from being a technological curiosity, ChatGPT has become a daily tool for millions of students, with profound implications for the future of education in Italy.(18)

What Does the School Do?

We are still in the early stages of a structural use of this technology (after all, GPT is only from November 2022). There are many experiments, but something is moving in our country.

We are faced with pervasive tools in daily life: imagining a school without them means condemning students to experience school as a time machine capable of traveling only into the past.

GAI will change school forever because it changes the goal. Having established that the notions learned at school are only the fuel to feed our intellect, the true goal of education is the formation of a critical spirit; therefore, it is understood that it is no longer time to teach only the answers, but time to understand what the important questions to ask are.

Steve Jobs' 1985 prophecy is coming true. "A time will come when computers will not be limited to processing data but will amplify human intellect, allowing anyone to access the knowledge of the greatest thinkers of the past."

The Strategic Role of Character.AI

Today, CHARACTER.AI allows you to dialogue with historical figures (e.g., Aristotle). All this, if well-guided by the teacher, can become an interactive and stimulating educational resource. The character is reconstructed step by step, adapting it to the topic of the lesson. The "update" phase of the character should not be solitary: it can become a real classroom laboratory. The true strength of Character.AI lies in its ability to offer personalized and adaptive learning. The virtual characters, created with the platform, are able to adapt their personality and teaching approach based on the individual preferences and needs of students. This feature aligns perfectly with the objectives of the new ministerial guidelines that emphasize personalization as a central element of educational innovation.(19)

Character.AI stands out in the Italian educational landscape for its ability to create virtual characters equipped with Artificial Intelligence, which can be used as personalized tutors, learning facilitators, and engagement tools for students. The platform already has over 20 million registered users and hosts more than 500 million AI-generated characters. Concrete applications in Italian schools are already evident. A significant example is the creation of

Dante Alighieri chatbots developed by students for the "Dantedì,"(20) which recorded over 36,000 conversations. These projects demonstrate how Character.AI allows transforming the learning of traditional subjects, such as literature, into interactive and engaging experiences. The character update phase can turn into a real classroom laboratory, where students collaborate to historically and psychologically reconstruct figures from the past.

Character.AI represents today a fundamental catalyst for the digital transformation of the Italian school. Its importance derives from the convergence of several factors: the favorable regulatory framework established by the ministerial guidelines,(21) the growing need for personalized learning, the demand for greater engagement from digital native students, and the urgency to develop digital and transversal skills for the future of work.

The aware and pedagogically guided adoption of Character.AI in Italian schools can contribute to building a more inclusive, personalized, and up-to-date educational system with the challenges of the 21st century, always keeping the educational relationship between teacher and student and the fundamental values of Italian humanistic education at the center.

Notebook LM: The Revolution of Interactive Study

Notebook LM represents today a revolutionary tool for the education of the future, positioning itself as a catalyst for a pedagogical transformation that completely redefines the approach to personalized learning, the creation of educational content, and student engagement. Its importance for the school of the future lies in its unique ability to transform static documents into dynamic, multimodal, and deeply personalized learning experiences.

Unlike generalist chatbots, this tool operates as a personalized research assistant, relying exclusively on the documents uploaded by the user. The system can manage up to 50 sources per notebook and process up to 500,000 words of content.

The particularity of Notebook LM lies in its ability to generate podcasts and presentations with moving images, paving the way for the concept of the "flipped classroom": students can transform mandatory readings into podcasts to listen to at home, freeing up classroom time for more in-depth and interactive activities.(22)

The Importance of Prompt Engineering

GAI is transforming the Italian educational landscape, and prompts represent the fundamental bridge for effective and didactically significant use of these technologies in the classroom. Prompts have become an essential metacognitive skill for teachers in the digital age.

A prompt is a message or instruction given to an AI model to enable it to generate a specific output. In the school context, it represents the natural language that allows teachers and students to dialogue effectively with GAI systems.

"Doing a prompt well" means designing clear, specific, and structured instructions that guide AI models toward the desired responses, maximizing the accuracy, relevance, and usefulness of the generated outputs.

If the requests are careful and creative (prompts), the results are spectacular!

Educational prompts serve as strategic instructions that guide AI in creating educational content, activities, assessments, and personalized learning

materials. They must be specific and action-oriented, using verbs like "create," "write," "analyze," "summarize." Gemini creates digital books in minutes. ChatGPT creates lessons, creates teaching materials, personalizes teaching, improves explanations, provides assessment tools, and thus fosters innovation. However, it must be considered that we are dealing with a support tool that does not replace the teacher. The quality of the output therefore directly depends on the precision and clarity of the formulated prompt.(23)

The GAI Manifesto at School: A Turning Point

In February 2024, the Manifesto of Generative Artificial Intelligence at School (MIAS) was born, a pioneering initiative coordinated by Professor Roberto Castaldo of ISIS Europa. This document represents one of the first organic initiatives in Italy to guide the aware and responsible integration of GAI in educational environments.

The MIAS arises from the growing need to address in a structured way the impact of generative artificial intelligence in the world of education. The initiative emerges in response to the often "irresponsible" use that students make of tools like ChatGPT to automatically complete assigned tasks, creating significant pedagogical challenges for the educational system.

The manifesto fits into a crucial moment, when many international schools were considering banning these tools, while in Italy the awareness was emerging that "the school cannot remain on the margins of the ongoing transformation," but must take an active role in the critical adoption of generative AI.

The document represents a pioneering example of how educational institutions can proactively guide technological innovation.

The Manifesto of Generative Artificial Intelligence at School of February 2024 thus constitutes a fundamental document for understanding the Italian approach to the integration of AI in education. Through its ethical principles, operational guidelines, and person-centered pedagogical vision, the MIAS offers a roadmap to transform AI from a potential educational threat into a tool for enhancing learning and teaching.

The school must motivate young people, help them take a step forward, and not keep them stuck in a world that no longer exists.

The MIAS consists of two distinct documents (one for students, one for teachers), each formed by 10 basic principles with 5 guidelines per principle, for a total of 50 operational guidelines. The manifesto anticipated and influenced national policies, being cited in the Guidelines of the Ministry of Education and Merit of 2025 as a reference source for the structured introduction of artificial intelligence in Italian schools.(24)

The Need for Clear Rules

August 9, 2025, marked a historic date for the Italian school: the Ministry of Education and Merit finally published the first "Guidelines for the Introduction of Artificial Intelligence in Educational Institutions." This is a document that puts an end to what the text itself defines as a "new version of cops and robbers" between teachers and students, where both were hiding in the use of tools that are now part of the daily life of over one billion people worldwide.

The situation before the publication of the guidelines was paradoxical: on one side, teachers who often banned the use of AI for fear of compromising authentic learning, and on the other, students who used it anyway, but secretly. This underground war had created a climate of suspicion and

misunderstanding, when in fact AI now represents an unavoidable technological reality.

As explained by Minister Giuseppe Valditara, it was necessary to "lay the foundations" for an aware and regulated use of AI in schools, following the indications already defined by the European Union's AI Act.(25) The guiding principle, which guides the entire document, is that of "human in the loop" (the human being at the center of the process): the teacher must always coordinate, because the role of the professor is always fundamental. "Artificial intelligence will revolutionize the Italian school, but the teacher remains irreplaceable."

Following the guidelines published by UNESCO in 2023, the ministerial document indicates which are the most interesting areas of development in applying GAI (Generative Artificial Intelligence) software to teaching. The basic idea is that of personalized learning, i.e., "improving learning and enhancing potential, talents, and individual inclinations of students" by using AI to adapt educational paths based on individual needs. Integrating digital tools to promote more engaging teaching, with particular reference to STEM subjects, a chronic weakness of the Italian school. A sore point, as is school dropout, to combat which, through AI, inclusion and integration processes are to be promoted.

The guidelines go beyond generic teaching indications, arriving on one hand to indicate how GAI can simplify and optimize the internal processes of educational institutions through automation and the digitization of administrative activities, and on the other, to "enhance the quality and efficiency of services aimed at students and families." Generative tools are finally indicated as the means to promote "a school environment capable of innovating and responding to the needs of students and society." The ministerial document seems, however, oriented towards the definition of "prohibited practices" and "high-risk AI systems." In the first category, not

expressly dedicated to school environments, falls the use of subliminal or deliberately manipulative or deceptive techniques, "the evaluation or classification of individuals based on their social behavior or personal characteristics," "the use of biometric categorization systems," and finally, AI tools "capable of identifying emotions." Following the indications derivable from the AI ACT, the uses defined as "high risk" are identified, particularly for educational institutions: IT systems capable of "determining access, admission, or assignment of individuals to educational institutions," "evaluating learning outcomes" and the appropriate level of education a person will receive, "monitoring and detecting prohibited behaviors of students".(26)

The document is explicit in defining what is permitted and what is prohibited. The European AI Act categorically prohibits the use of systems that use subliminal or manipulative techniques, the classification of people through social scores, biometric categorization to infer sensitive personal characteristics, and above all, in the school context, systems capable of identifying students' emotions, except for medical or security reasons.

Schools operate as "deployers" of AI systems, assuming specific responsibilities that vary based on the risk level of the system used. These new figures are not yet well defined, but will likely end up being school principals.

High-risk systems—those that influence access to education, student evaluation, or monitoring during exams—are subject to particularly stringent rules, including the need for an impact assessment on fundamental rights.

Despite the attention to risks, the guidelines recognize the enormous potential of AI to improve the educational experience. For school principals, AI can support planning, document management, and schedule

organization. Administrative staff can benefit from the automation of repetitive tasks and more efficient management of communications.

For teachers, innovative possibilities open up: creation of personalized teaching materials, interactive simulations, custom evaluation rubrics, and digital tutoring systems. Students can access personalized learning paths, immediate feedback, multidisciplinary resources, and tools that promote greater inclusivity and autonomy.

The document emphasizes the crucial importance of continuous training for all school staff. With PNRR funds, over 5,760 training courses on the use of AI in teaching have already been realized. Additionally, over 100 million euros have been allocated for the creation of highly innovative and AI-integrated campuses.

These guidelines represent the first organic framework in the world developed by a school system for itself. The document, although in version 1.0 and therefore still partial and generic in some aspects, establishes the boundaries of a regulated but open-to-experimentation field of action.

The goal is clear: to transform the Italian school into a more inclusive, efficient, and innovative environment, without giving up the fundamental principles of equity, rights protection, and the centrality of the human being. As emphasized by the Ministry, AI must truly be a tool at the service of education and not a risk for the school community.

The journey has just begun, but the foundations have been laid: now it is up to the schools, respecting their autonomy, to build the future of Italian education, where technology and humanity walk together towards new horizons of learning.(27)

2. The Metamorphosis of the World of Work

Innovation is an induced process: it means adapting and adjusting to the surrounding environment, at the risk of extinction or irrelevance. GAI is changing the world of work.

The truth is that GAI (such as ChatGPT, Claude, and Gemini...) is not just a technological innovation, but represents a historic turning point for the future of work, comparable to the invention of printing, the industrial revolution, or the advent of the Internet. With one fundamental difference: the exponential speed with which it is spreading does not leave time for the natural adaptation of economic and social systems.

The estimates of international organizations converge on a significant impact of AI on labor markets. The International Monetary Fund predicts that AI will influence 60% of jobs in advanced economies and about 40% of global jobs. Goldman Sachs' projections indicate that generative AI could automate the equivalent of 300 million full-time jobs globally by 2030, but this process could also increase global GDP by 7% over the next ten years.

Particularly significant is the fact that 80% of the American workforce belongs to an occupation where at least 10% of tasks can be performed or assisted by AI, while one-fifth of the workforce sees 50% of their work activities potentially influenced by AI. This "exposure" to AI does not automatically translate into job loss, but rather a transformation of work modalities.(28)

Despite concerns about technological unemployment, historical evidence suggests that technological innovation tends to create more jobs than it eliminates. Goldman Sachs notes that about 60% of US workers today are in occupations that did not exist in 1940, indicating that more than 85% of job growth comes from technology-driven job creation.

The transition to an AI-augmented economy represents a complex challenge, but also an unprecedented opportunity for Italy. The success of this transformation will depend on the country's ability to invest in future skills, create innovative ecosystems, and ensure that the technological revolution translates into shared prosperity for all workers. Digital technologies therefore also represent an opportunity for growth in one's career path. Today we have devices capable of writing for us.

Will Upskilling and Reskilling Be Enough?

An in-depth analysis of the available evidence suggests that these strategies, although necessary, may not be sufficient to address the entire scope of the ongoing transformation.

Upskilling and Reskilling, while representing fundamental tools for adapting to technological change, will not be sufficient to completely solve the challenges of the future of work. Several structural and systemic factors limit the effectiveness of these traditional training approaches.

The fundamental problem lies in the accelerated speed with which skills become obsolete. According to the World Economic Forum, the average lifespan of a technical skill is estimated between 2 and 5 years, but in advanced technological sectors, this period is further reduced. 39% of professional skills could become obsolete by 2030, creating a cycle of obsolescence faster than the capacity for requalification.(29)

The phenomenon manifests itself with particular intensity in the technology sector, where the evolution of tools, programming languages, and methodologies occurs at unprecedented rates. This acceleration makes it impossible for traditional training programs to keep up with changes, creating a growing gap between acquired skills and market needs.(30)

Upskilling and Reskilling programs suffer from significant time limitations. Reskilling, in particular, requires longer interventions than Upskilling, but the speed of technological change often exceeds the time needed to complete these training paths. While an employee is being retrained in a new skill, it may already be on its way to becoming obsolete. The scale of the problem is also greater than the current capacities of training systems. With 54% of company positions requiring Reskilling or Upskilling processes in the next three years and 40% of employees needing to update their skills in the next six months, the volume of training required exceeds existing operational capacities.

Traditional training programs often adopt standardized approaches that do not take into account individual specificities, work contexts, and different learning speeds. Personalized training, although recognized as necessary, remains expensive and complex to implement on a large scale, limiting the effectiveness of interventions.

This creates a paradox: at the moment a skill is fully acquired, it may already have become obsolete. Recent studies highlight that the effectiveness of Upskilling and Reskilling strongly depends on the personalization of training paths. A significant gap emerges between the theoretical acquisition of skills and their practical application in the work context. Innovation is no longer an optional choice, but a necessary adaptation process for survival. In a world where GAI is revolutionizing work, fundamental questions arise: are traditional training strategies sufficient to manage this epochal transformation?

The numbers of the ongoing transformation are impressive and provide a clear picture of the extent of the change: 450 million workers worldwide will need retraining; 59% of the global workforce will need additional training; 44% of current skills will become obsolete in the next five years; 83% of jobs in major sectors will be affected by AI.(31)

Many professionals fall into "training fever," believing that acquiring new skills is always the solution to work problems. However, often the problem does not lie in the lack of skills, but in the inability to value those already possessed. 80% of people already have the tools necessary to achieve their professional goals, but do not know how to attribute the correct value to their experiences.

So the answer seems to be to focus on continuous training. Certainly, but not the kind we have seen in operation in recent years. A radical paradigmatic transformation of continuous training is necessary to address the challenges of the GAI era. The collected evidence converges towards the urgency of abandoning traditional models and adopting completely innovative approaches. The challenge is not technological but cultural: it requires the ability to completely rethink what it means to train and be trained in the GAI era.

A New Model of Continuous Training

The traditional model of continuous training can no longer keep up with the speed of technological evolution. Imagine having to learn a new skill for your job. Until recently, this meant enrolling in a course, attending lessons, and then returning to your desk hoping to remember everything. But this system no longer works in the GAI era, where everything changes too quickly. That's why a completely new approach is needed, based on three fundamental pillars that are revolutionizing the way we learn on the job. First, instead of a single large course that teaches everything, imagine a system made up of many small "building blocks" of knowledge that combine automatically with each other, just like Lego. So what is it? It's a system of building blocks that builds itself. But how does it work in practice? It works like this: each skill is an independent "module" that can be reused; the system understands what

you need and automatically assembles the right path for you; if your role changes, the building blocks reorganize to adapt to the new needs. For example, if you work in marketing and need to learn about AI, the system won't propose a generic course, but will combine specific modules on "AI for creatives," "campaign automation," and "predictive sales analysis," in short, exactly what you need, when you need it. The second pillar refers to learning while working (without realizing it). Learning no longer happens in moments separate from work, but integrates perfectly into what you do every day, like an invisible assistant that helps you at the right time. How does it work in practice? There is a digital mentor: an AI that watches you work (without invading your privacy) and suggests advice at the right time. It's practically real-time coaching: if you're writing an important email, the system can suggest how to improve it. We are facing a kind of automatic learning: every time you complete a task, the system learns how to help you better the next time. A concrete example could be preparing a presentation: the system could notice that you have difficulty with graphics and propose a 2-minute tutorial on that specific problem, without wasting time on things you already know how to do. We are therefore facing an environment that changes shape for those who work there. So imagine an office that continuously transforms to adapt to your way of learning, where there is no longer the classic "master-student" relationship, but everyone teaches and learns from everyone. This implies a totally different approach. First of all, spaces that adapt: the work environment (physical or digital) changes based on what you need to learn; roles become more fluid, because you are students of programming, but also teachers of communication. But above all, the system captures and enhances even the "unwritten" skills you have developed through experience. You learn by doing projects together with colleagues, not just from books. For example, if you need to learn to use new software, instead of following a traditional course, the system connects you with the most experienced colleague, creates a virtual environment where you can

experiment without risks, and transforms your experience into a useful resource for future colleagues, who will have to learn the same thing. These three pillars practically change everything and solve the main problems of traditional training. By learning during work, you immediately use what you learn. You are no longer forced to learn courses that you may not need. Each path is tailored to you. The system evolves along with technologies and the needs of work. In short, we are moving from a model where "you stop working to learn" to one where "you learn while you work," making learning natural, continuous, and truly useful for the professional growth of each individual.(32)

AI Literacy(33)**: A Continuum of Skills**

What we need to understand is that the pyramidal model emphasizes that AI literacy is not a binary skill (present/absent), but is configuring itself as a complex and multidimensional continuum, rather than a simple linear progression of skills.

AI Literacy emerges as a multi-level interconnected system that integrates different dimensions of competence. The main international frameworks, such as the one developed jointly by the European Commission and the OECD, identify four fundamental domains.(34)

This structure suggests that AI literacy will function as a progressive but non-linear continuum, where skills develop through levels of increasing sophistication and responsibility.

The analysis of recent research reveals that this phenomenon will present innovative characteristics that go beyond traditional digital literacy models. It will integrate structured competence progressions with elements of flexibility, adaptability, and interdisciplinarity that reflect the very nature of

artificial intelligence. This approach will require a transformation of educational and training systems to support the development of skills that are both technically sound, ethically grounded, and human-centered, preparing individuals and organizations to navigate effectively in the AI era.(35)

Certainly, the AI Act has favored all this. In fact, the normative definition of the European AI Act (Article 3, point 56) describes AI Literacy as "the skills, knowledge, and understanding that enable providers, deployers, and affected persons, taking into account their respective rights and obligations under this regulation, to proceed with informed dissemination of AI systems, as well as to acquire awareness of the opportunities and risks of AI and the possible harm it may cause."

Today, understanding AI is fundamental because it has become essential for several reasons. We live in a unique historical moment: AI is transforming our world at an unprecedented speed. But what does AI literacy really mean, and why should we all be interested? Imagine for a moment being in the 90s, when the Internet was beginning to spread, or when the "Office package" was spreading. Those who had learned to use the computer and navigate online found themselves at an advantage in almost every aspect of life. Today we find ourselves facing a similar revolution, but even more pervasive, and we must prepare the citizens of tomorrow. Our students will enter a job market where AI will be everywhere: from the voice assistants they already use on their smartphones to the most sophisticated systems that will help them in their future professions. Not preparing them for this scenario would be like teaching them to write by hand without ever showing them what a keyboard is. Never before has it been so important to distinguish between reliable information and artificially generated content. Our young people must learn to ask the right questions: "Who created this information?", "Where do these data come from?", "Has this content been verified?". It is a

modern form of civic education, as essential as learning to read and write. Training aware citizens also means making them capable of actively participating in decisions concerning the use of AI in society. Only those who understand these technologies can contribute to an informed public debate on their benefits and risks.(36)

In the world of work, AI will become a strategic skill. It will be an absolute necessity for leaders. It’s no coincidence that 7 out of 10 corporate executives consider AI mastery a strategic priority. Anyone leading an organization today must understand how AI can improve processes, reduce costs, and create new business opportunities.

AI can automate repetitive tasks, analyze vast amounts of data in real time, and suggest innovative solutions to business challenges. But to harness these capabilities, you need to know what to ask and how to interpret the answers. The future of work won’t be defined by machines replacing humans, but by their collaboration. Knowing how to work alongside intelligent systems will become a fundamental skill across every sector—from medicine to engineering, marketing to scientific research.(37)

Human Skills

Have you ever heard of Human Skills? If the answer is no, don't worry: you probably use them every day without realizing it. These are the abilities that make us deeply human and that, paradoxically, become more valuable as technology advances.

Imagine being in the office: you can calm an angry colleague, find a creative solution to a complex problem, or get people with very different characters to work together. These are Human Skills in action. It's not about knowing how to program a computer or knowing a technical procedure, but about

those skills that concern our way of relating, communicating, and being human.

Human Skills are like an invisible luggage we always carry with us. They develop through our life experiences, the relationships we build, our successes, and failures. Unlike technical skills that are learned from books or through specific courses, these abilities are absorbed almost unconsciously, constantly influencing our behaviors and choices.

Their particularity is that they are transversal: whether you are a doctor, teacher, engineer, or merchant, you will need the same basic skills to communicate effectively, solve problems, and work in a team.

We live in an extraordinary era, where intelligent machines can write articles, create images, translate languages, and even compose music. Yet, there is something that these tools, no matter how sophisticated, cannot yet replicate: our humanity.

Think about it: an AI can analyze thousands of data in a few seconds, but can it truly understand the emotions of a person in distress? Can it make complex ethical decisions considering all moral nuances? Can it inspire a team during a difficult moment?(38)

International research has revealed a surprising fact: 83% of workers believe that AI will make human skills even more important. It's not a paradox, it's reality: the more technology evolves, the more we need those qualities that make us unique.(39)

The future of work will not be a battle between humans and machines, but a harmonious dance between our skills and those of Artificial Intelligence. This is what experts call Human-Driven AI: an approach where the human being remains at the center, using AI as a powerful support tool.

Imagine a surgeon using technology to get more precise diagnoses, but always entrusting final decisions to their own experience and sensitivity; or a teacher using AI to personalize teaching materials, but building the educational relationship through empathy and human understanding.

Using GAI effectively is not like using a calculator: it requires wisdom, intuition, and critical control. That's why it needs human guidance. These tools can produce incredible content, but they need someone who knows how to ask the right questions, evaluate the quality of responses, and identify any errors or "hallucinations" of the system.

Technology evolves rapidly: programs and technical tools change continuously, making specific skills obsolete. But the ability to adapt, learn, and think critically remains always current. Ethical decisions are needed: AI can help us make more informed decisions, but it is always up to us to determine what is right or wrong, considering the impact on people and society.

Creativity is still ours: AI can generate infinite variations on a theme, but it is we who imagine new possibilities, think outside the box, and give meaning to results. Human Skills are not a passing trend, but a long-term investment for our professional and personal future. In a rapidly changing world, these skills represent our anchor of stability and our competitive advantage.

While machines become increasingly skilled at performing specific tasks, humans maintain a monopoly on qualities such as genuine empathy, original creativity, ethical thinking, and the ability to build authentic relationships. These are not just professional skills, but elements that enrich our lives and allow us to contribute positively to the world around us. The message is clear: we must not fear technological progress, but embrace it consciously, bringing with us that baggage of humanity that makes us irreplaceable.

Human Skills are our passport to the future, a future where technology and humanity dance together towards new possibilities.(40)

How GAI is Revolutionizing the World of Work

We live in an extraordinary historical moment. GAI is changing the work landscape with a speed and intensity that we have never seen before, not even when the Internet began to transform our lives. This technology is not just making some activities more efficient: it is literally redesigning entire professions, creating unprecedented opportunities, but also posing challenges that require immediate and thoughtful responses.(41)

The figures emerging from the most authoritative research tell a story of unprecedented transformation. The International Labour Organization estimates that by 2035, about a quarter of professional tasks in Europe could be automated. This is not science fiction, but a reality that is already materializing before our eyes.(42)

The World Economic Forum offers an even more detailed picture: Artificial Intelligence will create 78 million new jobs by 2030, but will eliminate 92 million. The net result is the loss of 14 million positions, but this figure hides a deeper revolution: we are not simply losing jobs, we are witnessing a complete metamorphosis of what it means to work.

When Goldman Sachs predicts that AI could expose the equivalent of 300 million full-time jobs globally to automation, and McKinsey calculates that by 2030, 30% of hours worked in the economy could be automated, we are looking at numbers that should make us seriously reflect on the future that awaits us.(43)

The common narrative suggests that automation mainly affects manual and repetitive jobs, but the reality is much more complex. GAI is proving to be

particularly effective in automating activities that require information processing and standardized communication.

In the banking sector, for example, we are witnessing a real exodus of tellers and counter operators. Major Italian banks such as Intesa Sanpaolo and UniCredit are already systematically replacing staff with automatic counters and AI chatbots. Consider that by 2030, over 70% of the activities performed by bank tellers could be completely automated.(44)

The world of call centers and customer service is experiencing what some experts call a "professional extinction." Chatbots and voice assistants already handle 80% of routine requests without any human intervention. Bank of America's virtual assistant Erica, for example, handles over a billion customer interactions each year.(45)

But the real surprise comes when we look at intellectual professions. Junior lawyers and paralegals are discovering that AI-based contract review software can process thousands of documents in seconds. Translators and interpreters find themselves competing with increasingly sophisticated algorithms. Even entry-level editors, copywriters, and social media managers must contend with models like GPT-4 that can produce quality content in record time.(46)

However, it would be short-sighted to only look at the destruction. AI is creating new professional categories that did not exist even a few years ago, often more qualified and better paid than those they are replacing.

Take the AI Engineer: this figure designs and develops AI systems, mastering languages like Python and machine learning and deep learning techniques. It is one of the fastest-growing professions, with an 80% increase in Italy. Similarly, the Machine Learning Engineer specializes in designing algorithms that allow machines to learn, requiring advanced skills in big data and statistical analysis. A particularly interesting figure is that of the Prompt

Engineer, who we could define as the "translator" between humans and generative AI. This profession, which did not exist until recently, is now crucial for optimizing interaction with systems like ChatGPT and requires a unique combination of technical and communication skills. In the creative field, figures such as the Generative Creative Designer, who combines traditional creativity with generative AI tools, and the AI Media Strategist, who uses AI platforms to optimize advertising campaigns through advanced predictive models, are emerging. We must not forget the professions of governance and control. The AI Ethics Specialist ensures the ethical and responsible use of artificial intelligence, while the AI Quality Assurance Manager oversees the quality of AI systems and ensures their regulatory compliance.(47)

In this rapidly evolving landscape, some skills are emerging as fundamental for future success. The AWS report for 2025 clearly identifies the most in-demand technical skills: machine learning and deep learning, ML Ops for scaling and deploying AI solutions in production, and experience with large language models.

But it is interesting to note how the World Economic Forum identifies skills that go far beyond the purely technical aspect. And here, reference to Human Skills is mandatory. The European Union has responded to this challenge by launching the "Union of Skills" in March 2025, an ambitious initiative to provide European workers with the skills needed to thrive in the AI-driven economy. Lifelong learning is no longer an option, but an imperative for anyone who wants to remain relevant in the future labor market, although, as we previously mentioned, the approach will have to be completely different from the past.(48)

Experts identify three levels of AI skills: basic skills to optimize individual activities using tools like ChatGPT, automation skills to create autonomous

agents and orchestrate complex processes, and innovation skills that allow the use of AI as raw material for new products and services.

Not everyone will face this transition in the same way. McKinsey research reveals that women are at greater risk than men, often being concentrated in sectors such as office support and customer service, which are among the first to be automated. By 2030, 12 million workers will have to reinvent themselves professionally, and a significant percentage of these will be women in positions often characterized by lower wages.(49)

Workers with lower wages are also particularly vulnerable to automation and will likely have greater difficulty accessing the retraining programs needed to adapt to new sectors. However, not all is lost. Some professions remain relatively safe because they require physical presence and human contact, social skills and empathy, complex creativity and ethical judgment, in addition to the ability to adapt to unpredictable situations. Psychologists, nurses, teachers, artisans, and care professionals continue to represent bastions of irreplaceable human intervention.

Generative AI promises significant productivity increases—McKinsey estimates an annual economic potential between 2.6 and 4.4 trillion dollars—but risks creating technological unemployment in the short term. The productivity paradox that emerges requires smart and far-sighted public policies. To successfully navigate this transformation, workers must invest heavily in continuous learning, focusing on transversal and creative skills, develop basic AI skills to remain competitive, and cultivate uniquely human abilities such as empathy and emotional intelligence.

Companies must implement reskilling programs for existing employees, adopt a Human-in-the-Loop approach to maximize the benefits of AI while maintaining human control, and invest in ethical AI governance to avoid bias and discrimination.

Policymakers have the task of developing social protection frameworks for occupational transitions, massively investing in education and vocational training, and promoting collaboration between institutions, companies, and the education system.

GAI does not represent the end of human work, but rather its profound metamorphosis. Success in navigating this change will depend on our ability to adapt quickly, invest in the right skills, and keep human value central in an increasingly automated world.

The challenge before us is not to blindly resist change, but to govern it wisely to create a future of work that is simultaneously productive, inclusive, and respectful of human dignity. Only then can we transform what could be an employment crisis into a historic opportunity for collective evolution and growth.

Italy and the Acceleration in the Adoption of GAI

Italy is indeed experiencing significant acceleration in the adoption of GAI, confirmed by recent data showing extraordinary growth in various sectors of the national economy.

The AI market in Italy recorded a growth of 58% in 2024, reaching the record value of 1.2 billion euros. This result represents a significant acceleration compared to previous years, as experimental projects already account for 43% of the total market value, with the remaining 57% still consisting of traditional AI solutions. The growth is particularly evident when considered in historical perspective: the Italian AI market has grown by +262% over the last 6 years, from about 435 million euros in 2022 to 674 million in 2023 (+55%), reaching 1.2 billion in 2024.(50) Its adoption in the Italian world of work has shown a significant increase. Its use at work increased from 12% in

2024 to 46% in 2025, recording a jump of 34 percentage points, marking the transition from experiment to daily practice.(51) At the sectoral level, the adoption of GAI in the workplace reached 79% in Italy in 2024, with significant variations between sectors: from 100% in professional services and life sciences to 34% in the media sector.(52)

Projections for the future of the Italian AI market are particularly optimistic. The market is expected to double by 2027, approaching 2 billion euros, growing from 909 million in 2024 to 1.802 billion in 2027.

According to Anitec-Assinform, this growth will be mainly driven by the banking and telecommunications sectors, with a notable push in manufacturing. SMEs could benefit from an increase in added value of up to 122 billion euros if they could achieve a 50% adoption rate.

Despite accelerated growth, Italy still faces significant challenges. The country maintains a gap compared to the European average (13.5%) in AI adoption, particularly evident in SMEs where only 1.4% use AI for at least three business purposes.

However, Italian companies that have embraced GAI are demonstrating a capacity for integration into business processes above the average, with 67% of companies having already launched AI initiatives in 2025 compared to 30% in 2024, according to the Aspen Institute Observatory.(53)

The acceleration in the adoption of this technology in Italy therefore represents a real and measurable phenomenon, characterized by robust market growth, rapidly expanding corporate adoption, and significant investments both public and private. This positions Italy as an emerging player in the European AI landscape, although structural challenges remain to be addressed to maximize the potential of this technological transformation.

Learning Agility: The Meta-Skill of the Future

The convergence between research evidence, predictions on future work trends, and organizational needs confirms that Learning Agility represents the bridge between current and future skills. It is not simply another soft skill, but a fundamental meta-cognitive ability that will determine individual and organizational success in the era of continuous transformation.

In a world where "the only certainty is that strategies applied in the past may no longer work in the current or future context," Learning Agility emerges as the skill that helps managers, talents, and companies respond to the challenges of an uncertain present and a poorly predictable future. It is indeed the meta-skill that helps to move and make decisions in a system that often succumbs to the temptation to stand still and wait.(54)

Learning Agility differs from traditional skills by its nature as a meta-skill. Meta-skills are defined as general cognitive abilities of a reflective nature, which transcend the specifics of tasks or work contexts. They represent the ability to reflect on one's possibilities to generate and master skills, or the awareness of one's skills and the ability to manage them.

This meta-cognitive dimension makes Learning Agility particularly strategic because it transcends specific domains. Unlike technical skills that quickly lose value, Learning Agility: maintains its relevance through technological and sectoral changes; enables continuous learning; facilitates the acquisition of new skills efficiently and effectively; generates adaptability; allows navigating uncertain and rapidly transforming contexts.(55)

The growing importance of Learning Agility is closely linked to the transformations of the labor market. Between 2025 and 2030, about 170 million new jobs will be created, but 44% of the workforce will need to update their skills to remain employable.(56)

It is fundamental to understand that Learning Agility is not a soft skill because soft skills refer to ways of thinking, communicating, and acting, while Learning Agility represents a higher-level skill that orchestrates and integrates various soft skills in the function of learning and adaptation. The distinction is fundamental: traditional soft skills can be specific (e.g., communication, leadership), while Learning Agility is a meta-cognitive ability that determines how to develop, combine, and apply existing skills in new contexts.

In this context, the importance of Learning Agility emerges, defined as the ability to learn new skills through experience and to apply that learning in different contexts. According to the pioneering definition by Michael M. Lombardo and Robert Eichinger(57), Learning Agility is "the willingness and ability to learn new skills to perform under new, difficult, or different conditions."

Contrary to what one might think, Learning Agility is not an innate gift, but can be trained. It is not simply "knowing more," but rather "knowing how to intervene even when you don't know what to do." Development occurs through the awareness that our individual and organizational abilities are not fixed, but can be continuously developed.(58)

Educational Tools and Technologies

OpenAI Academy represents a revolutionary initiative to democratize access to AI skills. Initially focused on developers and technical users, the Academy has evolved to include educators, students, job seekers, and small entrepreneurs. The platform offers a wide range of on-demand content, expert-led workshops, micro-lessons on how to write and program better with ChatGPT, teaching strategies for teachers, and live sessions dedicated to creating AI agents.

Professional training stands out from academic paths for its practical and applicative nature. Unlike academic courses, which often require solid mathematical or computer science foundations, professional programs are designed to be accessible to everyone, regardless of their starting background. Claude also provides a particular training platform, designed for those who wish to acquire AI Fluency, i.e., to become "fluent" in the use of AI as one becomes fluent in a language. The offer is divided into "Claude for you" (personal use) and "Claude for work" (professional use).(59)

Another great help for work comes from apps that translate any foreign language. In fact, in the era of GAI, knowledge of a foreign language should no longer be an obstacle. Today there are numerous tools capable of translating texts and conversations quickly and effectively, often directly from your smartphone (Google Translate, Microsoft Translator, DeepL, Reverso...). Today, conversations with Virtual Assistants (Loora and Learna AI) can also be activated.

The real change brought by AI is not only in the power of the tools, but also in the new freedom with which we can use them. We are well beyond corporate perimeters. All this has been accompanied by the pandemic period, when Smart Working began to be introduced in workplaces. Today, thanks to AI apps, it is possible to write, design, translate, create content, and make informed decisions, even away from a desk, during a trip, while waiting in the car, or sitting on a park bench. For the first time, automatic text generation allows writing articles, reports, and long documents even from a tiny keyboard like that of a smartphone.

But in all this, what is the real secret to getting good results with a chatbot? It is writing a good prompt, i.e., a precise text instruction, enriched with context and formulated in a way that best guides the behavior of the model.

Many users have therefore realized they have three options: learn to write effective prompts themselves, adding details, examples, and clear instructions; ask the AI itself to improve the prompt before generating a response; use a Prompt Optimizer. Prompt Optimizers are online tools that help rewrite or refine a prompt, making it clearer, more targeted, and effective.

In practice, the user provides the AI with a brief draft of the request, and the system reworks it, transforming it into a structured prompt capable of obtaining the maximum from a chatbot, both for generating text and for creating or modifying images and videos. Once the optimized prompt is obtained, it can be copied and pasted directly into the dedicated chatbot for execution, or further refined before use. One of the best-known examples is the Optimizer for GPT-5, OpenAI's most advanced model, often described as particularly sensitive to the quality and structure of the prompt.(60)

What Are Companies Looking For?

After seeing what the ways to approach GAI are and what the tools to work with it are, it is important to understand if the job market is looking for people who know the potential to create value while this technology performs tasks once done by humans. GAI also becomes a tool for finding work.

But how much does knowing how to use GAI count in the world of work? On one hand, 72% of Italian business leaders admit to having difficulty finding junior talents with adequate skills. A real challenge is being created among companies trying to fill entry-level positions. On the other hand, many of these roles are being redefined by automation: 60% of managers expect that AI will automate repetitive tasks; an evolution that allows young professionals to focus on more strategic and creative contributions.

But what are companies looking for? 40% of Italian companies have already started using generative AI tools to improve employee learning, but with still limited results in terms of skill transfer. However, companies are looking for something more than just technical knowledge. They indeed need a generation capable of combining digital skills and soft skills, which 54% of managers consider increasingly essential for junior talents. Knowledge of AI is also highly appreciated: 8 out of 10 leaders prefer young professionals competent in this area compared to less updated senior profiles: in Italy, these trends are particularly visible in sectors where AI is driving growth: entry-level opportunities have increased in education (+55%), in the public administration (+26%), and in tourism & hospitality (+24%), offering young professionals concrete opportunities to make a difference.

Artificial Intelligence: Your New Ally for Finding a Job

Imagine having a personal assistant who works 24 hours a day to help you find the job of your dreams, who improves your resume without you having to rewrite it from scratch, and who trains you for interviews like a professional coach. This is no longer science fiction, it is the reality of Artificial Intelligence applied to job searching. In 2025, looking for a job without using AI is like driving on the highway with a car from the 70s: technically possible, but definitely disadvantageous. AI has become the game changer that transforms a often frustrating and disorganized search into a strategic and targeted process.

The difference is substantial: instead of sending the same resume to dozens of companies hoping for a response, AI allows you to personalize each application, anticipate market moves, and always present yourself in the most effective way possible. One of the most common problems in job

searching is the "universal resume," that document we use for all applications hoping it will work. AI solves this problem at its root.

Tools like Resume.io and Jobscan work like expert consultants: they analyze the job posting you're interested in, compare your resume with what the company is looking for, and suggest exactly which keywords to add and which skills to highlight. The result? A CV that speaks the company's language and easily passes automatic selection systems (called ATS), which filter applications before a human even sees them.(61)

LinkedIn has made a qualitative leap by introducing features that seem straight out of a science fiction movie. Job Match tells you not only if you're suitable for a position, but how competitive you are compared to other candidates. If you have a premium subscription, you even find out if you're a "Top applicant," information that can help you decide whether to invest time and energy in that specific application. But that's not all: LinkedIn's AI coaching offers a tailored learning path, drawing from a library of over 26,000 courses. You can create personalized interview scenarios and receive immediate feedback on how you speak, the language you use, and your voice setup.(62)

Preparation for interviews is perhaps the area where AI shines the most. Interviewer AI and ChatGPT become your personal coaches and are available whenever you want.

These tools don't just ask you standard questions. They analyze your tone of voice, posture, body language, and give you specific suggestions for improvement. It's like having a professional coach who prepares you for any situation, from behavioral questions to the most complex technical ones. The most interesting aspect? You can make as many mistakes as you want without consequences. It's a safe environment where you can experiment

with different answers and approaches until you find the one that works best for you.

If you think that sending applications is a boring and repetitive job, AI agrees with you. Tools like LazyApply, JobCopilot, and BulkApply automate this process, allowing you to apply for dozens of positions a day. But it's not just a matter of quantity: these tools personalize each application, filter offers according to your criteria, and send applications at the best times to maximize visibility. It's pure efficiency applied to job searching.(63)

Instead of manually checking job sites every day, you can configure ChatGPT as a research assistant that continuously monitors opportunities for you. This proactive approach allows you to: always be among the first to see new positions; apply promptly before too much competition arises; maintain consistency in your search even when you're busy with other projects.

The Ministry of Labor has launched App LI, a virtual assistant specifically designed for young Italians between 18 and 35 years old. It's not just another chatbot: it's a complete platform that creates resumes, simulates interviews, explores training opportunities, and offers personalized guidance.(64)

It's a sign that even institutions have understood that AI is no longer the future, but the present of job searching.

The most sophisticated aspect of AI in recruitment is its ability to predict success in specific positions. Modern algorithms don't just look at technical skills, but analyze cultural compatibility, behavioral patterns, and probabilities of long-term success.

This means that AI can: suggest career paths you had never considered; identify the skills you lack and how to develop them; find hidden opportunities that perfectly align with your profile.

As with any powerful tool, AI must be used intelligently. The main risk is losing authenticity. Automation must amplify your personality, not replace it. The secret lies in balancing the efficiency of AI with the genuine building of professional relationships. Algorithms can get you to the interview, but it's up to you to convince people.

OpenAI is developing a platform that promises to combine LinkedIn's features with AI certification systems and personalized tutoring. The goal? To create an integrated ecosystem where training, certification, and job placement merge into a single experience.(65)

In 2025, success in job searching no longer depends only on your traditional skills, but on your ability to develop "collaborative intelligence," that is, the ability to work effectively with AI. This is not a complex technical skill to acquire: it is rather the art of knowing when to rely on technology and when to rely on your unique human qualities. AI is therefore confirmed not as a competitor, but as a strategic partner, indispensable for anyone who wants to successfully navigate the modern job market. The question is not whether to use it, but how to use it best to achieve your professional goals.

The Behavior of Young People Facing AI

Imagine entering any high school classroom in Italy. What you see might surprise you: almost 8 out of 10 students are using AI to do homework, study, or simply have fun. Yet, many of their teachers don't even notice.

The numbers speak clearly: we are facing a true digital revolution driven by young Italians. Consider that 77% of young people between 13 and 28 years old already use tools like ChatGPT, Copilot, or Gemini. It's not a passing trend, but an established reality: almost half of them use them at least once a week.(66)

At university, the situation is even more pronounced: over 8 out of 10 students regularly use these tools, whether they are attending a bachelor's, master's, or doctoral program. It's as if AI has become the new "study companion" for an entire generation.

But what exactly do they do with these tools? The answer is more varied than one might think:

At school and university, AI has become the digital tutoring par excellence. Young people use it to: clarify difficult concepts and explanations of complex terms; help with homework (the most frequent use); improve the structure of texts; solve complex problems.

One of the most surprising aspects is the use of artificial intelligence as emotional support. More and more young people turn to ChatGPT not only for school matters but also for personal problems. Questions like "How can I leave my boyfriend without hurting him?" or "How do I explain to my parents that they listen to me but don't understand me?" are becoming common.

Almost 1 in 2 young people between 15 and 24 years old also use it as a "virtual psychologist," and 1 in 4 does so at least once a week. It's as if they have found a digital confidant always available, 24 hours a day.

Contrary to what one might think, Italian young people are not naive technology users. Their attitude can be defined as "cautiously optimistic." On one hand, they recognize the advantages: 3 out of 4 say it has improved their work-life balance, and over 7 out of 10 think it has improved the quality of their activities.

On the other hand, however, they are well aware of the risks. Over 4 out of 10 adolescents fear its dangers, and the main concerns are: the risk that it will cause unemployment (67%), the fear of developing a dependence; the concern of finding jobs that are not exposed to automation (60%).(67)

Perhaps the most surprising fact: while only 36% of teachers believe their students use it, in reality, only 16% of students do not use it at all. It's as if a double life is being led: on one hand, young people who massively use these tools, and on the other, adults who don't notice.

The problem is that only 1 school out of 4 has clear rules on the use of AI, while in half of the institutions there are no rules. Where use is permitted and regulated, adoption is much more aware and responsible.

Not everything is rosy. One of the most concerning aspects is the incorrect use in the academic field: almost 3 out of 10 university students have submitted papers entirely written by AI without even rereading them. It's like copying homework from a classmate, but in a digital version.

The difference between generations is evident. Young people between 20 and 34 years old surf the Internet in 93.5% of cases, while those over 65 stop at 53.3%. But it's not just a matter of numbers: while adults use technology in an "instrumental" way (as a tool to do something), young people live in "continuous symbiosis" with the digital.

Here, another interesting paradox emerges: despite growing up with technology, only 1 in 4 young people feels truly prepared. It's as if they know how to use their smartphone perfectly but don't really know how it works.

At the same time, 6 out of 10 young Europeans would like their teachers to know more, and over half would like their parents to learn how to use it. It's a generation that asks for training and guidance, not bans.(68)

Italian young people are showing us what the future will be like: a generation that massively adopts new technologies but maintains a critical spirit about the risks. They are not "naive digital natives," but aware users who ask for clear rules and adequate training.

The challenge for us adults is clear: we must bridge the gap between the spontaneous adoption by young people and systematic training. It's not about prohibiting or limiting, but about educating on the responsible use of tools that will be fundamental for their professional future.

AI is no longer a technology of the future: it is the present of our young people. And they are teaching us this, day after day, with their curiosity, pragmatism, and surprising digital wisdom.

GAI: A Revolution That Is Already Happening

We live in an extraordinary historical moment. GAI is no longer science fiction or a technology of the future: it is here, now, and it is transforming our way of working, studying, and living.

The question is no longer whether it will change our lives, but how we can guide this change intelligently and humanely.

Too often the debate is polarized between catastrophists and techno-optimists. This study instead proposes a balanced vision that recognizes both the current limits of GAI (such as "hallucinations" and algorithmic biases) and its extraordinary potential.

The key to success does not lie in resisting change, but in guiding it with wisdom. This means training aware, critical, and creative digital citizens, capable of making the most of these new tools without losing their humanity.

In the world of education, it represents an epochal transformation. On one hand, it offers incredible opportunities: personalized learning, accessibility for all, immediate support. On the other, it entails real risks such as cognitive dependence and the loss of fundamental critical skills.

Imagine a student who always uses AI to write their essays. They might get better grades in the short term, but what happens when they have to write on their own? This is "cognitive debt": delegating too many mental functions to machines can weaken our natural abilities.

The future of education will depend on the ability of institutions to guide this technological transition while preserving the fundamental values of authentic learning.

The school can no longer be just a place where information is transmitted, which can be found everywhere. It must become a gym where critical thinking, creativity, and the ability to discern between true and false information are trained. In other words, it must train digital citizens capable of navigating the AI era.

One of the most widespread fears concerns work: will AI steal our jobs? The answer is more complex than a simple yes or no. GAI does not represent the end of human work, but rather its profound metamorphosis.

Think about history: the invention of the computer did not eliminate office work, it transformed it. Similarly, artificial intelligence will profoundly change many professions, eliminate some, and create new ones.

The real challenge is not to blindly resist change, but to govern it wisely to create a future of work that is simultaneously productive, inclusive, and respectful of human dignity.

This requires a proactive approach: investing in continuous training, developing the right skills, and always keeping human value central in an increasingly automated world.

In a rapidly changing world, a fundamental meta-skill emerges: Learning Agility. It is not simply the ability to learn new things, but the ability to unlearn, adapt, and continuously reinvent oneself.

As the document says: "The only certainty is that strategies applied in the past may no longer work in the current or future context." Learning Agility is what helps us navigate this uncertainty, representing the bridge between current and future skills.

While machines become increasingly skilled at specific tasks, humans maintain a monopoly on qualities such as genuine empathy, original creativity, ethical thinking, and the ability to build authentic relationships.

The so-called "Human Skills"—critical thinking, emotional intelligence, creativity, communication skills—are not a passing fad. They are our passport to the future, what makes us irreplaceable in an increasingly technological world.

The document reminds us of a fundamental principle: the adoption of AI must be done in an aware, ethical, and pedagogically effective manner, always keeping the dignity and unique potential of human intelligence at the center.

It is not just a technological issue, but a cultural and social transformation that requires deep reflection on our values and priorities.

The ongoing transformation requires a collective and coordinated effort among institutions, companies, educators, and citizens. No one can do it alone: a shared vision and a collaborative approach are needed.

The analysis concludes with a message of hope and responsibility: we must not fear technological progress, but embrace it consciously, bringing with us that baggage of humanity that makes us irreplaceable.

AI is not the enemy of humanity, but can become its most powerful ally—if we know how to use it wisely. Human Skills are our passport to the future, a future where technology and humanity dance together towards new possibilities.

The challenge is ambitious but exciting: to build a world where AI enhances our human abilities instead of replacing them, where technology serves humans and not vice versa. It is a responsibility that concerns all of us, now more than ever

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Massimo Tamiatti

I have always been involved in the study and dissemination of topics related to new technologies, new jobs, and new skills. I do this in a completely new and different way compared to traditional research approaches because, in addition to consulting traditional sources, I consult sources from major strategic consulting firms, which do not have a static but dynamic vision of reality, as they focus on the future. I systematically use the web to search for the most up-to-date content, perhaps through webinars with privileged witnesses on the subject of the investigation or through some important influencer specialized in the topic being addressed. Obviously, today, I use Generative Artificial Intelligence tools. I do not neglect the present; I try to interpret the signals that we have before our eyes, which we are often used to looking at and not seeing, and which suggest what could happen. I do not neglect the past, that is, history, but in reality, many disciplines are mixed: economics, statistics, sociology, psychology, anthropology, and above all, I use imagination anchored to the facts that happen every day in the world. I consider numbers very important, but they are not everything; at the center, there must always be a particular attention to the privileged witnesses of the things that happen and their personal stories. Frontiere does not have the gift of foresight, but our team can make hypotheses, and among these hypotheses, I have realized that it is very likely to encounter the future. Spreading the culture of anticipation helps people understand what is happening in the world, especially in the world of work, helps them prepare, elaborating strategies, and organizing themselves to make very important conscious and correct choices for the effect they will have on their lives.

Institutional Profile

I was Chief Research Officer at the Piemonte Lavoro Agency, where I coordinated research groups focused on labor policies and vocational training until June 30, 2023. Since July 1, I have been part of the staff of the "Riccardo Revelli Laboratory" as an honorary member. I am an expert in public employment services and currently teach in the Human Resources Master's program at the University of Turin. I am a member of the Scientific Committee of ISMEL and serve on the Scientific Committee of Polis policy, an Academy of Advanced Training. Since 2022, I have been the founder and director of the online scientific dissemination site frontieretecnologialavoro.com and a member of the Association of Italian Futurists founded by Roberto Poli. I specialize in the use of forecasting techniques applied to local labor markets, collaborating with the start-up Skopia, which focuses on futures studies and anticipation to help organizations develop forward-looking strategies in support of complex decision-making under high uncertainty. I hold a degree in Literature and Philosophy with theses in Contemporary History and Political Science, both completed at the University of Turin, and I am the author of numerous publications related to the labor market, particularly on new labor market scenarios, emerging professions, and new skills.

The following collaborated with me on this project: Gabriele Lamberti, Benjamin Dafku, Ivan and Federico Giacobino e Fabio Prettico.