Reprogramming Europe's Higher Education: **How Generative AI Can Spark Creativity, Problem-Solving, and Critical-Thinking**

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REPROGRAMMING EUROPE'S HIGHER EDUCATION: HOW GENERATIVE AI CAN SPARK CREATIVITY, PROBLEM-SOLVING, AND CRITICAL-THINKING

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1 Introduction

Throughout human history, and especially in the modern era when many nations prioritise the knowledge economy, higher education has become a central driver of economic progress. It serves not only as a foundation for economic growth but also contributes to socio-political stability and overall social well-being (Trinh, 2023). From a liberal perspective, higher education is valued for advancing personal emancipation, enabling social mobility, and reinforcing democratic participation (Li et al., 2024). It also plays a vital role in shaping human capital by equipping individuals with the skills and competencies needed to thrive in a competitive and rapidly changing world, which is a key priority highlighted in several European Union (EU) strategies (European Commission, 2025).

In recent years, however, higher education has been significantly disrupted by generative artificial intelligence (AI), which challenges traditional educational models and practices. This transformation began with the introduction of ChatGPT in November 2022, which quickly gained widespread popularity for its advanced natural language processing capabilities. It was soon followed by other generative AI tools such as Microsoft Copilot, Google Gemini, and cost-effective reasoning models like Deepseek, making AI technologies increasingly accessible to higher education students (Lee et al., 2024). As a result, generative AI has become deeply embedded in academic environments, influencing how students learn, how teachers design instruction, and how knowledge is produced and assessed.

At the same time, the labour market has begun to experience significant changes brought about by generative AI. Some occupations are becoming obsolete through automation and displacement, others are being reshaped through transformation, and many are being enhanced through efficiency gains. New professions are also emerging in AI-driven sectors, creating both opportunities and uncertainty. This evolution poses a major challenge for European higher education systems, which must now adapt to harness the potential of generative AI and prepare a qualified, future-ready workforce capable of thriving in a digital European society. While concerns about job loss and automation remain prevalent, generative AI is also driving innovation, expanding productivity, and redefining professional roles (Ravšelj et al., 2024).

These developments are reflected in shifting student perceptions. More than half of graduates in advanced economies express concern about AI's impact on their employment prospects, while many remain optimistic, believing that their own career paths will not be directly threatened (Cengage Group, 2024). According to global projections, by 2030 approximately one-quarter of jobs will be affected by structural transformations linked to technological change, including the widespread use of generative AI (World Economic Forum, 2025). Furthermore, an increasing number of workers of workers already use such technologies in their daily work, signalling a profound shift in the nature of employment and required skill sets (Singla et al., 2025). To respond effectively, higher education institutions must redefine their strategic priorities, integrate AI-related competencies into curricula, and promote next-generation learning aligned with the evolving digital economy (Ravšelj et al., 2025).

This publication examines the role of generative AI in higher education within the EU, using ChatGPT as an illustrative example, with particular attention to its implications for the future labour market. The EU experience draws on survey data collected from fifteen member states: Austria, Bulgaria, Croatia, Cyprus, Estonia, Greece, Hungary, Italy, Latvia, Luxembourg, Poland, Portugal, Romania, Slovenia, and Spain. The data were collected in two waves, the first from October 2023 to February 2024 (7,305 students) and the second from October 2024 to February 2025 (6,478 students). The collected evidence reflects the perspectives of European higher education students, a group generally more supportive of liberal values than less-educated populations (Scott, 2022), thereby offering valuable insights into liberal perspectives on generative AI. Following this introduction, the paper first explores how generative AI aligns with liberal educational ideals, then examines its potential influence on the European labour market, and concludes with key reflections.

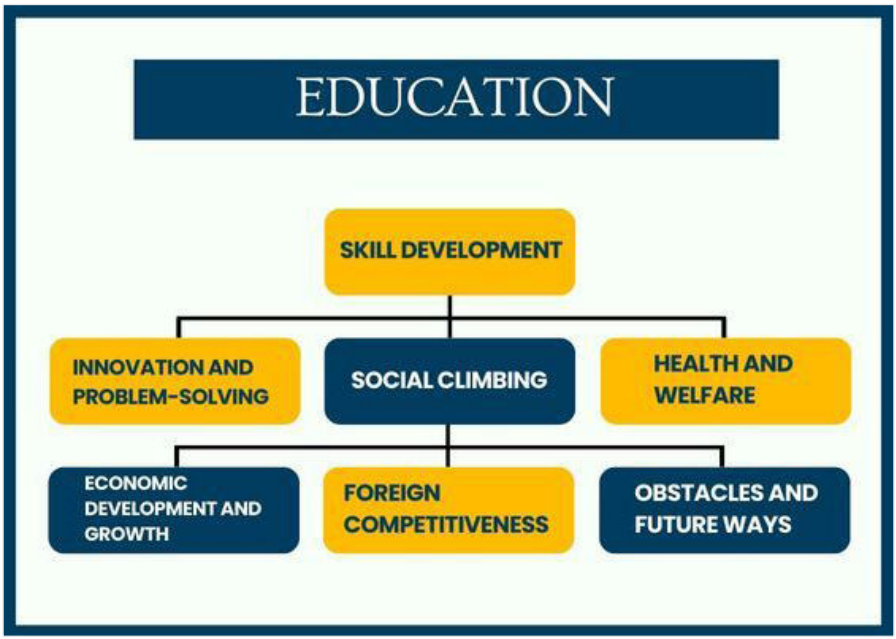
2 Generative Artificial Intelligence and Higher Education

2.1 Role of Higher Education in Shaping Human Capital

Over the course of human development, and especially in the modern age where many nations focus on building a knowledge-based economy, higher education has become a fundamental driver of economic progress. It not only underpins economic growth but also contributes significantly to socio-political stability and the improvement of overall quality of life (Trinh, 2023). In addition to its economic and social functions, the liberal perspective highlights the importance of higher education in fostering personal freedom, promoting social mobility, and reinforcing democratic engagement (Li et al., 2024). Furthermore, higher education is essential for developing human capital by equipping individuals with the competencies and knowledge required to succeed in an increasingly competitive global environment, a goal that aligns with the priorities of the EU (European Commission, 2025).

Higher education contributes to human capital through several interrelated channels that collectively develop individuals' knowledge, skills, and capacities, enhancing both personal and societal progress (Figure 1). Through Skill Development, higher education equips students with specialised and transferable competencies that increase productivity, employability, and adaptability in a changing global economy. It also promotes Innovation and Problem-Solving by fostering research, creativity, and critical thinking, which drive technological advancement and social transformation. In addition, higher education supports Social Climbing by expanding opportunities for upward mobility, reducing inequality, and strengthening civic engagement. The benefits of higher education extend beyond the economy, as reflected in Health and Welfare, where educated individuals make informed choices that improve both personal and community well-being. These outcomes collectively underpin Economic Development and Growth, as higher education stimulates productivity, entrepreneurship, and innovation, contributing to long-term national prosperity. Furthermore, in an increasingly interconnected world, Foreign Competitiveness highlights the role of higher education in preparing globally competent graduates capable of participating effectively in international labour markets. Despite its transformative potential, Obstacles and Future Ways remind us that challenges such as unequal access, limited funding, and institutional constraints must be addressed to fully realise the contribution of higher education to human capital formation (Kaur, 2023).

Figure 1: Key dimensions of the role of higher education in human capital formation



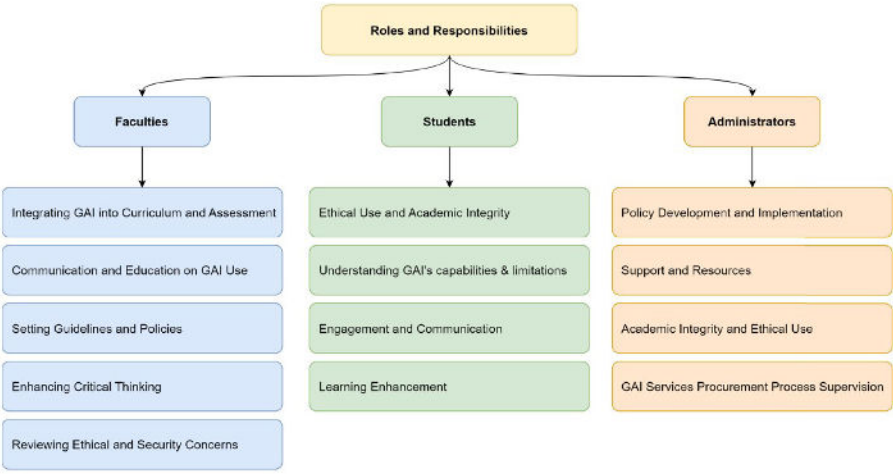
Source: Kaur, 2023.

However, generative AI has profoundly transformed higher education while simultaneously reshaping the development of human capital. It has introduced a wide range of opportunities and challenges that are redefining the foundations of traditional educational systems and practices. This transformative shift began with the public release of ChatGPT by OpenAI in November 2022, marking a pivotal moment in how various stakeholders such as faculty members, students, and administrators interact with digital learning tools. Since then, the rapid proliferation of generative AI chatbots and applications has further accelerated this evolution, influencing not only teaching and learning processes but also research, assessment, and the broader mission of higher education in preparing future-ready graduates (Lee et al., 2024). As higher education institutions continue to adapt to this technological disruption, the roles and responsibilities of key stakeholders have become increasingly interconnected. Faculty members are expected to integrate generative AI thoughtfully into curricula and assessment, students must engage with it ethically and critically, while administrators are tasked with ensuring responsible governance and institutional readiness.

Each stakeholder thus has evolving responsibilities that collectively contribute to the ethical, effective, and sustainable integration of generative AI in higher education (Jin et al., 2025) (Figure 2):

- **Faculty members** play a central role in the integration of generative AI into teaching, learning, and assessment. Their responsibilities include embedding generative AI tools within curricula and designing pedagogical approaches that incorporate these tools to support student learning and engagement. Faculty members also contribute to establishing and communicating ethical and operational parameters for the use of generative AI in academic contexts, so that expectations regarding appropriate use are understood by students. They also help ensure that its adoption remains consistent with institutional values, academic standards, and principles of fairness and transparency.
- **Students** are responsible for using generative AI tools in ways that align with academic integrity and ethical conduct. This includes acknowledging when generative AI has been used, citing AI-assisted contributions where required, and being transparent about how such tools were applied in learning and assessment activities. Students are also responsible for developing an informed understanding of the capabilities, limitations, and potential biases of generative AI, and for applying critical judgement when evaluating AI-generated outputs. Their role may also include participation in academic activities that examine the ethical, social, and educational implications of generative AI.
- **Administrators** hold responsibility for establishing institutional conditions that enable the ethical and effective integration of generative AI across the university. This includes developing, updating, and implementing policies and procedures that govern the use of generative AI and support compliance with relevant legal, ethical, and academic standards. Administrators are also responsible for allocating resources and supporting capacity-building through training and technical support for faculty, staff, and students. In addition, they oversee governance processes related to the selection, procurement, evaluation, and implementation of generative AI systems, with attention to institutional objectives and associated ethical, financial, and operational risks.

Figure 2: Roles and responsibilities of higher education stakeholders in adopting generative AI



Source: Jin et al., 2025.

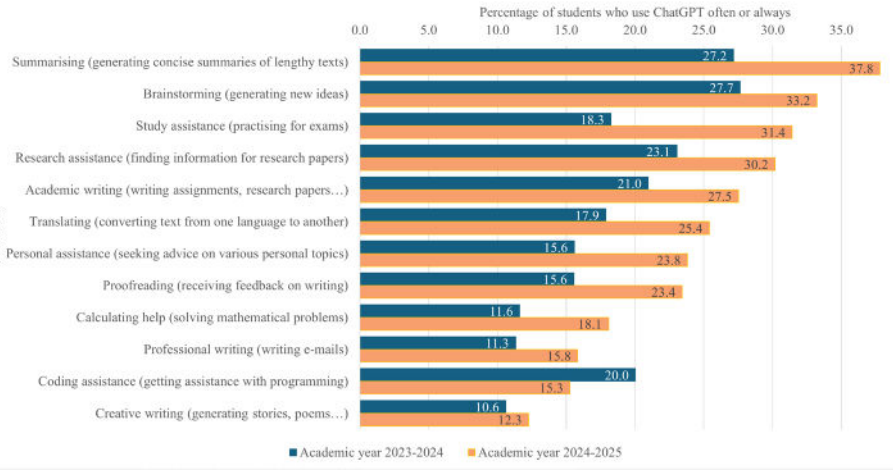
Higher education remains a cornerstone of human capital formation, serving as a catalyst for economic progress and a foundation for social advancement by cultivating knowledge, skills, and values that prepare individuals to contribute meaningfully to an increasingly complex and interconnected world. As generative AI reshapes this landscape, traditional mechanisms of human capital development such as skill formation, innovation, and social mobility are being redefined through the integration of intelligent technologies. Generative AI tools enhance higher education by producing dynamic, tailored content that supports research, enriches learning experiences, and fosters personalised and interactive engagement. Their capacity to process vast datasets enables in-depth exploration of topics, comprehensive knowledge coverage, and scalable application across institutions of varying sizes. While these technologies offer significant potential for advancing pedagogical innovation, creativity, and global collaboration, they also raise critical challenges concerning ethics, equity, and institutional governance. The future of higher education will depend on its ability to balance technological innovation with its enduring mission to promote critical thinking, ethical reasoning, and social responsibility, thereby sustaining its transformative role in driving economic growth, democratic values, and inclusive human development in the age of AI (Chan & Colloton, 2024).

2.2 ChatGPT Adoption in Higher Education in the European Union

Generative AI is becoming an integral component of the higher education landscape across the EU, reshaping how students learn, interact with content, and approach academic tasks. Its presence and use are expanding rapidly, supported by both institutional initiatives and individual adoption. Increasingly, students are integrating AI-driven chatbots such as ChatGPT into their everyday study routines, using them as tools for quick answers, learning companions for brainstorming, writing, and developing conceptual understanding. Recent findings indicate a sharp and continuous rise in adoption rates. During the 2023/2024 academic year, 74.9% of students reported using ChatGPT, while in 2024/2025 this proportion increased to 95.6%. This significant growth highlights the rapid mainstream integration of generative AI within higher education learning environments and reflects its growing normalisation in academic contexts. Students find these chatbots particularly valuable because they provide immediate, contextually relevant, and linguistically adaptive responses to a wide range of questions and tasks, thereby enhancing both efficiency and engagement in the learning process (Ravšelj et al., 2025).

Recent findings indicate a clear and consistent growth in the use of ChatGPT for a wide range of academic and personal purposes within the EU higher education context (Figure 3). Students most frequently use generative AI for tasks that support comprehension and creativity, such as summarising texts and brainstorming new ideas, suggesting that ChatGPT has become a valuable tool for processing information and stimulating original thought. Its use has also expanded notably in activities that require critical thinking and structured communication, including study support, research assistance, and academic writing, implying that students increasingly rely on AI not just for quick answers but as a partner in developing and refining complex assignments. Moreover, more students are turning to ChatGPT for tasks related to language, translation, and proofreading, demonstrating that AI tools are being adopted to improve clarity, accuracy, and linguistic expression in both native and foreign languages. Although less common, the growing use of ChatGPT for problem-solving, professional communication, programming, and creative writing reveals a gradual diversification of applications. Together, these patterns show how generative AI is moving from peripheral experimentation to a routine part of students' learning practices, enhancing both efficiency and engagement in higher education.

Figure 3: Adoption of generative AI in higher education in the EU



Source: Authors' elaboration based on the survey data.

The adoption of generative AI in EU higher education reflects both rapid technological integration and a significant pedagogical shift. Recent evidence shows that ChatGPT is reshaping academic practices by supporting personalised learning, enhancing access to knowledge, and fostering innovative teaching and assessment methods (Lee, 2023; Urban et al., 2024). Students and educators increasingly recognise ChatGPT as a versatile tool that facilitates summarising, problem-solving, and research support while also promoting critical thinking and creativity (Essien et al., 2024; Noy & Zhang, 2023). This transformation highlights the need for structured pedagogical strategies that encourage the responsible and effective use of AI tools. Initiatives such as peer-led technology roles and responsible AI workshops promote inclusivity and confidence among students, while introductory training for first-year learners and guidance on ethical and critical evaluation for advanced students help strengthen responsible AI use (Chan & Lee, 2023; Chiu et al., 2024). Integrating AI literacy into curricula and developing targeted instructional frameworks can further enhance digital competence and ensure that students engage with technology in reflective and meaningful ways (Liu & Pásztor, 2022; Javaid et al., 2023).

2.3 Impact of ChatGPT on Skills in the European Union

ChatGPT is reshaping the landscape of skills by transforming how individuals learn, communicate, and solve problems in both academic and professional contexts. It serves as a powerful tool for enhancing digital literacy, critical thinking, and creativity, enabling users to access, analyse, and generate complex information more efficiently while personalising the learning process. By automating repetitive and routine cognitive tasks, ChatGPT allows individuals to devote more time to higher-order thinking, innovation, and strategic decision-making, thus fostering deeper intellectual engagement. It also supports the development of communication and collaboration skills through interactive, adaptive feedback that encourages reflection and self-improvement.

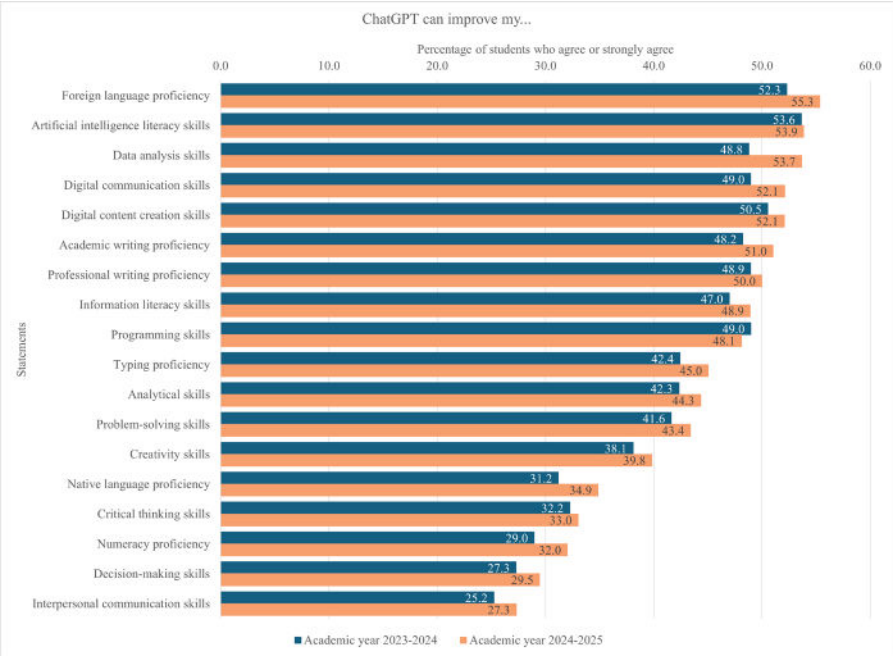
Moreover, ChatGPT's versatility enables learners to experiment with multiple perspectives, refine their reasoning, and simulate real-world problem-solving scenarios, contributing to the cultivation of analytical and creative capacities. However, its widespread adoption also brings challenges, including the risk of overreliance, the need for ethical reasoning, and the demand for continuous upskilling to use AI tools responsibly and effectively. Ultimately, ChatGPT acts as both a driver of productivity and a catalyst for rethinking the essential human skills required in the era of AI, prompting educators, students, and professionals alike to reconsider how learning and work can evolve in partnership with intelligent systems (Giordano et al., 2024).

Recent findings from higher education students in Europe show a clear and steady increase in the perceived impact of ChatGPT on a wide range of academic and personal skills (Figure 4). Students increasingly view ChatGPT as a supportive tool that enhances their ability to learn, communicate, and create, particularly in areas related to language and digital literacy.

The most notable improvements are seen in foreign language proficiency, digital communication, and content creation, reflecting the tool's growing use for writing, translation, and producing digital materials. Skills connected to analysis, problem-solving, and creativity also show gradual growth, suggesting that students are learning to use ChatGPT not just for information retrieval but for idea generation and reasoning as well. At the same time, moderate progress in academic and professional writing points to the integration of ChatGPT into everyday study practices. However, the perceived impact remains relatively modest in areas such as interpersonal communication, decision-making, and other socio-emotional or leadership-related competencies, indicating that students still see its main value in cognitive and technical rather than relational skill development.

Overall, the trend highlights ChatGPT's expanding role as a catalyst for developing linguistic, digital, and analytical skills, while its influence on higher-order social and emotional competencies continues to evolve more gradually.

Figure 4: Impact of ChatGPT on skills in the EU



Source: Authors' elaboration based on the survey data.

ChatGPT is increasingly recognised as a transformative force in reshaping the EU skills landscape, particularly within higher education. Its integration into teaching, learning, and research environments enhances how students and academics acquire, apply, and communicate knowledge across multiple domains. Recent evidence confirms that ChatGPT strengthens learning outcomes by providing an interactive, feedback-driven environment that promotes comprehension, written expression, and analytical reasoning (Lee, 2023; Urban et al., 2024; Essien et al., 2024). Students across the EU most frequently associate ChatGPT with improvements in foreign language proficiency, digital communication, and digital content creation skills, as it generates, translates, and refines text while supporting the gradual

development of writing and digital literacy. ChatGPT enhances writing fluency through real-time grammar correction, vocabulary expansion, and compositional feedback, contributing to stronger academic and professional writing performance (Noy & Zhang, 2023; Javaid et al., 2024). It also plays an important role in developing AI literacy, data analysis, and problem-solving skills, as its ability to organise, summarise, and interpret complex information supports users' analytical reasoning and capacity for knowledge synthesis (Menon & Shilpa, 2024; Chan & Hu, 2024). Interaction with ChatGPT enhances self-efficacy in addressing complex problems, and problem-based learning with AI fosters critical thinking and creativity (Liu & Pásztor, 2022; Urban et al., 2024).

However, the perceived influence of ChatGPT remains more limited in socio-emotional and interpersonal skill domains such as teamwork, empathy, and decision-making, which depend on emotional intelligence, contextual awareness, and human interaction that artificial intelligence cannot yet replicate effectively. While generative AI supports the enhancement of cognitive and technical abilities, it is less effective in cultivating relational and affective skills that underpin collaboration and leadership (Lim et al., 2023; Dwivedi et al., 2023). Overall, ChatGPT functions as a catalyst for cognitive and technical skill enhancement in the EU higher education context, accelerating the acquisition of linguistic, analytical, and digital competencies that are central to 21st-century learning. At the same time, it highlights the continuing importance of creativity, ethical reasoning, and critical reflection. As higher education institutions across the EU continue to integrate generative AI into curricula and academic practices, the main challenge will be to ensure that technological advancement supports holistic and sustainable skill development that complements the human dimensions of learning.

3 Generative Artificial Intelligence and Changing Labour Market

3.1 Impact of Generative Artificial Intelligence on Skills and Tasks

Generative AI is expected to profoundly transform the structure of work, making it increasingly important to understand the specific changes taking place within workplaces. Beyond automation, AI technologies are reshaping how tasks are performed, how decisions are made, and how human capabilities interact with intelligent systems. As generative AI becomes embedded in daily work processes, the boundary between human and machine contributions is becoming more fluid, fostering new forms of collaboration and knowledge creation.

To fully harness AI's potential, it is important to systematically analyse the workforce to understand how AI affects individual jobs by breaking them down into distinct tasks and underlying skills. This approach helps clarify which tasks can be automated, which can be augmented through AI support, and which remain uniquely human due to their reliance on creativity, critical thinking, empathy, or ethical reasoning.

The shift toward AI-enabled work redesign also calls for a reconsideration of what constitutes "work," as well as related concepts such as "jobs," "tasks," and "skills," all of which are being redefined by rapid technological progress. To better understand the evolving nature of human–AI collaboration, it is useful to distinguish among these four interrelated concepts, each representing a different level of analysis and offering insight into how generative AI is reshaping roles, responsibilities, and required competencies (Deloitte AI Institute, 2023):

- **Work** (e.g., achieving sales targets, enhancing user experience, increasing customer satisfaction) refers to the outcomes accomplished through the combined use of human abilities and technological tools that support these efforts. The desired results, which reflect strategic goals or societal needs, have always been defined by humans, and this fundamental aspect of work remains unchanged.
- **Jobs** (e.g., representative, front-end developer, account manager) have traditionally served as the structure through which human effort is organised to achieve specific outcomes. Although concerns are growing about potential job losses as AI automates certain functions, this view

overlooks two key points. First, tasks are distinct from jobs, and second, understanding how jobs evolve in the age of AI requires focusing on the skills that constitute them.

- **Tasks** (e.g., identifying new sales channels, testing software across different browsers, developing targeted product offerings) are concrete actions undertaken to accomplish work-related objectives. They have long been recognised as the essential building blocks of jobs, requiring a combination of skills and tools to achieve defined results. AI has the potential to automate some tasks entirely, simplify others, or enhance their efficiency, thereby enabling individuals to focus on higher-value or more creative activities.
- **Skills** (e.g., problem-solving, proficiency in HTML, data analysis) make it possible to perform the tasks necessary to achieve desired work outcomes. Both humans and AI systems possess skill sets that contribute to accomplishing these outcomes, although in different ways. Understanding the composition and application of skills is crucial for shaping how work evolves in an AI-driven environment and for ensuring that human expertise continues to play a central role in future work dynamics.

Generative AI is transforming the modern workforce and labour market by redefining how tasks are executed, how skills are applied, and how humans interact with technology (Deloitte AI Institute, 2023). Yet, the relationship between people and AI remains complex. In many contexts, collaboration between humans and intelligent systems enhances efficiency and improves individual performance, but it does not always surpass what either could achieve alone. The success of this partnership depends largely on the nature of the task and the unique strengths each side contributes. While creative and exploratory work benefits most from the complementary abilities of humans and AI, decision-oriented tasks often encounter challenges related to trust, coordination, and accountability. Achieving genuine synergy and sustained productivity gains requires thoughtful task design in which humans and AI contribute according to their comparative advantages, supported by systems that foster appropriate trust and evaluate success across multiple dimensions such as accuracy, quality, efficiency, and ethical integrity (Vaccaro et al., 2024). This evolving dynamic can be understood through four key categories that illustrate how AI is reshaping responsibilities across the workforce, from full automation to the emergence of new forms of human expertise (Deloitte AI Institute, 2023) (Table 1):

Table 1: Categories of types of AI impact on human skills and tasks

Category	Description	Examples	Representative Skills / Tasks
Automated tasks: Machines do best	Fully executed by AI systems with minimal human input. Focus on speed, accuracy, and consistency through predefined algorithms and automation.	AI generates reports, translations, or forecasts; automates data sorting and summaries.	Machine-only tasks: text and image generation, categorization, translation, simple design, trend detection.
Augmented skills: Humans with machines do best	AI enhances human efficiency, analysis, and creativity through collaboration between human intuition and AI computation.	Artists and researchers use AI for ideation, data analysis, and decision support.	Human–AI collaboration: creativity, complex problem solving, visualization, strategic planning, predictive analytics.
New skills: Humans need	As AI reshapes work, humans must learn to manage, evaluate, and integrate AI ethically and effectively.	Professionals oversee AI workflows and ensure ethical, societal, and organisational alignment.	Emerging competencies: AI ethics and governance, system supervision, evaluation, customisation.
Limited-impact tasks: Humans do best	Require empathy, moral reasoning, and contextual judgment beyond AI's capacity.	Leadership, counselling, and ethical decision-making in social or sensitive contexts.	Human-exclusive skills: persuasion, negotiation, empathy, integrity, motivation, physical and creative dexterity.

Source: Deloitte AI Institute, 2023.

- **Automated tasks: Machines do best:** This category includes activities that are fully executed by AI systems with little or no human involvement. These tasks rely on algorithms and automation to ensure speed, precision, and consistency. Examples include generating standardised reports, customer service responses, or personalised content based on data-driven insights. Representative skills in this category are machine-exclusive, such as image and text generation, data sorting and categorisation, routine forecasting, language translation, simple graphic design, and pattern or trend detection.
- **Augmented skills: Humans with machines do best:** This category refers to tasks where human performance is enhanced through collaboration with AI tools. AI supports creativity, analytical reasoning, and problem solving by processing complex data and generating insights that inform better decisions. Artists, researchers, and analysts, for example, use AI for inspiration and data interpretation. Skills in this category combine human intuition with AI computation, including creativity, analytical reasoning, data visualization, strategic planning, predictive analytics, and rapid prototyping.
- **New skills: Humans need:** This category focuses on the emerging competencies required to manage and integrate AI into professional environments. As AI continues to reshape work, humans must develop skills for effective collaboration, ethical oversight, and system supervision. Professionals are increasingly expected to manage AI workflows, ensure ethical compliance, and design AI applications that align with organisational and societal values. Key skills include AI ethics and governance, human–AI task coordination, AI system supervision, and output evaluation and customisation.
- **Limited impact tasks: Humans do best:** This category encompasses activities that depend on empathy, moral reasoning, and complex judgment that AI cannot replicate. These tasks rely heavily on emotional intelligence and contextual understanding. Examples include leadership, counselling, and ethical decision making, all of which require human sensitivity and ethical discernment. The core skills in this category are persuasion, negotiation, motivational leadership, ethical reasoning, compassion, empathy, relationship building, and physical care tasks, emphasising the irreplaceable value of human connection and moral insight.

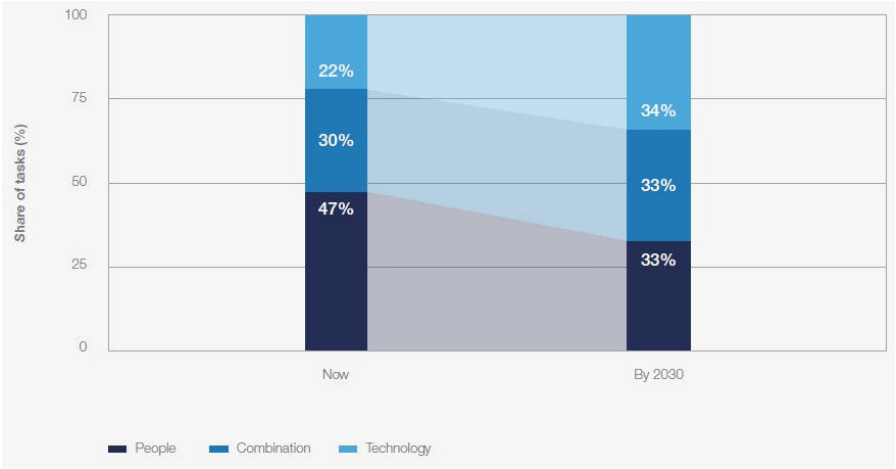
Understanding what humans do best and how generative AI can complement their abilities is essential for shaping the future of work. As shown in these four categories, generative AI influences tasks and skills in distinct but interconnected ways. Task automation involves activities that AI can perform efficiently, handling routine and data-driven processes with speed and precision.

Skill augmentation occurs when human creativity and analytical reasoning are strengthened through collaboration with AI tools. New skill creation reflects the growing need for individuals to develop abilities related to managing, supervising, and ethically integrating AI into different contexts. Limited-impact tasks highlight areas where uniquely human capacities such as empathy, moral judgment, and emotional intelligence continue to play a central role. Together, these categories form a useful framework for understanding the evolving relationship between human and artificial intelligence, and emphasise the need to balance technological progress with the preservation and development of human potential (Deloitte AI Institute, 2023).

The interaction between humans and AI is reshaping job roles and the overall distribution of work. Automation is expected to transform how people perform tasks, with the proportion of work carried out primarily by humans projected to decline as technology becomes increasingly adaptable and capable. According to recent evidence, approximately 47% of current tasks are performed mainly by humans, 22% by machines and algorithms, and 30% through collaboration between the two. By 2030, employers anticipate that these proportions will become nearly evenly distributed across the three approaches, reflecting a more balanced integration of people, technology, and human–machine collaboration (World Economic Forum, 2025) (Figure 5). This expected shift indicates that the future of work will be characterised not by the replacement of human labour, but by its reconfiguration in partnership with intelligent systems. As a result, success in this new landscape will depend increasingly on the ability to combine human judgment, creativity, and adaptability with the analytical power and efficiency of AI.

> Specifically, understanding what humans do best and how generative AI can complement their abilities is essential for shaping the future of work.

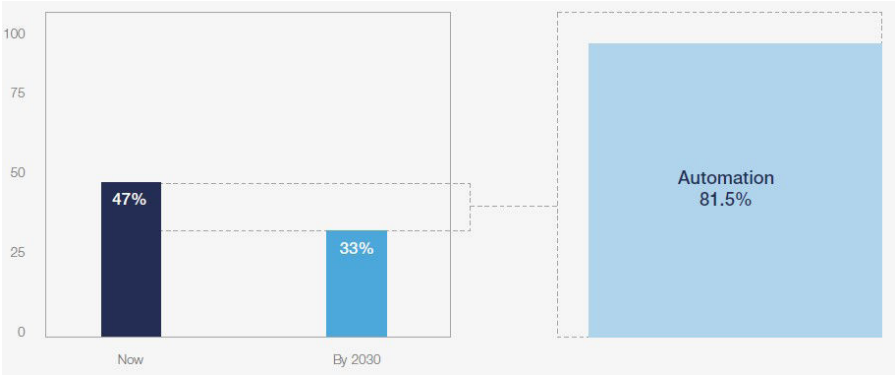
Figure 5: The shifting human–machine frontier between automation and augmentation (2025-2030)



Source: World Economic Forum, 2025.

The anticipated decline in the share of work tasks performed by humans is largely the result of accelerating automation and the increasing integration of artificial intelligence across industries. The projected decrease of approximately 15 percentage points in human-executed tasks between 2025 and 2030 reflects a structural shift in the nature of work, where repetitive and routine activities are increasingly delegated to intelligent systems and robotic processes. According to recent estimates, around 82% of this change will be driven by technological advancements in automation, particularly in data processing, administrative support, and manufacturing operations, while the remaining 18% will result from the growing expansion of human–machine collaboration that enhances, rather than replaces, human capabilities (World Economic Forum, 2025) (Figure 6). This transformation underscores the need for continuous reskilling and adaptation, as the balance between human and automated contributions becomes a defining characteristic of the evolving labour market in the EU.

Figure 6: Expected shift in the human share of work tasks in total firm output driven by automation versus augmentation (2025-2030)



Source: World Economic Forum, 2025.

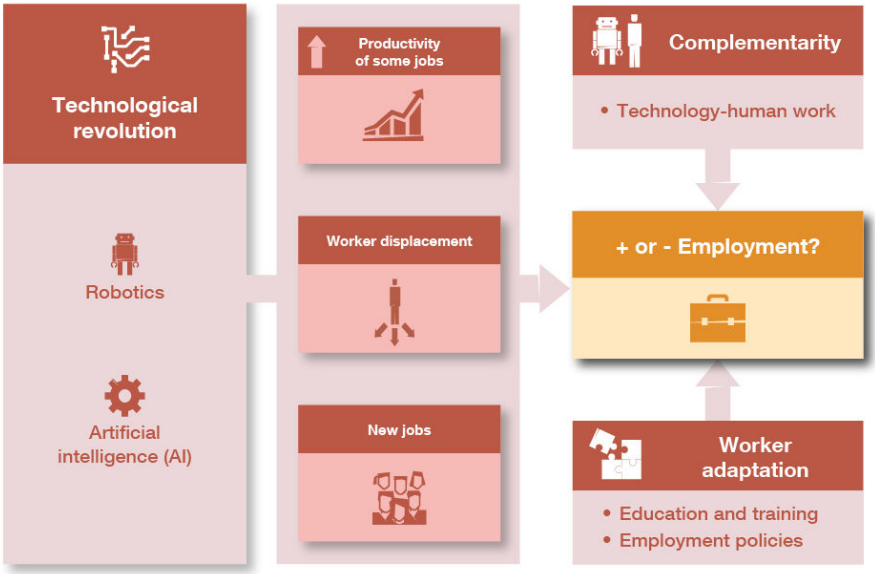
3.2 Impact of Generative Artificial Intelligence on Labour Market Dynamics

In recent years, the labour market has increasingly experienced the influence of generative AI, which can make certain occupations redundant through automation, reshape existing roles by transforming work processes, and boost efficiency and productivity through technological enhancement, while at the same time generating new employment opportunities in emerging sectors. Although some critics contend that AI will replace workers in routine positions, resulting in job losses, wage reductions, and greater income inequality, others argue that it can simultaneously foster the creation of high-skilled jobs, raise productivity, and stimulate economic growth (Guliyev, 2023).

A new technological revolution is unfolding, driven by rapid progress in robotics and AI. Machines and algorithms are now capable of performing tasks autonomously that were once carried out exclusively by humans, extending beyond both routine and specialised activities. Similar to earlier technological transformations, this shift has sparked concerns about potential job losses due to automation and whether the creation of new roles, along with productivity gains, will be sufficient to offset these effects. Overall, technologies such as AI have the potential to profoundly reshape multiple aspects of the labour market, influencing not only total employment levels but also the composition of job roles and working conditions, including wages, working hours, and job security, through three main mechanisms (Cazzaniga et al., 2024; Jimeno Serrano, 2024) (Figure 7):

- **Enhancing productivity** in certain occupations or among workers with specialised expertise, thereby increasing the demand for their labour. AI can improve efficiency in specific roles, making skilled workers more valuable. As productivity improves, additional investment may follow, leading to higher overall labour demand and helping to offset some of the income losses caused by automation.
- **Displacing workers** in particular roles through automation, leading to reduced demand for their labour. As AI takes over tasks once performed by humans, the need for workers in those roles declines, which can result in lower labour income and reduced demand for certain skill sets
- **Creating new jobs** that require advanced or specialised skills increases the demand for workers in these emerging fields. The integration of AI technologies generates new roles focused on designing, managing, and collaborating with AI systems, thereby fostering employment growth among individuals equipped with the necessary competencies.

Figure 7: Impact of technological change on the labour market



Source: Jimeno Serrano, 2024.

The technological revolution is reshaping the workforce by creating **complementarity** between technology and human labour, as machines take over routine tasks and allow workers to focus on higher-level, creative, and problem-solving activities. This evolving dynamic directly affects **employment**, since the balance between job displacement and the emergence of new, specialised roles will determine whether the overall impact on jobs is positive or negative. In order to ensure a positive outcome, **worker adaptation** is essential, requiring significant investment in education, reskilling, and upskilling initiatives, thereby allowing workers to transition into new roles and thrive alongside advanced technologies in the modern labour market (Jimeno Serrano, 2024).

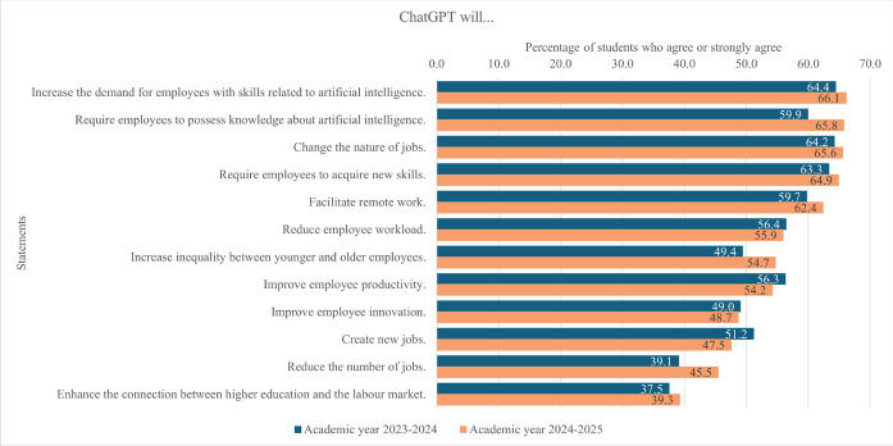
3.3 Impact of ChatGPT on the European Union Labour Market

The introduction of ChatGPT and other generative AI tools is beginning to reshape the labour market landscape across the EU by influencing job content, skill demands, and task allocations. These tools are enabling machines to take on more routine and data-intensive tasks previously performed by humans, prompting a shift whereby human work increasingly emphasises collaboration with AI, oversight, creativity and strategic thinking. At the same time, new occupational niches are emerging that centre on designing, managing and governing AI systems, thereby altering the traditional structure of jobs and required competencies. Although empirical evidence is still emerging, early studies suggest that generative AI is more likely to augment human work than to replace it entirely in the near term across Europe. For example, a European policy discussion paper concludes that generative AI will tend to transform tasks rather than immediately eliminate jobs, therefore advocating for up-skilling and implementing appropriate labour market policies to manage this transition (European Policy Centre, 2024).

Recent findings from higher education students in Europe indicate a growing perception of ChatGPT's transformative influence on the labour market (Figure 8). Students increasingly believe that the technology will raise the demand for AI-related skills and knowledge, reshape job roles, and require employees to continuously develop new competencies. At the same time, ChatGPT is seen as further enabling remote work and potentially intensifying inequalities between younger and older employees, reflecting the uneven effects of technological change across generations. Expectations about productivity and innovation have become more cautious, suggesting that initial optimism regarding efficiency gains is giving way to

a more balanced outlook. Students also express greater concern about job reductions and less confidence in new job creation, revealing ongoing uncertainty about automation's long-term employment effects. Nevertheless, perceptions of ChatGPT's potential to strengthen the connection between higher education and the labour market have slightly improved, indicating a modest increase in confidence that education systems are beginning to align with evolving labour market needs.

Figure 8: Impact of ChatGPT on the EU labour market.



Source: Authors' elaboration based on the survey data.

The impact of ChatGPT on the EU labour market reflects structural transformation rather than straightforward job replacement. Evidence suggests it reshapes work content and organisation by automating repetitive, information processing tasks while expanding analytical, creative, and supervisory roles, increasing the need for AI collaboration, adaptability, creativity, and digital literacy (Acemoglu et al., 2022; Zarifhonarvar, 2023). This aligns with EU skills policy analyses emphasising continuous reskilling and upskilling for a human centred digital transition (Cedefop, 2025). European students likewise see ChatGPT as increasing demand for AI related skills, expanding opportunities for remote work, and accelerating the need to acquire new competencies, while also highlighting risks of uneven adaptation and widening inequalities, including potential generational divides linked to differences in digital fluency and concerns about fairness and job security in AI driven environments. These perceptions mirror broader findings that AI diffusion can amplify skill mismatches and disparities where access to training and digital infrastructure is unequal (Komp Leukkunen, 2024), reinforcing the need for inclusive labour market strategies that ensure equitable access to AI education and proactive adaptation of vocational and higher education systems, consistent with expectations that generative AI will redesign tasks and create hybrid occupations requiring technical and socio cognitive abilities (Bonney et al., 2024).

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4 Liberal Education Dilemma in the Age of Generative Artificial Intelligence

4.1 Coexistence of Generative Artificial Intelligence and Liberal Education Principles

The spread of generative AI creates both opportunities and tensions for the philosophy of liberal higher education. This new technological landscape invites educators and scholars to reconsider the essence of learning, teaching, and human development in a world increasingly mediated by intelligent systems (Kalaitzidis, 2025). Generative AI expands the boundaries of intellectual access, enabling instant retrieval of information, dynamic dialogue, and personalised learning environments that can adapt to individual needs and interests. It promises to democratise knowledge and empower learners to explore complex problems beyond traditional disciplinary and institutional limits (Bobula, 2024). At the same time, it raises fundamental questions about the role of human judgment, authenticity, creativity, and moral responsibility in education (De Fine Licht, 2024). At the same time, it raises fundamental questions about the role of human judgment, authenticity, creativity, and moral responsibility in education (De Fine Licht, 2024). The challenge lies not merely in using AI effectively but in preserving the distinctively human capacities for reflection, freedom, and ethical reasoning that define liberal education. The coexistence of generative AI and liberal education therefore requires revisiting the classical principles that have guided humanistic learning for more than two centuries. These principles remain essential for ensuring that the integration of AI in higher education strengthens, rather than undermines, the humanistic and moral foundations upon which liberal education rests (Kurennoy, 2020):

- **Lifelong learning:** The liberal tradition views education as an endless process of self-development. Generative AI can support lifelong learning by providing immediate access to resources and individualised learning paths. However, the principle of lifelong learning assumes continuous human effort and reflection. True self-education involves transforming knowledge into understanding, which no AI can perform on behalf of the learner. Therefore, the coexistence of generative AI and liberal education depends on preserving human curiosity and intentionality as the driving forces of learning across a lifetime.
- **Academic freedom:** Academic freedom, understood as the liberty of teachers to research and teach and of students to learn freely, remains

fundamental in the AI age. Generative AI introduces new forms of dependency on algorithms and data sources that may influence intellectual autonomy. Protecting academic freedom now includes the right to choose and question AI tools, data, and methods. Universities must guarantee transparency and independence from commercial or political influence in the adoption of AI, ensuring that intellectual diversity and open inquiry continue to flourish.

- **Importance of practice and experience:** Liberal education emphasizes that learning must be rooted in experience and practice. Generative AI offers virtual laboratories, simulations, and creative environments that can enrich learning. Yet authentic education still requires interaction with the real world, where moral, emotional, and social dimensions emerge. Liberal education should cultivate AI experiential literacy—the capacity to use AI as an instrument for exploration while maintaining awareness of the embodied and social nature of human experience.
- **Critical thinking and civic competence:** Critical thinking, the ability to reason independently, is central to the liberal model. In the context of generative AI, this principle gains even greater importance. AI can produce convincing but inaccurate or biased information, which challenges students to develop intellectual vigilance and analytical judgment. Civic competence now includes understanding how AI systems affect democracy, communication, and collective decision-making. Liberal education must therefore integrate critical AI literacy as a foundation for active, responsible citisenship.
- **Competency development instead of knowledge accumulation:** Liberal education seeks to develop capacities for understanding, reasoning, and ethical action rather than the mere accumulation of facts. Generative AI accelerates the transition from knowledge storage to the cultivation of cognitive and moral competencies. It enables faster access to information, but the real educational task is to transform that information into wisdom. Educators must therefore focus on building interpretive, synthetic, and ethical reasoning skills that allow students to use AI responsibly and creatively.
- **Priority of general education over specialised education:** According to Humboldt, general education forms the basis for any specialised learning. In the age of generative AI, this principle acquires renewed importance. As AI increasingly performs specialised, technical tasks, human learners must focus on integrative, philosophical, and ethical understanding. General education nurtures the intellectual flexibility and cultural awareness required to adapt to the rapid transformations that AI brings to the world of work and knowledge.

> The coexistence of generative AI and liberal education represents not a contradiction but an evolving dialogue between technological innovation and humanistic tradition.

- **Learning to learn:** The principle of learning to learn defines education as the development of an individual's ability to educate themselves. Generative AI can facilitate this process by offering interactive and adaptive learning environments. However, it also risks promoting passive consumption of information. The essence of learning to learn lies in cultivating curiosity, critical evaluation, and intellectual independence. Students must learn to use AI tools reflectively, understanding both their power and their limitations, and to preserve the capacity for autonomous reasoning.
- **Self-directed learning effort:** For classical liberal thinkers, education is meaningful only when it stems from the learner's own effort. Generative AI can assist self-directed learners by providing immediate feedback and personalised guidance, but it cannot replace the inner work of comprehension and creation. Liberal education should encourage students to use AI as a means of extending their creative potential rather than as a shortcut to results. True learning still requires intellectual discipline and personal responsibility.
- **Political Neutrality:** Liberal education must remain free from political or ideological indoctrination. In the era of generative AI, this principle extends to digital and algorithmic neutrality. AI systems are built on human-designed data and values, and they may reproduce hidden biases or political preferences. Universities have a duty to teach students how to recognise these biases, to understand the ethical implications of AI technologies, and to make judgments based on critical reasoning rather than algorithmic persuasion. Neutrality in this sense is achieved through informed awareness, not detachment.

- **Interaction and Socratic dialogue:** The principle of interaction and Socratic dialogue reflects the conviction that learning is a process of shared reasoning. While AI can imitate conversation, genuine dialogue requires empathy, reflection, and the exchange of perspectives among human beings. Generative AI can support discussion by organising knowledge and stimulating debate, but it cannot replace the interpersonal dimension of learning. Liberal education should use AI to enhance, not eliminate, dialogue, creating a digital environment that sustains communication, inquiry, and moral understanding.

The coexistence of generative AI and liberal education represents not a contradiction but an evolving dialogue between technological innovation and humanistic tradition (Chan, 2024). Generative AI has the potential to amplify the liberal ideals of intellectual autonomy, lifelong learning, and civic responsibility, provided it is guided by reflective, ethical, and pedagogically grounded use (Bobula, 2024). The enduring mission of liberal education is to form individuals capable of understanding, judgment, and moral action, rather than merely adapting to technological change. By reaffirming its foundational principles of freedom, inquiry, experience, and responsibility, liberal education can transform the encounter with AI into an opportunity for renewal rather than displacement. In this way, generative AI becomes not a replacement for human intellect but a catalyst for cultivating the wisdom, empathy, and ethical discernment that sustain humanity's role at the centre of education (Wong et al., 2025).

"By reaffirming its foundational principles of freedom, inquiry, experience, and responsibility, liberal education can transform the encounter with AI into an opportunity for renewal rather than displacement.

4.2 Rethinking Liberal Education in the Age of Generative Artificial Intelligence

As generative AI reshapes the world at an unprecedented pace, it is increasingly evident that traditional adaptation strategies are no longer sufficient. This moment marks a profound shift, calling for a re-evaluation of the essential human skills and capabilities needed for the future. To navigate this transformation effectively, it is crucial to return to first principles and redefine the purpose of higher education in a world where humans and increasingly sophisticated generative AI collaborate as partners rather than compete as rivals (Bornet et al., 2025).

The emergence of generative AI is profoundly transforming the ways in which people live and work, yet higher education systems remain largely rooted in models established during the Industrial Revolution. In many classrooms today, students continue to memorize information that a generative AI system can instantly retrieve, practice skills that are rapidly becoming automated, and follow standardised curricula that overlook the uniquely human capacities most essential for the future. Instead of fostering critical thinking, existing structures often discourage inquiry and independent thought. This industrial-era model was well-suited to a time when information was scarce and humans performed most routine cognitive tasks. However, in an age when generative AI can access and analyse vast amounts of data within seconds, the priorities of higher education must undergo a profound transformation (Bornet et al., 2025).

This historical perspective provides a strong critique of today's career-oriented paradigm, where success is often defined by test scores and employment outcomes. Instead, higher education should aim to nurture in individuals a sustained motivation to learn, grow, and engage in reflective thinking that identifies and accelerates opportunities for development. Humanity is best served by seeking to understand the deeper purpose underlying human growth. Such understanding brings meaning to actions and fosters awareness of opportunities, such as enhanced collective progress enabled by generative AI. As generative AI increasingly assumes routine cognitive tasks and supports the creation of new possibilities, it becomes essential to return to a more holistic vision of higher education that emphasises human development rather than narrow vocational training. From this perspective, philosophy, psychology, and behavioural approaches to technology should occupy a more central position in shaping the priorities of higher education (Bornet et al., 2025).

As generative AI rapidly transforms the world, it has become evident that current higher education systems are struggling to keep pace. Preparing for

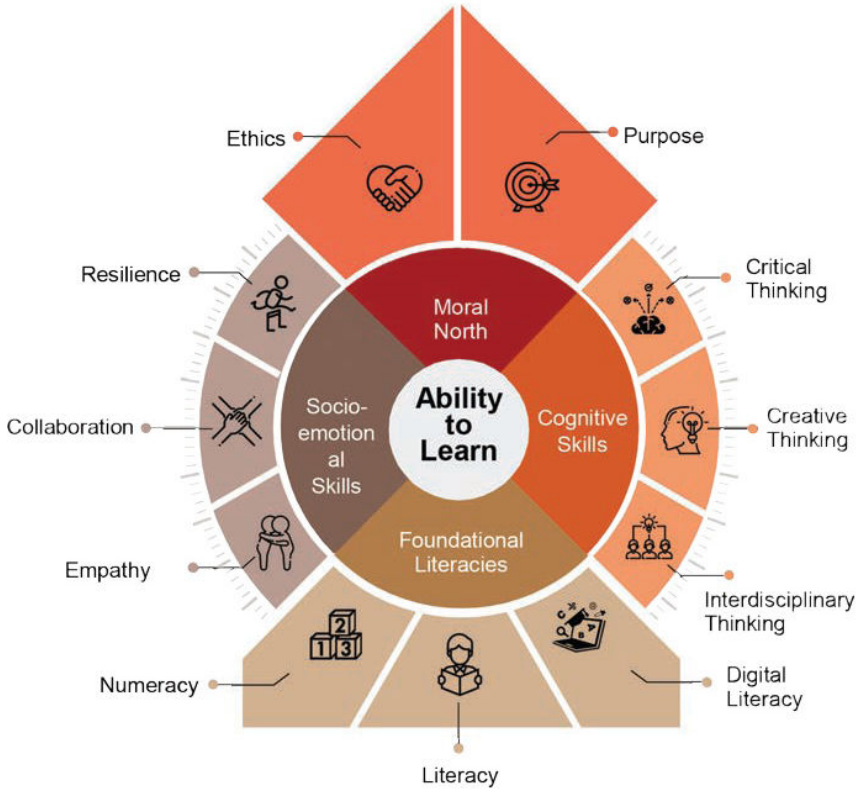
the challenges and opportunities of a generative AI–driven future requires developing new competencies that enable individuals not only to adapt but also to excel and thrive in this evolving technological landscape. Accordingly, three essential competencies will be crucial in the generative AI era, namely Change-Ready, AI-Ready, and Human-Ready capabilities (Bornet et al., 2025).

- **Human Ready:** Being Human Ready highlights the importance of distinctly human abilities such as creativity, social skills, and critical thinking. These are qualities that artificial intelligence cannot fully replicate. In an increasingly technology-driven world, these human strengths allow people to complement technological tools with empathy, insight, and moral awareness, helping to preserve what makes us human.
- **AI Ready:** Being AI Ready means understanding and using the potential of artificial intelligence to improve decision-making and increase efficiency while also recognising and managing its risks. Developing this ability involves keeping up with AI developments, continuously learning new skills, and applying AI thoughtfully and strategically to solve problems and foster innovation within one's area of expertise.
- **Change Ready:** Being Change Ready is about having the flexibility and mindset to adapt and succeed in times of rapid and constant transformation. As technology and society continue to evolve quickly, adaptability becomes a key quality that helps individuals remain resilient, relevant, and effective in a world of continuous change.

These future-oriented competencies can be further expanded by illustrating the interconnected framework of human capabilities that together form the foundation for lifelong learning and adaptability in the age of generative AI (Figure 9). At the centre of the model lies the Ability to Learn, which represents the continuous capacity to acquire, apply, and transform knowledge across diverse contexts. Surrounding this core are three interdependent dimensions: Foundational Literacies, Cognitive Skills, and Socio-emotional Skills. Together, these dimensions equip individuals to become Human Ready, AI Ready, and Change Ready. Foundational Literacies such as literacy, numeracy, and digital literacy serve as the basic enablers that allow individuals to effectively engage with technology, data, and knowledge systems. Cognitive Skills, including critical thinking, creative thinking, and interdisciplinary thinking, reflect the higher-order capabilities required for problem solving, innovation, and synthesis in complex AI-mediated environments. Meanwhile, Socio-emotional Skills, which encompass empathy, collaboration, and resilience, are essential for fostering cooperation, leadership, and ethical awareness in a world where human-AI interaction becomes increasingly common (Bornet et al., 2021).

At the apex of the framework lies the Moral North, which anchors all learning and decision making in ethics and purpose. This dimension ensures that the use of generative AI remains aligned with human values and societal well-being. Together, these domains illustrate that thriving in the AI era requires not only technical proficiency but also moral intelligence and emotional depth. Ultimately, the figure highlights that the future of higher education must move beyond narrow skill acquisition toward nurturing the integrated development of mind, heart, and purpose. By cultivating the moral, cognitive, socio-emotional, and foundational dimensions of learning, institutions can prepare individuals who are not only ready for AI but also ready to shape a future in which human potential and technological progress evolve in harmony (Bornet et al., 2021).

Figure 9: The skills required in a world influenced by AI



Source: Bornet et al., 2021.

Failure to adopt the three key competencies of the future, namely AI Ready, Human Ready, and Change Ready, could lead to significant and widespread negative consequences, leaving societies struggling to adapt to rapid technological and social transformations (Bornet, 2024):

- **Widening Skills Gap:** As generative AI and automation continue to evolve, many professions will increasingly demand new skills that are currently scarce. This growing skills gap could lead to unemployment and economic instability as organisations struggle to find individuals with the expertise required to remain competitive in a rapidly changing technological landscape.
- **Decreased Innovation:** Neglecting the development of Human Ready skills such as creativity, critical thinking, and emotional intelligence could severely limit innovation and slow overall progress. These uniquely human abilities are essential for generating original ideas, solving complex problems, and creating meaningful value in ways that technology alone cannot achieve.
- **Increased Inequality:** A lack of Change Ready skills could worsen existing inequalities and create new forms of social and economic division. Individuals who can adapt quickly and continuously learn new competencies will be better positioned to succeed in the era of generative AI, while those who cannot, may find themselves left behind. This divide could lead to a growing gap between those who benefit from technological transformation and those who struggle to keep up, with far-reaching consequences for equity and inclusion.

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5 Policy Recommendations for Higher Education and the Labour Market

5.1 Adapting Higher Education to Generative Artificial Intelligence-Driven Changes

Generative AI has introduced a paradigm shift in the mission and structure of higher education in the EU. Its rapid proliferation has profoundly affected how universities deliver instruction, assess learning, and prepare graduates for a digital society. The arrival of ChatGPT in 2022 and subsequent developments of other generative AI systems, including Microsoft Copilot and Google Gemini, have transformed academic environments by making AI a ubiquitous component of the learning experience (Lee et al., 2024; Ravšelj et al., 2025). To respond effectively, higher education institutions must evolve beyond traditional knowledge transmission toward a model that emphasises adaptive, ethical, and interdisciplinary competencies. Universities must not only teach students how to use AI tools but also cultivate their ability to think critically about how these technologies reshape knowledge, communication, and creativity.

Embedding AI literacy across all study programs is now essential to ensure that graduates understand both the potential and the limitations of AI systems. This literacy should extend beyond technical skills to include awareness of data ethics, bias detection, authorship issues, and responsible use of generative tools (Chiu et al., 2024; Chan & Hu, 2023). Integrating AI-related modules across disciplines can foster a holistic understanding of how intelligent technologies influence culture, democracy, and professional practice (Li et al., 2024; Kurennoy, 2020). Curricular reforms should therefore combine cognitive and moral development by linking digital proficiency with ethical reflection and civic engagement. Assessment systems must evolve to reward creativity, critical thinking, and originality, moving away from standardised testing that fails to capture the complex interactions between human reasoning and AI support (Essien et al., 2024; Chan & Colloton, 2024). Such a shift would allow students to use AI as an intellectual partner rather than as a shortcut, preserving the core principles of academic integrity and intellectual independence.

A successful transformation depends on the preparedness of faculty and administrators. Academic staff need structured institutional support to redesign courses, develop new teaching strategies, and ensure that AI is used to enhance rather than diminish student engagement. Faculty development initiatives should focus on pedagogical innovation, interdisciplinary collaboration, and

ethical technology use (Jin et al., 2025; Lim et al., 2023). Likewise, administrators should establish comprehensive AI governance frameworks that guarantee transparency, protect data privacy, and ensure equitable access to digital tools. Such frameworks must align with the European Commission's long-term strategies for digital and green transitions, emphasising innovation, inclusion, and lifelong learning (European Commission, 2025). By combining technological adoption with humanistic reflection, higher education can transform the challenge of generative AI into an opportunity to renew its social mission. Universities should view AI not as a competitor to human intellect but as a collaborator in expanding creativity, critical reasoning, and social awareness (Chan, 2024; Ravšelj et al., 2025). In doing so, they reaffirm liberal education's timeless role in shaping autonomous, ethical, and reflective citizens capable of navigating an increasingly AI-mediated world.

5.2 Preparing the Workforce for a Generative Artificial Intelligence-Transformed Economy

The emergence of generative AI is reshaping Europe's economic and occupational landscape, forcing policymakers, educators, and employers to reconsider how the workforce is prepared for future challenges. AI technologies are redefining tasks, transforming the structure of work, and demanding new types of collaboration between humans and machines. These transformations require comprehensive strategies that link higher education, vocational training, and lifelong learning into a coherent system of human capital development (Cedefop, 2025; European Policy Centre, 2024). As repetitive and data-intensive tasks become increasingly automated, the value of human labour will rest on attributes such as creativity, adaptability, empathy, and ethical reasoning—qualities that remain difficult for AI to replicate (World Economic Forum, 2025; Singla et al., 2025). The European workforce must therefore be prepared not merely to coexist with AI but to thrive in partnership with it, harnessing technological innovation to enhance both productivity and human well-being.

To achieve this, the EU must strengthen lifelong learning ecosystems that promote continuous upskilling and reskilling. Education systems designed for static careers must evolve into flexible structures that allow individuals to adapt to rapidly changing technological demands. Universities, governments, and industry actors should cooperate in developing modular and stackable learning programs that integrate digital, cognitive, and socio-emotional competencies (Ravšelj et al., 2025; European Commission, 2025). Public–private partnerships are particularly valuable in expanding access to high-quality AI training, while cross-sectoral initiatives can ensure that educational offerings remain responsive

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to emerging labour market needs (Cazzaniga et al., 2024; Jimeno Serrano, 2024). In this context, the EU's focus on skills for the green and digital transitions is a necessary foundation for inclusive growth, as it recognises that technological transformation must be accompanied by social sustainability and equal opportunity.

Equally critical is the promotion of future-oriented competencies that prepare individuals for a dynamic and AI-integrated world. Three interdependent capabilities, being AI Ready, Human Ready, and Change Ready, are central to ensuring employability and resilience (Bornet et al., 2025; Bornet, 2024). AI readiness involves mastering the use of intelligent systems to improve efficiency and innovation while maintaining awareness of their ethical and social implications. Human readiness highlights the need to preserve empathy, creativity, and critical thought in increasingly digital workplaces. Change readiness captures the flexibility and resilience required to navigate constant technological disruption. Together, these three capabilities form an integrated skill framework that supports adaptability, leadership, and moral intelligence. Failing to cultivate them could widen skill mismatches and deepen social inequality (Komp-Leukkunen, 2024). Policymakers must therefore prioritise inclusion by offering targeted AI literacy programs for underrepresented groups and financial incentives for organisations that implement ethical and inclusive AI practices. In parallel, social dialogue between employers, workers, and governments remains essential to ensuring that automation complements rather than replaces human labour (Bonney et al., 2024; Guliyev, 2023).

Preparing the workforce for a generative AI economy ultimately requires balancing innovation with equity and ethics. Europe's distinctive approach, grounded in social partnership,

human rights, and sustainable development, can serve as a global model for navigating the AI revolution. Through coordinated investment in education, training, and responsible innovation, the EU can ensure that AI contributes not only to competitiveness but also to social justice and collective progress (Cedefop, 2025; World Economic Forum, 2025). This human-centred transformation will allow the European labour market to remain resilient, inclusive, and forward-looking in the face of rapid technological change.

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6 Conclusion

Generative AI has become a defining factor in the transformation of higher education and the labour market across the EU. It simultaneously disrupts established academic practices and creates new possibilities for innovation, inclusion, and intellectual growth. The findings presented in this paper show that AI systems are reshaping how students learn, how teachers teach, and how employers define essential skills for the future of work (Ravšelj et al., 2025; Lee et al., 2024). Although automation may reduce the need for certain repetitive tasks, AI primarily acts as an enabling technology that enhances human creativity, reasoning, and problem-solving capacity (World Economic Forum, 2025; Deloitte AI Institute, 2023). These developments indicate that the success of Europe's transition to an AI-integrated society will depend on its ability to combine technological innovation with ethical reflection and human development.

The main challenge lies in redefining higher education and the labour market as interconnected systems that support lifelong learning and social progress. Universities must uphold the principles of liberal education while embedding AI literacy, critical thinking, and ethical reasoning throughout their programs (Chan, 2024; Kurennoy, 2020). Labour market institutions must in turn foster environments that enable continuous learning and promote fairness and inclusion in access to new technologies (European Commission, 2025; Cedefop, 2025). Coordinated action between the education sector, employers, and policymakers is essential to ensure that generative AI strengthens rather than undermines social cohesion and equality.

The future of Europe's relationship with generative AI will depend on how effectively it manages the balance between innovation and humanity. By integrating ethical governance, democratic participation, and human development into its policies, the EU can ensure that AI serves the common good rather than narrow economic goals (Ravšelj et al., 2025; Wong et al., 2025). In this vision, generative AI becomes a catalyst for intellectual and social renewal, enhancing the creativity, moral intelligence, and critical capacities that define both higher education and the European model of sustainable human progress.

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