SCCS Perspectives

Reimagining higher education in the age of AI

Federico Pablo-Martí

Carlos Mir

Francisco Javier Navarro

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Summary

This paper aims to explore how higher education should evolve in the face of the incorporation of AI into academic teaching. It stresses the importance of adapting university teaching to prepare future generations for a technology-influenced job market. It focuses on unique human skills, continuous learning, and effective collaboration with AI systems. It proposes three educational scenarios as a function of AI development and stresses the need for a holistic and humanistic education that fosters creativity and civic participation.

Introduction

In a world increasingly impacted by artificial intelligence (AI), an essential and challenging question emerges: How can education continue to evolve to maintain its social relevance? AI is not just another technological tool; it represents a fundamental redefinition of how we work, live, and solve problems. This revolution of a digital nature, driven by algorithms and task automation, is transforming job roles and opportunities at unprecedented speed. It is, in short, a Schumpeterian creative destruction that has begun to take hold at rates that will be economically and socially difficult to assimilate.

In this context, higher education, one of the cornerstones of progress and competitiveness in our society, faces a critical challenge: to adapt and evolve so as not to become obsolete, offering its students new skills to survive in this new scenario. AI may not take our jobs, but whoever can integrate its functionalities into their workflow will. This fact leads to the need for higher education institutions to help their students understand the relevance of this phenomenon and offer retraining opportunities to their graduates.

All this recognizes that higher education institutions not only train professionals for a competitive and diverse labor market. They are also concerned with educating their students holistically, in an environment that fosters the discovery of reality, based on freedom, friendship, and dialogue as the cornerstones of university work.

Objectives and scope

This paper seeks to explore and analyze how higher education can adapt and prepare future generations for a labor market that is being heavily influenced by AI. The need for this adaptation is not only a matter of maintaining the employability of future workers but also of fostering a deeper and more critical understanding of the meaning of the role of human beings in the age of intelligent machines, through the following fundamental considerations:

1. ***Recognizing the Impact of AI in the Workplace***: AI is redefining entire industries, from manufacturing to services to creativity and design. Jobs of the future will require not only technical skills related to AI but also soft skills that machines cannot yet replicate. Higher education must recognize and respond to these trends, ensuring that students understand AI and can develop the competencies needed to work alongside it. Internalizing these digital competencies will be far more important than learning the concrete use of any of today's systems, as it will allow them to gain the flexibility and capabilities needed to integrate continuous technological innovation into their day-to-day lives.

2. ***Establishing a holistic and humanistic approach***: Higher education in the age of AI must go beyond mere technical training. It must foster a holistic understanding of the world, where technology, ethics, humanities, and social sciences are intertwined. This will prepare students to address both the technical challenges and the ethical and social implications of AI as they arise at every turn.

3. ***Fostering creativity and innovation***: In a world where repetitive and systematic tasks are increasingly automated, creativity and innovation become precious assets. In this context, higher education must leverage these skills, allowing students to explore and develop unique solutions to complex problems, something that AI cannot yet fully replicate.

4. ***Preparing for continuous learning***: AI is accelerating change in all spheres of life, making continuous learning essential. Higher education must boost students' abilities to constantly adapt, learn, and reinvent themselves, crucial skills for navigating an ever-evolving job market.

5. ***Building intelligent collaborations***: The future of work will not just be about humans versus machines, but about how humans and machines can collaborate effectively. Higher education must teach students how to interact and collaborate with AI systems, preparing them for a new kind of work dynamic.

Therefore, the problem to be solved is not whether AI will change higher education, but how higher education must evolve to embrace and take advantage of the opportunities offered by AI.

Without any doubt we can affirm that AI will change higher education, it will allow to personalize learning according to the needs, interests, and rhythms of each student, it will facilitate the generation of innovative and creative educational content, it will expand access to learning through digital platforms, and it will improve the management and administration of educational institutions. All this will require facing the challenge of training the teachers of tomorrow, the need to redefine university

profiles and careers, and to manage differently the existing social, cultural, and economic inequalities and those that may arise in the future due to the development of AI.

This paper sets out to embark on a journey to discover and delineate future educational strategies that not only respond to the technological changes driven by AI but also promote a deeper understanding of our humanity and its coexistence with increasingly intelligent machines.

The transformation of labor and the economy

The emergence of AI is marking an era of unprecedented change in the global economy as it is not simply a new technology, but a catalyst for economic and social transformation (Pablo-Martí et al. 2024). Its influence extends from automating routine tasks to redefining entire industries. Companies that embrace AI are experiencing significant increases in efficiency, innovation, and, ultimately, revenue. But this advancement also brings with it significant challenges, especially in terms of wealth distribution and labor market restructuring. Today's generative artificial intelligence models already play a key role in automating specific tasks in various industries. Although these models do not replace human labor, they do contribute significantly to its efficiency. For example, they can perform data analysis and optimize information management, which can assist in complex tasks such as planning training regimens for athletes. While these systems cannot yet perform manual tasks, they can provide precise assistance: although they are not yet capable of cooking an omelet, they can indicate the optimal time to remove the potatoes from the heat. This assistance capability translates into increased productivity, allowing professionals to devote more time to improving the quality of services or products offered, or to focus on aspects of originality and creativity.

Figure 1 illustrates the differential impact of artificial intelligence (AI) on job markets across various economic strata: the world, advanced economies, emerging markets, and low-income countries. The bar chart segregates employment shares based on AI exposure and complementarity, distinguishing between jobs with high exposure to AI and varying degrees of complementarity (high and low). In advanced economies, a significant proportion of jobs are highly exposed to AI, with a notable share also having high complementarity, suggesting that AI may be augmenting these jobs rather than replacing them. Conversely, emerging markets and low-income countries show a lower proportion of jobs with high AI exposure, hinting at a slower integration of AI technologies. These variations imply that the impact of AI on employment is complex and context-dependent, with advanced economies potentially better positioned to integrate AI in a manner that complements existing jobs.

Figure 1.- AI's impact on jobs

Employment shares by AI exposure and complementarity
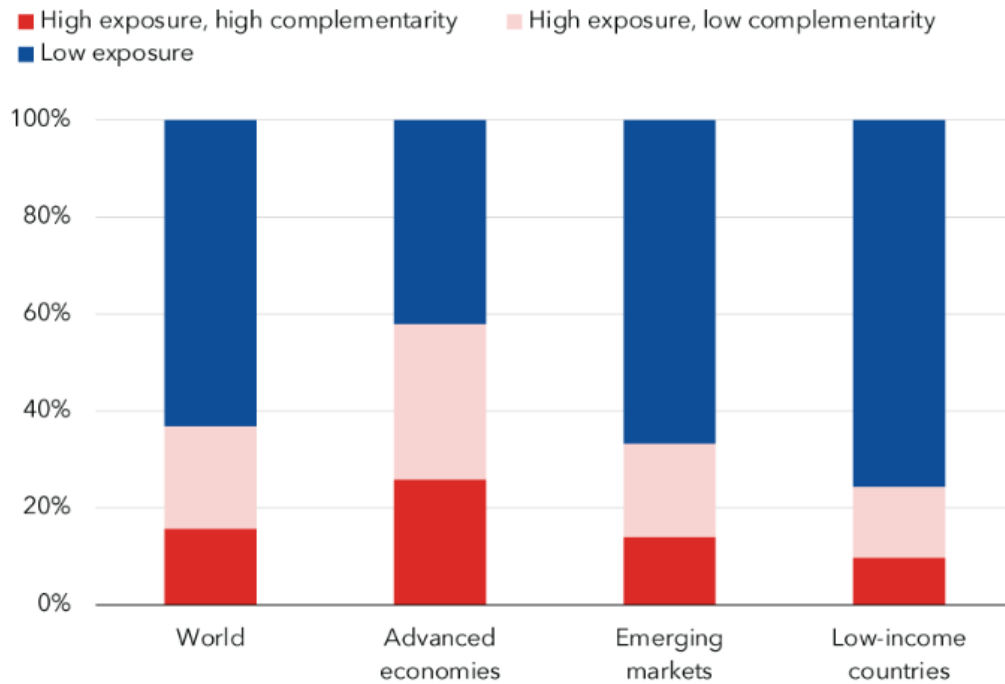
Source: ILO and IMF elaboration.

AI affects various sectors in heterogeneous ways. For example, in manufacturing, automation, and robotics have improved efficiency but also reduced the demand for traditional labor. In the service sector, from customer service to financial consulting, AI is transforming the nature of work, privileging analytical and creative skills over routine tasks. Even in fields such as healthcare and education, where the human touch is crucial, AI offers tools for more accurate diagnosis and personalized learning.

While it was initially thought that the tasks most likely to be replaced by AI would be those of a repetitive and predictable nature, recent advances, especially in the field of Large Language Models or Deep Learning (LLM), are beginning to impact even the most skilled and creative tasks. Accounting, for example, is evolving beyond mere routine data processing; advanced AI systems can now handle aspects of auditing and financial analysis, tasks that traditionally required a high level of expertise and professional judgment. In transportation, autonomous vehicles pose a threat to professional drivers, but the impact goes beyond that, also affecting areas such as logistics and route planning, where complex and strategic decision-making is being taken over by AI systems. All these developments reflect a growing trend toward the automation of tasks that were previously considered exclusively human, as highlighted in recent research on AI and the labor market (Brynjolfsson and McAfee, 2014; Frank, Autor, and Bessen, 2019). The impact of AI, far from being limited to low-skilled jobs, is beginning to transform highly specialized professions, challenging our traditional conceptions of which skills and roles are irreplaceable by technology.

However, it is important to note that AI is also creating new job opportunities. New roles are being generated that focus on the design, maintenance, and supervision of AI systems. In addition, there is a growing demand for skills that AI cannot yet replicate efficiently, such as creativity, emotional intelligence, and complex problem-solving skills. In this changing

context, it is critical to understand that AI is not only replacing jobs but also redefining what it means to work. The skills required in the labor market are evolving rapidly, posing significant challenges for the current education system. Adapting to this new landscape requires technical changes in training, as well as a profound re-evaluation of the values and objectives of education itself.

All the above shows that the level of uncertainty we face in the field of education is enormous. We do not know what the development of AI will be in the coming years, and we cannot determine its impact on the economy and society. Therefore, we will now consider three scenarios that offer different visions of how AI could influence the labor market and society.

Possible IA scenarios

Each of the scenarios below presents unique challenges and opportunities for higher education that demand an adaptive and proactive approach to preparing future generations. Adapting university education systems to these new scenarios is crucial to ensure that individuals are equipped with the skills and knowledge necessary to thrive in the future increasingly influenced by AI. The doubt that arises before analyzing these scenarios is whether this type of tools will be part of university education as content or is a (digital) competence that the student will have to carry as a backpack, leaving higher education to focus its activity on the objective of the chosen area of knowledge.

Scenario 1: AI as a complementary tool

In this first scenario, AI is seen as an extension of human capabilities, rather than a replacement. We have the example with the integration of current models as apps in our mobile devices. Education in this context focuses on how AI can be used to enhance and complement human skills. Training is geared towards teaching how to interact with AI technology effectively, integrating these tools into various disciplines and professions. For example, in the medical field, AI can assist doctors in diagnosis and treatment, but human empathy and judgment remain critical. In higher education, AI can personalize learning, but teachers retain the crucial role of guiding and motivating students. The key in this scenario is the synergy between human skills and AI capabilities.

Artificial Intelligence (AI) has been increasingly used as a complementary tool in higher education. According to a systematic review published in the International Journal of Educational Technology in Higher Education, AI has been used in higher education for various purposes such as assessment/evaluation, predicting, AI assistant, intelligent tutoring system (ITS), and managing student learning. AI tools are being used to provide adaptive and automated assessments, practice opportunities, personalized tutoring and feedback, and content recommendations. AI is also being used to generate content, write code, resolve accessibility issues, reconfigure writing processes, and detect plagiarism[1].

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[1]

Scenario 2: Human-Machine Collaboration (AI)

This scenario imagines a future where the interaction between humans and machines (AI systems) is seamless and complementary. Education focuses on developing skills to work together with AI. This includes understanding how to design, monitor, and improve AI systems, as well as skills to interpret and use the results provided by AI. Human-AI collaboration spans all sectors, from programming and maintaining AI systems to interpreting data in social sciences and humanities. Higher education in this setting must prepare students for deep integration of the technology into their work, teaching them to maximize the advantages AI offers while maintaining a critical and ethical understanding of its limitations and risks.

Scenario 3: Widespread automation

In this scenario, artificial general intelligence (AGI) has reached such a level of development that it dominates most economic sectors, generating most of the GDP (Gross Domestic Product) and taking over almost all tasks, including those requiring complex and adaptive skills. According to PwC analysis, global GDP will be up to 14% higher in 2030 as a result of the accelerating development and take-up of AI – the equivalent of an additional $15.7 trillion[2]. Machines can self-manage, self-improve, and perform tasks with efficiency and precision superior to human capabilities. In this context, higher education faces an unprecedented challenge: to prepare people for a world where the need to train workers for most roles has disappeared. Although this scenario is hypothetical, artificial intelligence is already being used in higher education for a variety of purposes, such as assessment/evaluation, predicting, AI assistant, intelligent tutoring system (ITS), and managing student learning.

In a future dominated by AGI, the purpose of higher education undergoes a significant transformation. It no longer focuses exclusively on preparing individuals for specific job roles but expands to encompass the development of the whole human being. This new vision of education emphasizes cultivating critical thinking, self-reflection, ethics, aesthetics, and intercultural understanding, recognizing the importance of these skills in an increasingly complex and technologically advanced world.

In this scenario, higher education seeks to actively promote creativity and innovation, areas in which human contribution remains unique and crucial. In fields such as art, literature, philosophy, and theoretical science, human creativity provides unparalleled value, an aspect underscored by authors such as Ken Robinson in works such as "*Out of Our Minds: Learning to be Creative*" (Robinson, 2011). Education in this context becomes a catalyst for the development of new ideas and perspectives, encouraging students to explore and push the limits of their imagination and thinking.

With AGI playing a dominant role, the need arises to teach metacognitive skills. These include problem-solving, systems thinking, and the ability to understand and design complex systems, including AI systems. Higher education is also focused on training individuals to interact and collaborate with advanced AI systems, not only at a technical level but also in understanding and critically evaluating their decisions and outcomes.

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[2] https://www.pwc.com/gx/en/issues/analytics/assets/pwc-ai-analysis-sizing-the-prize-report.pdf

Ethics and philosophy take on new relevance in higher education, especially about AI. Education strives to instill a strong ethical and philosophical understanding in students, equipping them to guide the evolution and application of AI in a way that aligns with human values and principles. This approach reflects concerns raised by authors such as Cathy O'Neil in "*Weapons of Math Destruction*" (O'Neil, 2016), highlighting the importance of ethical and responsible AI.

In terms of curricula and methodologies, education adopts an adaptive and personalized approach. Educational programs are designed to adapt to the individual skills, interests, and needs of each student, taking advantage of AI to personalize the educational experience. In addition, a participatory and interdisciplinary approach to teaching is promoted, preparing students to navigate and contribute effectively in a complex and highly interconnected world.

Finally, higher education plays a crucial role in fostering active and conscious citizen participation. In a society where the need for traditional work has diminished, higher education becomes a platform for exploring new ways of living and working, encouraging individuals to contribute to the common good and become civically engaged. This focus on the social role of education reflects the vision of authors such as Martha Nussbaum in "*Not for Profit: Why Democracy Needs the Humanities"* (Nussbaum, 2010), who emphasizes the importance of the humanities in the development of engaged and reflective citizens.

In short, education in a world where AGI is prominent is redefined to focus on holistic human development, creativity, innovation, and a deep and ethical understanding of technology, preparing individuals not only for successful careers but also for enriching and meaningful lives in a changing society.

It is important to note that the use of AI in higher education is still in its early stages, and the implementation of AI is likely to be gradual and dependent on various factors such as cost, infrastructure, faculty training, student acceptance, and the regulatory environment.

Proposals for the redesign of the educational system by scenarios

Scenario 1:

In a future where artificial intelligence (AI) establishes itself as a vital but complementary tool to human skills, the education system faces the task of balancing technical training with the development of intrinsically human capabilities. This scenario envisions a world in which human-machine collaboration is not only feasible but also essential for progress and innovation.

Education in this context aims to prepare students to work effectively with AI, leveraging their capabilities to enhance and complement their skills and knowledge. The education system, therefore, adopts a hybrid approach that integrates technical learning with the development of unique human skills.

From elementary through high school, students are introduced to the basics of AI. This is not limited to programming and data science but also includes an understanding of how AI

can be applied in various fields, from the arts to the social sciences. The curricula promote a project-based learning approach, where AI is used as a tool to solve real-world problems, thus fostering a practical and contextual understanding of its application.

At the university level, programs are designed to integrate AI across disciplines. For example, in the health sciences, students learn how AI can aid in the diagnosis and treatment of disease, while, in the humanities, they explore how AI can be used to analyze texts and cultural patterns. This interdisciplinary approach is in line with the ideas presented by Cathy N. Davidson in "*The New Education: How to Revolutionize the University to Prepare Students for a World in Flux*" (Davidson, 2017), where she argues for educational reform that responds to the changing needs of the 21st century.

Despite the focus on technology, a key priority of the education system is the development of soft skills. Skills such as creativity, critical thinking, empathy and collaboration become crucial in a world where AI handles more routine or analytical tasks. According to Andreas Schleicher, director of education at the OECD, these skills are essential to work effectively alongside AI (Schleicher, 2018).

Continuing education becomes a norm in this scenario. Educational institutions offer refresher programs and online courses to keep professionals up to date with the latest developments in AI. In addition, adaptive learning platforms, powered by AI, personalize the educational experience for each student, adapting to their learning styles and paces.

The education system also focuses on preparing students to interact and collaborate with AI systems. This involves not only a technical understanding of how these systems work, but also an understanding of their limitations, potential biases, and ethical considerations. Training in AI ethics (O'Neil, 2016) becomes essential to ensure that future professionals can make informed and responsible decisions when working with these technologies.

In a future where AI is a complementary tool to human skills, the education system adopts a holistic and integrated approach. This approach not only prepares students to use AI in their fields of work but also emphasizes the development of unique human skills and an ethical understanding of technology. Education becomes a bridge that bridges advanced technology with intrinsically human capabilities, preparing people to cope with its use as part of their daily workflow.

Scenario 2

In a future where artificial intelligence (AI) and humans collaborate in a relationship of equality and complementarity, the education system faces the task of preparing individuals for an effective symbiosis with technology. This scenario requires not only a technical understanding of AI but also a deep appreciation of the human skills that enhance this collaboration.

Education in this future is focused on preparing individuals capable of working side by side with advanced AI systems. This collaboration is not based on the supremacy of one over the other but on the recognition of the strengths and limitations of both AI and humans. The goal is to train individuals who not only understand AI but are also able to bring unique human qualities to this working relationship.

From the earliest stages, education incorporates AI and computing concepts but goes beyond mere technical knowledge. Curricula are designed to foster an understanding of how technology can be used to improve the quality of life and solve complex problems. According to Mitchel Resnick, author of "Lifelong Kindergarten: Cultivating Creativity through Projects, Passion, Peers, and Play" (Resnick, 2017), it is essential to foster a "learning by doing" mindset, where students experiment with technology in creative and playful ways.

At the university level, academic programs are tailored to offer an education that encompasses computer science as well as the humanities and arts. For example, in engineering and computer science programs, students learn not only to code and design AI systems but also to understand the ethical and social implications of these systems. Similarly, in the humanities and social sciences, students explore how AI can be used to understand complex human and social dynamics, following the interdisciplinary approach proposed by authors such as Cathy Davidson in "The New Education" (Davidson, 2017).

A crucial part of education in this scenario is the development of skills for effective collaboration with AI. This includes communication, teamwork, and critical thinking skills, enabling individuals to interact productively with AI systems. In addition, creativity and innovation are emphasized, skills in which humans have an advantage and which are essential for guiding and enhancing AI contributions.

Lifelong learning is becoming an essential aspect of life, with technology and labor market demands constantly evolving. Universities and other educational institutions offer lifelong learning opportunities, allowing individuals to update their skills and adapt to new technologies and job roles. These programs are in line with the ideas of authors such as Alvin Toffler in "The Shock of the Future" (Toffler, 1973), who emphasizes the importance of adaptability in a rapidly changing world.

In short, the education system in this scenario of equal collaboration between humans and AI is geared towards training competent technical individuals capable of bringing unique human qualities to this partnership. This education is not just about learning how to use AI, but how to live and work alongside it effectively and ethically, preparing people for a future where human-AI collaboration is fundamental to progress and innovation. It is not about teaching the current existing AI models, but about integrating them as an inherent part of the training, their skills, and workflow, with the ability to incorporate any current and future developments on it.

Scenario 3

In a future where pervasive artificial intelligence (AGI) has advanced to the point of taking over most job tasks, largely displacing the need for human labor, the education system faces an unprecedented challenge. In this scenario, education must transcend its traditional function of preparing for employment and adopt a broader and deeper role in human formation.

The central purpose of the education system in this scenario moves away from job preparation to focus on the integral development of the human being. Education seeks to cultivate individuals who are not only intellectually curious and capable, but also

emotionally resilient, ethically sound, and socially committed. At the university level, this implies a radical transformation in curricula and teaching methodologies.

Educational institutions become spaces to deeply explore what it means to be human in an era dominated by AGI. Curricula focus on areas such as the humanities, arts, philosophy, and social sciences, which offer a richer and more nuanced understanding of the human experience and condition. As Martha Nussbaum suggests in her work "Not for Profit: Why Democracy Needs the Humanities," education in this scenario must foster students' ability to think critically, argue ethically, and empathize with others, regardless of their background or circumstances (Nussbaum, 2010).

Creativity and innovation become cornerstones of education. University programs encourage creative thinking and experimentation in fields such as design, arts, and literature. These creative spaces allow students to express and explore complex ideas and emotions, something the IAG cannot fully replicate. In this sense, Ken Robinson highlights the importance of fostering creativity in education in his book "Out of Our Minds: Learning to be Creative" (Robinson, 2011).

In an ever-changing world, education becomes a lifelong process. Universities and other educational institutions offer continuous and flexible programs that allow individuals to explore new interests, develop new skills, and remain intellectually active and engaged (Toffler, 1970).

As AGI plays a dominant role in society, education also focuses on the ethics and philosophy of technology. Students learn to critically reflect on the moral and social implications of AGI, preparing them to actively participate in debates and decisions about how this technology should be used and regulated.

Finally, education fosters a strong sense of civic responsibility and social engagement. In a world where traditional work is no longer the center of human life, community involvement, political engagement, and volunteerism become more important. Educational institutions prepare students to be active and engaged citizens, capable of contributing to society in meaningful and diverse ways.

In an AI-dominated future, the education system redefines its purpose, focusing on the holistic development of individuals and preparation for a life of learning, exploration, and social contribution. This approach goes beyond job training and focuses on cultivating the qualities that make humans unique and valuable in a world where AI performs the majority of job tasks.

As can be seen, this may involve taking up disciplines that, due to their limited labor scope in the current market, would have remained in the background and that may be essential in this disruptive scenario. Philosophy, arts, and history will be essential in the formation of people of homo tecnologicus. And this may lead to a new integration of the sciences with a more unified vision of knowledge.

Conclusions

On the threshold of an era defined by AI, higher education faces an unprecedented challenge, forced to reinvent itself to prepare future generations for an ever-evolving world. This paper, through its analysis and exploration of various scenarios, has charted a path

toward a higher education that has to adapt to and take advantage of the opportunities presented by AI.

The issue of the role of higher education in an AI-dominated era has no easy or definitive answers. Therefore, an open and ongoing debate is invited on how education can and should evolve. This debate should involve educators, policymakers, technology experts, students, and society at large. The questions posed in this paper are the beginning of a much broader and necessary conversation.

Call to Action

1. Innovative Educational Policies: Governments and educational institutions must collaborate to develop policies that foster adaptive, human-centered education. This involves investing in educational technologies, training teachers in new pedagogical methodologies, and reforming curricula to include essential skills for the future.

2. Cross-sector collaboration: Closer collaboration between the education and technology sectors is essential. Technology companies can contribute knowledge and resources that enrich the educational process, while educational institutions can offer critical and humanistic perspectives that guide the ethical development of AI.

3. Focus on Human Skills: In a world where AI takes on many tasks, intrinsically human skills such as creativity, critical thinking, and empathy become more valuable than ever. Education must focus on cultivating these skills, preparing individuals for roles that AI cannot replicate.

4. Adaptability and Continuing Education: A culture of continuous learning and adaptability must be fostered, preparing individuals to evolve with the changing demands of the labor market and society. This involves the creation of continuing education programs and accessible online learning platforms.

5. Active Citizen Participation: Education should prepare citizens to actively participate in a democratic society by fostering civic engagement and social responsibility. This is especially relevant in a world where decisions about how AI is used and regulated have profound social and ethical implications.

Implications for the Institutional and Political Environment

The transition to an educational system that can coexist harmoniously with advanced AI will require a significant change in the institutional and political framework. Educational institutions must become more agile and responsive to technological change. Politicians must be willing to invest in education and collaborate with technology and education experts to design policies that support progressive and relevant education. Society must be open to reimagining education beyond traditional paradigms, recognizing that preparation for the future goes beyond the classroom.

The age of advanced AI is not only a challenge but also an opportunity to transform education in a way that cultivates the best of humanity. By embracing this challenge, we can ensure that future generations are equipped not only with technical skills but also with the wisdom, creativity, and compassion needed to thrive in a world shared with AI. Humanistic training can preside over this new evolution of science and knowledge.

The three scenarios described (AI as a complementary tool to human skills, pervasive automation, and human-IA collaboration, and the mastery of AGI with a reconceptualization of work and education) can be considered independent scenarios and phases of a single evolutionary process. This progression toward deeper integration of AI into society and education will depend largely on two critical factors: technological advances and institutional transformations.

Technological advances, particularly in the development of AI, will determine the speed and nature of these changes. As technology evolves, the possibilities and challenges it presents become more complex and nuanced, which in turn influences how education must adapt and respond.

Simultaneously, institutional transformations-including legal and policy changes play a crucial role in how these technological advances are integrated into society. Educational policies, AI regulations, and collaborative initiatives across sectors will be critical to ensure that the benefits of AI are maximized, and its risks are minimized. These transformations will determine not only how AI technology evolves, but also how society, and particularly the education system, adapts to and takes advantage of this evolution.

These scenarios can also be understood as phases of a process towards the implementation of Artificial General Intelligence (AGI) which offers a more dynamic and preparatory perspective on the future of education in the age of artificial intelligence. It urges us to be proactive in planning and adapting to these changes, ensuring that education remains relevant, effective, and aligned with the needs and challenges of an ever-changing world.

By establishing the periods of the phases of integration of artificial intelligence in education concerning the achievement of AGI, we can visualize these phases as progressive milestones on the way to the development of a fully functional AGI. Here is an approach based on that perspective:

Phase 1: AI as a Complementary Tool: This phase could be considered the beginning of the road to AGI. At this stage, AI is not yet pervasive, but it is already starting to have a significant impact in several sectors, including education. We could place this phase in the first quarter of the process towards AGI, where AI technology is advanced but still specialized and limited compared to human capabilities.

Phase 2: Pervasive Automation and Human-AI Collaboration: This phase would represent the midpoint on the road to AGI. At this point, AI has advanced considerably and has become more deeply integrated into society and the labor market. Human-AI collaboration is more frequent and sophisticated, but full AGI has not yet been reached. This midpoint marks an important transition where AI begins to take on more complex and creative roles, though still under human guidance and collaboration.

Phase 3: Mastering AGI and Reconceptualization of Work and Education: The final phase would align with the culmination of the AGI development process. In this scenario, AGI is fully developed and operational, capable of performing tasks at or above the human level in virtually all fields. Education, consequently, has been radically transformed to focus on aspects of human development that transcend traditional work, such as creativity, ethics, and personal and social development.

It is important to remember that these phases are neither discrete nor necessarily linear; there may be overlaps and progress may be asymmetric in different regions or sectors. Experts have much debate on the timeline for achieving IGA, with widely varying estimates. Some believe it could be a reality in a few decades, while others consider that we are still a long way from reaching that level of technological advancement. In any case, although it is unknown when we will reach phase 3, there is already some consensus that we are already entering phase 2, so in terms of the educational system, the transformations corresponding to scenarios 1 and 2 should already have been implemented.

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