



Education, Work, and the Making of Our Collective Future

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ABSTRACT

Rapid technological development is reshaping the jobs markets in ways that increasingly challenge the traditional role and significance of formal schooling. As industries transform and new kinds of jobs emerge, long-standing educational models are being questioned for their ability to keep pace with rapidly shifting skill demands. This paper critically examines the intersection between education and the future of jobs by exploring the structural transformations currently underway and assessing their implications for curriculum design, pedagogical practice, and policy development. While artificial intelligence and automation have the capacity to alter job structures and replace routine tasks, the evidence suggests that they are unlikely to eliminate work entirely. Instead, these technologies will continue to change what jobs look like and which skills hold value across sectors. Consequently, education systems face mounting pressure to cultivate a wider set of learners' capacities. Beyond technical and digital competencies, future jobs seekers must develop socio-emotional skills, higher-order cognitive abilities, and meta-learning strategies that enable continuous adaptation. This paper argues that preparing for the future of jobs requires a fundamental rethinking of educational purposes. Rather than relying solely on a human capital framework that prioritizes economic productivity, education systems should embrace a broader vision that supports human flourishing, adaptability, ethical reasoning, and civic resilience. Such a shift will position learners not just as future employees, but as capable, reflective participants in an evolving and uncertain world.

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Introduction

The question of how educational systems should prepare learners for future job markets has gained unprecedented urgency in recent years. The World Economic Forum (2023) emphasizes that the future of work is being shaped by the accelerating interplay of technological advancement, global disruptions, and evolving social expectations. Automation, artificial intelligence, and other emerging technologies are transforming the nature of work at an unprecedented pace, while economic, environmental, and social uncertainties demand heightened adaptability and resilience from the workforce. Simultaneously, job markets are becoming increasingly fluid, with traditional career trajectories giving way to portfolio careers, gig work, and roles that require continuous upskilling. In this rapidly evolving landscape, education can no longer be conceived as a static process of transmitting fixed knowledge, rather, it must cultivate learners' capacity to navigate complexity, anticipate change, and engage in lifelong learning. Economists, such as Autor (2022), provide valuable insight into this dynamic, noting that while automation will significantly alter the job market, it is unlikely to result in a uniform elimination of jobs. Instead, technological change tends to shift the composition of work, creating new roles while reducing demand for routine or predictable tasks. Roles that require creativity, interdisciplinary problem-solving, and social intelligence are comparatively resistant to automation and remain in high demand. This duality between displacement and transformation lies at the core of contemporary debates regarding education and jobs market. It raises fundamental questions about the purpose of schooling: Should curricula focus narrowly on equipping learners with specific technical or vocational skills or adopt a broader mandate that cultivates cognitive, social, and emotional capacities that prepare individuals for a world characterized by uncertainty and rapid change?

Governments and educational authorities are actively responding to these pressures, though approaches vary widely. Some have prioritized curriculum reforms emphasizing STEM (science, technology, engineering, and mathematics) education, coding literacy, and digital fluency, while others advocate for the development of soft skills including communication, collaboration, critical thinking, and adaptability. Employers similarly demand a combination of technical proficiency and meta-skills such as problem-solving, innovation, and resilience. For learners, these intersecting expectations create unprecedented uncertainty, challenging the long-standing notion that education serves primarily as preparation for a single, stable career. Instead, success increasingly depends on the ability to pivot across industries, sectors, and modes of work, underpinned by a foundation of lifelong learning. A comprehensive examination of these dynamics requires attention not only to the specific skills likely to be in demand but also to the structural characteristics of educational institutions themselves. Many are designed according to industrial-age models of mass schooling, emphasizing standardized curricula, hierarchical instruction, and assessment mechanisms that privilege memorization and conformity. While these structures were effective in the past, they are often insufficient for cultivating the complex, adaptive skill sets required in contemporary jobs markets. Education, therefore, must prioritize critical thinking, creativity, problem-solving, collaboration, and self-directed learning, while also addressing learners' social and emotional development as central to their capacity to thrive in work and life.

In view of the above, this paper is organized into two sections. The first section "Current Educational Responses towards Jobs Markets: A Critique" critically evaluates existing educational responses to evolving jobs market demands, highlighting both successes and limitations as well



as the contradictions. The second section “From Human Capital to Human Flourishing: Rethinking Education for the Future of Jobs” proposes a reorientation of educational priorities toward more holistic conceptions of learning, emphasizing adaptability, creativity, and lifelong learning as central competencies. By exploring these dimensions, this paper provides a nuance for understanding how education can meaningfully equip learners to navigate an uncertain, technologically mediated, and rapidly changing world of work.

Current Educational Responses Towards Jobs Markets: A Critique

Across the globe, contemporary educational reforms increasingly emphasize digital skills, STEM education, and measurable competencies aligned with jobs markets demand. Policymakers frequently frame education as a mechanism for economic competitiveness, innovation, and employability. While these priorities reflect real transformations, one can argue that solely *instrumental* approach to education risk narrowing the purpose of education as well as undermines learners’ capacity to navigate uncertainty, complexity, and ethical responsibility. Rather than preparing individuals for meaningful participation in social life, the instrumental approach reduces education to a technical process of skill acquisition. Biesta (2015) offers a foundational critique of this trend, arguing that education has been transformed into what he calls “learnification”. In this paradigm, educational discourse shifts away from questions of purpose, values, and subject formation toward a focus on learning outcomes, competencies, and performance indicators. Biesta warns that “the language of learning is not neutral” (p. 75) and that its dominance obscures the normative question of what education is for. He identifies three core educational functions viz qualification, socialization, and subjectification, and argues that current reforms disproportionately privilege qualification while marginalizing the

other two. Of particular concern is subjectification because it concerns the development of agency, responsibility, and the capacity to act as a free rational human subject, qualities that cannot be reduced to standardized skills or metrics. Similarly, Zhao (2012) critiques education systems that prioritize standardized testing and compliance over creativity and individuality. Drawing on comparative analyses of education in East Asia and the United States, Zhao argues that rigid accountability systems may raise test scores but simultaneously suppress innovation and entrepreneurial thinking. He contends that “standardization is fundamentally at odds with creativity” (Zhao, 2012, p. 24) and that schools should cultivate learners’ passions, risk-taking, and problem-finding capacities rather than merely problem-solving skills. For Zhao, preparing students for an uncertain future requires nurturing adaptability, imagination, and self-direction; and these qualities are poorly captured by current competency frameworks.

The tension between education and jobs markets demand is often framed through the discourse of “skills gaps”. Employers routinely claim that education systems fail to produce graduates with the skills required for contemporary work, particularly in technologically advanced sectors. However, scholars caution against accepting these claims at face value. Livingstone (2018) argues that alleged skills gaps are frequently exaggerated and may obscure deeper structural issues within jobs markets. He notes that “the problem is not a shortage of skills but a shortage of good jobs that fully utilize existing skills” (Livingstone, 2018, p. 5). From this perspective, employer complaints may reflect cost-cutting strategies, credential inflation, or a reluctance to invest in on-the-job training rather than genuine deficiencies in education. Roberts (2014) further complicates the notion of skills as individuals’ attributes that can be simply taught and transferred. Drawing on sociological research, he emphasizes that skills are



socially constructed and context-dependent, shaped by organizational cultures, power relations, and informal workplace practices. Roberts argues that “skills do not exist independently of the social relations within which they are deployed” (p. 34). This insight challenges policy models that assume linear pathways from education to employment and underscore the limits of treating skills as neutral, technical assets. It also reinforces Biesta’s concern that an excessive focus on measurable outcomes obscures the relational and ethical dimensions of education.

The rise of artificial intelligence (AI) and data-driven technologies intensifies these debates. Automation and algorithmic management are reshaping not only the skills required for work but also how work is governed and evaluated. Williamson and Piattoeva (2022) argue that education is increasingly shaped by processes of datafication, in which learning, behavior, and performance are continuously monitored, quantified, and optimized. They note that “data have become a governing force in education” (Williamson & Piattoeva, 2022, p. 3), influencing curriculum design, assessment practices, and policy decisions. In this context, digital literacy must extend beyond technical proficiency to include critical understanding of how algorithms, data infrastructures, and AI systems shape opportunities and inequalities. Preparing learners for AI-mediated work therefore requires a broader conception of digital competence. Computational thinking, data literacy, and algorithmic awareness are increasingly essential, but they must be integrated with ethical reasoning, critical judgment, and social understanding. Learners need to understand not only how technologies function but also whose interests they serve, how biases are embedded in systems, and what consequences they have for jobs, privacy, and governance. Without this critical dimension, digital education risks reproducing what Keri (2020) describes as a narrow technocratic vision. Keri warns that an

overemphasis on coding and technical skills may “reduce education to training for machine logic rather than human judgment” (2020, p. 118), reinforcing instrumentalism rather than challenging it.

Despite growing recognition of these challenges, educational institutions face significant structural constraints that limit their capacity for transformative change. Rigid curricula, high stakes testing regimes, and accountability pressures often leave little room for experimentation, interdisciplinary learning, or critical inquiry. Teachers face increasing workloads, administrative demands, and burnout, while professional development opportunities are frequently fragmented or underfunded. Access to digital technologies remains deeply unequal both within and among countries, exacerbating existing social and educational inequalities. Darling-Hammond (2021) argues that addressing these challenges requires systemic rather than incremental reform. She emphasizes that meaningful educational change must align curriculum, assessment, teacher education, and school organization around shared goals of equity, deep learning, and student agency. As she notes, “isolated reforms cannot succeed in systems designed to produce compliance rather than understanding” (Darling-Hammond, 2021, p. 9). From this perspective, preparing learners for uncertainty and technological change is not merely a matter of adding new skills to existing frameworks but of rethinking the purposes and structures of education itself.

In sum, while digital skills, STEM education, and employability remain important, an exclusive focus on instrumental competencies risks undermining education’s broader social and ethical functions. Scholars such as Biesta, Zhao, Livingstone, and Williamson remind us that education is not simply about producing skilled workers but about forming subjects capable of judgment, creativity, and responsibility in uncertain worlds. As AI and datafication reshape work and learning, the



challenge for education is not only to keep pace with technological change but to ensure that such change serves human flourishing rather than reducing learners to measurable units of economic value.

From Human Capital to Human Flourishing: Rethinking Education for the Future of Jobs

For much of the late twentieth and early twenty-first century, human capital theory has dominated education policy worldwide. Rooted in neoclassical economics, this framework conceptualizes education primarily as an investment in workforce productivity and national economic growth (Becker, 1993). Schooling, from this perspective, is justified insofar as it increases individuals' skills, employability, and earnings potential. While human capital theory has influenced the expansion of access to education and skills development, it has also widely narrowed the purposes of education and reduced learners to economic units. One of the most influential alternatives to human capital theory is Amartya Sen's (1999) capability approach. Rather than focusing on economic outputs, Sen emphasizes what individuals are substantively free to do and to be. Capabilities refer to "the various combinations of functionings that a person can achieve" (Sen, 1999, p. 75), encompassing not only work and income but also health, participation, dignity, and self-determination. From this perspective, education is not merely a means to labor market productivity but a foundational capability that expands people's freedoms and life chances. Preparing learners for future work is therefore inseparable from preparing them for political participation, social inclusion, and personal flourishing. In *Reimagining Our Futures Together*, UNESCO (2022) argues that education should be understood as a "common good" rather than a private investment. Education, in this view, enables individuals and societies to respond collectively to shared challenges such as climate change, inequality, technological disruption, and political

polarization. UNESCO emphasizes that education must cultivate "the ability to shape more peaceful, just and sustainable futures" (p. 5), explicitly linking employability with ethical responsibility, civic engagement, and social cohesion. Such frameworks challenge the assumption that economic competitiveness should be the primary benchmark of educational success.

In an era characterized by rapid technological change and uncertainty, the capacity to adapt and continue learning across the life course becomes increasingly important. Rather than mastering a fixed set of occupational skills, learners must develop what are often described as meta-competencies or learning dispositions. The OECD's *Learning Compass 2030* reflects this shift, highlighting "transformative competencies" such as adaptability, resilience, self-regulation, and metacognition (OECD, 2019). These competencies enable individuals not only to respond to change but to shape it in socially responsible ways. Research in the learning sciences provides strong empirical support for the importance of such capacities. Hattie and Donoghue's (2016) synthesis of meta-analyses demonstrates that metacognitive strategies such as planning, monitoring, and evaluating one's own learning have positive effects across subject areas and age groups. They argue that "the skill of learning how to learn is more powerful than any single content domain" (Hattie & Donoghue, 2016, p. 102). In uncertain jobs markets where job roles evolve rapidly, these capacities may be more durable than specific technical skills.

The limits of automation further reinforce the need for broader educational goals. While artificial intelligence and robotics increasingly outperform humans in routine, rule-based tasks, they remain poorly suited to creative, open-ended, and socially embedded problem-solving. Sawyer (2012) challenges the myth of creativity as an individual trait, arguing instead that creative thinking is fundamentally social and collaborative. Innovation



emerges through interaction, dialogue, and shared meaning-making rather than isolated genius. Education systems, therefore, must provide learning environments that foster collaboration, experimentation, and interdisciplinary thinking. Pedagogical approaches such as project-based learning, inquiry-based learning, and interdisciplinary curricula are frequently cited as effective means of cultivating creativity and problem-solving. These models allow learners to engage with authentic problems, integrate knowledge across domains, and develop communication and teamwork skills. However, research indicates that implementation remains uneven, often constrained by standardized curricula, assessment regimes, and limited teacher support (Darling-Hammond et al., 2020). As a result, the transformative potential of such pedagogies is not yet realized at scale. One of the most consistent findings across future-of-work research is the enduring importance of relational, emotional, and interpersonal skills. Reports from the World Economic Forum (2023) and the OECD (2021) emphasize that skills such as empathy, communication, collaboration, leadership, and cultural competence are increasingly valued across sectors. These capacities are difficult to automate precisely because they rely on emotional intelligence, moral judgment, and contextual understanding. They are particularly central to human-centered professions such as teaching, healthcare, social work, counseling, design, and management, but they are also critical in technical and scientific fields where teamwork and stakeholder engagement are essential. Importantly, relational skills are not merely instrumental workplace assets; they are also foundational to political life and social cohesion. The ability to listen, deliberate, resolve conflict, and work across difference underpins both effective organizations and functioning societies. This insight aligns with Sen's and UNESCO's emphasis on education as a public and civic endeavor rather than solely an economic one.

As artificial intelligence increasingly shapes decision-making in workplaces and public institutions, ethical reasoning becomes an essential educational priority. O'Neil (2016) famously warns of "weapons of math destruction", describing algorithmic systems that are opaque, unaccountable, and harmful to vulnerable populations. Such systems, she argues, can reinforce existing inequalities while presenting themselves as objective and neutral. Education must therefore equip learners not only to use digital technologies but to critically interrogate them. This requires forms of digital and data literacy that include ethical reflection, civic responsibility, and critical media literacy. Learners must understand how algorithms influence access to information, shape public discourse, and affect political processes. In an era of automated information flows (that includes misinformation) and political polarization, civic capacities such as political deliberation, critical evaluation of sources, and collective problem-solving are as vital as technical competence.

In conclusion, the future of work cannot be adequately addressed through human capital theory alone. While economic productivity remains important, it is insufficient as the primary rationale for education in a complex, uncertain, and technologically mediated world. Alternative frameworks such as the capability approach and education-as-a-common-good perspective highlight the interdependence of work, political governance, well-being, and ethical responsibility. Preparing learners for future work therefore requires cultivating not only skills and competencies but also agency, creativity, relational capacities, and moral judgment. Education's task is not simply to help individuals adapt to the future, but to empower them to shape it collectively.

Conclusion

The future of jobs presents both profound challenges and generative opportunities. Rapid technological change has reshaped and continues



reshaping how work is organized, governed, and valued. While popular narratives often predict widespread job loss, research consistently suggests that technology will not eliminate work altogether but will instead transform it, redistributing tasks and increasing demand for new forms of skill and judgment. The key challenge is not the disappearance of work but the pace and unevenness of change, which place increasing pressure on individuals and institutions to adapt. These transformations expose the limitations of narrow human capital models that frame education primarily as a pipeline for workforce productivity. While technical and occupational skills remain important, they are insufficient in a context characterized by uncertainty, complexity, and ethical risk. As noted that development should be understood in terms of expanding human freedom rather than merely increasing economic outputs, education, therefore, must play a central role in enabling individuals to lead lives they have reason to value, encompassing work, civic participation, social relationships, and well-being.

Education systems must evolve to embrace broader goals of human flourishing, adaptability, ethical reasoning, and political engagement. Education must be treated as a common good that equips learners to “collectively shape peaceful, just and sustainable futures”. This perspective aligns with growing calls to prioritize meta-competencies such as learning how to learn, creativity, collaboration, and moral judgment capacities that complement, rather than compete with, technical expertise. Achieving this shift requires systemic rather than piecemeal reform. Reimagining curricula to support interdisciplinary and inquiry-based learning must be accompanied by investments in teacher education, professional autonomy, and well-being. Structural inequities in access to high-quality education and digital resources must also be addressed to prevent technological change from deepening social divides. As work becomes increasingly non-linear, education policy must

prioritize lifelong learning systems that support reskilling and personal development across the life course. Thus, preparing for the future of work is inseparable from preparing for the future of society. Decisions about what and how we teach reflect normative choices about the kind of world we wish to build. The central question, therefore, is not only what work will look like in an age of AI, but how education can empower individuals and communities to shape technological change in ways that advance dignity and shared human flourishing.

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