Education and Re-skilling in the Age of AI

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Faced with major economic and social disruption, business and policy leaders are joining together to devise strategies and models to adapt the skills of the existing and future workforce to the opportunities offered by AI, automation, robotics and digitalization. McKinsey reports that “42 % in the United States, 24 % in Europe, and 31 % in the rest of the world—admit they currently lack a “good understanding of how automation and/or digitization will affect […] future skill needs.”

To prepare for looming technological upheavals, we need to understand the current educational and training landscape, its limitations, examine the latest research on the future skills needed and highlight some of the most effective employment and human resources strategies and educational models that can better position all stakeholders for the imminent change. We argue that by working together, especially through public-private partnerships, business and policy leaders can develop effective work-readiness and skill matching solutions, lifelong learning and re-skilling approaches to prepare both employers and employees for the changing world of work.
Teaching People to Learn

For some, AI and globalization can be liberating and exciting; but for those who are insufficienly prepared, they can mean uncertainty in employment, and a life without prospects. Our economies are shifting towards regional hubs of production, linked together by global chains of information and goods, but concentrated where comparative advantage can be built and renewed. This makes the distribution of knowledge and wealth crucial, and that is intimately tied to the distribution of educational opportunities.

The dilemma for education is that the kinds of things that are easy to teach have now become easy to digitize and automate (e.g. memorization vs. critical thinking). The modern world does not reward us just for what we know – Google knows everything – but for what we can do with what we know. So, the focus must shift to enabling people to become lifelong learners, which encourages constant learning, unlearning and relearning when the contexts change, and integrates both the practical world of work, with the theoretical world of learning. The future is about pairing computers with the cognitive, social and emotional skills of human beings.

These days, AI algorithms sort us into groups of like-minded individuals. They create virtual bubbles that amplify our views and leave us insulated from divergent perspectives. Tomorrow’s educational institutions will need to help students to think for themselves and join others, with empathy, in work and citizenship, and build character qualities such as perseverance, empathy or perspective taking, mindfulness, ethics, courage and leadership.

But to transform schooling at scale, we need not just a radical, alternative vision of what's possible, but also smart strategies and effective institutions. Our current educational institutions were invented in the industrial age, when the prevailing norms were standardization and compliance, and when it was both effective and efficient to educate students in batches and to train teachers once for their entire working lives. The curricula that spelled out what students should learn were designed at the top of the pyramid, then translated into instructional material, teacher education and learning environments, often through multiple layers of government, until they reached, and were implemented by, individual teachers in the classroom.

This structure, in a fast-moving world, reacts to current needs, far too slowly. Today, we need to embrace AI also in ways that elevate the role of educators from imparting received knowledge towards working as co-creators of knowledge, as coaches, as mentors and as evaluators. AI can support new ways of teaching that focus on learners as active participants (e.g. chat bot, gaming applications).

Public Private Coming Together around Skills

With 40% of employers reporting that they lack the talent required, it is surprising that at the same time global youth unemployment as stated by the International Labour
Organization (ILO) is at 66 Million.\(^1\) There is clearly a mismatch and the private sector has a critical role to play in resolving this skills-education deficit. Employer-driven education i.e. apprenticeships, traineeships, internships, learnerships, are key in equipping the workforce with the soft and technical skills that employers require.

In countries such as Switzerland and Germany with robust apprenticeship programs and strong employer engagement, the rate of youth unemployment is very low. So, why aren’t there more apprenticeships and employer driven education? In many countries, the policies, regulations, registration process for setting up work-based learning programs are cumbersome and time-consuming for employers. The return on investment (ROI) is often unknown, e.g. in the USA for every $1 spent there is a return of $1.47.\(^2\) Lastly, educational institutions are not always linking to employers on curriculum design to reflect the world of work’s latest needs.

We have learnt at the Global Apprenticeship Network (GAN), a public-private partnership (PPP), that the convening of key stakeholders at the local city and country level ensures that education and legislation is better attuned to the world of work. Although private and public stakeholders do not always speak the same language, bringing them together increases their mutual understanding of the needs and changes that will assist in getting skills for business and jobs for youth.

Employers are uniquely positioned to define the skills required in the world of AI, robotics and automation as they are developing these technologies. Sadly, their importance as not only job creators, but also curricula designers, are often overlooked and they are often left out of the conversation and decision-making process. Work-based learning and notably apprenticeships connect education to work and we are seeing more and more employers creating innovative apprenticeships - part-time apprenticeships, pre-apprenticeships and a vast range of online tools. e.g. e-apprenticeships. In the last five years since GAN’s inception, it has become increasingly apparent that these models must be leveraged to ensure that not only youth, but also middle-aged and senior population groups adapt their skills and competencies to the fast evolving economic and technological context. In short, with the need for reskilling and lifelong learning on an unprecedented scale, innovative apprenticeships can help get skills for business and jobs for all.

Below are two business-led initiatives that further illustrate the power of public-private partnership in skilling and reskilling. With the uncertainties linked to fast-paced technological change, these

\(^1\) http://www.ilo.org/global/topics/youth-employment/lang--en/index.htm
\(^2\) https://www.dol.gov/apprenticeship/NAW/pdf/Final_DOL_NAW_Factsheet.pdf
models show us how all actors – public and private- can join forces to ensure that skill development is continuously connected to present and future socioeconomic needs.

The first is IBM’s P-TECH school, a public-private partnership educational model that addresses postsecondary degree completion and career readiness by smoothing the transitions between high-school, college, and the professional world in science, technology, engineering, and mathematics (STEM). It recognizes that students need early and engaging experiences with the world of work, to make the academic work in high school and college meaningful and to fully prepare them with the workplace skills required by employers. The model pairs educational institutions with “employer partners” to act as mentors, develop curriculum, organize site visits, internships and other workplace learning opportunities.

The sustainability of the model depends on public authorities’ active involvement to develop appropriate frameworks, regulations, licensing, etc. Starting with one school in 2011 and engaging over 400 business partners, P-TECH expects to have 100 schools in 2018. IBM also ensures that its own workforce has continuous access to lifelong learning. Through the Think40 program IBM staff is asked to pursue at least 40 hours of personal and technical skills development through formal classes, self-paced learning, and online resources. The Think Academy platform allows IBM staff to access customized training which is constantly updated to IBM’s clients’ most current and pressing needs.

The second example is based on Randstad’s approach to “put humans first” in the age of digital transformation. Randstad supports clients to integrate versatility in their organizational culture, through a wide variety of reskilling mechanisms, ranging from external & internal training, mentorship to job rotations and adult apprenticeships. Moreover, Randstad operating companies facilitate the integration and reintegration of vulnerable segments of society (e.g. youth, women, senior staff) with more than 100 social innovation programs mostly through public-private partnerships across the world. For example, in Spain, the Randstad Foundation works with more than 600 companies to ensure the reintegration of those at risk of exclusion from the labor market. In Italy and in the Netherlands, Randstad focuses on employees over 50 years of age, by organizing training in the latest technologies, advocacy, and networking opportunities (12 events to date) with employers.

This overview of initiatives, models and partnerships demonstrates that, through collaboration involving public and private entities, excellent strategies can be developed, not only to adapt to the upcoming technological change, but also to
capitalize on the opportunities technology has to offer for the creation of better jobs and better lives.

**Employers are Optimistic in the Age of AI**

We’re all being told that our jobs are doomed by robots and automation. But the OECD estimates that only nine percent of jobs across the 35 OECD nations are at high risk of being automated, although of course even nine percent can generate plenty of social difficulties. But there is an established track record throughout history of new technologies creating at least as many new jobs as they displace. Usually these new jobs demand higher skills and provide higher pay. The biggest threat is that our educational institutions won’t be able to keep pace with the new skills demands including the important skills that AI will not be able to replace.

For global employers, there is a steadily growing mismatch between what companies need in terms of skills and what the workforce is coming equipped to do. In an economy with a significant on-demand labour force, two main types of competencies will be needed: “technical” – or in other words, related to deep knowledge of a specific domain, whether welding or engineering, and “transversal,” which applies to all occupations. Those are described by the Centre for Curriculum Redesign as creativity, critical thinking, communication and collaboration.

**The Skills Employers will Seek**

So what skills will managers need as a result of likely structural changes, driven by AI and growth of the on-demand economy? A recent survey by Business at OECD (BIAC) surveyed 50 employers’ organizations worldwide. It showed that employers value not just the skills and character traits described above, but also character qualities as well, such as mindfulness, curiosity, courage, resilience, ethics, leadership and meta-learning (e.g. growth mindset and metacognition).

Furthermore, it is becoming increasingly clear that, in a constantly changing world, an individual’s versatility matters; so, the model developed by Jim Spohrer of IBM, of a “T-shaped” person, holds true: broad and deep individuals capable of adapting and going where the demand lies.

Employers’ organizations at the national and global levels are already developing innovative programs to help governments and educators anticipate the needs of the future workforce. Through robust action at the global level, including through the G-20 and the OECD, policy makers can also make sure that they are helping their populations succeed and thrive in a world of AI and other technological advances.

This overview highlights the strength of partnerships between the public and the private sector in preparing for the unpredictable. For such alliances to reach their full potential, on the one hand governments and policy makers must be open to the private sector’s input and on the other hand employers need to take a long term view of the ROI and accordingly commit resources in skilling and educating their current and future staff, notably through apprenticeship and work-readiness programs.
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