

Bridging the AI skills gap: Is training keeping up?

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Key messages

- Artificial intelligence (AI) is becoming increasingly important in the workplace. The spread of AI is driving a heightened **need for both specialised AI professionals and workers with a more general understanding of AI**.
- An increasing number of OECD countries are implementing strategies and policies to support **upskilling and reskilling for AI adoption**, including the introduction of publicly-funded AI-related training programmes. However, **more can be done** to ensure training programmes are well suited to **prepare** adults for the future AI-driven workplace.
- Analysis from a subset of OECD countries reveals that only **a small percentage of training courses currently deliver AI content**, signalling a need to scale-up supply.
- The majority of programmes with some AI content currently **focus on advanced AI skills**. Most countries could benefit from offering a **broad range of courses to promote general AI literacy**.
- Policymakers should **consider expanding and better targeting initiatives** to develop both general AI literacy and advanced AI skills, including using financial and non-financial incentives, collaboration with industry, and the development of more inclusive learning pathways.

Understanding the current supply of AI training is the first step to future-proofing programmes

While demand for skills for the AI transition is rising, policymakers struggle to assess whether current training opportunities are sufficient. Studies about training needs often focus on the demand side – identifying the skills and knowledge that employers are having trouble sourcing – while offering little insight into the supply side, such as how training providers offer relevant course content or governments establish appropriate programmes. A new OECD report helps shed light on this topic (OECD, 2024^[1]).

With one in three job vacancies having high AI exposure, a significant share of jobs in OECD economies are influenced by the rise of AI. A small proportion of these jobs – about 1% – require specific, complex AI skills (Green, 2024^[2]) AI adoption is driving an increasing demand for AI professionals – workers who are proficient in developing and maintaining AI models. AI training programmes focussed on advanced AI skills can therefore help to build and support a highly skilled AI professional workforce.

However, the vast majority of workers exposed to AI will not require specialised AI skills. Most workers across the OECD only require a general understanding of AI. Therefore, in addition to advanced AI skills, training programmes must also address general AI literacy to ensure workers can effectively use and interact with AI systems. AI literacy helps workers to develop a more fundamental understanding of AI, enabling them to communicate and collaborate effectively with AI technologies. This can involve training on AI ethics, fostering awareness of potential risks and harms, and equipping individuals to critically evaluate AI technologies as they use them.

A new OECD report sheds light on the current supply of training and assesses the readiness of adult learning systems for the AI transition. Policy analysis of 21 countries provides new insights into existing government initiatives related to AI training. Additionally, novel analysis of training course catalogues in Australia, Germany, Singapore and the United States examines the share of courses with AI content, as well as their accessibility and flexibility across various characteristics. More information on the methodology is available in OECD (2024^[1]).

Training supply is not yet well-equipped to deliver AI skill needs

With the recent rise of AI adoption, many countries have introduced training incentives, but these often lack a direct focus on AI. Some, but not all, of the 21 analysed countries have developed dedicated AI strategies. Many countries have introduced incentives to support employers in providing training for their employees, typically through subsidies, although these financial incentives often lack a direct focus on AI skills. Similarly, whilst most countries offer financial support for training programmes to workers and jobseekers, these initiatives are also not explicitly tied to AI skills development. Moreover, publicly-funded digital skills training – without an explicit focus on AI – is common across the OECD.

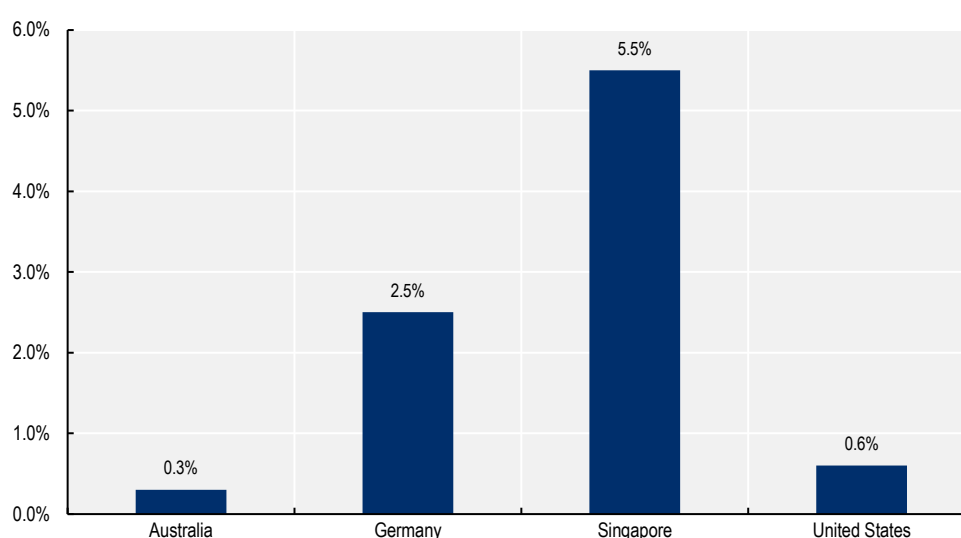
Nonetheless, some countries have made progress in offering publicly-funded training programmes that focus on AI. Among the 21 analysed countries, 14 have invested in AI-specific training programmes. Of these, 9 programmes focus on developing AI professionals, while 7 programmes aim to build AI literacy amongst the general public. A couple of countries have even implemented programmes for both advanced AI skills and AI literacy.

Countries rely heavily on financial incentives to promote the development of AI skills, underutilising other policy tools that could support a more inclusive transition. Although most countries employ a combination of incentives for the different actors in the skills ecosystem to promote AI-related training, financial support remains the dominant approach. However, fostering an inclusive transition requires a more holistic approach. Countries often overlook non-financial levers, such as career guidance initiatives, public-private collaborations and train-the-trainer programmes, policy tools that could

help ensure AI training reaches a wider and more diverse audience (see OECD report for a full overview of implemented incentives).

Moreover, novel quantitative analysis finds that across Australia, Germany, Singapore and the United States, between 0.3% and 5.5% of analysed training courses deliver AI content (see Figure 1). This could be content related to the development of both advanced AI skills and more general AI literacy. Whilst these figures may be underestimated (learning can also happen informally or in the workplace), this result does nonetheless suggest current training supply may not be sufficient to meet demand, especially the growing demand for AI literacy. With a significant proportion of the labour force expected to be exposed to changes in work brought about by AI, policymakers need to consider scaling up the supply of AI-related training courses to meet the growing adoption of AI in the economy.

Figure 1. Share of AI-related courses in Australia, Germany, Singapore and the United States



Note: Share was calculated using text matching on data gathered from catalogues of a mix of formal and non-formal education and training courses in Australia, Germany, Singapore and the United States.

Source: OECD (2024^[1]), *Training Supply for the Green and AI Transitions: Equipping Workers with the Right Skills*, <https://doi.org/10.1787/7600d16d-en>.

Evidence from both policy analysis and the analysis of training courses shows that most countries place a bigger focus on developing AI professionals than expanding general AI literacy. Policymakers should consider ways to expand general AI literacy programmes for a wider population, alongside continuing to provide more advanced training offerings for AI professionals. While not all workers will require training to develop and maintain AI systems, most will require skills for using and interacting with AI systems, including general AI literacy skills (Lassébie and Quintini, 2022^[3]). General AI literacy courses can expand workers' awareness of the benefits and uses of AI and help to boost confidence in their AI skills. Some countries are making headway in the development of general AI literacy and AI professional skills. Table 1 and Table 2 highlights some notable policy initiatives.

Table 1. Examples of policy initiatives related to general AI literacy

Austria: The Digital Everywhere (<i>Digital Überall</i>) initiative planned to roll-out 3 500 workshops in all Austrian municipalities throughout 2024 with the aim of boosting basic digital competencies, including AI and cybersecurity, among the general population. The workshops are conducted at different venues, including youth centres and retirement homes, facilitating access for individuals from different backgrounds and age groups.	Germany: As part of Germany's AI Strategy, mobile and stationary "AI Studios" (KI-Studios) have been set up throughout the country as a way to support employers, specifically SMEs, in their uptake of AI. Interactive demonstrators provide information, raise awareness, and bring AI to life with vivid and realistic applications of AI in the workplace. The studios take a workshop format and aim to explain AI technologies and their implications in a user-friendly manner, helping businesses navigate the complexities of AI adoption. The initiative is a collaborative endeavor amongst research institutes, universities and the Ministry of Labour and Social Affairs.
Singapore: The SkillsFuture for Digital Workplace 2.0 initiative is a training programme that focuses on four key areas: automation, cybersecurity risk, data analytics and in-demand digital tools. It aims to assist individuals from various professional backgrounds and skill levels in acquiring digital and AI literacy. Of note, the initiative is targeted toward adults in jobs likely to be affected by AI and with low levels of skills. The two-day long courses are eligible for subsidy under Singapore's SkillsFuture Credit scheme, which provides an opening credit of SGD 500 to all Singaporeans aged 25 and above, helping to partially offset training expenses.	Hungary: The Hungarian AI challenge, set up in 2020, is a gamified learning experience designed to raise awareness about the emergence of AI and to teach AI basics to the general public. The beginner level online course contains interactive content and can be completed within two to three hours. The goal to equip 1% of the Hungarian population (around 100 000 people) with a basic understanding of AI, while another 1 million adults are exposed to the technology via exhibits, events, brochures, contests and a website.

Source: 2023 OECD Policy Questionnaire: Adult Learning for Diffusion of AI, taken from OECD (2024^[11]), *Training Supply for the Green and AI Transitions: Equipping Workers with the Right Skills*, <https://doi.org/10.1787/7600d16d-en>.

Table 2. Examples of policy initiatives related to AI professional training

Poland: the Academy for Innovative Applications of Digital Technology (AI Tech) initiative is a collaboration between leading companies in the technology sector and Polish universities to jointly create AI-related master programmes. Five universities launched new programmes and specialisations in AI, cybersecurity and machine learning in 2021, with funding from the European Union.	United Kingdom: the Department for Education launched Skills Bootcamps in 2020, which offer short, sector-specific training to both employed and unemployed adults in areas including AI. The bootcamps help learners develop the technical skills required to secure an entry-level role in the tech sector. Course curricula is created and delivered in collaboration with employers, ensuring learners are equipped with job-ready skills. The courses last up to 16 weeks and are free of charge. Upon successful completion, learners are offered a job interview with a potential employer, helping workers make the transition from training to work.
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Source: 2023 OECD Policy Questionnaire: Adult Learning for Diffusion of AI, taken from OECD (2024^[11]), *Training Supply for the Green and AI Transitions: Equipping Workers with the Right Skills*, <https://doi.org/10.1787/7600d16d-en>.

More inclusive training options can expand participation in AI training

The provision of inclusive and flexible training options is key to broadening access to training and managing the unequal impacts of AI across different groups, yet AI-related training remains relatively rigid. Low-skilled adults or workers in jobs with a high risk of automation are particularly vulnerable to the potential adverse employment effects of the AI transition and may thus require extra support. However, these groups of workers are often also the least likely to access and participate in training. Government initiatives are therefore key to ensuring training is accessible, flexible and inclusive to secure broader participation. OECD (2024^[11]) finds that most AI-related training is focused on training for AI professionals, with more pre-requisites demanded for AI-related training than the average training course. This suggests that the current supply of AI-related training may be more targeted towards higher skilled adults. While beginner-level courses do exist, there is room to expand entry-level options to encourage wider participation in training. Additionally, while AI courses are only slightly less likely to be held in-person than the average course, the share of online or hybrid courses remains relatively low across the four countries, highlighting an opportunity to make AI training more flexible and accessible.

What can policymakers do?

- **Better target financial support measures** – such as subsidies and grants – by ensuring they are directly linked to AI skills development. Directing funds specifically towards courses that build both specialised AI competencies and general AI literacy, with particular attention to those most vulnerable to transition risks.
- **Increase non-financial incentives**, such as advice and career guidance, public-private collaborations and train-the-trainer programmes, to foster a more comprehensive and holistic approach as such measures remain underutilised.
- **Foster collaboration** between governments, educational institutions, and industry to co-design curricula and training courses that are closely aligned with current and future workplace demands.
- **Reduce or remove high entry requirements for AI courses and encourage the development of entry-level AI initiatives** – such as bootcamps and short courses – that reduce barriers to training, allowing individuals with minimal prior qualifications to gain essential AI literacy skills, ensuring a more inclusive transition.
- **Expand flexible learning options** (e.g., online, part-time) to broaden accessibility and inclusivity of AI training, increasing the attractiveness of training and encouraging wider participation amongst currently underrepresented groups.
- **Integrate AI-related training into broader workforce strategies**, embedding AI upskilling and reskilling within comprehensive workforce development plans, encouraging a lifelong learning mindset amongst employers, to help workers build AI skills and navigate transitions in an AI-driven economy.

References

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- Lassébie, J. and G. Quintini (2022), “What skills and abilities can automation technologies replicate and what does it mean for workers?: New evidence”, *OECD Social, Employment and Migration Working Papers*, No. 282, OECD Publishing, Paris, <https://doi.org/10.1787/646aad77-en>. [3]
- OECD (2024), *Training Supply for the Green and AI Transitions: Equipping Workers with the Right Skills*, Getting Skills Right, OECD Publishing, Paris, <https://doi.org/10.1787/7600d16d-en>. [1]

Explore further

Read the full report:

OECD (2024), *Training Supply for the Green and AI Transitions: Equipping Workers with the Right Skills*, Getting Skills Right, OECD Publishing, Paris, <https://doi.org/10.1787/7600d16d-en>.

See more OECD analysis on adult learning:

<https://www.oecd.org/en/topics/adult-learning.html>

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This policy brief contributes to the OECD's Artificial Intelligence in Work, Innovation, Productivity and Skills (AI-WIPS) programme, which provides policymakers with new evidence and analysis to keep abreast of the fast-evolving changes in AI capabilities and diffusion and their implications for the world of work. The programme aims to help ensure that adoption of AI in the world of work is effective, beneficial to all, people-centred and accepted by the population at large. AI-WIPS is supported by the German Federal Ministry of Labour and Social Affairs (BMAS) and will complement the work of the German AI Observatory in the Ministry's Policy Lab Digital, Work & Society. For more information, visit <https://oecd.ai/work-innovation-productivity-skills> and <https://denkfabrik-bmas.de/>.



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