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Written submission from Dr Gemma Dale and Dr Michael Drummond (AIB0028)

Call for evidence: Artificial Intelligence, business and the future of the workforce

Dr Gemma Dale

Dr Michael Drummond

Liverpool John Moores University

Skills, Education & Transitions

What skills will workers and managers need to work effectively with AI?

Lack of AI skills and expertise has been [identified by the ONS](#) as a barrier to organisational adoption of AI technology. Academic definitions of AI literacy are a useful starting point to understand what skills are needed and how they might be developed. These definitions focus on core capabilities rather than specific tools, highlighting the importance of treating AI literacy as a broad foundational competency. A definition by [Long & Magerko \(2020\)](#) describes AI literacy as the ability to: *communicate and collaborate effectively with AI and use AI as a tool online, at home and in the workplace*. This definition emphasises the fact that AI is not merely a work-related skill but will be increasingly relevant to all aspects of work and life. AI literacy is further explained by [Ng et al., \(2021\)](#) as encompassing three elements: knowing and understanding AI, using and applying AI and evaluating and creating AI. Other terms are in use to describe the kind of skills and knowledge that will be required for the future: Microsoft use the term 'AI aptitude' where McKinsey talk about 'AI fluency'. Common in these definitions is the need for both knowledge and application. Also common within these discussions is the likelihood of work involving increasing integration between the work of humans and the work of machines. This assortment of terms suggests the importance of having a clear definition of what is meant by AI literacy and setting out specific goals for any related activities, to avoid unnecessary confusion.

These various definitions emphasise that effective engagement with AI demands a mixture of both cognitive and practical skills, requiring an understanding of what AI is and does and the essentials of how to use it, accompanied by skills that support effective and critical use. AI literacy requires technical competence accompanied by human centred skills such as communication, judgement, reflection, analysis, learning agility and confidence. [Microsoft research](#) identified specific requirements that leaders consider essential for the employees in the future. These include how to write prompts for AI systems, how to evaluate the work of AI tools and how to check for bias.

There is a broad understand that new skills are required for the future of work but for many organisations, a lack of a clear process for identifying and developing the specific skills, as well as potential barriers to overcome to such development, some of which have already been [identified by Government](#). This is understandable given the emerging nature of AI but suggests that support will be required if organisations are to maximise the potential of these technologies.

Building on these definitions and [our own research](#) on introducing AI into teaching and learning within Higher Education, we propose that workers and managers will require the following skills for foundational AI literacy.

Technical AI skills

Key concepts, definitions and fundamentals of AI; what is AI and how can it be used, as well as how AI systems work in practice.

- Awareness of AI technologies in everyday life.
- Competent use of common Generative AI tools and how these might be introduced effectively, safely and ethically into work activities. Including how to effectively prompt such systems.
- Insights into the potential uses of AI in business in general and organisational specific activities and use cases (where applicable).
- Competent use of industry / organisational specific AI technologies, including the ability to verify, appraise and analyse output.
- Identification of strengths / benefits, risks / challenges with respect to AI technologies. Includes understanding the boundaries of AI, including when not to use it.

These technical competencies will provide workers with a general understanding of AI. They competencies then need to be supported by and integrated with human centric skills, some of which are often referred to as 'soft skills'. They are, however, generic rather than sector specific. AI skills pathways related to industries or role types can complement these foundational skills. Given the emerging nature of AI in many organisations, combined with its many potential uses and ongoing development, the most important of these is perhaps having a flexible attitude towards these technologies and learning to use them, described here as 'learning agility'.

Cognitive skills for AI use

- Learning agility (the ability and willingness to learn AI technologies and relearn new ones in the future – developing a continuous learning mindset)
- Critical thinking (evaluation of AI outputs, determining whether outputs are credible / reliable, questioning).
- Decision making (using AI to support but not replace human judgement).
- Problem solving and reasoning.
- Analytical thinking.

Broadly, managers will need a similar range of skills and competencies to use AI technologies day to day within their own roles and responsibilities. Additionally, and depending on organisational AI maturity and level of adoption, they may need to be able to understand how to integrate AI into tasks and workflows, support employees with learning new tools and adjust to AI enabled work processes, and use human oversight of make informed decisions about AI use and its outputs. These tasks will draw on existing recognised skills for effective management.

Senior leaders / business owners may require higher level strategic capabilities to help them guide organisations through AI adoption or transformation. As previously, the specific skills requirements will be driven by the kind of AI technologies most relevant to the organisation, organisational maturity and strategic plans for incorporating AI into the activities of the organisation. Similarly, there will be a technical element (system choice for example) as well as a cognitive one encompassing broader leadership skills (change management, strategy, communication, ethics, risk management, planning). Leaders will need the ability to assess where AI can add value in accordance with organisational goals, oversee ethical, governance and legal obligations, develop plans for workforce reskilling and ensure that the culture and structures ready for AI adoption and integration.

Are current education, further/higher education and adult learning systems adequate and flexible enough to meet evolving skills needs?

Educational institutions at all levels are also on a learning journey with AI technologies and adoption is generally at an early and experimental stage. Whilst some have embraced AI and incorporated it into teaching, learning and assessment, there is a lack of a consistent strategy or formalised support for educators to themselves be sufficiently trained on AI technologies to be able to support future learners.

Not all educators will be sufficiently ready to incorporate AI / Generative AI into their practice. Research has already shown that some may be reluctant to do so, potentially because of the time and effort to do, confidence levels and a preference to maintain traditional forms of assessment. However, the rise of Generative AI in [particular calls into question the integrity of some traditional forms of academic assessment and the need to re-design assessments](#) meaning that inattention or complacency regarding AI tools is not an option for educators and institutions.

Educators will therefore need to be specifically equipped through targeted training and development initiatives to be able to teach with AI as well as teach about it. We suggest that educators need broadly the same foundational technical and cognitive skills demanded of employees of the future with additional training and development in the following areas:

- Awareness of tools that can support AI teaching, learning and assessment.
- Ability to design learning activities that incorporate AI technologies.
- Awareness of how AI (especially Generative AI) affects traditional models of assessment, and the ability to design assessments that integrate AI or exclude AI misuse.
- The ability to support learners as they navigate new technologies.
- Awareness of the risks of AI tools and how to educate learners on these, including safe use.

AI Literacy needs to be integrated across a curriculum rather than being treated as a specific module, course or discipline. Previously [the AI Council has recommended](#) creating AI academies for educators, including the provision of specific materials to support teaching and learning and adapt the curriculum, as well as initiatives that will support the development of educators. We repeat these calls; without direct support to schools / educational institutions there is a risk of uneven adoption and quality issues. As noted by the Russell Group in their response to AI in education, educational establishments at all levels will need to collaborate to share best practices in incorporating AI in teaching and learning; we suggest that the government consider facilitating this collaboration.

Speed is an issue of note: businesses are hiring AI skills today making this a key employability issue for those leaving education and seeking employment. Students at all levels are also already using or being exposed to AI technologies ([including in their school work](#)), suggesting an urgent demand to equip them with skills to use them as well as understand potential risks and avoid over-reliance and misuse.

Given the speed of development of new technologies, it is recommended that any skills initiatives / practical actions resulting from this consultation are focused on principles and key ideas, as opposed to specific tools. As AI continues to develop and is integrated into more business functions, approaches and support will similarly need to develop. These principles can align with the discussed definitions of AI (for example knowing and understanding AI, using and applying AI and evaluating and creating AI).

What reskilling and upskilling models are most effective, particularly for SMEs and lower paid or insecure workers?

Regardless of industry, role type or job status, employers will benefit from undertaking capability assessments as a first step, in order that AI literacy initiatives may be targeted and relevant, addressing real gaps rather than assuming uniform needs, and tackling specific organisational needs. Templates for such assessments could be standardised and provided, and focused on areas including baseline understanding of AI, competence with tools, current use levels and confidence.

Short, modular and flexible learning models can support learning amongst organisations and employees who may have access to or the resources to support formalised qualifications or lengthy courses. Courses should be available online (including mobile friendly options) with scaffolded support for learners. This can broaden accessibility to AI learning, noting that those in insecure work may find it difficult to access classroom-based learning.

With respect to specific models, our own [early research into micro-credentials](#) has found that these can be an effective way of teaching foundational AI skills. These, as well as MOOCs such as the one developed by the [University of Bristol](#) can provide valuable introductions to AI in general.

When designing learning interventions, the Government and employers will need to give consideration to barriers to learning and can be further guided by academic theory. The Technology Acceptance Model tells us that user adoption is influenced by perceived usefulness (of the technology to the individual) and perceived ease of use. This theory suggests that organisations will need to carefully communicate the purpose of AI technologies and the benefits of engaging with them / learning how to use them, as well as simply providing relevant training. Employers will need to answer the question for employees ‘what is in it for me’.

The implementation of AI technologies also has the potential to generate fear about future job prospects, further highlighting the importance of not simply treating the development of AI skills as training initiative; articulating the benefits to individuals will help to address these concerns, and careful implementation can ensure that such issues do not become barriers to

learning. Drawing on established change management and employee engagement techniques can support this approach.

SMEs can be further supported via the provision of mentors, the development of sector specific courses, and the provision of learning through colleges or regional skills providers, reducing the burden on individual firms. Straightforward guidance, advisory networks, case studies and starter toolkits would also benefit smaller organisations to build AI literacy and capability.

How can Government and employers support augmentation, job redesign and upskilling when introducing AI?

As highlighted previously, given the emerging nature of AI and Generative AI in particular, many organisations and education institutions are still in a ‘trial and error’ state. The exact impact on the labour market, and then at a micro level, how individual jobs may change, is largely unknown (albeit many predictions and scenarios exist). Even the concept of AI literacy itself does not have a consistent definition.

A defined model or framework for AI introduction, development and adoption, combined with AI literacy initiatives, is a starting point. Such a framework needs to be aligned with digital and AI skills gaps and linked to a curriculum that will support students as they transition from education to work and provide the skills needed in the future of work.

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