



Industry 4.0: skills for the future and learning development

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Presentation abstract

The world and the workforce are changing with the rise of Industry 4.0, or the Fourth Industrial Revolution, with a shift towards automation and digital technology, and this is coupled with other global shifts such as the climate crisis. Organisations such as the World Economic Forum, the International Labour Organisation, and Skills Development Scotland believe Industry 4.0 will change the way we work and live, with implications for everyone. These organisations argue that we need to become lifelong learners and develop future-ready skills, most notably adaptability, creativity, critical thinking, and problem-solving. But what does this mean for Learning Developers? Firstly, we need to consider how and if our own roles will change, and secondly the impact this will have on our learners and what (if any) changes we should make to support them.

I used the following prompt questions to start the discussions:

- Should Learning Developers be concerned about Industry 4.0?
- What are future-ready skills and are these already embedded in higher education?
- Should Industry 4.0 impact the way Learning Developers think about lifelong learning?

Keywords: industry 4.0; future ready skills; lifelong learning.

Community response

The reflections of the participants in the round tables touched on several key themes about the role of human intelligence, creativity, and education in an era of rapidly advancing artificial intelligence. Drawing a parallel between the process of learning and critically evaluating AI outputs, Carina Buckley noted:

It made me think back to a conversation with my Physics teacher at school about calculations, encouraging us to not blindly trust the calculator but to have the know-how to calculate by hand so we could see any mistake. As technology is increasingly complex, it feels even more important that we can see when things have gone wrong, biases have crept in, or assumptions have been made.

This emphasises the continued importance of deep understanding and the ability to detect errors or biases in technology-assisted processes. Even more than that, we should be compelled to reassert the unique qualities of human intelligence, particularly creativity and imagination, in contrast to artificial intelligence:

What does it mean, now, to be human? This, I think, was at the heart of this discussion, and the need to claim creativity and imagination for *human* intelligence, out of the current grip (and novelty?) of artificial intelligence. This reading opens a significant space for Learning Developers, as students need to understand the processes of creativity, the value of writing for thinking, the time and space that allow imaginations to flourish and expand. I believe knowledge will remain as important as ever, because it is how that knowledge is interpreted and applied that really matters, much more than skills. We need to be able to make connections, see potential, and take intellectual risks, and Learning Developers are ideally placed to lead this work. It only remains for us to assert it! (CB)

There was also a strong emphasis on the crucial role that Learning Developers can play in this changing landscape. Helena Beeson pointed out that Learning Developers are key in helping students to develop creative thinking, writing skills, and the ability to make connections and take intellectual risks:

I enjoyed this discussion, but it did make me think. As Learning Developers, it is likely that AI will have a significant impact on our future. It is arguably a moving target — who knows how it will evolve for certain — but I welcomed the discussion around likely scenarios. Everyone at the table seemed so well informed and brought different perspectives to the topic.

Despite the focus on skills in many educational discussions, these reflections argue for the continued importance of how knowledge is interpreted and applied, rather than just acquired. There is an acknowledgment of the unpredictable nature of AI's evolution and its impact on education, reminding us to stay informed and consider multiple perspectives on this rapidly changing topic. The rise of AI certainly necessitates a re-evaluation of human skills, knowledge, and creativity, and Learning Developers should take a proactive role in shaping how students learn to think and create in this AI-enhanced world.

Next steps and additional questions

In addition to the prompt questions posed in the abstract, the following questions could stimulate further discussion:

- How can Learning Developers position themselves as leaders in developing students' critical thinking and creative skills in relation to AI?
- How can we prepare Learning Developers to confidently navigate and teach about AI technologies? What collaborations between Learning Developers and subject specialists could be beneficial in developing comprehensive educational strategies?
- How can we balance the development of traditional knowledge bases with the need for adaptability in the face of rapidly evolving AI technologies?

Author's reflection

This topic led to many interesting and thought-provoking conversations, which went in many directions. However, coherent across all conversations was the sense of the unknown; both positive and negative. There were discussions of how Industry 4.0 and AI will lead to opportunities to develop new ways of working and learning, with the possibility of making education more inclusive. Yet, understandably, there is great concern about the shifting future, with large unknowns about what changes will emerge, how universities will change, and how we can support our students to navigate these changes.

Much of the conversation focused on the nature of knowledge and skills in Industry 4.0, and if specialised knowledge will advance at an accelerated rate. Therefore, students (and

practitioners) will need to understand how to engage with this new accelerated knowledge, generative AI, and automation. They will need to know how to evaluate this information, especially for its accuracy and relevance, whilst consistently trying to keep up to date. This led to fundamental questions about the role Learning Developers can play in this changing landscape, and how collectively this will impact the profession.

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The authors and contributors did not use generative AI technologies in the creation of this manuscript.

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