Educating for the fourth industrial revolution

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With technology rapidly changing our economic, cultural and social realities, the question of how to prepare the younger, and even the current, generation for the fourth industrial revolution has been a pressing issue for contemporary higher education.

How do we educate for the fourth industrial revolution? Are our education systems and programmes relevant to the fourth industrial revolution? And if not, how do we reconstruct our education systems so that they are?

Fourth industrial revolution

Although there have been debates about whether current developments in technology are the late part of the third industrial revolution – the advent of information and communications technology or ICT – or constitute the advent of the fourth industrial revolution, it is increasingly clear that the rapid development of technology has changed everyone’s economic, social and cultural status quo.

The fourth industrial revolution is said to be ushered in by advancements in robotics, virtual reality, cloud technology, big data, artificial intelligence, the internet of things and other technologies. It is characterised by the fusion of technologies and the blurring of the lines between the physical, digital and biological aspects of life.

These technologies are predicted to have a significant effect on our daily lives, including the way we learn, especially if we are to prepare the younger generation and re-educate the current generation for changing work, social and cultural environments.
In spite of the fact that we are starting to discuss the advent of the fourth industrial revolution, our social infrastructure has been painfully slow to adapt to technological advances and their impact on our work and social life.

In spite of various conversations on student-centred learning, learning outcomes, lifelong learning and even on the use of ICT in education, the education sector, and higher education in particular, is still adopting antiquated methods of facilitating learning. Curricula and programmes can barely catch up with the needs of industry and contemporary social life.

There is a need to ensure that the world’s population, and not just the younger generation, has the ability to continuously learn, adapt and apply rapidly changing technologies to the rapidly changing learning and work environment and adapt to cultural, economic, political and social developments.

In fact, the Boston Consulting Group recommended from an economic and industrial perspective that companies adopt new work and organisational models, retrain employees and recruit for the fourth industrial revolution. In terms of education, the group also recommended that education systems provide broader skillsets, close the IT skills gap and utilise new formats for continuing education.

Their recommendation for education echoes the conversation on 21st century skills with its focus on closing the digital divide, ICT competencies, the use of open educational resources, e-learning and mobile learning to increase access to and the quality and relevance of the education system.

However, these are only stop-gap solutions to ongoing challenges that have faced society since the advent of the second industrial revolution and which have been magnified during the third industrial revolution.

With the massification of education occurring worldwide over the past
three decades, the design of both the traditional and contemporary education systems has failed to ensure access to quality, relevant education for the world’s population. As such, there is a need to redesign contemporary education systems to create an adaptable and flexible system that supports educating for the fourth and future industrial revolutions.

**Educating for the fourth and future industrial revolutions**

In order to educate for the fourth and future industrial revolutions, there is a need to embrace the technologies associated with them. Education systems, programmes and curricula need to be flexible, allowing for students’ interests and needs. They need to be relevant to unforeseen work and social issues and qualifications need to be assessed and awarded for learning across formal, non-formal and informal avenues.

Of course, teachers, who are the primary facilitators of learning, should also be continuously learning so they can acquire the necessary skills and competencies to adapt and use current and new technologies into the continuously changing required learning process and environment.

In short, there is a need to focus on ICT and future technologies, teacher education and lifelong learning for an adaptable and flexible education system.

Such a system should be outcomes-based and ensure continuous improvement in the teaching and learning environment and in teaching and learning practices. Future education systems should strongly focus on outcomes-based curricula and programmes and facilitate flexible awarding of educational qualifications based on outcomes-based units, what I fondly call the LEGO blocks of learning.

To facilitate real lifelong learning opportunities and award appropriate qualifications, learning, be it formal, non-formal or informal, should be
converted into a kind of blocks system which people will use to build into educational qualifications, similar to how LEGO blocks are used to create different figures.

As the conversation about the challenges brought about by the fourth industrial revolution has begun, it is high time for the higher education community to start a much needed conversation and debate about how to reshape the education system into an adaptable, flexible and relevant social environment to ensure that the world’s population, both young people and adults, have the means to pursue lifelong learning and acquire the necessary skills and competencies to survive and contribute to a rapidly changing society across different industrial revolutions.

If not now, when; if not us, who? If we don’t do it now, it may be too late. Higher education institutions may lose their role as educators of both young people and the adult population and national governments may decide to further reduce higher education funding. Last but not the least, the world’s future population and citizens will not be prepared for a rapidly changing society which will not be limited to the world of work.

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