

FORWARD THINKING

WORKPLACES AND WORK SKILLS ARE CONSTANTLY CHANGING ALL OVER THE WORLD. THE RESULT: A MISMATCH BETWEEN THE SKILLS THAT EMPLOYERS NEED AND THE QUALIFICATIONS OUR EDUCATION SYSTEMS PRODUCE.

By Steven McKee, Labtech International Ltd.

I have been fortunate to attend various educational conferences and events over the past year, the highlights being Worlddidac Basel, Worlddidac Hong Kong, GESS Dubai and ISTE in Philadelphia. An interesting recurring theme at many of these events is that educators these days find themselves thinking about the future of vocational skills training and its intersection with 21st century skills and educational technology. I believe that this intersection is where a lot of exciting new developments are taking place, which may result in changes that can significantly improve teaching and learning as well as lower the costs especially in the area of technical and vocational education.

Even at the World Economic Forum in Davos this year, discussion focused on skills education. One of the big stories that came out in the education area from Davos is that the world's leaders are just now waking up to the fact that there is a mismatch

between the skills employers need versus what is being produced by our **educational systems**. Those of us involved in the development of education internationally have known this for quite some time. Just last year **China** announced that they were converting half of their universities (600 out of 1200) to **Technical Institutes** for this precise reason.

The lack of employable skills among the graduating youth led to rising unemployment in the Middle East and was undoubtedly one of the triggers to the so-called Arab Spring a few years ago. It is a fact that this mismatch is being recognised around the world, and that we need to refocus on improving programmes in secondary schools and beyond so as to develop employable skills and knowledge that reflects today's working environment.

What is the reason for this mismatch? Much has been made of 21st century skills which include digital literacy and digital fluency. We can all see that workplaces and work skills are quickly changing all over the world. This area is fascinating from several perspectives, considering how the use of technology will affect both teaching and learning. Not all countries are at the same point in development and/or use of digital technologies by businesses and education. However, we can be certain that it will come to many countries; it is just a question of when and how. You can see businesses and industries adapting and taking advantage of digital technology to increase productivity. To match this, new skills are needed by employees to conform to new ways of working and create value at the workplace.

The education systems in many countries have been struggling with how to put digital learning resources into education, how to change the curriculum, how to know about and to incorporate work and knowledge patterns from industry into education to better prepare the students for the world of work. No doubt the workplace is changing faster than the education system can keep up with. This is one of the main issues that cause this mismatch to begin with. We are not teaching the students well enough for learning and working in the digital age. Schools are not fully meeting the requirements of industries for skill training, digital or otherwise. This is one reason why the new relationship between Worlddidac and the International Society for Technology in Education, **ISTE**, has the potential to be important. This was announced last October at Worlddidac Basel – this new relationship which hopefully will develop and spread new educational technology models and make advice available to countries around the world. I was privileged to be on the team that initiated this relationship as a member of the Worlddidac board and will continue to work with both ISTE and Worlddidac to further these developments.

Information and how we use it is changing and has become both an economic currency and a driving force behind the large rise in productivity in developed countries over the past few decades. As an educator, a key factor to consider is how our relationship is changing to information and knowledge as well as its application. What does it mean for employable skills training and how should this impact our educational systems in teaching and learning?

I had the pleasure of meeting and spending some time with **Marc Prenzky** a few years ago who wrote his now famous book on digital natives. He put forth the idea that children think differently nowadays and that their relationship to technology is more fluent than the older generation.

I would like to put forth that our relationship with knowledge and information is also changing and that this should also eventually change how we teach, learn and work. In the past we “owned” knowledge. It was to be gained, remembered and retained. In school this of course manifests itself in the classic lecture or reading activities followed by some exercises and a test to see if the knowledge was retained. This has been extremely useful and successful in the past and still much of our standardized testing and comparisons such as PISA draw on this same model until present time. But we may be measuring the wrong thing in the wrong way for today’s needs.

Access to information is no longer restricted to library repositories, physical locations, or with learned individuals. It is now simply available 24-7 anywhere that you can get online; that is increasingly almost everywhere. In businesses, access to information is essential to many jobs for utilising and keeping track of information, adding value, communication, collaboration, production and for enhancing activities as well as jobs. A good analogy to consider is that of just-in-time manufacturing. This is where the parts show up just before the item is assembled or produced. Many factories today do not need a large warehouse any more to store parts in advance. Instead the parts arrive at

the time of assembly or use and go directly to the production floor. I would like to put forth the concept of just-in-time information. We can see that businesses are restructuring themselves and their employees so as to have information when they need it and where they need it in order to perform their jobs. I think that children nowadays are also treating information in a similar manner. Education in the past treated the mind to some extent like a warehouse. It was to be filled with information and knowledge in preparation of and awaiting some future use. However, much like the hard drive on our computers, it seems that this function is shifting to cloud or information networks where it is always available and accessible, no matter when and where you need it.

Many decades ago, when I was young, my grandfather said something extremely prescient to me: “It is not so important that you know something but is more important that you know how and where to find it”. This was in the day of libraries and limited information resources. It was quite true then as locating information was not easy. His point was that it is a primary skill to know how to find information or where to find the answers. This was true then but it is even much more important today and can be considered a vital or essential skill, it is certainly a 21st century skill.

Today’s youth is not interested in remembering or retaining information or facts in the old manner or to be asked to digest information according to some outdated curriculum and learning methodology. They are comfortable with the fact that information is literally at their fingertips, they know it is there when they

need it. They think it is useless to spend time remembering things that are commonly available. They are motivated to seek out information when they need it, in other words now and not before. In a previous generation we saw a somewhat similar situation in the resistance to learn math by longhand or manual calculations after the calculator was available. We now teach kids how to use calculators and computers in school. We now may not need to fill the mental warehouse so much in advance but rather have an index or location techniques, we may start to treat the world wide web or cloud as a part of our mental storehouse.

So when the need arises, the youth of today will locate or search for the information, bookmark it, organise it, digest it, analyse and manipulate it, put it to use to accomplish the task, file it or store it away for future use and reference and finally share it. The digital skills associated with these tasks are what we need to include in our teaching and learning programmes so that they can become better at this. I have come up with a new term to express and define this issue called: “knowledge”.

The **Oxford dictionary** defines knowledge as “information and skills acquired through experience or education. It is the theoretical or practical understanding of a subject”. In updating this for the digital age I propose that we alter this to become “knowledge” which we can define as just in time acquisition and use of information and/or skills facilitated and augmented by digital resources and networks. It is the theoretical or practical application of digital resources like information and software applications to a problem at hand.

In this concept the digital domain constitutes or represents a significant factor in a person's extended memory, resources and potential capabilities. It is in some ways a substitution for memory and even learning. This alters the way that information and its associated ideas and understanding are treated in, that they do not have to be retained in the same way as in the pre-ubiquitous-internet age. The younger generations are starting to rely on technology for retaining information, you do not need to "know" and retain it in the old sense of filling the warehouse but nowadays you need to only "book-

mark" it and know where to find it and what to do with it. In the new age the information is always there and growing, so access and navigation are what is important, as well as perhaps contribution to it and in a way becoming part of the information community. Also, as software systems become more powerful they will provide enhancements to our skill sets and enable us to do things that we might not otherwise be able to do or to do it quicker. It is in fact a new way to acquire or access skills at a certain level whereas in the past they had to be acquired individually and mastered.

I find the new term of "knowledge" to be a useful reference concept in reflecting on how the structure and activities of teaching and learning can or should change. How can we use "knowledge" in learning? What skills should we teach to use this more effectively? What tools and applications should we introduce to the students? And importantly, how should it be assessed? These are interesting points to ponder for our forward thinking for the future. I welcome suggestions and comments on this topic so as to continue to refine and expand the concept. Perhaps we take it to the cloud!

The author

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