

## Germany -changing skills for a changing world of work

In February 2019, I visited Germany to attend the **Didacta Education Summit and Trade Fair** in Cologne. It's a huge event, hosting more than 100,000 delegates and 900 exhibitors from 53 countries and covered all aspects of education from early childhood, through schooling, VET, higher education, adult learning and digital technology.

Before the conference, I was pleased to be able to meet with a number of representatives from leading German companies and institutions involved in advanced manufacturing and training. A report on these visits is being separately published by IBSA Manufacturing.

Germany is at the forefront of the changing world of work – particularly in its manufacturing sector where it decided some time ago not to try and compete on price, but instead to compete on quality and technical 'know how'. This has seen it lead many of the advancements in advanced manufacturing, and in the training required for this changing world of work.

Key lessons for the education and training sector which I gained from the trip include:

- likely changes in the future of manufacturing include less mass production and an increasing focus on the customer and more customised products
- that means changes to components and software to offer more tailored products to the market – it also requires changes to the production process itself
- however there are also other factors at play, one industry which may move away from an increasingly customised future is the car industry. While car manufacturers are currently offering increasingly customised cars to meet consumer demand, the advent of driverless cars becoming widespread on our roads in the near future is likely to change this demand for customisation. That's because, with a few major companies likely to own most of the autonomous vehicles they will benefit from having a few standard models across their fleet (which will keep costs down)
- old employment models are changing, and people need to be open to change
- a more digitised economy and world of work will require people to have certain mandatory 'primary' technical skills. These will be focussed on new technologies and will be needed at both beginner and advanced levels. The secondary skills people will require in the new economy are 'soft skills' – which have remained a constant requirement in the workplace over the last decade or more.
- digitisation and programming knowledge are increasingly important primary skills. Even though most employees do not need to program computers – they need to understand how computers and algorithms work if they are to do well in the increasingly digital world.
- the ability/willingness to learn are key secondary skills workers will need in an increasingly automated and digitised workplace
- other secondary skills which are becoming increasingly important are teamwork, being open about *not* knowing something, and collaboration – more project work at school and tertiary level would allow more of these skills to be taught before people join the workforce
- technicians need an open mindset to succeed, and they need to be providing their organisation with feedback on products as early as possible and have a focus on iterative product development. Historically some technicians have come to their role with a preference to work on individual projects/products in isolation and then present the finished product. This is no longer viable.

- another key area of focus in terms of primary or technical skills - are maintenance skills. Keeping machines working even as they become self-diagnosing is a key skill for the success of advanced manufacturing plants. To be successful in the role, maintenance workers not only need to understand the machines they are working on, they also need an understanding of the production process, to ensure they can correctly diagnose problems and identify the right solutions.
- moves by German governments to encourage more working from home are a key driver of the increasing demand for 'digital twins' and virtual reality representations of physical systems and equipment. In Germany these advances are not occurring simply because the reduced costs and improved safety aspects of being able to trial and test changes in the digital environment before rolling them out in the physical environment are appealing. They are also increasingly popular because the new technology offers technicians the opportunity to work from home at the same rate as white collar workers are currently able to do. This shift in turn has impacts on transport infrastructure and other related town planning requirements across German cities and regions and is being actively examined in this context.
- in terms of which organisations are increasingly supplying this technical training in Germany – it is now the equipment suppliers who are the leading providers of advanced technical training – as they help businesses upskill their workers as new technology is introduced

In terms of education technology:

- the EU's recent General Data Protection Regulation (GDPR) has been described as the most important change in data privacy regulation in the last 20 years and is also having an impact on adult learning and corporate training in Germany (and potentially other European countries).
- the German market lags other countries such as China and the US. This is partly because German suppliers and users have a strong preference for materials to be in German. The Netherlands by contrast is more interested in Australian and other suppliers and their system is easier to internationalise with English as the language of instruction not posing any problems.
- this 'German-centric' focus was also evident at the Didacta conference/trade fair where very few speakers spoke in English (and because of the set-up and emphasis on lots of smaller speaking spaces across the venue rather than single large theatres there were no audio translations
- amongst the exhibitors was Lucas-Nuelle a leading supplier of learning resources to the VET sector internationally, including to the Australian TAFE sector
- another very impressive exhibitor was Technik-LPE which is a supplier of the service robot, Pepper, made by Softbank Robotics. If you haven't seen Pepper and what 'she' can do – there are a number of videos available. This one is [worth a look](#). She is now in widespread use in Japan, the US, and Europe in aged care facilities, people's homes, restaurants, banks, medical facilities, shopping centres, etc. She was being promoted at Didacta by Technik-LPE for use as a science teaching aide and in helping to teach soft skills. A smaller robot, NAO, is also made by the same company.