

NZTECH ADVANCE EDUCATION TECHNOLOGY SUMMIT
Leading for 21st Century Learning

BRIEFING PAPER

CONNECT

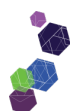
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NZTech Advance Education Technology Summit: Leading for 21st Century Learning

AUGUST 2016

This NZTech briefing paper provides insights from the recent NZTech Advance Education Technology Summit produced as a collaboration between NZTech and Conferenz, including key observations from the Leaders Forum discussions involving senior executives and educators from government, education institutes and the tech sector.

EXECUTIVE SUMMARY

As announced by Education Minister Hekia Parata at the NZTech Advance Education Technology Summit in Auckland in July 2016, digital technology is to be formally integrated into the New Zealand curriculum.

The inclusion in the curriculum is a great first step in ensuring we have a world-leading education system to cope with the demands of the fast-approaching digital future. The industry is concerned that digital technology hasn't been provided its own focused area within the curriculum and continues to be grouped with historical technology subjects such as materials, food and metals technology.

Nevertheless, the journey to a 21st century education system has begun. The follow up announcement from the Minister of an immediate \$1 million investment in initiatives to help schools engage their students in digital technologies sends a strong message of commitment. However, it is noted that this journey will require tremendous effort from across the education system, the government and the tech sector to ensure accelerated uptake of digital technology throughout all New Zealand schools.

During the Leaders Forum at the Summit, the following critical steps were identified:

- The importance of engaging the influencers and creating the demand
- The necessity of preparing the teachers and developing their capability
- The need to develop resources and providing the tools for the teachers

It was also identified that to be successful there will be a strong requirement for the education and tech sectors to work together. Subsequently, this discussion raised a set of questions regarding demand, capability and resources:

- How can we create authentic demand for technology learning?
- How can we convey the importance of both digital fluency and citizenship to the community at large?
- How can teachers be prepared for the new learning environment?
- How can teacher technology capability be developed?
- How can we provide the tools for technology learning?
- How can we ensure the successful development and use of resources?

CURRICULUM TO INCLUDE DIGITAL TECHNOLOGY

The NZTech Advance Education Technology Summit opened with the announcement by Education Minister Hekia Parata that digital technology will be formally integrated into the New Zealand curriculum and Te Marautanga o Aotearoa, from Year 1. The summit heard how this is the first change to the curriculum since its introduction in 2007 and reflects the Government's commitment to championing 21st century practice in teaching and learning. The Minister explained that this change will ensure we have an education system that prepares young people for a future where digital fluency will be critical for success. The decision is an outcome of the Government's Science and Society Strategic Plan 'A Nation of Curious Minds: Te Whenua Hirihiri i te Mahara'. Until the end of 2017, the Government will consult with stakeholders, design new curriculum content and develop achievement objectives across the whole learner pathway. It will then be fully integrated by 2018. The Minister also acknowledged that the tech sector is one of the fastest growing sectors in New Zealand with an ongoing demand for skilled graduates.

Within weeks of the Summit the Ministry of Education has established a Digital Technologies Curriculum Implementation Reference Group in partnership with the leading tech sector industry bodies, and followed up with an immediate investment of \$1 million as part of a phased approach to the introduction.

THRIVING IN THE FUTURE

To thrive in today's world and beyond, computational thinking has to be a fundamental part of the way people understand the world. Computational thinking is a way of solving problems and designing solutions. It involves algorithms, abstract models, data analysis, extracting key information and dealing with complex systems. In a world where access to information is almost unlimited, students will need to know how to combine information step by step and learn from their digital mistakes. The pace of change is an attractive proposition in itself for children. However, it is a skill that must be developed from an early age and one that enables people to leverage computer technology for their advantage.

The inclusion of digital technology in the curricula is more than simply the provision of devices and preparing students for careers in programming. With the exponential rate of technology development, it is almost impossible to comprehend how different our lives will be in the next two decades. There is no denying that the world our children live in is technology driven, and that young people are indeed generating this drive. However, it is widely acknowledged by both educators and policy makers that we need to better prepare young people for the future, for jobs that in most cases don't even exist yet. It is also generally agreed that computer technology will be increasingly pervasive, making computational thinking skills critical for the future success of all of our children.

ACCELERATING THE UPTAKE OF COMPUTATIONAL THINKING

The government appears to have a keen long-term interest in digital citizenship through the introduction of digital technology into the curricular, however there is wide spread concern that the pace of change is not fast enough. The tech sector remains concerned that digital technology hasn't been provided its own learning area within the curriculum and continues to be grouped with historical technology subjects such as materials, food and metals technology. There is concern that this may limit funding and priority within the system.

Additionally, specific investment for resources and teacher capability is clearly required. The need for wider education on the importance of digital citizenship also emerged as one of the key issues at the Summit.

Following the Minister's announcement, a broad cross section of stakeholders from education, government and industry took part in a Leader's Forum discussion on how to accelerate the uptake of computational thinking in New Zealand schools. The Forum was well represented across all aspects of the education system including principals, tech teachers, academics, the PPTA, industry bodies, STEM providers, tech leaders and senior Ministry officials.

The forum identified three primary areas of challenge that will need to be addressed in order to achieve the Minister's goals of having New Zealand schools successfully teaching digital technology and computational thinking from year one by 2018. These include:

Engaging the influencers

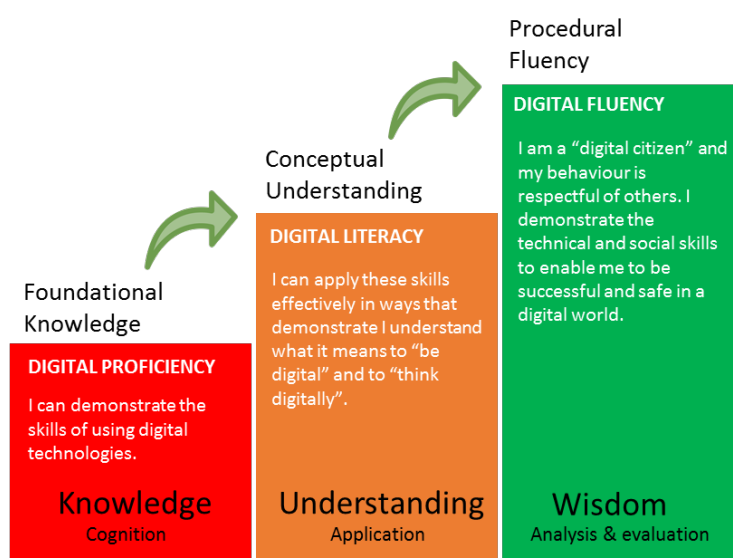
It was widely expressed that unless parents and school leadership see the importance of digital technology, fundamental changes will be hindered.

Currently, New Zealand schools are locally managed by Boards of Trustees, consisting of community representation, primarily parents and care givers of students. In addition, the school's principal is the board's chief executive in relation to the school. Whilst the principal must comply with the board's policy directions they have discretion to manage the administration of the school. They play a key role in developing the teaching and learning in their schools.

The Leader's Forum identified that principals as school leaders play a highly important role in influencing the uptake of computational thinking. However, this is not at the exclusion of the wider community, including parents and care givers. Whilst parents heavily influence their local school, there are currently mixed messages on the importance of technology and its place within the learning environment.

The Leader's Forum identified that a successful influencer is not only passionate about technology but is also themselves digitally fluent. And by digitally fluent, we mean more than just being able to use devices, they understand the importance being able to learn with and create with digital tools. From a leadership perspective, there is an increasing need for digital wisdom as we enter a new learning environment for the future.

Figure 1: Achieving Digital Fluency



Source: Derek Wenmoth, 2015

The Leader's Forum identified that 'one big idea' was needed to provide a cohesive vision across all levels of education to anchor parents thinking on why technology is so important and the increasingly pervasive role it plays in our lives.

The compelling value proposition of digital fluency has been documented in the Government's Science and Society Strategic Plan 'A Nation of Curious Minds: Te Whenua Hirihiri i te Mahara'. Digital fluency is essential for our future as digital citizens and for the future economic success of our nation. In this instance, digital fluency moves beyond the realm of the education sector alone, to a national digital strategy.

A key issue of discussion was what can the industry and education sector do to better engage with key influencers, primarily parents, principals and school leadership? Aside from school leadership, it was acknowledged that parents are themselves reflective of our communities in diversity and communication needs to be culturally relevant in all situations. This will require a multi-pronged messaging approach to ensure key messages are disseminated. It will also require a compelling, coherent, aspirational vision that can be interpreted appropriately for each demographic.

The Leader's Forum identified that further investment, as the government has committed, will need to be made in leadership development for both trustees and principals. In addition, the forum concurred that increased promotion of growth and future job opportunities is required to drive demand for technology learning. Ultimately, the tech and education sectors will need to collaborate closely as they work towards the shared vision of digital fluency, digital citizenship and a digital nation.

Preparing the teachers

The Leader's Forum identified that the second main challenge is building capability. The view was widely expressed that very few teachers currently understand the need for digital technology in the curricula as it pertains to digital fluency and citizenship. This is often coupled with a lack of confidence with existing technology. As a result, current priorities have focused mainly on the introduction of devices into classrooms. This scope, under the computational thinking model, will need to change.

Regardless of a teacher's individual understanding of technology, there needs to be a deeper knowledge of how to introduce technology from a pedagogical perspective; that is, the theory and practice of how best to teach.

The Leader's Forum acknowledged that teachers are the gateway to the classroom and complete the knowledge gap for students, however in the very near future, their role will become increasingly that of a learning facilitator. Whilst a number of teachers throughout New Zealand have already adopted these learning practices, the majority are still working towards this approach and don't appear to be there yet. Both the education and technology sector can examine these examples as case studies for valuable lessons on digital fluency.

Developing the resources

A third critical issue in accelerating the uptake of computational thinking is the development of inspired resources. Alongside developing the capability of teachers, appropriate teaching resources need to be developed.

While there are currently some resources and resource activities available, many of these are untargeted and the forum agreed that the best resources need to be identified and supported. Additional resources must be developed in the gap areas (especially with the curriculum changes). The Leader's Forum also identified that more importantly, an infrastructure that consolidates access to resource creators, resources themselves and teachers is needed. What was surprising within the Leaders Forum participants was the lack of detailed knowledge of Pond, the infrastructure already

available to support resource sharing. It is imperative that the further development of this platform is done in parallel with the demands of the developing needs for digital technology teaching resources.

RECOMMENDATIONS

Addressing the three key issues highlighted above will require collaborative efforts between the Government, educators and the tech sector. It is encouraging that in her announcement at the Summit, Minister Parata welcomed the opportunity to continue working with stakeholders, including the tech sector to ensure the creation of a future-focused, world leading education system. The prompt establishment of the Digital Technologies Curriculum Implementation Reference Group has also been applauded.

Below are our recommendations for accelerating the system wide integration of digital technologies and computational thinking within the New Zealand education curricula:

Create demand through raised awareness

Awareness needs to be raised throughout the community from parents and care givers to principals and school leadership. Unless the importance of technology and its increasingly pervasive impact is realised, fundamental changes will not occur. There are two areas that would benefit from additional focus, firstly, the development of digital fluency and skills for the modern workforce. Secondly, opening pathways to digital technology careers. For this reason, we recommend a multi-pronged messaging campaign extolling the virtues of digital fluency and citizenship. The target audience includes students, parents, care givers, teachers, principals and school leadership. Message delivery should incorporate all available marketing channels including traditional media, social media, community meetings and public debate and discussion.

Investment in the development of capability

To ensure teacher capability is successfully developed for the new learning environment, prompt investment is required. While newly trained teachers will be prepared for the digital curricula, there are thousands of existing teachers, who need to be supportively digitally up skilled. A renewed effort is needed to build models to better reach and empower these teachers through continuing professional development. It is also recommended that the tech sector, alongside the STEM Alliance, provide additional support. This is imperative as the system develops with the aim of better integration of EdTech and external STEM initiatives into the system. For example, can NCEA credits be gained through the involvement with external initiatives such as Code Club or The Mind Lab?

Investment in the provision of resources

Inspired resources are also needed to accelerate the uptake of computational thinking and investment is critical. A plethora of teaching resources, exemplars and equipment is required to support teachers in the classroom. Focus also needs to be directed toward investing in growing the infrastructure to support these new resources. For example, what support does the government's Network for Learning (N4L) online community, Pond, need and should the content in Pond be transformed and given more purpose under the curricula change?

CONCLUSION

We welcome the announcement by Minister Parata at the NZTech Advance Education Technology Summit of the formal integration of digital technology into the New Zealand Curriculum and Te Marautanga o Aotearoa.

The inclusion in the curriculum is a great first step in ensuring we have a world-leading education system to cope with the demands of the fast-approaching digital future. Despite the long-term interest in digital citizenship through the introduction of digital technology into the curricular, there is wide spread concern that the pace of change is not fast enough.

Leaders at the NZTech Advance Education Technology Summit identified that partnerships between the public and private sectors, and the technology industry are critical to achieving the recommendations presented in this paper.

The discussion forum identified three primary areas of challenge that will need to be addressed in order to achieve the Minister's goals of having New Zealand schools successfully teaching digital technology and computational thinking from year one by 2018. These include; engaging the influencers, preparing the teachers and development of resources.

It was widely expressed that unless parents and school leadership see the importance of digital technology, fundamental changes within schools will not occur. To highlight the importance of technology, its increasingly pervasive role and its place within the learning environment, a multi-pronged messaging approach needs to be adopted. A cohesive vision across all levels of education, and indeed society, will also help anchor parents attitudes.

The Leader's Forum identified that the second main challenge is building capability with regards to preparing teachers. As classroom knowledge gate keepers, in the very near future, teacher's roles will become increasingly that of a learning facilitator. Significant investment needs to be committed to helping the current teachers upskill. Digital fluency and citizenship is not limited to tech teachers, digital confidence is needed across all teachers.

A third critical issue in accelerating the uptake of digital technology and computational thinking is the development of inspired resources. Alongside developing the capability of teachers, appropriate teaching resources will need to be developed.

Ultimately, the tech and education sectors will need to collaborate closely as they work towards the shared vision of digital fluency and citizenship. The New Zealand technology industry also looks forward to working with the Government to help develop the next generation of learning. We believe only through collaborative efforts can we create a truly digital nation.



The New Zealand Technology Industry Association (NZTech) is the national voice for the technology sector in New Zealand.

NZTech is a not-for-profit association funded by members - the technology businesses in New Zealand and associated partners - from start-ups and local IT firms through to hi-tech manufacturers, major corporations and tertiary institutes.

NZTech works to increase New Zealand's prosperity through better use of technology and strategically focuses on enhancing skills and talents, driving business growth and exports, and guiding and supporting government policy. By actively encouraging relevant initiatives and policies that stimulate and advance the use of technology, together we aim to increase New Zealand's productivity, innovation and economic growth.

DISCLAIMER

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