Future Proofing Curriculum Design and Delivery for a Digitally Disrupted World (Great Landing, Right Airport)

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Abstract

We have always lived in a world of change, but the pace of change is accelerating at an unprecedented level. The education system, like a supertanker is both complex to maneuver and slow to change. This paper discusses digital immigrants, digital natives (Prensky 2001) and the digitally disabled (Mitchell 2015), and considers using horizontal management tools in the digital age such as "Agile," for curriculum design and execution to provide a learning experience for students that will serve them well into the workplace. It considers educational design in commercial terms in respect of developing a minimal viable product (MVP), and through iterations building a minimal lovable product (MLP). It suggests using *Learning Out Loud* (LOL) as a way of evolving learning experience into complex systems.

Keywords: Digital Disruption, Minimal Lovable Product, Minimal Viable Product, Digital Immigrant, Learning out Loud, LOL, Digital Native, Digitally Disabled, Curriculum, Tertiary, Secondary Tertiary Partnership, Agile Education, Scrum team education

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Climate

We live in a world where the climate and the entire ecosystem is changing. Not only in meteorological terms but also in complexity, social interactions and communication. In Tertiary education we are moving into a post Mandatory Review of Qualifications (MROQ) phase where local qualifications are replaced by New Zealand Qualifications. This provides curriculum designers with a choice. Do we rationalize, simplify and organize what we have or make a great scary leap forward to transform curriculum and teaching and learning experiences? This paper argues the case for the scary leap forward. MROQ gives us an opportunity to develop programs of study with built in future proofing included**.** As we look at graduate profiles we need to consider the liquid expectations of the employers and consumers of our graduates. The work place is changing and we are moving rapidly from a content driven system to a skills and competencies based environment. Our previous preconceptions around technical and academic ladders are being challenged as we look more deeply into the cognitive and technical skills of future graduates. Our students have never been more differentiated. In Northland we recognize that digital skills and basic education along with building tenacity and grit are needed to unlock employment potential and overcome barriers. Students from rural or isolated areas may have limited access to digital devices (digitally excluded or disabled) (Mitchell,2015), contrasted with early adopters and digital natives as well as tutors and students who may be digital immigrants (Prensky,2001). Evidence suggests that through neuroplasticity, the brains of digital immigrants and digital natives are different (Prensky, 2001) and that the brain maintains its plasticity for life (Caine,1991) and is

responsive to training (Draganski, Bogdan, et. al. 2004). How do we design for this to build equity into learning experiences? The employment market is in a state of flux with waterfall management systems being replaced by agile management and the development of fractal organizations (Weber & Wild, 2005). Digital David's are challenging the Goliaths of business and zero hour contracts and multiple employers both longitudinally and horizontally throughout a working lifetime are becoming a new norm increasing complexity. A study and report by the Productivity commission (2016) identifies the effect of digital disruption and the change of the workplace it has been said could threaten 40 percent of Jobs in the future. Do we expect 40% of our working population to disappear, retire? Most likely not, therefore we suggest that we must prepare for this labor market and expect to retrain and upskill people for the new jobs that will develop and evolve. These are in many cases loyal company employee's, who will not require long new qualifications, but rather short modules flexibly delivered to retain them and build human capacity in a market where currently New Zealand uses immigration to fulfill market shortage at the expense of local workers. While immigration may be an efficient way to fill job market shortages we should ask, is it the most effective?

Value

At NorthTec we are asking the following questions;

- What is the customer value proposition?
- Who are the customers and what do they really want and how do we integrate their needs?
- How can we deliver and exceed customer expectations and fulfill our organizational strategic objectives?

In Tertiary education we work for many masters. Our most important customer must be the learner yet we must also consider the needs of our funders be they TEC, MOE or others in an increasingly

more competitive and complicated arrangement**.** We must also consider the increasing numbers of our students who will become self-employed contractors. This is a complex ecosystem and one in flux, which must be considered flexibly with its many different and liquid expectations of varied consumers and funders of education. To complicate this further the value proposition is measured by our customers against not only us as providers, but also against the marketplace beyond education and into major corporate delivery. We work in a world of Pokémon Go and Apple where expectations and attention spans of learners creates global expectation of curriculum delivery, salaries and roles far beyond traditional modes of instruction and engagement. We must also consider the cultural and support needs of our students and the increasing equity gap that can exist between young and old, wealthy and poor in digital uptake and support networks. How connected are our learners at home and what experience and cultural support can they bring with them on this journey? Work carried out by NorthTec and Pehiaweri marae on the Digit project, an MBIE funded digital literacy initiative, has demonstrated that these cultural links are a key part of success for a community (Fenton-Coyne, Tomes, Studdart, & Scholtz,2016). A synergy of cultural support and digital integration provides a vision to connect curious minds in indigenous communities across age ranges. This creates a "Tradigital" environment a term coined by Judith J. Moncrief, (The molding or combination of the traditional and computer based (digital) methods used to create something) where we can use the cultural capacity and resilience of the community to build the digital capacity of the learners engaging across age and literacy boundaries. These considerations mean we should not "throw out the baby with the bathwater" which brings us to designing curriculum for a digitally disparate world, bridging digital equity boundaries

Design.

The New Zealand curriculum asks us first and foremost to know our learners. Our learners are changing. Recent work on NCEA (Hipkins, Johnson, Sheehan 2016) has acknowledged both the requirement for and proposed changes in contextualization and integrated curriculum design in schools. This to support making better pathways choices. NCEA presents us with students who are used to a modular assessment structure that currently has little relevance to the real world of employment. Tertiary has an opportunity to work in this space and develop contextual modules to make learning rich and in an authentic learning environment. The engineering to employment initiative which focusses on putting school curriculum into the context of creative problem solving in engineering is one example of how this can work. NorthTec has developed a New Zealand certificate in science at level 3 on a modular basis to work in the same space of secondary tertiary partnerships. The key to this programme being a success is in its modularity. Each module is designed as a stand-alone course but at the same time integrated into authentic context. Engagement in science for second tier learners is a *wicked problem* with no easy solution. Short *sprints* linked to longer term contextual pathways may be a way of engaging higher level thinking and developing cognitive skills. This can build grit and resilience as well as keeping an eye on long term goals. The modules are built as minimal viable products, not as large qualification structures allowing adaptation to change and development as the liquid expectations of learners and other stakeholders evolve. This agile structure where we can discover, plan, build and review through many iterations gives us excellent opportunities for reflective practice and ongoing self-assessment. Modules evolve through minimal viable product (MVP)stages to a “minimal lovable product” (MLP) engaged to the learner and employer in a harmonious yet challenging relationship adapting to change.

Learning.

As we consider the future of learning we should look at the furture of the workplace and the environment our learning will operate in if we are to prepare workers for that workplace. Organisations in the past have evolved from military and industrial models in silos with a command and control attitude, a waterfall environment. In the last decade or so this is shifting to an agile environment with multidisciplinary autonomous teams with collaboration in decision making about the way work is done. Contracts were stable and a worker would work for one company yet in the future people will work for many different clients and numerous companies. Companies are looking to leverage the talent in an organisation across silos through initiatives such as Working out Loud (Stepper, 2015). At NorthTec we plan to model this using a learning out loud or LOL environment.

Effective learning environments should reflect a model that enables and fosters individual analysis of the project, working in teams and sharing ideas. In the IT industry a project management platform has been successful in creating this environment. The Agile project management system integrated into software development and now moving into mainstream project management provides a model for doing this (Martin, 2003). The use of Scrum teams (Sutherland, 2015) of students to discover and ideate solutions, prototype ideas and then iterate and share outcomes, leads to inspiration, innovation and learning. If each learning outcome becomes a project that requires design thinking by the students and is discussed to provide solutions, we have a rich environment for enquiry and discovery based learning. How is this different to problem based learning? It provides a structure and an extension of it. It mirrors the workplaces of the future and it gives a fully involved, deeply integrated experience to our learners. It acknowledges that learning, like work is a collegial and cooperative experience. Agile teams

work face to face in close quarters environments with stand up meetings to determine progress and direction. As our students move through into higher level courses we can develop methodologies and skill sets using tools such as ***SLACK*** to enable this in remote and distant environments. With the Government's recent announcement of "COOLS" we should consider also how Tertiary can integrate with secondary on line learning environment's and prepare for students who emerge from these in the future. Integration of secondary, tertiary and employment is a pressing need breaking traditional structures and silos. This is complicated by funding structures and we believe that an urgent need exists to break these barriers across Government Ministry's and build linkage in real partnership where secondary tertiary alliance is a real powerhouse of the new economy.

Assessment

The tricky part of team learning lies in assessment and how we design learning to gather evidence of learning rather than harvest assessment. Considering the complex relationship of curriculum and assessment, we should be able to imagine and then develop programs where our students do not even realize that they are being assessed and collect evidence of their learning along their learning journey. The use of self-assessment, peer assessment and building portfolios along with social media and enterprise social networks along with Linked-in for example could provide our students not only with a grade but also a body of work and references for a future employer. If we can link this to employers and the workplace through all our programs, students can see assessment as performance management in a way that will add value and prepare them for the workplace.

Conclusion

In a world where change is perhaps one of the few constants, we need an agile curriculum approach, which will build capacity in students for an uncertain but exciting future. When we swop certainty for innovation and discovery, we need to build capacity in learners for this world view. It's a scary leap both for educators and students. It's a leap that we have no choice but to make and one in which many structures will need to change. The way programs are approved through NZQA, funded through TEC and developed in cooperation with ITO's must all adapt to an Agile environment. This move may be easier if we use a *Tradigital* approach and base change on solid foundations of cultural capacity and community support as we move towards this Tertiary can integrate close links with secondary schools and employers to broker better outcomes. We can avoid ageism and waste by filling skills gaps with short modular retraining driven by customer demand. Building cultural linkage across generations in new ways of working. We can look to build skills for working out loud using a learning out loud framework.

Perhaps then we will have the best chance of landing our ***plane*** and our students at the right airport.

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