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

Studdart[1], Nigel C., Haywood[2], Graeme & Doncheva[3], Vasi.

Abstract

We have always lived in a world of change, but the pace of change is accelerating at an unprecedented rate. The education system, like a super tanker is complex to manoeuvre and slow to change. A mismatch between the current system and future employment means that while we may safely land our students they may be at the wrong airport. Research in an indigenous community in New Zealand has led to consideration of a future based integrated educational approach. This paper discusses digital diversity and considers horizontal management tools in the digital age such as "Agile," for curriculum design and implementation to provide a learning experience for students that will serve them well into the workplace. It is proposed that NorthTec students work in Innovation Scrum teams, where learning outcomes are problems, resolved by student developed creative solutions. Assessment is based on teamwork solutions of instructional dilemmas and wicked problems building portfolios of real world solutions. It considers educational design in terms 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 and fractal organizations and landing our students at the "right airport".

Keywords: Agile, SCRUM, Indigenous, Learning out Loud (LOL)

1. Climate

The world's climate and entire ecosystem are changing. Not only in meteorological terms but also in complexity, economic, social interactions and communication. In the New Zealand Tertiary landscape, we are moving into a post Mandatory Review of Qualifications (MROQ) phase where institutional qualifications are replaced by New Zealand Qualifications aligned to current and future employer needs. This provides a choice to curriculum designers to rationalize, simplify and organize existing curriculum or leap forward to transform curriculum and teaching and learning experiences. This paper argues the case for the leap forward as MROQ provides an opportunity to develop programmes of study with built in future proofing**.** Developing programmes to meet graduate profiles, we need to consider the liquid expectations of future employers and graduates.

The work place moving rapidly from a content driven system to a skills and competencies based environment is another key driver for change. Conceptual structures are challenged as we consider the cognitive and technical transferable skills for the future. Students have never been more diverse in background, motivation and expectations. At NorthTec we recognize digital skills and foundational literacies along with building tenacity and grit are needed to unlock employment potential and remove barriers for students from rural, isolated and economically disadvantaged communities with limited access to digital devices [1]. That is in contrast to early adopters, digital natives as well as tutors and students who may be digital immigrants [2]. Evidence suggests that through neuroplasticity, the brains of digital immigrants and digital natives are different [2] as the brain responds to training [4] and maintains plasticity for life [3], therefore it is critical to design for digital diversity.

The employment market in New Zealand and most developed countries is in a state of flux with waterfall management systems being replaced by agile and fractal organizations [5]. Digital David's are challenging Goliaths of business. Flexible contracts and multiple employers both longitudinally and horizontally throughout a working lifetime are the new norm. A report commissioned by the New Zealand Productivity

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[1] NorthTec, New Zealand
[2] NorthTec, New Zealand
[3] NorthTec, New Zealand

commission [6] identifies the effect of digital disruption and the change of the workplace to be threatening 40% of current jobs in the future. Do we expect 40% of our working population to disappear or be unemployed? Most likely not. We must prepare and expect to retrain for the new jobs that will continue to evolve. That is not likely to require long study, new qualifications. Short modules focused on competencies and delivered flexibly are likely to be in demand rather than importing workers. Immigration may be an efficient way to fill short term market shortages but is unlikely to be most effective long term.

2. Value
In Tertiary education, we work for many masters. Our most important customer is the learner yet we must also consider the demands of funders in a competitive market and the increasing numbers of students who are self-employed. This is a complex ecosystem in flux with different consumers, funders and their liquid expectations. Complexity is increased as the value proposition is measured by our customers against not only us as providers, but also against the marketplace beyond education and into corporate training.

Considering the complexity when designing curriculum and new programmes at NorthTec we are continuously asking the following questions; what is the learner value proposition? who are the learners and what do they really want and how do we integrate and meet their current and future needs? How can we deliver and exceed learner expectations and fulfill organizational strategic objectives?

We work in a world of Pokémon Go and Apple where expectations of learners create global expectation of learning and roles 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, what experience and cultural support can they bring with them on their journey?

A project carried out by NorthTec and Pehiaweri marae funded by the Ministry of Business Innovation and Employment as a digital literacy initiative demonstrated cultural links are a key part of success for a Northland community [7]. A synergy of cultural support and digital integration provides a vision connecting curious minds in indigenous communities across ages creating 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 cultural capacity and resilience of the community supports the building of digital capacity of the learners engaging across age and literacy boundaries. These considerations suggest we should integrate this in designing curriculum for a digitally disparate world, bridging digital equity boundaries.

3. Design
Our learners are changing. Recent work on the New Zealand Certificate of Education (NCEA) [8] has acknowledged the requirement for proposed changes in contextualization and integrated curriculum design in schools to support learners making better pathways choices. NCEA presents tertiary providers with students who are used to a modular assessment structure that may have little relevance to the world of employment. Tertiary has an opportunity to develop contextual modules and make learning rich, situated in an authentic learning environment. The Engineering to Employment initiative focusing on integrating school curriculum into the context of creative problem solving in engineering is an example of how this can work [9]. Taking advantage of the opportunity using modularity as a key to success NorthTec has developed a New Zealand certificate in Science on a modular basis to offer for secondary tertiary partnerships. Each module is designed as a stand-alone sprint integrated in authentic context. Sprints are linked to contextual pathways as a way of engaging higher level thinking and work ready skills to build grit and resilience as well as keeping an eye on long term goals. Modules are built as minimal viable products not large qualification structures adapting and developing as liquid expectations of learners and other stakeholders evolve. This agile structure in learning design with review through iterations provides opportunities for reflective practice. Modules evolve through minimal viable product (MVP) [10] to a "minimal loveable product" (MLP) engaging the learner and employer in a harmonious yet challenging fluid relationship engendering a growth mindset.

4. Learning

As we consider the future of learning we should look to the furture of the workplace as learning will inform and prepare future employees. Organisations traditionally have evolved from military and industrial models in silos, a waterfall environment. In the last decade this is shifting to an agile environment with multidisciplinary autonomous and collaborative teams. Stable employment is no longer the norm as people work for many different clients and numerous companies. Companies are leveraging talent in organisations across silos within initiatives like Working out Loud [11]. At NorthTec we model this using a learning out loud (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 system in software development is now moving into mainstream project management as a proven effective model [12]. Scrum teams of students can discover and ideate solutions, prototype ideas and then iterate and share outcomes, enabling collaborative learning in a safe structured space [13]. Learning outcomes require design thinking by students, providing a rich environment for cognitive development. This approach is different to problem based learning as it provides a structure and an extension of it. It mirrors the workplaces of the future and gives a fully involved, deeply integrated experience; learning, like work becomes a collegial and cooperative endeavor.

5. Assessment

Assessment is authentic as learning is designed to gather evidence of learning rather than harvest assessment. The complex relationship of curriculum and assessment can be harnessed to ideate and develop programs where students do not realize that they are being assessed as they collect evidence of learning along the journey. Self-assessment, peer assessment and portfolios along with social media and networks such as Linked-in for example provide a body of work for future employers.

6. Conclusion

In a world where change is one of the few constants, swapping certainty for innovation and discovery we need an agile approach to curriculum building capacity in students for an exciting future. It's a leap that we have no choice but to make in which many structures will need to change. The way programs are approved through New Zealand Qualifications Authority, funded through Tertiary Education Commission and developed in cooperation with Industry Training Organization's must all adapt to an Agile environment. This may be easier if we use a *Tradigital* approach and base change on solid foundations of cultural capacity and community support as we move forward. Tertiary can integrate close links with secondary schools and employers brokering 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 build skills for working out loud using a learning out loud (LOL) framework. Perhaps then we will have the best chance of landing our plane and our students at the right airport.

7. Acknowledgements

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