Educ. Sci. **2015**, *5*, 85–103; doi:10.3390/educsci5020085

OPEN ACCESS

education sciences

ISSN 2227-7102

www.mdpi.com/journal/education

Article

Reflections on the Use of Iterative, Agile and Collaborative Approaches for Blended Flipped Learning Development

Hazel Owen [1,*] and Nicola Dunham [2]

[1] Ethos Consultancy NZ, Auckland, Aotearoa 1142, New Zealand

[2] Te Kura Whanui, Unitec Institute of Technology, Auckland, Aotearoa 1025, New Zealand; E-Mail: ndunham@unitec.ac.nz

***** Author to whom correspondence should be addressed; E-Mail: info@ethosconsultancynz.com.

Academic Editor: Anthony G. Picciano

Received: 25 February 2015 / Accepted: 7 April 2015 / Published: 10 April 2015

Abstract: E-learning experiences are widely becoming common practice in many schools, tertiary institutions and other organisations. However despite this increased use of technology to enhance learning and the associated investment involved the result does not always equate to more engaged, knowledgeable and skilled learners. We have observed two key prevalences. The first is an ingrained, and often unquestioned, set of beliefs and expectations held by the majority of people who have experienced formal education, and who are involved in the development of eLearning and blended learning experiences. These beliefs tend to impact the overall design of what a blended type of learning experience might consist of. The second prevalence is for educational institutions to embark on large-scale eLearning developments, which by their scale can prove problematic. In part because it is a long time before the school or organisation sees any benefit and there is an up-front cost before any learning value is realised. In this paper we will be discussing our experiences of the implementation of a large-scale blended-learning project at Unitec, a tertiary institution in Aotearoa, New Zealand. Approaches taken to implement the development were iterative and based on a phased rollout, with each subsequent stage being informed by the ones before it. Our discussion draws on personal reflections associated with three different perspectives and a variety of roles during the three initial phases of the change making process. Our overall aim is to share our contextualised experiences, to add to the knowledge base on blended learning, and to provide some general, practical recommendations.

Keywords: E-learning development; collaborative writing; iterative approach; agile

1. Introduction

Many schools, tertiary institutions, and other organisations are, in some capacity, involved in the design of eLearning and blended learning experiences [1]. So, why does it frequently appear that, disappointingly, the often substantial investment made does not always equate to more engaged, knowledgeable and skilled learners?

We have observed two key prevalences. The first is an ingrained set of beliefs and expectations, often unquestioned ("it worked fine for me..." [2]), held by the majority of people who have experienced formal education, and are involved in the development of eLearning and blended learning experiences. These beliefs tend to shape overall expectations of what this type of experience might comprise [3].

The second prevalence is for institutions to embark on large-scale, "monolithic" eLearning developments [4]. The term is sometimes used as a pejorative term, referring to indivisibility, as well as the fact that they are often slow, if not impossible, to change without starting over again. Therefore, monolithic deliverables in an education context are problematic, in part because it is a long time before the school or organisation sees any benefit, and there is an up-front cost before any learning value is realised.

In this paper, we will be discussing our experiences of the implementation of a large blended-learning project at Unitec Institute of Technology, a tertiary institution in Aotearoa New Zealand. Tertiary education in Aotearoa New Zealand covers all post-secondary education including the delivery of programmes from certificate to PhD level [5], and is akin to the term Higher Education in other countries [6]. The project (instigated at the beginning of 2012) was driven by initiatives to improve student experiences of learning and teaching; enhance interdisciplinary education through shared and common courses across disciplines; introduce a common semester for all first year students transitioning to a bachelor degree programme, and develop a new suite of interdisciplinary qualifications at postgraduate level within the Health Science faculty [7].

Approaches taken to implement the development were iterative, and based on a phased rollout, with each subsequent stage being informed by the ones before it. Steps included needs analysis, design, prototyping, analysing, refinement and deployment. The two iterations that our paper covers were scoped, scheduled and timeboxed (an approach that put in place strict time boundaries around an action or activity, and helped ensure the scope of each iteration was managed).

Our discussion is based on personal reflections associated with three different perspectives and a variety of roles during the three initial phases of the change making process. Our overall aim is to share our contextualised experiences, to add to the knowledge base on blended learning, and to provide some general, practical recommendations.

2. Context

In this section we provide a brief overview of some of the central influences, as well as the main group heading up the change, and an indication of the scope of the project.

The project at Unitec was informed by initiatives to improve student experiences of learning and teaching; enhance interdisciplinary education through shared and common courses across disciplines; introduce a common semester for all first year students transitioning to a bachelor degree programme; and develop a new suite of interdisciplinary qualifications at postgraduate level within the Health Science faculty. One caveat we were cognisant of was that technology by itself does nothing to enhance learning and teaching; as such sound pedagogical theory and eLearning principles needed to be the driving forces.

As part of the change process, a new Centre for Interdisciplinary Scholarship was established in May 2014, which became known as Te Kura Whānui. Kura (a te reo Māori word that literally means school) represented the notion of growth, learning and development. Whānui was chosen as it is indicative of wider connections and something that is responsive to diversity and interconnectedness. Figure 1 [7], depicts the basic structure of Te Kura Whānui in terms of how it is situated, at present, within the institution. Its central location within the faculty means that the centre spans all undergraduate programmes of study within the faculty. The centre is also the location for the new Master of Applied Practice and the Professional Doctorate, which encompasses all postgraduate study from across the institution.

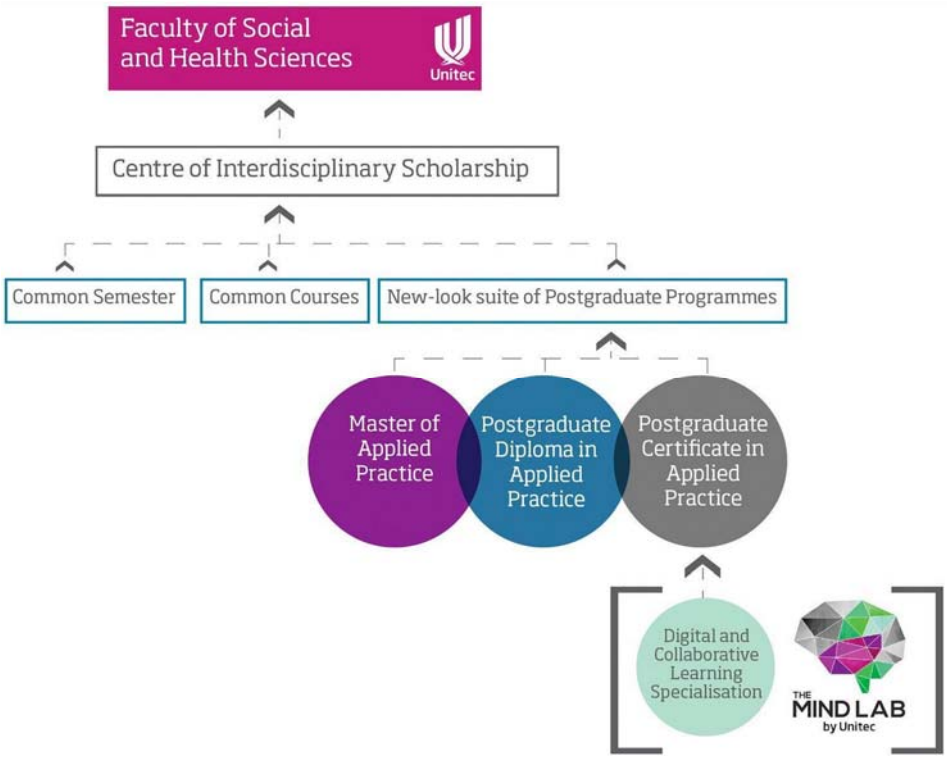

Figure 1. Structure of Te Kura Whānui [7].

Te Kura Whānui is fast becoming the place for innovation leading the way in terms of using an iterative approach that embodies collaborative and interdisciplinary ways of working. In turn, this attracted the interest of external clients and has led to external projects at both local and national levels.

3. Literature Review

3.1. Identity and Openness to Change

Current notions around the development of formal learning experiences are often broadly "hierarchical, substantially introvert, guarded, careful, precise and measured" [4] (p. 94). As such, there is frequently an uneasy dichotomy where the identity of an organisation sits uneasily alongside internal innovations, which can in turn, challenge the identity of practitioners within the organisation.

While our research did not account for the specific traits of personnel involved in this innovative, challenging project, Carol Dweck's work [8], into fixed and growth mindsets may offer some insights into why some participants thrived, while others chose to either not become involved, or withdrew from the project quite quickly. Some people, Dweck posits, view their intelligence as fixed and place a high value on their success—something termed as a "fixed mindset" [8]. When a person possesses this "entity" theory, they tend to avoid challenges, deflect feedback, withdraw when they meet obstacles, see little point in putting in extra effort, and are threatened by other people's success [9]. For example, they may experience anxiety that being seen to work hard to master something might be perceived as evidence of limited intelligence, and may therefore choose an easy option where they maximise the eventuality that they will do well [9].

On the other hand, people who possess an 'incremental' theory of intelligence—a growth mindset—tend to see failure as part of the process of developing their intelligence [8]. They actively seek challenges, perceiving them as something that, if they put enough hard work into overcoming them, will help them to grow intellectually [9]. In addition, these individuals see feedback as something that will help them develop, and to celebrate the success of other people. "In one world—the world of fixed traits—success is about proving you're smart or talented. Validating yourself. In the other [growth mindset]—the world of changing qualities—it's about stretching yourself to learn something new. Developing yourself" [10] (p. 14). However, Dweck's research suggests that people are malleable and can, with support, shift from a fixed to a growth mindset [9]. This notion has implications for the type of support offered to people within a project, as well as recognition that some practitioners may not be ready for change, but will need time to move into a space where they feel comfortable and confident taking risks.

3.2. Iterative Approach and Agility

Theories of technology-enhanced learning evolve alongside daily advances in technology, altering expectations of graduates by employers, and influencing student expectations [11]. These factors also help highlight why monolithic developments are often out-dated before they are only partially complete, and why an iterative, agile approach can be more effective. As well as being faced by shifting sands, when educational institutions make the decision to implement eLearning initiatives they are often confronted with a negative transition period, and only have access to a few (but growing) numbers of case studies and guidelines [12].

Russell [13] (n.p.) advises that: "because e-learning projects are more chaotic, it is usually best to implement a project management approach that is built for chaos". A release-based, iterative approach can help address some of the issues that arise from the chaos, especially when underpinned by being

agile. A brief description [13] of a monolithic compared with an iterative approach illustrates some of the benefits:

- with an iterative approach a project plan is developed for each phase, which tends to be short-term (two to three months for instance), whereas with a monolithic approach a project plan is necessary for the whole project, which may extend for several months, and sometimes years;
- each iteration can be designed and developed, tested, changed in response to feedback, and rolled out to learners; with a monolithic the whole thing is designed, developed, tested, and rolled out to learners;
- the iterative approach enables iterations to be undertaken until either (1) they use up the budget and are signed off; or (2) they built into the ongoing design of programmes such that courses can remain organic and responsive to the needs of learners.

Agility can be a key component of an iterative approach. The benefits include being able to start small, increase transparency and resiliency [14], and help to ensure the project team has the "ability to respond to issues as they arise throughout the course of…[each iteration]", and this "can save resources and, ultimately, help deliver a successful project on time and within budget" [15] (n.p.).

Lean methodologies are well aligned with agile approaches, with the underpinning philosophy being that productivity and performance are improved when unnecessary or wasteful steps within a process are eliminated [16]. According to Dragomir and Surugiu [17] (n.p.) the "lean concept refers to the effective management of an organization's production processes by eliminating...processes that do not add value and are not required". Lean methodologies align with iterative approaches to course development through the attention given to the ongoing identification of opportunities, evaluation of progress in relation to process as well as product, and ensuring that the institution is able to be responsive to changing needs. Lean approaches also align with blended learning in which learning activities and experiences can be evaluated in relation to how they directly help a learner [18].

3.3. Blended, Flipped Learning

The writing, design, and development of a blended flipped course involves a range of considerations, only a few of which are considered in this paper. It has been suggested that blended learning is "a blending of campus and online educational experiences for the express purpose of enhancing the quality of the learning experience" [19] (p. 5). However, this definition neither includes information about how to enhance the learning experience, nor advises how campus and online experiences are to be blended [20]. In contrast, Heinze and Proctor [21] (p. 21) classify blended learning as "learning that is facilitated by the effective combination of different modes of delivery, models of teaching and styles of learning, and founded on transparent communication amongst all parties involved with a course". Hence, it is important to identify what we mean by blended and flipped in the Unitec context. In the Unitec context the notion of 'blended' aligned closely with the Heinze and Proctor view, whereby the conceptualisation, design, development, and facilitation exploited the affordances of technology to enhance:

- Collaborative processes (synchronous and asynchronous)
- Project discussions

- Professional development
- Course design, and
- Facilitation of sessions with students.

The blended approach also supported self-regulation and autonomy in the project team, as well as with students.

With this definition of blended learning in mind, flipped learning offered a complementary approach. Although many definitions of flipped learning focus on reversing what happens "in" and "out" of the classroom, "at its core, the flip involves shifting the focus from the facilitator to the learners, in part by "inverting the design of the course so students engage in activities, apply concepts, and focus on higher-level learning outcomes" [22] (n.p.). As a result, one of the fundamental things we had to consider in the Unitec context is that the writing and design process had to create an environment where knowledge-building tools (affordances) and the means to create and manipulate artifacts of understanding were provided, *not one in which concepts are explicitly taught*" [23] (p. 107) (emphasis not in the original).

4. Method

Reflective accounts are a means by which lived experiences can be attributed meaning. Schutz [24] (p. 69) writes that: "it is misleading to argue that experiences *have* meaning. Meaning does not lie *in* the experience. Rather, those experiences are meaningful which are grasped reflectively". Therefore, this paper does not fall into the category of a research paper as such. Rather, the authors are aiming to draw on the principles of phenomenology to explore 'lived experience' from the perspectives of people involved [25].

The three participants in the study (two of whom are also the authors of this paper) have worked closely together on the project in question, two since September 2013, and all three since March 2014 [6]. The participants have all been involved (for 15 years or more each) with facilitation, teacher professional development, and curriculum design. One of the participants has been working within the eLearning field for almost 15 years.

We have incorporated the principle of personal situated inquiry into our reflective accounts [26]. We each separately wrote reflections about our experiences, from a stance of identity and integrity, doing "something [that is] alien to the academic culture", describing our "inner lives–risky stuff in a profession that fears the personal and seeks safety in the technical, the distant and the abstract" [27] (p. 12). The researchers then analysed each of the reflections, independently identifying key emerging categories. A synthesis of codes and themes from the three reflections were then collated and form the heart of this paper. This approach of independent and cross analysis is in keeping with the aforementioned principles of critical collaborative inquiry and a transparent and systematic research process [26]. The three participants had several key roles in the project, including (in no particular order):

- eLearning designer and developer
- eLearning project manager
- eLearning team leader
- Course writer
- Subject matter expert

- Curriculum editor
- Consultant
- Course leader
- Course facilitator
- Kaupapa (foundation of understanding and knowledge) Māori methodologist

The breadth and variety of the roles enable the participants to provide different perspectives and insights into motivations, challenges, and professional development needs that may help inform practitioners and education institutions involved in large-scale eLearning innovations.

Given that the project is ongoing, to help preserve some semblance of anonymity, quotes are attributed to participant 1, 2, or 3, or the person's role where it is necessary for clarity.

5. Discussion

The following section is organised around emerging categories. Within these categories, exemplifying aspects of the narratives are woven into the discussion.

5.1. Complexity of the Context

The need for hard decision-making and leadership capacity to accordingly manage dilemmas plays a significant part in the confidence with, and smooth running of, the change process. Cardno [28] suggests that within a project—especially an eLearning initiative, which tends to have a continuum of uptake within an institution—"whichever way the leader acts there is likely to be an uncomfortable situation for one of the parties involved" [28] (p. 33). Within the blended flipped project at Unitec Participant 2 identifies that "there is an uneasy dichotomy between the support for the initiative from senior management, and the sense of urgency to roll out the courses to students to see a return on investment as soon as possible. While this is totally understandable, it also means that I feel torn between ensuring a really rigorous quality assurance and piloting process, and meeting the expectations to deliver". Indeed it became clear that internal systems of communication and relationships could be active in either supporting or undermining the change process, at times with varying responses from the same person on different occasions, at times necessitating the unpicking of "the complexities of the institution" (Participant 2).

Other issues of having a centre and un-trialled processes within a larger institution include lack of understanding about whether a writer had been released or seconded from a department for a specific number of hours a week. We have found this to be a massive challenge because, for example, even after finding "writers/subject matter experts who are keen to be involved, [and] open to the collaborative approach" they sometimes would not be released from teaching load, or not be released in a timely way "from other roles they have" (Participant 2).

The was also a realisation toward the completion of iteration one, once the four Common Semester course were rolled out to students, that existing institutional systems and structures were no longer compatible with the new ways of doing. Participant 1 describes "a rising of the pragmatists as we battled with the day-to-day logistics of working in ways which challenged the existing systems and processes". For instance, there were "gaps in existing orientation systems ... which at the time left both students and the teaching team exposed: providing an ideal environment for doubt, despair and

scepticism to run riot" (Participant 1). These tensions led to a mindfulness of how we moved forward so that we did not lose the ideology and philosophy behind developing the blended, flipped approach to learning and teaching. In addition, there have been communication and operational challenges, as well as a need for a large amount of commitment from all participants.

Trust was a significant factor in the project team, but this was hampered by past experiences of change within the institution, which created "an air of distrust" (Participant 1). Participant 3 agreed, explaining that "if a new teaching and learning paradigm is introduced at a time when an organisation is undergoing major financial restructuring…the potential of a new paradigm and the benefits to learners are in danger of being overshadowed by an ensuing culture of uncertainty and scepticism". As such, a reasonable amount of resiliency was required to help the project members survive the "negativity from colleagues both within and outside of my own department" (Participant 1), in particular negativity expressed by those not involved in the initiative and resistant to the ongoing changes.

Whilst support for the project was evidenced through the ongoing, hard fought for, resourcing there was a "gap in understanding between how much resource was estimated for an initiative of this scope, and how much is actually required" (Participant 2). Participant 2 also describes the risks of under-resourcing, indicating that she gets "a sense of a job done not quite well enough, of not quite enough support offered, of writers who are writing under incredible pressure, of curriculum editors who would like the space to develop professional relationships further, and of eLearning designers and builders working flat out". Participant 3 observed that she had concerns about the issue of resourcing and its impact on the student experience, indicating that: "the staffing was not conducive to the level of support the literature was telling me would ensure the best outcome for student experience and success". Furthermore Participant 2 relates that "there are things underway to help address workload issues and to bring on additional team members…they are hampered by wider institutional procedures...and, quite possibly, a sense of mistrust of the change that is underway" (Participant 2).

The resourcing issue was exacerbated by timeframes. An iteration would be timeboxed, but then "we were still faced with the question—who was going to write the new courses? In the background there was growing tension as the process of recruiting and seconding writers was painfully slow, and I must admit to almost pulling my hair out as the timelines I had worked out, slipped, and then slipped again" (Participant 2). This resulted in the creation of "a huge amount of stress, as this was high stakes stuff, and tensions were high" (Participant 2). In this way the iterative process related not only to the writing process but also to recruitment and roles. We needed staff to be available to write, edit and implement the eLearning design and development, but all in carefully staggered timeframes. It was also necessary to have project staff available to make changes identified through feedback and learnings that arose from previous phases of the iterative process.

5.2. Time

Time was seen as both a positive and a negative by the three participants who were eager to engage and apply themselves to a high standard in a demanding project, but needed to balance this with the demands of personal life and family, and ongoing professional aspirations (two, for example, are studying for their doctorates). It is questionable whether any feel positive about their emotional and physical wellbeing. Participant 2 observed that her colleagues were "working in the evenings and at

the weekends [which] means they are spending less time with friends and family" just to "keep up" with the demands of the project.

On the other hand, we did recognise that the iterative approach provided time to unpack and understand writing for a blended, flipped environment. In addition, we found there was opportunity to design and write courses that were 'good enough', knowing that improvements could be made in future iterations that would be informed by student feedback and direct experience. The iterative approach also provided time to acclimatise to process of change, and the high degree of collaboration and transparency.

5.3. Developing Ways of Doing Things

By June 2013, "early work around the vision (driven by the Executive Dean), as well as collection of stakeholder feedback, and course and curriculum outlines, had been completed. In addition, much of the documentation required for NZQA approval had been written and submitted" (Participant 2). The project group needed to design, develop and implement a "blended, flipped approach to interdisciplinary learning" (Participant 2) that would offer opportunities for an active, applied, "enhanced learning experience" (Participant 2) for students. These opportunities it was hoped would support them to develop the skills to be "self directed, co-constructive, collaborative, lifelong learners" (Participant 3). However, the "change was not just at the level of course design but also delivery, management and processing" (Participant 1), and had to align with wider institutional sustainability strategies.

In spite of the learning gains found through the combination of blended, flipped learning and effective practice "there is often a gap between teachers' hopes and educational outcomes…[resulting in] teacher disappointment and/or student frustration" [29] (p. 83). Often this is due to 1) a variation in the quality of practitioners' designs [29,30], because design skills and experience with eLearning are not yet widespread [31], plus there is still a tendency for technology to be the driving focus as opposed to pedagogy [32].

The way the project had been set up in a separate centre enabled the project team a reasonable amount of autonomy and permitted us to be agile, creative and innovative. While the "what" was directed by the executive team the 'how' was more open to the actual development team to decide. We had to meet the demands of numerous stakeholders and ensure that, for example, courses were "free of any particular discipline perspective; ensuring a generic of 'vanilla' course that could provide a foundation for multiple disciplines within the faculty" (Participant 1). However, we were able to trial a collaborative approach to writing and development, as well as learning and teaching.

5.4. Collaborative Course Writing

When used creatively and flexibly, ICT has the potential to enhance learning through an "increasingly fluent use of media and communications methods and novel distributions of collaborative activity and relationships" [29] (p. 83). Therefore, the approach adopted by Te Kura Whānui was to design blended flipped courses that would seek to build on learners' tendencies toward experimentation and collaboration.

The course design (as well as the writing process), underpinned by blended flipped principles, drew on the notion of learning being an active process. This was, in part, achieved by redesigning curricula

to include authentic activities, which encourage formal and informal collaboration in discovery-orientated tasks [33], while also providing scaffolding in areas such as critical thinking and information literacy skills. Courses were designed to encourage students to engage with course learning activities, peers, materials and resources prior to attending facilitated synchronous sessions (either face-to-face or in a webinar). In addition, the design and delivery of the online spaces (narrative, activities, content and so on) was flipped in the way it focuses on the learner (using first person, for example) and encourages learners to find and create their own resources, as well as guide and 'teach' their peers. Prior learning could be extended by facilitators and peers—especially important in courses where students may already be working and have years of experience. Interdisciplinary learning was integrated into the design, in this context, by trying to avoid siloing students into discipline-specific learning. Instead students were encouraged to explore issues from the perspectives of multiple practice and discipline perspectives.

We did find, though, that differences between courses, which took a process focus over those that were content-driven, posed a challenge to maintaining the initial rationale that was driving changes in learning and teaching. Participant 1 reflects that "when content becomes the driver for course design there is tendency to think of density and … the focus can turn to giving students the required information (knowledge) as opposed to inviting students to explore and engaging them more with the process of learning. A challenge then becomes one of how we, as course designers and developers, engage with those courses that are content heavy; keeping co-constructivism at the heart of what we are designing and not slipping into didactic habits".

As part of the process, Te Kura Whānui took over the responsibility for the writing and development of courses, and the support of the facilitators. The course design process changed from that of being the sole responsibility of individual lecturers to becoming a team-based, collaborative and transparent approach at all levels: from writing and design, to the facilitation of the courses. This approach required what Participant 1 described as "a meeting of minds".

Participant 2 explained that "we...developed a process that involved a collaborative writing and curriculum editing approach using Google Docs, followed by the eLearning design and development phase after writer and curriculum editor sign off". In this way, a writer worked with the curriculum editor during the initial planning stages, before starting to write in shared Google Docs. The writer started writing and the curriculum editor offered support, suggestions and ongoing feedback during the writing process. There were many reasons for this but the two main ones were:

1. The ongoing nature of the feedback meant that the writer was able to adapt their course design and apply learnings forward to other parts of the course;
2. Not every writer was familiar with the blended flipped approach. Therefore the curriculum editor was able to offer support and mentoring around how to write a course that would help ensure a positive learning experience for students

Once the writer and the curriculum editor had progressed through as many iterations of feedback and editing they felt they needed within the available timeframe, they signed off the course. After this was done, no more edits by the writer or the curriculum editor were undertaken. The eLearning designer/developer then worked in the same shared document, asking for clarification where required,

or indicating, for example, whether further student support was needed. They might also make suggestions as to how the course could be enhanced through further collaborative opportunities for students.

For this to work well, Participant 2 identified the "need for a team to be built not only on skills and experience, but also on relationships, complementary (but not necessarily the same...challenges are good, and echo-chambers can be stifling) beliefs about learning and teaching, and an openness to true collaboration". No longer were academics working in isolation; rather teams of writers and developers needed to liaise closely with multiple stakeholders—"a less than usual practice within academic course development" (Participant 1). She acknowledges that it "has not been a given, rather more a hard earned state of being", made especially "tricky with such tight deadlines" (Participant 2).

The new institutional approach to course design led to the re-framing of roles, for lecturer (to facilitator), eLearning designer (to mentor and guide), and student (to active learner), often enabled by the affordances of online spaces, tools and critical use of existing web resources, as essential components of a re-conceptualised approach to learning and teaching [6]. However, although providing many benefits, the approach did create challenges for some project participants—something we discuss in the following section.

5.5. The Challenges of Shifting Identity

The staff that comprise Te Kura Whānui come from a range of discipline areas, backgrounds and cultures. Some are full time members of the centre, with their sole role/s being situated within the centre. Others hold proportional roles, which are split between the centre and departments, and one was an external contractor employed to project-manage the eLearning side for 2 days a week. For all except the external contractors, working within Te Kura Whānui has resulted in significant changes in terms of work. Roles for some changed and evolved as the centre grew, at times adding to the need to be responsive and flexible as the change process dictated. Sometimes this meant roles were comprehensible and at others ambiguous; Participant 1 observed that at "times my role has been clear and at other times it has felt like I have been navigating treacle as I manoeuvre through this evolving space", which has led to the "real making of a living job".

Considering these factors in the light of Dweck's mindsets [8], we found the following factors significant. Participant 1 identified herself as having "a tendency to get itchy feet and a bit of a change magnet" who was ready to "be part of something bigger". In the face of challenges she described herself as "a terrier in nature, I clung on and dug in". Likewise, Participant 2 saw herself "*intrigued*" about the proposed changes. Participant 3 was more ambivalent about change, and saw this particular project as something where "the risk is unknown and the stakes are quite high". While all three acknowledged multiple sources of stress, it appeared that their willingness to take risks, a well-developed resilience, and a creative attitude to problem-solving (all facets of a growth mindset), helped them overcome difficulties, and relish the change to the point where Participant 1 indicated "I was really feeling a sense of flying, of freshness and a chance to give things a go". Without this combination of growth mindset dispositions it is unlikely that the participants would have become–and stayed–involved in the project.

At a practical level, for blended, flipped learning to be effective, several changes needed to take place in the attitudes and professional practices of the educators involved [34]. However, Participant 2 reflected that: "there were some writers that did not appear to 'take' to the approach and ... didn't seem

open to shifting their practice...as well as others who felt quite vulnerable and found the collaborative writing process threatening".

With this resistance in mind it is acknowledged that the impact of education systems on individual teacher agency is often an uneasy combination of regulation and accountability, with a desire (and sometimes a requirement) to be innovative. This can feel increasingly pressured when, as Participant 1 reflected, the educator is made to feel that by becoming involved in change they have "stepped over to the 'dark side'", or where, as Participant 3 shares, a "conversation that occurred quite by chance in the middle of the mall" with a student that leaves her questioning her own shifting beliefs about learning.

While related to developing new ways of doing things, these roles required different approaches that challenge existing understandings of what an academic practitioner is and does, thereby, impacting notions of identity. Participant 3 explained that: "I was being asked to move from my identity as a lecturer, to become a 'learning facilitator'". She also wrote about the strain of balancing perceived contradictory needs explaining that: "on the one hand I wanted to teach responsively and reach out to Māori students to engage them in relation-based, face-to-face learning encounters that I knew they were familiar with. On the other hand I had an obligation to the methodological approach that was being trialled". As such, she found herself "struggling to find and know the new terrain being created".

The collaborative process enabled the project group members to get to know and understand different needs and expectations, thereby helping to ensure effective professional support [35]. Participant 2 explains that she "felt the process was going to offer some great opportunities for hands-on professional development through writers being immersed in the process, while being mentored and guided by a Curriculum Editor". This also led to team members supporting each other professionally as they faced challenges in a more collegial and "open" space, in ways that were appropriate for the evolving nature of the team, as well as its diversity.

5.6. The Impact of an Iterative, Agile Approach

One of the major positives of the iterative approach was that we were able to gather initial requirements rather than a complete set of requirements (and given this was a new approach for the institution in many ways, it is questionable if gathering a full set would have been possible). The requirements helped with the specification, design and development of a prototype course. Participant 2 explained that: "Once E&C [the Enquiry and Communication Common Semester course] was completed as a prototype we were able to collect stakeholder feedback and apply this to the writing of the other three courses". The flexibility meant that we were able to begin with one course, which was then reviewed. In turn, the findings helped us refine the design and associated processes on an ongoing basis, such that "The findings from Phase 1 have been invaluable, and have informed our approach since as we moved into Phase 2 and 3" (Participant 2). In turn, this has helped us identify and avoid the replication of errors.

On a more micro scale, the course writers found that the opportunity to edit a course multiple times in a collaborative environment was positive. The danger was, however, that they would become too focussed on a course, thereby creating slippage, in part because the notion of an iterative cycle was not yet familiar.

There was the issue that we have previously alluded to, of "a small 'centre' that is responsive, has a relatively flat organic structure, and a focus on innovation...struggling within the larger overall organisation's existing structures and formal procedures" (Participant 2). Participant 2 acknowledges that "these structures and procedures are essential for the organisation as a whole", but goes on to indicate that the situation seems to be "contradictory to supporting and enabling innovation—in other words organisational knowledge seems to undermine the dynamic capabilities required for an iterative cycle of rapid innovation, implementation, evaluation, and application of learnings to subsequent learnings" (Participant 2).

In spite of the challenges, toward the second half of the semester 1, 2014, we observed that "students...were showing signs of engaging and succeeding. The final sign of triumph came with our innovative integrated assessment. At last we could see the learning that had occurred and just what the students could achieve" (Participant 1). In addition, Participant 2 explained that she "felt really positive that we were developing courses that would be as accessible as we could make them, would be culturally responsive, would still 'look and feel' different to the usual blended learning experience, and would have the necessary scaffolding and support available for students to access as they needed". At this point the three participants appear to have sufficient confidence to embrace uncertainty, to continue to move from the known to the unknown, and to further develop their own ideas.

The frustrations and stresses that have been inherent in the project have raised questions around sustainability. It is telling that Participant 2 reflects: "There is still a great enthusiasm for the project and belief that it offers an enhanced learning experience for a wide variety of learners. However, there are a lot of tired faces". The iterative approach we adopted had both benefits and drawbacks. In relation to the project itself the benefits have been numerous; however, the impact on project personnel remains a big concern as we head into the next phases.

6. Recommendations

The general guidelines that do exist should be taken into consideration at the planning, implementation and subsequent stages [36]. These, along with sensitive change management, can make the transition smoother [37]. As such, in this section, we have identified some of our key learnings, and offer them as recommendations.

6.1. Processes

The iterative approach provides time for people—and departments—to shift and develop their identity, as well as to build liaisons and shared understandings. It is, however, important that agreements are developed around roles and responsibilities within the wider institution, as well as a recognition that existing institutional processes are unlikely to be responsive enough to keep up with the rapid change. Therefore, identification of some of the central risks around these factors may help the project team put in place some robust mitigations.

Where project members are concerned, the development of an induction process will help bring them into the culture and processes quickly, while also ensuring they remain supported within a group that should provide opportunities for ongoing reflection and discussion.

6.2. Project Management

Project management is an essential aspect of an iterative, large-scale eLearning project—and something that is sometimes overlooked, or not appropriately resourced. A project manager will, amongst other things:

- organise, manage and allocate resources (including writers/subject matter experts, curriculum editors, and eLearning designer/developers);
- set up timelines for development, and timebox each iteration;
- help the institution to complete an iteration within the agreed scope, while also meeting quality requirements
- identify outcomes;
- identify risks and issues, as well as possible mitigations;
- provide for professional development, time release, and other incentives;
- analyse/review results and modify the project on an ongoing basis, and
- communicate progress on a regular basis to all key stakeholders.

6.3. Ownership and Shared Understandings

Ownership is achieved in collaborative, supportive groups where there is a good level of shared understanding around underpinning principles and approaches, otherwise a coherent approach to the project implementation, and the associated eLearning development, will not be possible. Construction of meaning may "result from individual critical reflection but ideas are generated and knowledge constructed through the collaborative and confirmatory process of sustained dialogue within a critical community" [38] (p. 91). As such, where possible, project participants should be actively involved from the inception of a project. They should have input into initial research, educational philosophies, identification of their own and of student needs, and contribute to the design and the piloting of the innovations developed. Opportunities should also be provided for educators to take time and space to 'buy in' and become involved in later iterative phases to become involved once they are ready.

6.4. Design and Development

For eLearning initiatives to be effective they need to include access to examples and models that are pedagogically sound, and that draw on effective practices. Therefore, those participants with a growth mindset, who are able to problem solve and remain resilient in the face of challenges, play a crucial role. In part this is so that, once the first iteration has successfully rolled out to students, they can offer feedback and guidelines around alternative approaches within the specific education institution.

6.5. Support and Professional Development

In every development group there will be members with different levels of expertise and experience. However, it is important to ensure that a few team members do not do the majority of the work purely because they have the necessary experience or skills. Parity of input and output is important for a well-functioning team [11].

As an important aspect of collaboration and communication it is essential to consider how to support people involved in a project so that they can develop necessary digital literacy and digital citizenship skills, in turn helping to ensure a positive eLearning development experience. Mentoring can be a valuable strategy to provide support when appropriate within an established relationship of mutual trust, while also fulfilling the goal of developing autonomous, as opposed to dependent, group members.

Just-in-time, one-to-one professional development is especially effective, whereby a project group participant can ask for assistance while in the middle of the development process. With this approach, they take part in the problem solving process, and have an authentic reason to apply new skills as soon as they are learned. Critical reflection is fundamental in helping to ensure that group members have "space to reflect on their...activities so that they can make necessary connections" between their experience, key concepts, and developing skills [39] (p. 172). If there is no purpose or opportunity for meaningful application after professional development, efforts can be wasted and can even be counterproductive.

6.6. Review Process

A longitudinal review study should be conducted during the pilot of the resulting integrated blended learning course [11]. The review needs to be systematic, iterative, meaningful and non-intrusive. Results can be used in following iterations to inform the development of effective practices and recognise changing needs and technologies, as well as to evaluate the efficacy of the approach. Comparative studies of effective practices and academic research is also desirable. Students must also feel a sense of ownership, and this can be encouraged through the fostering of a tight-knit learning community that actively seeks their suggestions and feedback, in part through explicit evaluation of the blended, flipped learning course [11].

7. Conclusions

We have represented perspectives from only three participants, and distilled these experiences into discussions that help inform recommendations, which may inform other education institutions looking to implement large-scale eLearning initiatives. In addition, we hope to have communicated the benefits, as well as a few of the drawbacks, of using an iterative, agile approach rather than a monolithic one.

The flipped blended model ensured that students were actively involved in their learning as co-constructors of knowledge, as opposed to passive recipients of knowledge. As such, higher order thinking skills could be practised through participation in activities, application, collaboration and reflection. Early results to date indicate that students are engaged, aware of the metacognitive strategies they are employing, and are enjoying the flexibility the blended, flipped design enables. However, as yet the evidence we have collected for this is mainly anecdotal, and student success and retention will be the focus of a future research study.

With this in mind we acknowledge that shifting mindsets has been as much a part of the experience for the project participants as it has for the students. The highly collaborative and iterative approach

enabled course writers to challenge their own perspectives of intelligence—both their own and for their prospective students—as they battled with prioritising process and active learning over content.

As a new venture Te Kura Whānui has evolved from an initial concept to a reality and along the way is developing new processes and unfamiliar ways of working. Roles have shifted and changed and morphed as the centre expands and moves into unknown territory. As a result, new identities formed. The facilitators became guides with a clear sense of the Learning Outcomes, graduate profile, and curriculum, and so could, for instance bring discussions and research back on track, help learners make connections with the 'why', and, of course, offer a deep insight into the skills and the discipline. The result, at a professional level, was that being innovative resulted in a form of professional reframing—a new way of being, knowing and doing at a professional level [40,41].

The shift to this collaborative, transparent, agile approach to eLearning development has not been a simple process. Change is usually uncomfortable, disruptive, happens at all levels, is irreversible, and causes dissonance. We have suggested that innovation does not happen without tension and indeed it is tension that actually provides some of the energy that can drive innovation. So, coping with being innovative is not about removing the tensions, but rather about being consciously aware and mindful of them to ensure that the innovation can actually happen. It's about surviving *and* thriving, thereby avoiding burn-out, implosion and a reversion back to the original ways of being and doing.

Author Contributions

All the authors contributed equally to the development of this paper. All authors contributed in providing reflective accounts, which were then analysed and cross-analysed by all authors. All authors participated equally in the writing of the paper.

Conflicts of Interest

The authors declare no conflict of interest.

References

1. Gaebel, M.; Kupriyanova, V.; Morais, R.; Colucci, E. *E-Learning in European Higher Education Institutions: Results of a Mapping Survey*; European Univeristy Association Publications: Brussels, Belgium, 2014.
2. Byham, W. *70: The New 50*; DDI Press: Bridgeville, PA, USA, 2007.
3. Harteis, C.; Gruber, H.; Hertramph, H. How epistemic beliefs influence e-learning in daily work-life. *Educ. Technol. Soc.* **2010**, *13*, 201–211.
4. Joint Information Services Committee. JISC infoNet—SFC e-Learning toolkit. 2005. Available online: http://goo.gl/nNjCKk (accessed on 17 January 2015).
5. Tertiary Education Commission. *Statement of Intent 2013/13–2014/15*; Tertiary Education Commission: Wellington, New Zealand, 2012.
6. Dunham, N.; Owen, H.; Heta-Lensen, Y. Explorations into becoming new, radical, and quite possibly dangerously progressive within an Aotearoa New Zealand context. *Educ. Sci.* 2015, *5*, 65–84.

7. Unitec Institute of Technology. *Faculty of Social and Health Sciences: Te Kura Whānui Centre for Interdisciplinary Scholarship*; Unitec Institute of Technology: Auckland, New Zealand, 2014.
8. Dweck, C.S. *Self-Theories: Their Role in Motivation, Personality, and Development*; Taylor & Francis Ltd.: Hove, UK, 2000.
9. Dweck, C.S. *Mindset*; Robinson: London, UK, 2012.
10. Dweck, C.S. *Mindset: The new psychology of success*; Ballantine Books: New York, NY, USA, 2008.
11. Owen, H.; Allardice, R. Managing the implementation of blended E-learning initiatives with the unconverted in a climate of institutionally driven change. In *Engaging Hybrid and Blended Learning in Higher Education*; Westover, J.H., Westover, J.P., Eds.; Common Ground Publishing: Champaign, IL, USA, 2014; pp. 50–68.
12. Schneckenberg, D. The European eCompetence initiative—A network for eLearning excellence in higher education. In New Challenges and Partnerships in an Enlarged European Union. In Proceedings of the EDEN 2004 Annual Conference, Budapest, Hungary, 16–19 June 2004; Szűcs, A., Bø, I., Eds., 2004; pp. 485–491.
13. Russell, L. Project management and e-learning: More is worse. 2006. Available online: http://www.astd.org/LC/2006/0806_russell.htm (accessed on 10 October 2014).
14. Haikin, M. Reflections on applying iterative and incremental software development methodologies (Agile, RAD *etc*.) to aid and development work in developing countries. 2013. Available online: https://matthaikin.files.wordpress.com/2013/03/agile-blarticle-part-11.pdf (accessed on 17 January 2015).
15. Rouse, M. Agile project management is an iterative approach to planning and guiding project processes. 2011. Available online: http://searchcio.techtarget.com/definition/Agile-project-management (accessed on 25 November 2014).
16. Ziskovsky, B.; Ziskovsky, J. Doing more with less—Going Lean in education. 2007. Available online: http://www.leaneducation.com/whitepaper-DoingMoreWithLess.pdf (accessed on 24 March 2015).
17. Dragomir, C.; Surugiu, F. Implementing Lean in a Higher Education University. Constanta Maritime University: Constanta, Romania, XIII, *18*. Available online: http://cmu-edu.eu/RePEc/cmc/annals/279-v18.pdf (accessed on 24 March 2015).
18. Hudson, T. Create a "Lean" learning environment, 2012. Available online: http://www.clomedia.com/articles/how-to-create-a-lean-learning-environment (accessed on 24 March 2015).
19. Garrison, R.; Vaughan, N. Blended learning and course redesign in higher education: Assessing the role of teaching presence from the learner perspective. University of Calgary, 2007. Available online: http://pdfioz.org/k-66100412.html (accessed on 20 November 2014).
20. Zemsky, R.; Massy, W. Thwarted Innovation: What happened to e-learning and why. 2004. Available online: http://goo.gl/xa6fKR (accessed on 7 December 2007).
21. Heinze, A.; Proctor, C. *Reflections on the Use of Blended Learning*. In Proceedings of the Education in a Changing Environment, University of Salford, Salford, UK, 13–14 September 2004. Available online: http://usir.salford.ac.uk/1658/1/4247745025H__CP_-_paper9_5.pdf (accessed on 5 December 2014).

22. Honeycutt, B.; Garrett, J. *The Flipped Approach to a Learner-Centered Class*; Magna Publications: Madison, WI, USA, 2013.
23. Hannafin, M.; Hannafin, K.; Land, S.; Oliver, K. Grounded practice and the design of constructivist learning environments. *ETR&D* **1997**, *45*, 101–117.
24. Schutz, A. *The Phenomenology of the Social World*; Northwestern University Press: Evanston, IL, USA, 1967.
25. Welman, J.; Kruger, S. *Research Methodology for the Business and Administrative Science*; International Thompson: Johannesburg, South Africa, 1999.
26. Samaras, A.P. *Self-study Teacher Research: Improving Your Practice through Collaborative Inquiry*; SAGE Publications: Thousand Oaks, CA, USA, 2011.
27. Palmer, P.J. *The Courage to Teach: Exploring the Inner Landscape of a Teacher's Life*, 10th anniversary ed.; Jossey-Bass: San Francisco, CA, USA, 2007.
28. Cardno, C. Leadership learning—the praxis of dilemma management. *ISEA* **2007**, *35*, 33–50.
29. Goodyear, P. Educational design and networked learning: Patterns, pattern languages and design practice. *AJET* **2005**, *21*, 82–101.
30. Romiszowski, A.; Mason, R. Computer-mediated communication. In *Handbook of Research for Educational Communications and Technology*, 2nd ed.; Jonassen, D.H., Driscoll, M.P., Eds.; Lawrence Erlbaum Associates: Mahwah, NJ, USA, 2004; pp. 397–431.
31. Armitage, S.; O'Leary, R. *A Guide for Learning Technologists*; Learning and Teaching Support Network (LTSN): York, UK, 2003.
32. Salmon, G. *E-tivities. The key to Active Online Learning*; Kogan Page: London, UK, 2002.
33. Rossett, A.; Douglis, F.; Frazee, R. Strategies for Building Blended Learning. 2003. Available online: http://www.learningcircuits.org/2003/jul2003/rossett.htm (accessed on 17 November 2014).
34. Bonk, C.; Cummings, J. A dozen recommendations for placing the student at the center of Web-based learning. *EMI* **1998**, *35*, 82–89.
35. Donovan, M.S.; Bransford, J.; Pellegrino, J.W. *How People Learn: Ridging Research and Practice*; National Academy Press: Washington, DC, USA, 1999.
36. Collis, B.; Van der Wende, M. *Models of Technology and Change in Higher Education: An International Comparative Survey on the Current and Future Use of ICT in Higher Education*; University of Twente: Enschede, Netherlands 2002.
37. Bonk, C.; Cummings, J.; Hara, N.; Fischler, R.; Lee, S. A ten level web integration continuum for Higher Education. In *Instructional and Cognitive Impacts of Web-based education*; Abbey, B., Ed.; Idea Group Publisher: Hershey, PA, USA, 2000; pp. 56–77.
38. Garrison, D.; Archer, W. *A Transactional Perspective on Teaching-learning: A Framework for Adult and Higher Education*; Pergamon: Oxford, UK, 2000
39. Strayer, J. How learning in an inverted classroom influences cooperation, innovation and task orientation. *Learn Environ Res* **2012**, *15*, 171–193.
40. Bolstad, R. *Taking a "Future Focus" in Education—What Does it Mean?* NZCER Press: Wellington, New Zealand, 2011. Available online: http://www.nzcer.org.nz/research/publications/taking-future-focus-education-what-does-it-mean (accessed on 20 January 2015).

41. Mezirow, J. Transformative learning theory. In *Transformative Learning in Practice: Insights from Community, Workplace, and Higher Education*; Mezirow, J., Taylor, E., Eds.; Jossey-Bass: San Francisco, CA, USA, 2009; pp. 18–31.