



Design and development of examples to support authentic professional learning: a participative process

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This paper presents the results of a second phase of an evaluation of a set of example units (online teaching spaces). These were developed using a participative design process during a University's transition to a new Learning Management System. The first phase considered how the products were consumed as learning objects, and raised questions as to whether further work on example units was worthwhile; this second phase considers the impact of the process of development itself. Using a Developmental Evaluation approach, the paper analyses the reflections of a sample of participating academics and educational design and development staff, captured in semi-structured interviews. Both groups' experiences indicate that the process of creating the example units netted significant benefits for their own professional learning and that of their colleagues, as well as for the wider change management program. The implications of these findings for institutional practices and future research are outlined.

Keywords: Professional learning, new technology, online design, authentic learning, evaluation, LMS

Introduction

The introduction of new technologies in the higher education sector can be viewed as an opportunity to transform learning and teaching practice (McNeill, Arthur, Breyer, Huber, & Parker, 2012). Often, as an approach to managing such changes and introducing new technology to existing processes, change agents are used. The role of change agent is normally assumed by educational designers, developers and early adopters. Early adopters are one of five adopter categories linked to the bell curve of distribution of innovativeness (Rogers, 1995). Whilst early adopters have different characteristics, motivations, and needs to the mainstream, they can act as a conduit for the uptake of new technologies since "Faculty prefer to learn about changes and innovation from people they know and to which they have immediate access" (Jacobsen, 1998, p.6). Ensuring these change agents are able to use and promote the affordances of a new technology requires capability building through professional learning. Such professional learning activities include workshops, online resources, and one-one support.

The use of example units as learning objects is another approach to adopting educational technology that has been shown to be effective (Huber & An, 2012; Taylor, 2003; Wells, 2007). Learning can be situated in many contexts, such as social (Lave & Wenger, 1991) or experiential (Kolb, 1984). However if learning is to be

transformative, it must involve critical inquiry (Webster-Wright, 2009). Embedding professional learning in an authentic workplace context and encouraging critical reflection will do just this.

Whilst example units have been shown to be useful in professional learning, what of their design and development? Are there benefits to be gained by participating in this process and if so, how should this activity be implemented? Kember (1998) advocates for an action research approach to educational development, highlighting that there is more stress on the process and “The act of participation is itself an outcome, so the journey becomes as important as the destination, if not more so” (p59). Kember (1998) goes on to explain that such an action research approach to staff professional development is not, as may first be thought a dichotomy in terms (collaborative and iterative vs. external direction setting). In fact, by engaging the participants in critical discourse, a collaborative approach can enable change to practice and result in high quality, curriculum design in a sustainable way.

While the terms “professional development” and “professional learning” both lead to advancing knowledge and are often used interchangeably, professional learning has come to designate a more active, engaging and transformative process (Groundwater-Smith & Mockler, 2009; Webster-Wright, 2009). We will henceforth refer to professional learning.

Background

The transition to a new learning management system (LMS) at one Australian Metropolitan university offered the opportunity for institution-wide enhancement of the online and blended learning environment. Underpinned by the overall aims of the University’s Academic Plan of developing physical and virtual environments to provide a quality learning experience, a large scale project was established. The project’s overarching aims were to foster and support the transformation of curriculum rather than simply moving content across from one learning management system to another, as well as capability–building, ensuring sustainability by supporting academics to learn how to design and build their own units.

One of the strategies put into place to facilitate these aims was the development of a set of example units that demonstrated features relevant for specific contexts. Example units enable the showcasing of technology within an authentic setting, thereby enabling teachers to draw links to their own classrooms and teaching (Taylor, 2003; Wells, 2007). A set of thirty four example units (one per teaching department) were developed by a team of educational designers and developers (who, in the interest of brevity, will be referred to as “Developers”) in collaboration with academics who had been identified as early adopters. These example units were then showcased in presentations to departments and faculties, as well as being available online for use as self-help resources. Each unit was accompanied online by a short video of the academic explaining what was being showcased in the unit and why particular design decisions had been made. It was important that academics could see the new system in use in a unit, and in some way relate it to their own units and context. Early adopters and champions were encouraged to share their experiences, both positive and negative, to encourage peer learning (Huber & An, 2012). The majority of academics chosen or volunteering for this exercise had no prior experience of using Moodle (the new LMS). The educational design and development staff were in a similar position and in addition some were new to the university, having been employed in a drive to build support frameworks to facilitate the adoption of the new system.

In the initial planning stage for this project, the learning objects were titled “exemplars”. The word exemplar is “a model or pattern to be copied or imitated” (Delbridge and Bernard, 1982, p.424) and often indicates exemplary or best-practice. As development on the units began, it became apparent that these units were not necessarily models exemplifying best-practice, but rather a range of examples of how the new LMS could be used. The units were then renamed “example” units or “showcase” units.

Methodology

As in the first phase of this study, pragmatism is the theoretical paradigm which underpins the research. Pragmatism provides the opportunity to use multiple methods of data collection and is oriented towards “what works” and practice (Datta, 1997; Owen, 2006). Reflective inquiry is utilized as part of the research protocol. Also known as “critical inquiry”, Adler (1993) describes such an approach as “questioning, deciding, analysing and considering alternatives within an ethical, political framework” (p.161).

Method

The research adopted a multi-phased mixed methods approach; with a convergent design (Cresswell and Plano-Clarke, 2011) in phase one and a qualitative design in phase two. Phase one involved the analysis of LMS transactional logs and the collection of online survey responses to find out how example units were used as part of teacher professional learning and sought ways their design could be improved for better reuse in the next iteration. Twenty-five staff who had accessed the example units completed the survey, amounting to a response rate of around 9%. Phase one analysed the two strands of data concurrently and converged the findings in the analysis. Further details of this phase have been reported previously (Huber & An, 2012).

A cyclical design framework known as developmental evaluation (Patton, 1994) was used, in which findings are used to inform the development of the next research cycle. In this way, a second qualitative phase to the study was designed. This paper reports on this second phase whereby a group of Unit Convenors and Developers involved in the design and development of the example units were invited to be interviewed about their involvement and outcomes from working on the example units. Thirty individuals were approached by email, and eight agreed to be interviewed. Participants included three Developers and five Unit Convenors. Most of the participants were female, and most had little prior experience of Moodle. The Unit Convenor group included a participant from each of four faculties and two of the three Developers were new to the Institution.

In phase two, the semi-structured interviews comprised of eight questions that sought insights from two separate stages of the project: experiences during the process of development of the example units and experiences during delivery of teaching units, specifically around the impacts on professional learning. The interviews were recorded using a digital recorder and transcribed. Interview notes were also used in the manual analysis and respondents were grouped according to their role. The results/interview data were manually categorised into the two stages and themes were extracted. Each of the researchers did this individually and then their themes were compared, contrasted and discussed. In addition, Leximancer (a software package which uses statistical processing to automatically code text) was used to analyse the interview data and create two-dimensional concept maps. Using Leximancer as an analysis tool adds reliability to the data, since accuracy is the strongest form of reliability (Weber, 1990). It also introduces validity. Qualitative analysis in general can engender the concern that, since the researcher chooses coding concepts, they may tend towards making inferences. There may also be researcher bias and possible errors in their conclusions. Leximancer offers unbiased results from which to draw conclusions or at minimum to be used as a comparison (benchmark) of the researcher's findings. Finally the literature was "enfolded" into the themes to interpret, explain and substantiate their status (Eisenhardt, 1989), providing a theoretical underpinning to the analysis.

Research Questions/Outcomes

One of the main findings in the first phase of this study was the low number of staff indicating that they would revisit the example units. This indicated that staff may have gleaned the information they thought necessary on the first visit and felt no need to return. The question was posed as to whether further work on example units was worthwhile. The research team designed phase two of the study to delve further into the usefulness of the example units for teacher professional learning. In order to do this, the following research questions were used to underpin phase two of the study:

1. What were the benefits and challenges of participating in the example units design and development process?
2. How did the example units work once translated into 'real' units in an actual teaching context?
3. What impact did the experience of creating an example unit, and of accessing others, have on the participants' professional learning?

Results

The qualitative data collected in phase two of this study is reported here first using selective comments to highlight answers to the research questions and then as a summary of the automatic coding from Leximancer. The two data sets are then woven together in the discussion.

Design and Development Phase

Questions about the Design and Development phase inquired about the benefits and challenges of being involved in the project, and gave participants the opportunity to reflect on the impact of their involvement on their own professional learning.

Unit Convenors

Unit Convenors were largely very positive about their experiences of the design and development process. They tended to identify pragmatic benefits they enjoyed from participating, such as the level of individualised design and development support they received, and the fact that active participation (“getting your hands dirty” and being able to “learn as you go” (Unit Convenor 4), had “forced” them to organise their thoughts and plan the design of their online units earlier than they might have otherwise - “being on the front of the wave or front of the curve, as opposed to having to catch up” (Unit Convenor 4). These factors were identified as major motivations for Unit Convenors for initially becoming involved in the example units process, something they felt was then borne out by their subsequent experiences of the project.

The intensive design and development support for building the example units was perceived as extending Unit Convenors’ confidence and abilities beyond what they might have achieved on their own, and giving them a platform from which to then build up their own capability using the new LMS, beyond the “basics”. They were cognisant of the fact that while the example unit process had not been a comprehensive training program in using all aspects of the system, it had given them a “leg up” (Unit Convenor 3). Unit Convenors also saw the example units process as an opportunity to try out some aspects of the system before they tried it “for real”, perhaps with a larger number of students. This was echoed by one Developer, who felt the Unit Convenors who participated are “pretty self-sufficient now, they’re pretty confident that they’ll be able to create similar looking units with those ideas in their heads by themselves now....I think the long-term benefit is really quite considerable.” (Developer 3).

Some Unit Convenors emphasised that the process had impacted on developing their approach to learning and teaching generally, and not just on their skills for using the LMS. One Unit Convenor is planning to apply for an internal learning and teaching grant to further explore the potential of one of the tools used in her example unit.

Unit Convenors also identified benefits of the process for colleagues in their departments and faculties. While recognising that they themselves tended to be located at the “early adopter” end of the spectrum, Unit Convenors felt that there were benefits for all categories on the bell-curve, and that their experiences with “going first” with the example units had “percolated out” in a positive way to colleagues in their departments. They recognised that they acted as “champions” for the new LMS within their departments and were willing to play this role, to the extent of answering their colleagues’ questions and acting to some extent in an LMS-support role: “You’ve got to make sure that these skills are developed within the departments as well, not just outside the department” (Unit Convenor 4). To a greater or lesser extent, the example units of all participants were seen as acting as an “ice-breaker” for other academics who had not experienced the new LMS and were perhaps reluctant or hostile about the change process. This effect was seen to be enhanced by the example units being authentic learning objects, situated in their actual Department context: “people respond much better to somebody in the department showing them what they’ve done.” (Unit 1)

Unit Convenors tended to identify technical problems and their experiences using individual tools which had not gone according to plan amongst the major challenges of the example units development process.

Developers

Developers also saw themselves as benefiting from the process significantly in terms of professional learning. Again, the benefits were seen as going well beyond technical skills in using Moodle. Developers tended to place value on what the development process had afforded them in terms of relationship-building and orientation to an often new faculty environment, working in a team environment and sharing experiences, and exposure to a variety of units, learning objectives and teaching contexts through the project. The challenge of the competency required in needing to be able to present Unit Convenors with a recommendation or a range of tools for them to choose from in the new LMS was also considered a benefit. Developers also felt that the chance to work individually and intensively with convenors was of benefit to both Unit Convenors and Developers:

I’ve learned a lot from the convenors as well, because it’s really important I believe to listen closely to what they say, and sometimes just work that a little bit, and...add your own expertise and make that happen. Rather than sort of having a shiny, glitzy, glamorous idea, with all the bells and whistles, but then that doesn’t necessarily work on the ground. (Developer 3)

Developers identified the level of engagement of the Unit Convenors and their willingness to be involved in a participative design process as a critical success factor in the development of example units, and often creating challenges.

I had some really motivated convenors who really wanted to learn how to use the technology.. and that was great, it was really beneficial for both sides. And then we had some convenors who just wanted the designer to make a particular tool or activity or resource, and they just said what they wanted and the designer tried to give some advice, and then pretty much produced what they wanted. (Developer 1)

This was also linked to a sense from Developers that the example units (not being “exemplars” of best practice) could be thought of almost as a work in progress, demonstrating sometimes smaller changes and incremental progress made by the Unit Convenor towards a more interactive or community-based online presence.

I think there should be a group that charges ahead and looks at the most recent trends and things like that. But on the coalface it does need to be a lot slower and steady and not error-prone, that’s really the most important bit. (Developer 3)

Individual roles and responsibilities within the development team of each example unit varied. Developers identified that the development of the example units tended to be an organic process, which did not tend to respond well to prescriptive ideas, or being overly managed, and needed to balance the aims of the Unit Convenor in the unit as well as the aims of the example units project itself.

Developers found that the level of uncertainty about the new system at the time of development, and the inevitable technical problems associated with implementation of a new system, presented some of the key challenges for them in the design and development phase.

Teaching Phase

Unit Convenors

All Unit Convenors interviewed assessed their example units as having worked well when translated to actual teaching, with some pointing out particular tools or features which had been successful. Unit Convenors did not tend to attribute the success of the example units as stemming from the example units process specifically however, as some felt that their own pre-existing learning design had contributed, and that this had remained largely intact from prior to the example units project.

In some cases, particular tools or features were not used or eventually hidden by the Unit Convenor in practice, if they were too difficult to manage in practice or were not successfully realised.

I didn’t really understand [some aspects of the example unit]. And that’s not a critique of how the thing went - probably in terms of showing what the [example unit] could do it was good - but in terms of having a unit that I could actually run and manage, it was a bit too much. (Unit Convenor 2)

Developers

Developers’ responses to this area of questioning were limited, as often they had only minimal contact with the Unit Convenor following completion of the example unit, and feedback on how a unit, tool or learning design was experienced by students was often only gained in an ad hoc or piecemeal fashion. Where Developers noted various ways in which unit had worked well or not worked well, this was often again linked with the level of engagement of the Unit Convenor, their openness to new ideas, and the extent to which they had considered the learning outcomes and aims of the unit in the design of the online space. The importance and influence of context on the success of a unit design was also highlighted.

You apply all the principles and so on... but in practice there’s a lot more going on there than just design that will make or break it...It’s about the whole thing, the package...what sort of teacher the lecturer is and how they personally bring the students along with them. Which is very hard to measure and to get back from the convenor. (Developer 2)

Transmission of Knowledge

A portion of the interview was designed to test the results from Phase 1 of this study, by asking participants if they had looked at other example units, and what they had gained by doing so.

Unit Convenors

While uncertain of the extent to which example units were actually accessed and used by other academics, Unit Convenors were supportive in principle of the example units as learning objects, and emphasised their strengths as a resource for ‘just in time’ design inspiration and support. All the Unit Convenors interviewed had viewed other example units to some extent, and had picked up at least a few ideas or tips from their designs. In contrast

to phase 1 of this research however, the Unit Convenors did not tend to pick out individual tools or design models as being of particular use to them. The visual aspects of unit design as a way to engage academics were more likely to be brought out by Unit Convenors; the importance and influence of this was borne out by Developers too as a ‘feel-good factor’:

I looked at the Computing ones and decided I didn’t want lots of little tiny links....And I looked at the hieroglyphics [in another unit] which I thought was just drop-dead gorgeous...I took it home and showed my husband. (Unit Convenor 1)

Developers

Developers endorsed the ongoing utility of example units as learning objects for use in their activities related to supporting the professional learning of other staff. Example units were valued as tangible products with the ability to demonstrate good practice, along with showing the potential for different activities to be applied to different contexts. Developers endorsed the authenticity of the example units and the way that they situated uses of the LMS in the context of a unit with a particular student cohort and set of learning outcomes, rather than presenting them in isolation. “It speaks volumes to academics, because they want to see examples of real units that have used these tools” (Developer 1). The lack of available feedback from students on how they experienced the unit was seen as undermining the usefulness however, and the learning gained from actually running the unit could be a crucial element in using the example in professional learning workshops

One of the example units eventually became the basis for a template on which all of a Faculty’s online teaching spaces have subsequently been based; part of the reason for the choice was that the design of the template had been based on the needs of an authentic unit.

Automated themes - Leximancer

Two concept maps depicting the top six or seven themes for each data set (Unit Convenors and Developers), were produced from Leximancer, and these can be seen in Figure 1. These themes contain clusters of concepts; those that appear together often in the interview data are represented close to one another in the map. The themes are heat-mapped to indicate frequency, which means that the ‘hottest’ or most strongly evident theme appears in red, the next hottest in orange, and so on.

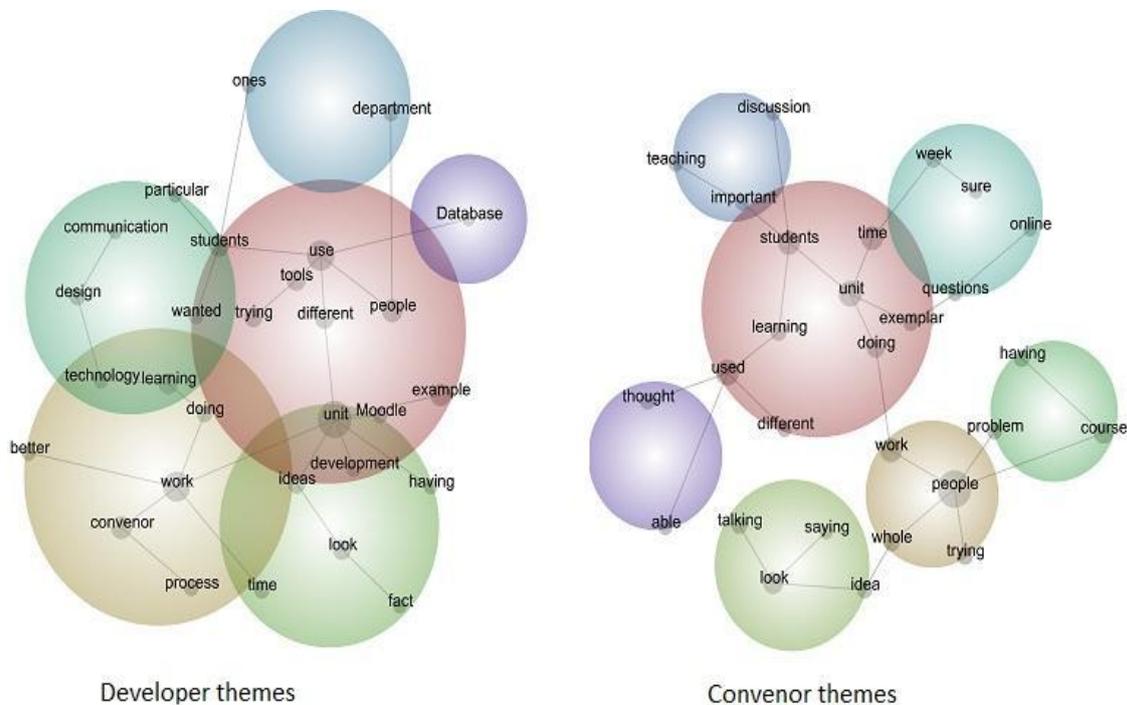


Figure 1. Automated concept maps produced by Leximancer

Analysis of the concepts that emerge through the themes further supports the use of example units for professional development. Similar themes were found in both sets of data, however they can be interpreted in

relation to each of the participant's roles. The Developers' themes are associated with *unit*, *work*, *look* and *design* in line with their support role in providing technical and functional expertise. The use of the concept 'communication' in the *design* theme may indicate the importance of building relationships through good communications with Unit Convenors. Similarly, the Unit Convenors associated themes that relate to their work context, with *learning*, *people*, *course*, *week* and *discussion* being prominent. The theme *look* was connected to the concepts 'talking', 'idea' and 'saying' which may indicate that Unit Convenors valued this critical discourse as a way of improving their uptake of technology.

The following summarises the themes (italicised) and associated concepts displayed in Figure 1.

Convenors: (*used*, unit, students, time, doing, learning, exemplar, different)(*people*, work, whole, trying)(*look*, talking, idea, saying)(*course*, having, problem)(*week*, questions, online, sure)(*discussion*, teaching, important)
Developers: (*unit*, use, people, students, example, tools, different, trying, Moodle)(*work*, convenor, learning, doing, process, better)(*look*, ideas, time, development, having, fact)(*design*, wanted, technology, particular, communication)

Discussion

Gunn, Woodgate and O'Grady (2005) argue that engaging teachers in a collaborative, participative design process to repurpose existing learning objects is a highly effective way to produce a sense of ownership, confidence, and knowledge, and ultimately acceptance of organisational change. The focus on repurposing of learning objects is founded in the knowledge that "it may not be practical for every teacher to develop the technical skills to produce learning objects from scratch" (p.195). While we do not dispute the fact that the creation of learning objects using a participative design process would not be scalable to every teaching unit of a large institution, we have found that the application of the same type of collaborative process to the creation of selection of learning objects "from scratch" has had a very similar range of benefits for the staff involved, i.e. a sense of ownership, acceptance, confidence and so on, and that just as importantly, these benefits have filtered out to the wider academic staff as a result of the active learning in the design process.

While to a certain extent some of these benefits were the intended results of the example units project, this study has shown them to be deeper, richer and more complex than might have been foreseen. For example in phase one of the study, 35% of respondents to the survey disagreed that the example units offered opportunities for collaboration in line with other studies such as Handal and Huber (2011) and Taylor (2003). However phase two of the study has afforded the opportunity to investigate this finding in more detail. The true value of the learning objects can be seen to have been located more in the transformative effects of the participative design process that led to their creation itself, rather than in the objects as objects (Kember, 1998). This includes the building of relationships and a community of practice between developers and academics, the professional learning opportunities for the developers themselves, and the impact of the academics' experience of the process on their colleagues. This is brought out by the theme identified through Leximancer of *people* being prominent to both sets of participants.

Unit Convenors themselves validated the participative design process. One participant experienced the collaborative approach as a "match between the academics and [the Developer] group that is explosive in terms of effectiveness of teaching...I would like more of that collaboration, in fact I'd like that collaboration with all my courses." (Unit Convenor 3). The fact that Developers identified the level of willingness to engage on the part of individual Unit Convenors as a critical factor in how successful the example units were as learning objects, also speaks to the influence of the design process.

Hand in hand with the collaborative design process, the importance of scaffolding around example units for academics is also underscored by the data. To maximise their usefulness, example units must not just show tools being used, but also must go some way towards explaining why design choices have been made by the Unit Convenor working with the Developer, and why they are appropriate for that cohort and the unit's learning aims. There is also a need for example units to vary in their level of sophistication and complexity, so as to be accessible and achievable for a majority of academics, who would not enjoy the same level of intensive design and development support to develop their own units. As was highlighted through Leximancer, themes from the Developer's data included 'design', 'technology' and 'tools' as compared to the more contextual concepts in the Unit Convenors' data, which were based around 'learning', 'people' and 'discussion'.

Huber and An (2012) frame the showcasing of the example units as a strategy for encouraging a sense of "relatedness", enabling academics to see the potential benefits for themselves in the new system. Data from this phase of the study has shown that example units indeed acted as an "ice-breaker" for other academics. Seen in

this light, the lower than expected number of survey participants in the first phase of this study who indicated that they would revisit the example units may be less significant.

The results of this study have also elucidated a number of ways ongoing initiatives within the institution may be enhanced. For instance, data from participants showed that feedback on how a unit, tool or learning design translated from an example unit was experienced by students in a 'real' unit was often only gained in an ad hoc or piecemeal fashion. This has highlighted a need for more systematised follow-up and evaluation of professional learning and design and development initiatives in order to measure their effectiveness. There are already a number of approaches to measuring impact of professional learning initiatives, see for example Desimone (2009), and use of such a core conceptual framework could be applied to the area of educational design and development.

This study has allowed for a focussed investigation of the effectiveness of an example unit development project, and has brought to light a number of valuable aspects which were not readily apparent in larger-scale quantitative analysis, such as that carried out to evaluate the LMS implementation project as a whole. On the other hand, the limitations of the study are apparent in the number of participants. The reflections reported here are based on a small sample of Unit Convenors and Developers however their thoughtful comments have provided insights for future research and development. The research was carried out within the context of one institution and therefore a cross-institutional study would further justify the findings.

Future Directions

This paper has demonstrated that the value of building example unit lies in the knowledge gained from the collaborative design process between the Unit Convenor and the development team. Looking forward, it is unlikely a project could be sustainable on the scale of one example unit per department, but one example unit per faculty per semester may be more realistic (eight per year). Selection of the Unit Convenors for this development is important. Experience in the study suggests they need to possess not only a motivation to try new approaches and tools in teaching, but also a willingness to reflect on their learning experience and to assist in the learning of colleagues. The educational design and development team work on a number of different projects across the university under different grant and program titles. As trust is built in these projects they would form an ideal, sustainable foundation on which to extract new example units. Student data (de-identified) could add a richness to new example units that was missing in the first ones (reported on here in phase one). New example units could highlight more clearly what works, what didn't and why in the pragmatic fashion of this research study.

Since this project, the faculty-based LMS training and support staff have been reassigned to the Educational Design and Development Group and their role has been expanded to include more educational design aspects. This places them in an ideal position to identify new example units and to further utilize the examples in their training sessions. In this way the examples continue to contribute to the professional learning of the design and development group as well as being available as accessible self-help resources for convenors. A further source for new example units will arise as Moodle, an open source platform, is continually changing. Major upgrades are implemented once a year and example units could be developed to showcase new features of the platform.

A future direction for research is to further examine the perception of "exemplar" as opposed to "example", and investigate which of the two ought to be pursued if the goal is professional learning. As one Developer noted, "if you're putting a link up on the website, the assumption that most staff would make is that you were representing something that was good practice, and that wasn't necessarily the case" (Developer 1). Interestingly, Leximancer confirms this use of the terminology with Developers using 'example' and the Unit Convenors using 'Exemplar'.

A wider study would also be beneficial to compare the findings in this paper across different institutions with different approaches to change management and ways of implementing innovations. Furthermore it would be insightful to include as participants those Convenors and Developers who were not necessarily champions or in support of the changes to the LMS to investigate what can be done to support other groups on the bell curve of distribution of innovativeness (Rogers, 1995).

Conclusion

In the first phase of this study, investigations centered on how a set of learning objects, showcasing a new technology, were utilized. The findings indicated a perception that interaction with the example units had no

'social' aspect which leads to assumptions about their effectiveness for learning. Phase two of the study has found that active learning takes place during the design and development process for both sets of participants (Convenors and Developers). The process of developing these example units was also found to be an authentic context in which to situate professional learning. Encouraging a wider uptake in this development process can come about by instigating new ways of working in partnership with the faculty mainstream members supported by the experiences of early adopters.

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