# Enabling Pervasive Change: A Higher Education Case Study

Simon Collyer
Chris Campbell
*The University of Queensland*
*Australia*
s.collyer@uq.edu.au
chris.campbell@uq.edu.au

**Abstract:** Pervasive adoption of eLearning technology within higher education institutions remains a significant challenge. While the benefits of technology enhanced learning (TEL) have been identified, and enabling technology is increasingly plentiful, many organizations neglect change management in favor of individual innovation, risking significant productivity losses across the enterprise, and potentially reducing the quality of education. This investigation is the beginning of a study to leverage the experiences of Faculty across a range of disciplines to identify the communication and change approaches that are most effective for appropriate adoption of TEL. The intent is to build a grounded theory for effective technology adoption change support using Kotter's (1996) eight change management steps as a framework to catalogue the approaches.

## Introduction

The pace of TEL change is accelerating, driven by the globalization of higher education, information technology, and deregulation (Graetz, Rimmer et al. 2006). Our unfolding reality is uncertain, ever changing, and unpredictable. As the world moves to an ever faster clock cycle, so must we increase our focus on change management to keep pace (Boyd 1996, Hodgson and White 2003). The Group of Eight Australian Universities chair recently lamented a "technology tsunami sweeping across our campuses" (Young 2014, p3) suggesting technology is changing at a faster rate than universities can presently absorb.

This study will identify management approaches suitable for supporting educators in appropriate absorption of technology, to enhance learning across all faculties at universities. Some of the benefits of technology enhanced learning (TEL) have already been established. These include encompassing learning outcomes, student equity, learning efficiency and administrative efficiency (JISC, 2008; US Department of Education, 2010). However, levels of mature technology awareness amongst Faculty are still low (The University of Queensland, 2014a). Studies have shown how neglecting broad technology adoption in favor of individual innovation, risks significant productivity losses by as much as 45% (Comin, 2012). While many institutions focus on their innovators, and early adopters, it is the early and late majority, as shown in , that deliver the greatest benefits.

The need for broad change support is an ever increasing challenge, and one arguably equal to the need for innovation or pedagogical advances (Comin & Mestieri, 2010; Ertmer, 2005). This investigation will leverage the experiences of Faculty in a range of disciplines to identify the communication and change approaches that are most effective for appropriate adoption of educational technology. This study, which is part of a larger study, will use case study methodology and will present one case study on how TEL can be used to promote change. It will use Kotter's change management theory (Kotter, 1996) as a framework for the study.

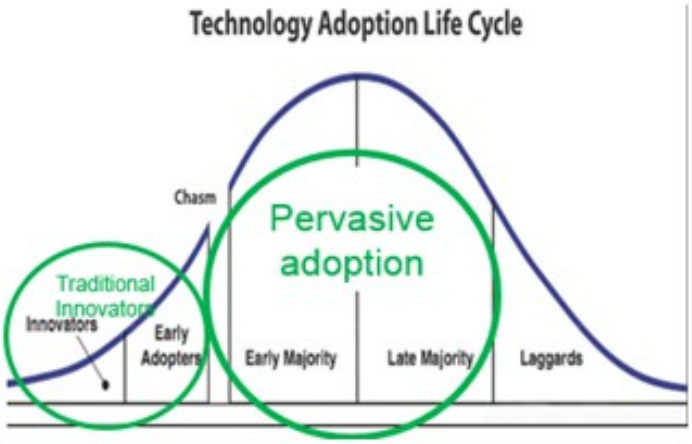


**Figure 1.** The early and late majority required for pervasive adoption: Adapted from Rogers (1962).

## Implementing Pervasive Change at a University

Considering Kotter's change management theory (Kotter, 1996) this project will document successful and recommended approaches to TEL implementation leveraging the experiences of successful change leaders including Faculty which includes course coordinators, heads of school, and others academics at The University of Queensland. Two groups of researchers have conducted research using Kotter's change management theory with regards to educational technology. These include Quinn, Amer, Lonie, Blackmore, Thompson and Pettigrove (2012) who investigated adapting Kotter (1996) for the purposes of managing the impact of blended learning changes on students. The other group of researchers Roxå, Olsson and Martensson (2008) have investigated scholarship sharing amongst course coordinators, but in this project we seek to identify practical holistic end-to-end principles for supporting technology change for course coordinators. These change leaders have created processes to shape what is learned by the students by changing how it is learned (Laurillard, 2012), changing their teaching to enhance learning by example with TEL. By learning from how these change leaders implement change we may be able to improve broad and appropriate technology adoption enhancing learning outcomes and general efficiency on a larger scale.

This project will complement technology and pedagogy with change support tools for technology enhanced learning adoption in the tertiary environment. These change tools are critical and will remain critical for unlocking the unrealized potential of technological and pedagogical developments, to reap their benefits on broad scale. It is not sufficient to identify effective technologies and pedagogies if we have not learned how to keep pace, with processes to absorb those developments suitable for the unique challenges of the higher education environment, especially in a research intensive university. This study therefore seeks to identify management and support approaches for technology adoption by Faculty.

While much of this technology has the ultimate goal of enhancing student learning, there are also important innovations that enhance the student experience. This study therefore includes educational technology that benefits other organizational objectives such as: student equity, industry connection, access to services, global engagement, cultural engagement, learning convenience, and peer networking. Efficiency benefits are however particularly important for their ability to redirect scarce resources towards other University objectives such as research and community engagement.

While Faculty overwhelmingly believe in the value of TEL, they have low levels of awareness of the mature tools available (e.g. desktop video generation in support of flipped classroom- 46%), and very high levels of awareness of immature tools (e.g. MOOCs) (The University of Queensland, 2014a). Once discovered, Faculty often report very favorable results with mature tools, which represents a significant missed opportunity for the enterprise given these technologies are often years old (The University of Queensland, 2014b).

## Methodology

This study forms part of a larger study that received ethics approval at the university prior to data being collected. In the larger study grounded theory with in-depth interviews and focus groups was the methodology selected as the most suitable for addressing the aims of this research. Grounded theory was selected because higher Education TEL is an area about which little is known, and because the researchers are seeking an in-depth understanding of the perspectives of practitioners in actual environments. Also, qualitative research methods are most suited to understanding the complexity of human behavior and perceptions in naturalistic environments (Denzin & Lincoln, 1994).

For this paper a single school from the grounded theory study has been selected as a case, investigated using a semi structured in depth interview. During and after the interview, the researchers took field notes of their interpretations and impressions of the data given. The field notes were used to help guide subsequent interviews, promote a constant comparative analysis (Taylor & Bogdan, 1998), and formed the basis of discussions to verify interpretations. In line with grounded theory, interview transcripts and field notes were analyzed as data collection progressed. This constant comparison involved continuously drawing interpretations and refining concepts from one participant to the next (Taylor and Bogdan 1998, Creswell 2003, Yin 2003).

The participant was sent a summary of the combined analysis of the interview and invited to comment on whether it was a fair representation of their views. This procedure enabled the researchers to verify that their identification of themes accurately represented the participants intended meaning (Creswell 2003). Interview transcripts were analysed and highlighted for themes by the investigators (Morgan 1988), with areas of consensus and disagreement noted. Due to the complexity of the concepts and the small sample sizes, software-based text-analysis tools were considered unnecessary. Microsoft Word was used to add comments and highlight key parts of the text. The principal investigator coded the transcripts according to content themes, identifying initial codes and writing memos. The resulting documents were reviewed by the co-investigator who added her own interpretations in the comments and these were discussed to reach consensus on interpretations.

## Results and Discussion

In order to reduce replication across this article, results and discussion are presented together (American Psychological Association, 2010; M. Q. Patton, 2005). Some raw data extracts from the transcripts are included to illustrate content themes. The participant in this case was a Head of School (HoS) at a research intensive University. The HoS led the successful introduction of online assignment marking for the estimated ten to fifteen thousand pieces of assessment the school processed each year. The HoS was interviewed about the technology implementation process to discover the process that applied to their initiative, as well as the processes that they recommend as effective. Questions related to: communications including how practitioners find out about technology and build awareness of new technologies or capabilities; motivations, to identify the drivers that lead to the practitioner investigating or adopting a technology; support services that are helpful in the adoption process; organisational roles that assisted the adoption process; vision and leadership activities that were effective; progress management, issue identification, resolution and follow up; and finally how to embed new practices into the culture.

The case school was “slow in terms of uptake” of technology before the application of change management processes. This study revealed an effective set of communication and support processes used in the pervasive adoption of a technology for enhance learning. The key themes are now presented under the headings: a focus on pragmatism; building awareness as a precursor to motivation; using motivators to engage; and the benefits of leadership and support.

### A Focus on Pragmatism

Above all, this case drew attention to the benefit of a pragmatically focused TEL change program. No small part of the success resulted from the deliberate selection of a proven reputable technology, avoiding anything

'untested'. Arguably achieving broad adoption of most proven technologies is sufficient to be a leader in a world focused largely on less representative early adopters, as evidenced by most conference programs and research grants. Just as important as the pedagogical drivers, technology enabled solutions must be achievable from a resource point of view, and scalable and sustainable, delivering broad benefits for the resources invested, as was demonstrated in the following statements:

> It has to be something that's scalable. It has to be something that people see obvious benefits in. It has to have support. This is a way to move the whole school forward.

> As far as I could see it was [supported by the institution], and [the vendor] had a long history, and the [hardware] were reputable devices, so it wasn't like we were mucking around with some new untested type of technology.

> Because it was a regular core product we decided to take the plunge.

> No one does best practice. If we did best practice we'd have them in tutorials of 10 for three hours a week, but we don't. We don't have the resources to pay for it, but if someone said its better pedagogical practice, it will save you money, there is support available, and we will provide that support, and that training, then as the head of school I'd be thinking right, this is something we need to be looking at as a school.

**Building Awareness as a Precursor to Motivation**

One premise of this study is that instructors are busy and need structured change support for adopting appropriate technology. This case highlighted that support needs to begin with building awareness of possibilities:

> I don't think people have an awareness of how technology can help do things better. I think the problem is: If you have a flash bang product, that means nothing to me, but if you are going to show me how to do something better... ah OK.

The HoS emphasised the need to frame communications in the instructor's reality and objectives, rather than in technical terms, product names, or vendor names. Advice must also be achievable:

> It's crucial that you start with what people are doing now, as opposed to saying what they are doing now is outdated. The message people hear is "you're dinosaurs, you're stuck in front of a classroom talking to people. We are the wiz bang technologists" and there's just a gulf. Better to help us do what we already do but do it better… A lot of [instructors] have been here 20 or 30 years and some of the stuff is a bit scary for them, but also they don't have the intuitive understanding of it, so I think you need to keep people comfortable, and I think a lot of the stuff that comes out is a bit frightening.

A regular newsletter email spruiking technology options helped spark the case initiative, but other communication approaches were recommended:

> …try to get them to the [school planning] retreat. Try to get in front of people, and give them a quick demonstration.

> line up a pilot school where all of the things you want to do to be a good teacher, good PowerPoint presentations, provide good feedback to students, provide interesting Blackboard

> sites, interesting lectures, provide resources for students on the Blackboard site, and think 'How can I help people do this better.

**Using Motivations to Engage**

The need to understand motivations to adopt technology was a fundamental objective of this study. A number of motivations were revealed by the case, including: saving instructor's time; reducing administration overheads; improve learning outcomes; and lowering environmental impact. For example the ability to save instructor time was evidenced in the following comment:

> People who had worked with online marking said that once you got more practiced at it, it was actually quicker, because you can use comments banks and that kind of thing.

The desire to improve learning outcomes was also evident:

> I didn't think [paper based marking] was good pedagogy because fewer and fewer students come and collect their essays. The collection rate was probably down to 35-40% and as a lecturer that's incredibly frustrating because you write the feedback and the students never come and get it, and our assignments aren't summative, they're formative.. you write the 2000 word essay, you get feedback, you get coaching, of ten several hundred words of feedback, and if they are not picking it up its an enormous amount of wasted effort, and its appalling teaching and learning practice

Reducing administration overheads another clear motivation:

> It just strikes me as an oddity that students come to University and have to hand in paper essays. I haven't submitted anything on paper for a very long time. Students at high school submit through Turnitin now, well the better high schools anyway, so why would they come to university and do paper based assignments? Phenomenal waste of office time. Ten to fifteen thousand pieces of assessment. They've all got to be date stamped, and given to lecturers. [This creates] problems with the perineal 'I handed in my essay but its missing'.

**The Benefits of Leadership and Support**

Leadership and provision of change support were key themes. In this case the HoS reported "I asked one of my staff to check it out. He did. He said 'Yep it seems to work fine'… he gave it a pretty thorough look actually" so then the HoS provided leadership, to encourage his staff to adopt the change:

> At the school meeting I said I think we should do this. We've all got to go. I was the new head of school so I had a bit of political capital. I laid out all the reasons. I said I'd provide the iPads if we agreed to do this, and I said I thought this would be a fairly significant advance in our teaching and learning, but that I also thought it was very manageable. I promised people we would provide the support and training.

Staff were not left in the lurch: "We had [the technical eLearning trainer] turn up to do the training. I think that was important, to make them feel comfortable with it, and we also invited her along to the school retreat". During the implementation, progress was monitors and issues collected:

> I sought people's feedback, but that was largely done by the director of teaching and learning. He got a whole bunch of feedback. There were a few people who were critical of it, and [he] gathered together the problems people had had, and addressed those in the next training session with [the eLearning technical trainer, who] provided a training session for all staff, and have

continued to provide an hour long training session for staff who need refreshers, or for people who have questions to ask. That was very helpful.

## Conclusions

This case study documents communication and support themes for a successful initiative to achieve pervasive adoption of a technology for enhanced learning. Key themes included: a focus on pragmatism; building awareness as a precursor to motivation; using motivators to engage; and the benefits of leadership and support. Individual approaches included the need to frame communications around ways to improve delivery of their existing day to day goals; providing case studies based on peers not technologists; providing advice and communications that are incremental and pragmatic (not esoteric and revolutionary); and the importance of working with tools that have central support importance; that are robust and proven and scalable due to magnified reward for the implementation effort.

While this study was based on one case the larger study will include more than 25 cases to build a more robust theory to be tested through action research. It is hoped this model will assist universities in unlocking the unrealised potential of technological and pedagogical developments, to reap their benefits on broad scale. The model will form a practical tool kit of change management principles and approaches for future change leaders (Faculty, course coordinators, and heads of school, curriculum designers, managers and others).

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