Learning thresholds: A journey in online learning and teaching

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Abstract

Three tertiary business educators transitioned their teaching from a just face-to-face mode of content delivery into online/blended content delivery formats. It was found there were three dominant domains of learning thresholds for these educators, which involved the course, student engagement and the teacher. The course domain considered alternative approaches to teaching and course design. The student domain focussed on student engagement and feedback. The teacher domain addressed teacher identity and interactions. Challenges faced by the educators included adopting a new paradigm of teaching, benchmarking efforts, and adequate resourcing. The positive transformative experience involved the educators gaining increased self-assurance in becoming effective online educators.

Introduction

Online education is growing at a rapid pace, with MOOCs (massive open online courses) now having in excess of three million students (Clarke, 2013). Business education, as a part of this phenomenon, is also facing the issue of having to develop a response, which involves "developing and applying different approaches to blending technology with face-to-face learning" (Clarke, 2013, p. 410).

The experience of including components from the online learning environment into the on-campus face-to-face mode of teaching, outlined in this study, was an interesting and unique journey for those who participated in this research project. This research seeks to capture the reflections of three business education lecturers at a Christian tertiary institution as they encountered learning thresholds on the journey of implementing online/blended teaching alongside their regular face-to-face course delivery mode. The lecturers who participated in this study typically taught 6-8 units of study per year which involved contact with approximately 120 students. While each lecturer taught some of these study units in on-campus mode, some of the units were taught in a blended mode in which many online components and communication tools were used to teach off-campus students. For ease of understanding, the term 'online' is used throughout this paper to describe both purely online and partially online (blended) components in the teaching experience.

The aim of this study was to identify learning thresholds that teaching staff experienced as they learned about online learning and teaching in business education. It is anticipated that the identification of these learning thresholds will inform the content and nature of professional development

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programs for future business educators who engage in the processes of online course design and online teaching. Findings from the study are based on journal reflections kept by the lecturers throughout the online unit development process and during their teaching experience, as well as transcripts from focus groups held with these business educators during the teaching semester.

The trends in the delivery of subject content are fast changing. Today educational institutions are dealing with students who have higher expectations, are much more demanding, are more aware of their rights and are quick to switch providers if they are unhappy. The requirements of off-campus students are somewhat different from on-campus students in terms of their learning needs. To suit learners' demands for flexible delivery of courses, most universities and higher education institutions have already moved, or are in the process of moving, the delivery of courses to the online environment.

> *"Learning thresholds are transformative, troublesome, irreversible, integrative, bounded, discursive and reconstitutive, and they typically involve … a state of liminality"*

It is difficult to recognise learning thresholds in the process of online course development and teaching. Some learning thresholds act as 'gateways or portals' (Meyer & Land, 2006) to a higher or new level of understanding and, in turn, this leads to the attainment of more difficult and complex learning thresholds. To assist in the recognition of such threshold concepts, Meyer and Land (2005) have highlighted eight key features of learning thresholds that are typically part of the learning process. Learning thresholds are transformative, troublesome, irreversible, integrative, bounded, discursive and reconstitutive, and they typically involve learners entering a state of liminality which is described by Land, Meyer and Baillie (2010) as "a transformative state in the process of learning in which there is a reformulation of the learner's meaning frame and an accompanying shift in the learner's ontology or subjectivity" (Land, Rattray & Vivian, 2014, p. 199). Transformation occurs when there is a basic, fundamental and structural change in the perception or view of oneself, the environment or others. Cranton and King (2003) note transformation consequently changes the way one sees things to make meaning of the world. The integrative element of a learning threshold follows in a linear fashion in that it combines the prior knowledge and understanding with a learner's newly changed perceptions. When learning of this nature is significant, it can be categorised as being transformative.

Kiley and Wisker (2009) observe that earlier research studies on learning thresholds have been directed towards discipline-specific studies in undergraduate education and are primarily related to discipline-specific fields. Many of these studies focus on the challenge that besets educators who are attempting to define threshold concepts or learning thresholds within particular disciplines. While online teaching may not be a discipline or area of study, the process of identifying learning thresholds of online teachers has some similarities with the way in which threshold concepts are identified in other fields of study (Northcote, Gosselin, Reynaud, Kilgour, & Anderson, 2015). It has also been noted that identifying learning thresholds of online teachers has the potential to assist novice academics (Davies & Mangan, 2008) involved in the preparation of resources and instruction because the process of identifying learning thresholds of such staff can provide direction for professional development. Creating a framework and guidelines are essential for identifying learning thresholds.

Not all learners are equipped to handle online teaching (Bennett, Maton, & Kervin, 2008; Goodyear & Ellis, 2008), and a combination of traditional classroom teaching and online methodologies, referred to as 'blended learning', has proven beneficial to learners (Means, Bakia, & Murphy, 2014). Lambert and Brewer (2007) suggest that this blended learning style can allow elements of traditional face-to-face learning, alongside online teaching, to benefit learners more than either mode of study being offered alone. Studies across a range of teaching contexts (Farrell, Cubit, Bobrowski, & Salmon, 2007; Kelly, Lyng, McGrath, & Cannon, 2009) have identified benefits of blended learning for students as being:

- provision for learning at any location;
- self-paced timing of learning;
- changed nature of peer interactions;
- opportunities for reflection; and
- improved levels of involvement.

A number of considerations have been identified as being critical to the successful delivery of online units of study, particularly where distance students are involved. These critical success factors are varied, with Volery and Lord (2000) identifying technological factors (access and usability), instructor characteristics (teaching style, technical skills) and student characteristics (technological ability) as being important. Cheawjindakarn, Suwannatthachote and Theeraroungchaisri (2012) reviewed the literature of critical success factors in online distance learning in higher education between 2000 and 2012 and, more broadly, identified five factors in need of consideration at the higher education level:

1. institutional management (including framework and scope of the program, operational plans and assessments of cost effectiveness);

2. the learning environment (including course management systems, technical infrastructure, interactive learning opportunities, access and navigation);
3. instructional design (including clear learning objectives, quality content, learning strategies, student motivation, and appropriate assessments);
4. service support (including training for key stakeholders, communication tools, and a help desk for student access); and
5. course evaluation.

Any institution implementing an online learning program would be well advised to give consideration to these areas in order to increase the likelihood they are delivering a quality online learning program. Online learning, in whatever form it takes, is extolled as a critical and worthwhile endeavour (Grandzol & Grandzol, 2006), not least for its additional range of resources and flexibility (Wong, 2012). Students who have experienced online learning reported in one study, "a preference for being able to watch lectures at times that were convenient to their schedule" (Watters & Paul, 2009, p. 55), and felt it was a more effective content delivery system. The use of pre-recorded lectures in particular, was seen to be "an effective alternative to traditional live classroom lectures" (Watters & Paul, 2009, p. 56).

For instructors, there is a range of new multimedia tools and technologies that open new ways of teaching, and this can increase creativity (Morgan, 2015). Freeman and Hancock (2013) found in their study of accounting academics that rather than move to a fully online context, "what is more likely to happen is academics will judiciously incorporate technology-enabled learning into a blended or hybrid learning environment" (p. 90). The work of Means and her colleagues reached similar findings: suggesting that blended learning contexts have much to offer learners (Means, Bakia, & Murphy, 2014; Means, Toyama, Murphy, Bakia, & Jones, 2010).

Efficiency is an overwhelming advantage for the blended environment. A study of accounting students by Watters and Paul (2009) found online delivery to be not only more efficient in delivering content (p. 51), but that student perception of effectiveness was, "in some way correlated with factors that lead to higher student success and performance, such as motivation, maturity, intellectual ability, etc." (p. 54). In contrast, some are critical of such approaches to business education, including seeing it as challenging current teaching roles (Grandzol & Grandzol, 2006) and questioning its quality of learning (Grandzol & Grandzol, 2006; Morgan, 2015).

In contrast to Watters and Paul (2009), Wong (2012) found in her study of accounting students and online learning that they "ranked the delivery of face-to-face lectures as the most effective in assisting their learning … closely followed by face-to-face tutorials" (p. 200). Similarly, Freeman and Hancock (2013) raise the issue that:

> it is highly unlikely, if not impossible at this time, that all accounting students can develop all graduate capabilities completely in purely asynchronous online contexts devoid of expert intervention, especially those threshold learning outcomes requiring substantial intervention and targeted, timely feedback such as teamwork and communication. (p. 90)

Students still wanted the ability to interact with instructors (Watters & Paul, 2009), and Freeman and Hancock (2013) note the "need for accounting academics who can perform the essential roles of intervening with students' learning problems/difficulties and assessing students' judgement-based knowledge " (p. 98). Yet Tanner, Noser, and Totaro (2009) noted from their research that students who had already undertaken an online course were more inclined to take another, suggesting that ignorance of the benefits plays a role in the perceptions of online business education.

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Online courses also have large start-up costs, not only in infrastructure, but also in the training of academics responsible for administering the course (Myring, Bott, & Edwards, 2014), and the time it takes these academics to set-up the courses (Tanner et al., 2009; Watters & Paul, 2009). Critics also point out that there is some evidence an online accounting degree is not the best preparation for professional accounting qualifications (see for instance Morgan, 2015; Tabatabaei, Solomon, Strickland, & Metrejean, 2014).

So while some participants embrace online business education, and others are wary of it, a lot depends on how the online course is presented. For example, a mere recording of a tutorial does not provide a rich learning environment for students (Wong, 2012), whereas a good unit structure and an engaging instructor can be very advantageous (Myring et al., 2014) as students are actively engaged with their learning (Wong, 2012). Consequently it is difficult to conclude whether online business education is categorically better than face-to-face teaching (Morgan, 2015) resulting in a lack of consensus on this issue (Tanner et al., 2009). Either way, online business education appears to be here to stay in one form or another, because of other drivers of globalised education.

> *evidence was sought to determine … thresholds that challenge business educators … including evidence of when they may have become "stuck"*

Methodology

The research study reported here was guided by the pursuit of an answer to the following research question: *What are the learning thresholds that business educators encounter in a higher education context when they learn about online learning and teaching?* Based on the transition from on-campus teaching to facilitating online units of study in a business education context, evidence was sought to determine the learning thresholds that challenge business educators as they proceed in their journey to become efficient and experienced teachers in online teaching environments, including evidence of when they may have become "stuck" (Cousin, 2009; McGowan, 2012; Meyer & Land, 2005) in their professional journeys. From the outcomes of this investigation, a set of research-informed guidelines will be developed to inform the design of future professional learning and staff development activities to ensure that such activities are tailored to the needs of the academic teaching staff who participated in this study. However, the focus of this article is to identify the learning thresholds that business educators in a higher education context encounter, in a professional development sense, when they learn to facilitate learning in an online course.

Using some elements of a mixed methods research approach (Creswell & Plano Clark, 2011) that had been used in previous iterations of this research (Northcote et al., 2015), qualitative data from a group of business education academics teaching in a small Christian higher education institution were gathered using a reflective journal instrument and focus groups. Using a self-study research approach (Lassonde, Galman, & Kosnik, 2009), and using the processes of reflective practice (Schön, 1987), these business educators collaboratively investigated their own and each other's professional development journeys as they gained experience teaching in online learning contexts. Five reflective journals were submitted by each lecturer over the period of a teaching semester and three focus group interviews were conducted.

The three Business School teaching staff were requested to reflect on their experiences of learning to teach in online contexts across a semester period (Semester 2, 2015). During this period, they regularly recorded personal observations in structured reflective journals at five points during the semester from August through to November, answering reflection-promoting questions such as the following:

> From my point of view as an online teacher, what have been the major concerns or areas of "troublesome knowledge" that have been uppermost in my mind over the past few weeks, about online learning and teaching or online course design?
> What typical questions have I been asking others, or meaning to ask others, over the past few weeks, about online learning and teaching or online course design?
> What understandings have I developed over the past few weeks, about online learning and teaching or online course design?

By drawing on elements of the recently developed learning threshold identification method, reported elsewhere (Northcote et al., 2017), the data from the reflective journals were analysed using the following method:

1. Collation and immersion. Reflective journal comments were collated according to categories provided by the reflective journal question points. The researchers immersed themselves in the data through repeated reading before memoing or coding began.
2. Memoing. Initial insights into the data were recorded to document areas of interest, possible conceptual themes and general observations. Broad themes were noted.
3. Coding. The raw data were constantly compared (Charmaz, 2014) to determine categories of focus. This coding process was guided by a number of *signposts* to indicate the presence of learning thresholds (Northcote et al., 2017) including evidence of transformative ideas or integrative thinking, or references to teacher identity, teacher presence, confidence and/or uncertainty. The signposts were used to assist in the recognition of the learning threshold itself, the development of a learning threshold or the participant's state of liminality (Meyer & Land, 2006; Osmond & Turner, 2010), typically experienced before developing a learning threshold.
4. Categorisation of coded themes. Broader core categories in the data were formed, as emerging from the coding process, under which specific learning thresholds were identified.
5. Dissemination and publication. Once identified, the learning thresholds, as experienced by the business educators who participated in this study, are currently being shared with other business educators and higher education colleagues for commentary, discussion and debate.

Findings

Three significant domains emerged from the data from which learning thresholds were identified.

Firstly, *the domain of the course* relevant to this study was identified, which was comprised of elements including course design, course structure and pedagogical issues, within the context of business education. Secondly, *the domain of the student* and the learning threshold concepts encountered by business educators emerged from the data analysis process, comprising elements such as student connectedness, student engagement and performance, and student readiness. Lastly, *the domain of the teacher* is considered, consisting of teacher identity, teacher confidence and teacher presence. The findings presented here address the relevant learning thresholds by exploring each of these domains, drawing from these business educators' knowledge shifts and transformational experiences as they developed their units of study into integrated online courses.

Course Domain Learning Thresholds

The course domain learning thresholds identified in this study include:

- Online teaching utilises teaching methodologies that differ from classroom based teaching.
- Online engagement requires a more individualised approach.
- The linking of unit content together is paramount as the opportunity to expand on this is limited.
- The understanding and use of technology impacts the quality of online material.

From the outset, it is important to note that there was significant hesitation from these business educators as to whether the move to an online learning program would be beneficial. The question of "Is it worthwhile?" was raised in light of the move to online delivery taking "a lot more time than we were led to believe." Initially, these instructors were "worried about the time involved to do this" and did not "know how to do this in a time-efficient manner." From a course design perspective, the business educators involved in this study were quick to identify that workload implications were a considerable issue when moving a unit of study to online delivery.

A significant learning threshold encountered by these business educators involved the realisation that online teaching utilises teaching methodologies that differ from classroom-based teaching. Much time was required "thinking about how to convey the information from lectures differently", resulting in a 'liminal state' (Meyer & Land, 2005), as these lecturers oscillated between prior understandings of how they delivered subject content, and their early experiences and shifts in thinking about the delivery of content online. A learning threshold experienced by these business educators was that online engagement required a more individualised approach – a finding that ran counter-intuitive to teacher expectations. As one business educator commented, "My thinking is that wandering around a class room talking to a few students at a time is less time consuming than giving individual attention to online students." There was also a view that, for content heavy units of study, this content would need to be streamlined in order for it to be engaging in an online environment.

These business educators found that this meant they needed to be "thinking about what this might mean in relation to the extent of content I deliver – how I can break it all down to simple components that are short, direct, yet relevant." It was acknowledged that "the effectiveness of the delivery depends a lot on the communication with students and constant interactions." An element of the facilitation of an online unit observed by business educators in this study involved that of "linking everything together, as there is no opportunity to 'wing it' in the class room." This represented a change of thinking, as a higher level of preparation was required to ensure a close alignment between learning activities and student engagement.

Addressing the defined questions of the research study, an area of concern or 'troublesome knowledge' (Perkins, 2006) identified by these business educators, was the understanding and use of technology. A fear of "not knowing what I don't know about it" existed early on in this project. Technical aspects such as recording and uploading class lecture material were also concerns for these staff, as well as the availability and timeliness of IT support. In light of timeframes given to prepare units of study for students to access, these concerns proved genuine, emphasising the need for dedicated IT time and support when delivering these units of study online.

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Student Domain Learning Thresholds

The student domain learning thresholds identified in this study include:

- Teachers need to address the issue of how to engage with students in an online environment
- On-campus attendance is impacted when students have access to unit resources online
- There is a need to gauge feedback from students early in the online learning experience
- Not all students are 'ready' to make the transition to online learning.

> *I can control a classroom and cope without a data projector, but when lecture recordings fail and we cannot upload learning material I feel helpless*

Student engagement was a particular area of concern for these beginning online educators. As the teaching period commenced and assessment results were determined, the subject lecturers became aware there were students struggling academically. A new problem emerged: How do we most effectively engage with students in an online unit of study? A largely unforeseen new workload arose regarding the 'email trail' which developed as a result of this, while others considered the possibility of regular 'Skype' sessions that may have needed to take place outside of work hours to maximise availability for student interaction.

A by-product of online teaching was found to be a drop in on-campus attendance, as students now had the ability to access more class related material online. One business educator lamented that class attendance had become inconsistent, and this had impacted on their ability to plan meaningful learning activities for their on-campus classes – something that they found difficult to replicate in an online setting. Of concern also to these educators was the loss of student-to-student interactions that arose as a result of a decreased on-campus attendance.

Staff also found that it was difficult early on to gauge how the units of study were being received by the students online, and also to gain feedback from these students regarding the online learning experience. As one unit lecturer commented, "I have been wondering about how the learning experience has been for students. We are not receiving much feedback in this process and I am wondering whether having this would change my processes a little." Over time this concern lessened, as opportunity to solicit such feedback was provided and unit lecturers made relevant changes where necessary.

Student readiness for online learning was also questioned, as some business educators designed their units of study in a 'flipped classroom' approach. This required students to access unit content online prior to scheduled class times, in an effort to make the in-class time more activity oriented to solidify student learning. Many students struggled in making this transition, needing constant prompting and creating learning gaps in early teaching weeks as the academic performance divide widened between those who had engaged with this content and those who had not.

Teacher Domain Learning Thresholds

The teacher domain learning thresholds identified in this study include:

- Online learning may lessen personal interactions with students.
- Teacher identity is fundamentally impacted by the changing nature of their teaching.
- Dedicated IT support is necessary to assist in the transition to online teaching.
- There is a need to have an understanding of what constitutes 'best practice' in online education.

A learning threshold which emerged as relevant to the teacher involved the realisation that less personal interactions with students would take place. One business educator described it this way: "It seems as though it is now being only [a] one way mode with less interactions." Additionally, there was a sense that online teaching "really is at a distance from the students." These comments represented significant shifts in thinking for these lecturers, having never taught in an online space before.

The business educators involved in this study also found that a fundamental change to their teacher identity took place. Early in this project, one online lecturer stated:

> I've been really challenged by this whole idea of being a sage on a stage [changing] to a guide by a side. I've reflected a lot on that in the last six months or so. I think I'm coming to the point where I realise that I think my role is to facilitate learning in a space. … as compared to just standing up and putting on a good show. It's been challenging for me but quite liberating to [let] go 'actually, I can see that very effective learning could take place'.

For a number of these online educators, classroom teaching was something they had done for many years, so 'reinventing' themselves to work in a new space represented a major reawakening of their teaching identities. This was made even more challenging by interactions with peers who had delivered units of study online, voicing that it was straight forward and simple. As one person stated of these interactions: "People with loads of experience telling me 'It's easy – you'll be fine – it's not that difficult', assuming that I will be able to (do it) … "

A significant impact on teacher confidence involves the support of a dedicated IT department. Early on in this research project, business educators acknowledged feelings of helplessness when such support was not made readily available. Comments such as "I can control a classroom and cope without a data projector, but when lecture recordings fail and we cannot upload learning material I feel helpless" clearly show the link between the importance of IT support for beginning online teachers and the confidence they experience in delivering these units of study online.

Having been tasked with delivering course content online, with a short lead-time, these

business educators felt overwhelmed at the commencement of this project. A burden of expectation was felt by all, with one lecturer describing the situation as having "huge expectations and not having the confidence to deliver." One subject lecturer, when exploring what other large and prestigious institutions were doing in this space enrolled in a massive open online course (MOOC) related to their subject area. The experience left them overwhelmed with the difficulty of the task at hand, stating, "I was expecting a lot more razzle-dazzle and it has me worried – if they can't do any better with all their resources, how am I supposed to make it work?" This desire to benchmark arose from teachers questioning whether what they had prepared was in line with that of similar business courses elsewhere - "What is best practice?"

There were a number of successes experienced by these business educators as the teaching period progressed. Early reflective journal comments captured these: "Things up and running – It is happening!" and "Got my sites up and ready." The experience of delivering content in an online unit, while a significant learning challenge, was found to be a transformative process, with lecturers commenting throughout that they were "taking on board some changes that I will make next time around already, and I consider that a good thing." One business educator was confident enough to reflect on their learning through the online teaching experience by stating "I may not be too bad after all."

Discussion

A number of learning thresholds found in this research study resonated with other literature which previously researched learning thresholds in online teaching (Davies & Mangan, 2008; Northcote et al., 2015). Three domains of online teaching evolved, being the course, student and teacher. The course domain involved the preparation, design, structure, workload and methodology. While student areas included the teacher-student and student-student interactions, connectedness, student readiness, access of resources, engagement, learning and performance. The teacher area included areas of teaching confidence levels, requisite skills, teacher presence and identity.

One of the unique learning thresholds found in the study was that online teaching is perceived as being very different from an on-campus classroom teaching. As described by (Barradell, 2016), it goes "beyond the surface-level engagement in student learning" (p. 264). Meyer and Land (2005) note them as "jewels in the curriculum" (p. 5) in the students' engagement phase and Davies (2008) mentions thresholds as a way of thinking in practice. The differences between online and face-to-face teaching is seen throughout the study.

Key learning thresholds that flowed through the study included recognition that online teaching is less responsive than classroom teaching and that it takes sufficient time to do development work in terms of the course design and structure. There is much adaption, adoption and innovation as aspects in the process. A variety of resources are used to prepare and optimise the teaching of concepts and to convey content to the students. The content needs to be delivered in meaningful chunks and in a right balance for it to be effective within the learning process. These learning thresholds help a novice tertiary teacher to have an understanding of what is involved with online teaching. This is what Meyer and Land (2005) refer to as the "transformed view of the subject matter or landscape" or even "a world view" (p. 4).

Online teaching has a distinctive impact on the learning and teaching components that were identified in the study. Learning thresholds are individualised and are dependent on the availability and accessibility of technology. Online delivery impacts on class attendance and is less responsive than classroom interaction. Online teaching is an ongoing phenomenon (Bright, 2007); there is constant learning of new things and key ideas, and new ways of doing things can be unlocked (Barradell, 2016; Kiley & Wisker, 2009). Online teachers come to a realisation of a new unknown space or field where they feel the need to change how they teach. These ideas help constitute key attributes that help lead the participant to have a "transformed understanding" (Meyer & Land, 2006, p. 6) and a "deep approach to learning" (Davies & Mangan, 2008, p. 714) of the subject.

For professional learning purposes, these findings provide research-based evidence of where to focus the design and provision of professional development programs, events, resources and activities for educators who are learning about teaching online. By tailoring activities to the needs of academic teaching staff, their development as higher education teachers can be supported through the provision of focused and context-relevant professional development. As such, the "process of embedding theory into good practice", as espoused by Macdonald and Poniatowska (2011), can be enacted in a professional development context by utilising the theoretical findings from this study to inform the design of bespoke practical professional development support.

> *"online teaching is perceived as being very different from an on-campus classroom teaching. … it goes beyond the surface-level engagement in student learning"*

Conclusion

This study established three key domains of learning thresholds for tertiary business educators venturing into teaching via online methods. The first domain involved learning thresholds associated with the course, and included the need to use different teaching approaches, to plan sufficient preparation time and to utilise new learning technologies (which require adequate dedicated IT support).

The second domain revolved around the student, more specifically student engagement. The learning thresholds encountered here were the realisation of the additional workload implications for dealing with increased student interactions outside of the classroom, and the drop in on-campus attendance which impacted on in-class activities. Educators also learned to find alternative student feedback mechanisms that are not dependent on face-to-face interactions. The students also encountered learning thresholds in adapting to the different teaching approaches (e.g. the flipped classroom) and the accessibility of additional material outside of the classroom.

> *"identity as classroom teachers was now replaced by that of a facilitator of student learning, irrespective of the location of the student and the means of their engaging with the content."*

The third domain was the teacher. Business educators experienced a learning threshold when acknowledging the reduced level of in-person interactions and the resulting increased distance from students. Teacher identity change was another learning threshold, and in particular the need for them to reinvent themselves, and their identity as classroom teachers was now replaced by that of a facilitator of student learning, irrespective of the location of the student and the means of their engaging with the content.

In reaching these learning thresholds the educators were most challenged by the need to change the paradigm of their teaching, to find exemplars against which to benchmark their efforts, and adequate resourcing (including time allocations for development and delivery, and IT infrastructure and support). However the overwhelming positive result was the transformative experience for the educators, who gained confidence in their ability to adapt. Small successes bred greater levels of confidence that then led to further success and eventually a level of self-assurance in becoming effective educators in the online realm.

The online learning approach is becoming entrenched in tertiary education and this study has added to the expanding body of research on learning thresholds associated with it. The study has identified key learning thresholds for course development, student engagement and teaching. These key learning thresholds, developed by a group of business educators, have the potential to inform the design of professional development programs for future business educators in higher education contexts. This article has specifically focussed on tertiary business educators and further research across other disciplines and settings will continue to assist educators to plan for the resourcing and development of online learning programs.

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> *"These key learning thresholds, … have the potential to inform the design of professional development"*