Using threshold concepts about online teaching to support novice online teachers: Designing professional development guidelines to individually assist academic staff ("me") and collectively guide the institution ("us")

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As online learning expands across the higher education sector, individual university lecturers are required to take on roles that incorporate responsibilities for designing and teaching online courses. Their growing capacities to fulfil these roles are sometimes supported by professional development (PD) programs within their institutions while some staff engage in staff development activities outside their home institutions. These programs and activities may take place within Communities of Practice (CoPs) while others are conducted on an individual basis. While much research has been undertaken into the field of online teaching and learning, including investigations into the most useful technological tools to incorporate into the design of online courses, the design of PD curricula to support the needs of novice teachers of online courses has not been as extensively explored. This paper reports on the outcomes of an Office for Learning and Teaching (OLT) funded project which purposely set out to identify the threshold concepts about online teaching that university lecturers develop as they engage in both the individual and communal aspects of designing and teaching online courses. The paper explains how the identification of threshold concepts about online teaching informed the development of a set of curriculum guidelines for the PD of novice online teachers. Recommendations for the design of PD for individual teachers (at the "me" level) are provided along with recommendations for the institution (at the "us" level).

Introduction

The professional development (PD) programs and activities offered to individual novice online teachers in university contexts vary greatly in their nature and success rates (Baran, Correia, & Thompson, 2013; Kennedy, 2015). Many of these initiatives are offered in group contexts using Communities of Practice (CoP) formats that promote the benefits of social learning and mentoring (Koch & Fusco, 2008; McDonald, 2014). Alternatively, online self-help resources for professional learning purposes offer personalised learning experiences for university staff seeking guidance about online pedagogy and practice. However, the curricula of group-based PD programs or individually-focused resources do not always meet the needs of individual novice online teachers. In a novel approach to understanding the nature of online teachers' core expertise, the researchers involved in the project reported in this paper sought to determine the threshold concepts that online teachers acquire as they develop experience in online teaching. These online teaching threshold concepts were then used to inform the development of PD guidelines for novice online teachers that are applicable at an individual academic staff level (relevant to "me") and promote collective support at an institutional level (relevant to "us").

Background

At all levels of learning, there are times when an obstruction to moving to the next level in the learning process is overcome. This could be called a revelation or, in colloquial terms, a 'light bulb moment' for the learner. Over a decade ago, Meyer and Land (2003) labelled such a learning experience as a threshold concept, explaining that "It represents a transformed way of understanding, or interpreting, or viewing something, without which the learner cannot progress" (p. 1). Threshold concepts have certain characteristics (Cousin, 2006; Meyer & Land, 2005) and are said to be transformative; typically, the gaining of a threshold concept involves a conceptual shift for the learner as they acquire new understandings. A threshold concept is irreversible because, once adopted, it will not be forgotten. Threshold concepts are said to be integrative as they bring about connections with the learner's pre-existing knowledge. A threshold concept will also have boundaries. According to Meyer and Land (2006), "any conceptual space will have terminal frontiers, bordering with thresholds into new conceptual areas" (p. 6). Some of these boundaries are defined from a disciplinary perspective; aspects of the concept may be particular to one specific discipline. Troublesome knowledge (Cousin, 2006; Perkins, 2006) is often associated with the acquisition of threshold concepts and has been linked to feelings of disquiet and discomfort for the learner: "Getting students to reverse their intuitive understandings is also troublesome because the reversal can involve an uncomfortable, emotional repositioning" (Cousin, 2006, p. 4).

While threshold concepts are often reported as being useful when identifying key components of a curriculum designed to facilitate *student* learning, often within a specified discipline, they are also useful in pinpointing significant learning thresholds for *teachers* in PD contexts. For that reason, the study of threshold concepts for higher education teachers has become a significant area of research and may be implemented to reverse the practice of overfilling the curriculum at the expense of good pedagogy. Cousin referred to this as an "overstuffed curriculum" (2006, p. 4). For a beginning online teacher working in tertiary education, not only do they need to identify the threshold concepts with which their students are contending, but they also need to identify their own set of threshold concepts related to the practice of online teaching (Northcote et al., 2017).

The project on which this paper is based used a survey (Online Teaching Self-Efficacy Inventory) (Gosselin, 2009) and reflective journals to gather data from academic and PD staff for the purpose of identifying a range of threshold concepts about online teaching. Through a selection of data analysis and triangulation techniques, including two rounds of consultation with experts using the Delphi Method, described later in this paper, these data were distilled to twelve threshold concepts about online teaching which incorporated the following issues:

- monitoring and giving feedback to individual students and groups of students;
- course design;
- alignment of learning activities and assessments;
- time demands of online teaching as compared to on-campus teaching;
- students learning without the constant presence of a teacher;
- the importance of online student presence;
- the difference between student presence in online and on-campus contexts;
- the role of online students' self-regulation;
- interactivity in online learning; and
- the value of online interaction for learning and the benefits of online synchronous communication.

The actual threshold concepts about online teaching that were identified in this project can be found at the project's website, *Threshold Concepts for Novice Online Teachers* (see Figure 1). The process of identifying a set of threshold concepts about online teaching has the potential to inform designers of PD programs about the obstacles which may challenge teachers as they learn to facilitate online learning. As well as acknowledging the online teacher's role as a facilitator of learning, as evident in Salmon's work (2013), many of these threshold concepts also acknowledge the role of both teacher and student presence, which is reflective of the work of such scholars as Garrison and his colleagues' research about teacher presence (Akyol & Garrison, 2008; Garrison & Cleveland-Innes, 2005) and Kear and her colleagues' research about student presence (Kear, 2010; Kear, Chetwynd, & Jefferis, 2014).

The threshold concepts identified throughout our project embody the roadblocks that online teachers frequently encounter. Following identification of the threshold concepts, the main purpose of the project was to use these threshold concepts about online teaching to inform the development of PD for novice online teachers. The collection of threshold concepts aligns with some of the blockages to effective online teaching identified by Kreber and Kanuka (2013) who suggest that these blockages can be cleared through the use of inquiry-based approaches to PD that use online communication technologies. The idea of integrating technology into the actual design of continuous PD to promote critical reflection was also found to be effective by Baran, Correia and Thompson (2011).
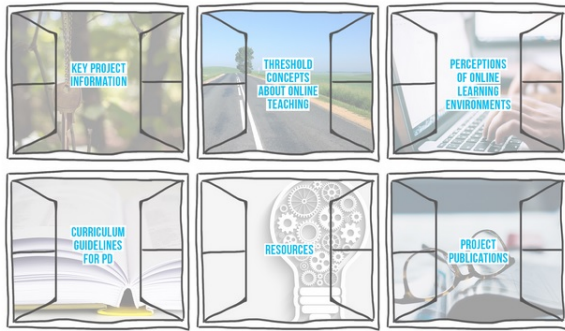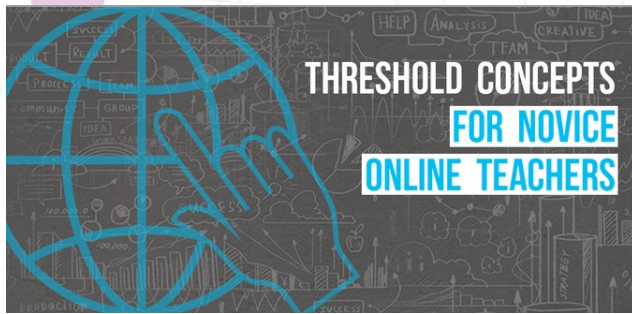
Figure 1: Project website – Threshold concepts for novice online teachers
Available at: http://tcs4nots.avondale.edu.au/

As well as issues regarding the use of technology in PD, its ongoing impact has also been noted as problematic. Determining whether or not PD makes a difference to those who participate is well documented (Ebert-May et al., 2011; Wayne, Yoon, Zhu, Cronen, & Garet, 2008). Ebert-May et al. (2011), in an analysis of the impact of a PD session on active learning strategies, found that faculty members who attended and participated in PD were often left alone afterwards and thus reverted to their previous practices, some of which were not ideal. They recommended from this study that on-site expert support be continued after the PD session took place and that teachers should be seen as 'apprentices' in the new teaching methods they were learning about: "Regular and timely feedback from experts is fundamental to the PD process" (Ebert-May et al., 2011, p. 557).

The idea of effective PD being represented on a continuum rather than being provided via isolated events was reported by Rientes, Brouwer and Lygo-Baker (2013) in a study which implemented online PD for higher education teachers. They found that measurable changes in teachers' practices and beliefs were evident over time when the PD provided incorporated relevant technology and was made up of regular modules. On the same theme, Mirriahi, Alonzo, McIntyre, Kligyte and Fox (2015) reported a study that indicated multiple approaches over a period of time are necessary to bring about improved professional knowledge of digital literacy for higher education teachers. The guidelines presented in this paper, intended for use when designing PD programs, resources and activities for novice online teachers in universities, are also offered with such considerations in

mind; that is, to create PD programs that adopt multiple formats, including on-campus and online formats, and methods that cater for individuals and groups of educators. The method by which these PD guidelines were developed is now described.

Methodology

A multisite and multiphase mixed methods research methodology (Creswell & Plano Clark, 2011) was adopted in this research project. The study aimed to establish a set of guidelines to inform the design of PD curricula for the purposes of transforming the capacities of novice online teachers in higher education. This work builds on previous investigations that have been underway since 2010 (Northcote, Gosselin, Reynaud, Kilgour, & Anderson, 2015; Northcote, Reynaud, Beamish, Martin, & Gosselin, 2011), with a similar intent: to inform the development and delivery of professional training programs for online educators. The study followed a sequential three-phase design. In the first two phases of the study, both quantitative and qualitative data were collected, analysed and compared to determine, firstly, teachers' threshold concepts about online teaching, and secondly, teachers' and students' perceptions about online education.

To determine the threshold concepts about online teaching that were developed as tertiary educators gained expertise in designing and teaching online courses, data from questionnaires and reflection journals were sought from higher education teaching staff and PD officers at three tertiary institutions. Two of the institutions are in Australia (one is a public university and the other is a private provider), and one public university is in the USA. The data collection instruments for this study were designed and selected to capture data about the concerns and challenges faced by academic teaching staff while developing online teaching skills. Their recollections about successful online teaching experiences were also gathered. Qualitative data were gathered from 70 staff who contributed responses to a semi-structured reflective journal about difficulties encountered as they developed online teaching skills and online pedagogy. Also, 107 staff provided quantitative responses to a self–reporting questionnaire, the *Online Teaching Self-Efficacy Inventory* (OTSEI) (Gosselin, 2009). Data from the OTSEI provided information that enabled the researchers to assess the participants' self-efficacy beliefs within five areas encompassing online pedagogy: (1) web-based course structure; (2) online curricular alignment; (3) course content migration; (4) virtual interaction; and (5) selection of technological resources. The combined analysis of the qualitative and quantitative data gathered throughout the study provided insight into some of the instrumental moments of development through which online teachers typically progressed as they developed experience in online course design and online teaching, incorporating both highlights and concerns. Through

triangulation of the qualitative and quantitative data, the researchers identified the threshold concepts that novice and experienced teaching staff encountered as they familiarised themselves with online pedagogy and gained experience teaching in online environments. These threshold concepts were further categorised into thematic clusters.

Next, a panel of experts were consulted to provide feedback about the threshold concepts that had been identified in the study's first phase. The panel was made up of 16 distinguished national and international scholars with expertise in threshold concepts, PD and online pedagogy. These experts' insights were captured using two rounds of a modified online Delphi technique (Keeney, Hasson, & McKenna, 2006, 2011; Powell, 2003) that has also been adopted by other threshold concept researchers (Nicola-Richmond, Pépin, & Larkin, 2015; Townsend, Hofer, Hanick, & Brunetti, 2016). The panel members' responses were analysed using an 80% or above agreement level as an indication of consensus. This iterative process continued through a further round of feedback to refine the threshold concepts themselves and the thematic clusters used to categorise them. This process, in addition to consideration of the reflective journal and OTSEI data, resulted in multiple data sources being gathered across the study's phases and research settings, the result of which provided answers to the study's first research question: *What threshold concepts about online pedagogy are perceived as essential for novice higher education teachers teaching in online contexts?* The threshold concepts identified in this phase of the study are currently being published elsewhere, and are also available on the project's website (*Threshold Concepts for Novice Online Teachers* (http://tcs4nots.avondale.edu.au/).

Once a set of threshold concepts about online teaching were identified, the second phase of the study was enacted in which both students and teachers in higher education contexts provided evidence, through focus groups and questionnaires, about their preferred online learning environments. This second phase of the study pursued answers to the following research question: *How do higher education teachers and students perceive online learning contexts?* Questions were posited to groups of higher education students and teaching staff via online questionnaires and focus groups about their preferred ways of teaching and learning in online contexts. This phase of the study ensured that the final set of PD guidelines produced from the project reflected not only the perspectives of experts and teaching staff, but that they were also embedded with the views of students.

The final and third phase of the study synthesised the study's earlier findings into a set of practical recommendations to guide the development and delivery of PD curricula for online educators. This final phase of

the study, reported in this paper, sought answers to the following research question:

> What guidelines can be established to inform the design of professional development curricula to transform the capacities of novice online teachers in higher education?

These PD guidelines are presented below, as the results of this study.

Results: recommendations for practice - curriculum design guidelines for the PD of novice online educators

The 12 threshold concepts about online teaching formed the foundation of the curriculum guidelines that were created to inform the construction of PD outputs (such as programs, events, activities and resources) for novice online teachers. These curriculum guidelines were described at both a wide-scale institutional level (the "us" level) as well as an individual academic staff level (the "me" level), as illustrated in Figure 2. To ensure that the professional learning journeys of individual academic staff were realistically set within the context of an institution's overall direction and support services, both the institutional and individual level were considered important.
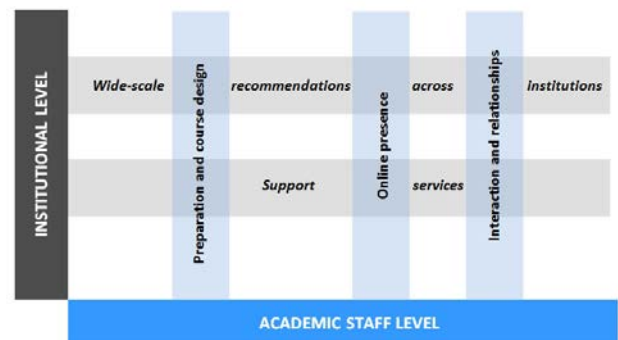

Figure 2: Cross-linking of PD guidelines recommended at the institutional and academic staff level

Both the institutional PD guidelines and the guidelines that were purposefully designed for individual academic staff reflected the concerns of online educators as they were expressed throughout earlier phases of the project. For example, when developing guidelines that specifically met the needs of novice online educators in higher education contexts, of special note was the expressed concern by the study's participants about the lack of immediacy experienced when communicating in online courses. This concern was typified by comments such as:

> *The class discussions just miss a touch of depth when it is all online.*
> *Communication is a problem. At times getting in contact with a professor by email is challenging.*

It is difficult to engage students who are not face-to-face.

The pedagogies are different and more difficult to get experiential learning happening.

Furthermore, the question of determining students' responses to online courses was identified as a major area of concern for teaching staff, described as follows:

It's difficult to connect with the students.

There is absence of feedback loop from online audience.

If there is a problem - how do you monitor this?

These concerns and needs, expressed by participants in the project, are specifically cited as topics within the PD guidelines, as outlined in Tables 1 and 2.

At the institutional level, or the "us" level, broad recommendations were developed for application across institutions (see Table 1) to support the PD of novice online teachers at the "me" level. These were largely expressed in terms of institutional recommendations about policies related to teaching and learning, and recommendations about the provision of support services to provide education to novice online teachers about both the pedagogy and logistics of online teaching and learning. In this way, the professional guidelines that were identified at the end of the project included suggested methods for implementing PD programs for novice online educators as well as recommendations regarding the content of such programs.

Table 1: Institutional recommendations for the support of novice online teachers

Professional development category	Institutional recommendations
Wide-scale recommendations across institutions	Policies related to teaching and learning should: 1. specify expectations that students enrolled in distance or online courses must portray an online presence through participation in online activities, completing and submitting assessment tasks and accessing course material; 2. emphasise that lecturers should ensure that online and on-campus students require equitable (but not always exactly the same) opportunities to achieve the learning outcomes in a course; 3. teachers should be given time and resources to practise online communication techniques using varied tools; 4. state the expected timeframe within which students should expect to have their questions answered by their lecturers; and 5. workload allocations should be scheduled for the design and preparation as well as the facilitation of online courses, noting that online teaching may take more time than on-campus teaching.
Support services	Institutional support services need to provide training to novice online teachers in why, how and when to: 1. operate online communication software and tools; 2. use online software and tools to manage students' assessment tasks and provide prompt feedback; 3. meet the needs of both online and on-campus students within the same LMS course site; 4. structure a course in an engaging manner; 5. clarify instructions and expectations; 6. engage in learning about the major barriers and breakthroughs that experienced online teachers have encountered; 7. develop an online presence that does not dominate the online space; and 8. scaffold, guide and stage learning activities and processes.

At the individual academic staff level, or the "me" level, guidelines for PD curricula were developed to assist teaching staff in the areas of preparation and course design, online presence, and interaction and relationships (see Table 2). The same thematic clusters used to categorise the actual threshold concepts about online teaching were used to group the PD curriculum guidelines. Whereas the institutional guidelines, as outlined in Table 1, were focused on the setting up, support and delivery of PD for novice online teachers, the curriculum guidelines for their PD, as outlined in Table 2, were more focused on the content of these programs relevant to individual teachers.

Table 2: Curriculum guidelines for the design of PD for novice online teachers

Professional development category	Professional development curriculum guidelines
Preparation and course design	When designing an online course, special attention must be paid to developing course components that allow for regular back and forth communication between lecturers and their students. The components of an online course need to be aligned (learning outcomes, content, activities and assessment tasks) and these links need to be emphasised to students.
Online presence	Mechanisms must be designed and put in place to enable the teacher to take an active role in facilitating online interaction and communication. It is important for online teachers to inform students enrolled by distance or on-campus mode that, although their needs may be met in different ways by the course and the lecturer, both groups will be treated equitably. Students have a diverse range of expectations about the skills required of online teachers whereas teachers' expectations of the skills they (teachers) require are less diverse and more pragmatic. This issue requires teachers to ensure there are opportunities to discuss teacher-student and student-teacher expectations of each other's roles during the course. Teachers and students need opportunities to express themselves online in socially appropriate ways and in ways that they can engage in academic material that fosters deep learning. The notion of online presence needs to be considered and fostered through online interaction. Teachers need to encourage self-regulation in their

Professional development category	Professional development curriculum guidelines
	students and both teachers and students may need to develop an understanding that students can learn without the constant presence of teachers.
Interaction and relationships	The issues that students find to be important in online courses include: equity, prompt responses and feedback, use of authentic examples. The issues that teachers find very important in online courses include: equity, student independence and assessment submission. Sometimes the issues that students find important do not always align with what teachers find important. Students' and teacher's expectations and preferences may differ in terms of the value of collaborative learning and group work tasks. Online dialogue between students and teachers needs to be facilitated to ensure a shared understanding is developed between both groups about the purpose, frequency, nature and options associated with online contact between teachers and groups of students, teachers and individual students, and between students. Students and teachers typically agree upon the value of online communication and the importance of using real world examples but there may be clashing expectations about how independent students are expected to be by their teachers compared to how independent students believe they should be in online learning contexts.

Discussion

The OLT project outcomes reported in this paper have contributed to knowledge and advanced the field of planning professional learning for teachers who are novices to online pedagogy. Meyer and Land (2005) used the term "threshold concepts" to refer to particular concepts that are fundamental to understanding a field of practice and, although initially challenging, these concepts, when acquired, open up new ways of thinking and practising. The framework of threshold concepts is now being applied widely within many disciplines, to enhance student learning, as well as in PD contexts where academic staff members are learners of new pedagogies (Bunnell & Bernstein, 2012). The present study applied threshold concepts theory to the field of PD with the anticipation of advancing the skills and expertise of novice teachers in the area of online teaching.

A preliminary study on threshold concepts for novice online tertiary educators produced an initial set of concepts on which this study builds. These concepts included the notion that face-to-face and online learning and teaching approaches differ in fundamental ways (Northcote et al., 2011) and that, because of this, teachers new to online pedagogy need to be supported and inducted into new practices. Since teaching online lacks visual immediacy and is often asynchronous, it differs from traditional face-to-face pedagogy and therefore requires transformations in practice, pedagogy and teacher identity.

One of the challenges associated with identifying threshold concepts is that they are unique to particular disciplines and that, in the case of online pedagogy, each individual teacher may have different needs and experience different learning thresholds during the process of gaining online teaching expertise. This variation of individuals' experiences of threshold concepts is recognised in the literature (Barradell, 2013) and, therefore, the views of faculty, students and novice online educators were acknowledged as the foundation for cross-linking professional learning guidelines to meet multiple needs (Figure 2).

The study broadly identified three thematic conceptual clusters as encapsulating online pedagogy: 1) course design; 2) the development of online presence; and 3) the facilitation of interaction and relationships with and among students. A striking feature of the qualitative data collected was that individual practitioners who responded showed different levels of skills and understanding in handling the online environment, indicating the need for PD approaches that responded to the tripartite needs of the institution, faculty and students.

Tables 1 and 2 above show the different approaches to content and skills development that were designed. At the individual academic staff level, the guidelines focused on the micro level skills of preparation and course design, online presence and building interaction and relationships. At the institutional level (Table 1), the strategy was to support and deliver PD for novices to online pedagogy, including specific curriculum guidelines for PD and recommendations for the content of these programs (Table 2). These PD guidelines provide flexibility and adaptability in the provision of "just-in-time" support for novices in online pedagogy, while enabling staff who are more proficient and experienced to evolve professionally.

It has been claimed that the threshold concepts framework helps in curriculum development as it highlights troublesome concepts and key practices, also known as "jewels in the curriculum" (Land, Meyer, Cousin, & Davies, 2005) which become the foci for professional learning. By responding to staff and student

needs, and taking into account their perceptions of online teaching, the guidelines developed have inspired thinking about PD as an integrative, holistic and responsive approach that ensured the inclusion of student and staff voices. These guidelines are based upon research-informed and expert-sanctioned evidence. Similar approaches could be adopted across multiple disciplines to adopt threshold concepts as a theoretical framework to explore staff and student learning needs in tertiary and further education and as a means of engaging these multiple audiences in scholarly conversation about their respective pedagogic needs.

Conclusion

The research-informed practical guidelines outlined in this paper are intended to inform the way in which curricula for PD programs are designed for and delivered to novice online educators. These guidelines are based upon recently gathered data about threshold concepts of online pedagogy, which were identified using an evolved methodology that has been under development and in practice since 2010. Guidelines are provided at the institution-wide level (the "us" level) as well as at the level of the individual teaching academic (the "me" level). While much literature has reported on the way in which online teaching and online learning *should* occur as well as how teachers *should* be supported to facilitate online learning, the PD guidelines outlined in this paper are based on evidence from experienced online teachers who are currently teaching in higher education contexts. These guidelines also incorporate specialised advice provided by world-renowned experts from the fields of threshold concepts, PD and online pedagogy. In this way, the PD guidelines outlined in this paper go beyond practical recommendations that we *think* are relevant. Instead, the authentic context in which they were developed along with the relevant stakeholders who were consulted to form them ensure that these guidelines are grounded in practice and are underpinned by current educational theory and research. University administrators and staff development managers may find the guidelines reported in this paper useful in the coordination and provision of PD programs, activities and resources for teaching staff. Novice and experienced online educators may use the guidelines to inform their own future professional learning about online teaching.

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