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Using online teaching threshold concepts in transformative professional learning curricula for novice online educators

Final report 2017

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List of acronyms used

CASTL	Centre for Advancement of the Scholarship of Teaching and Learning
ERG	expert reference group
ICT	information and communication technologies
OLES	Online Learning Environment Survey
OTSEI	Online Teaching Self-Efficacy Inventory
PD	professional development

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Executive summary

For academic staff entering the realm of online teaching, and for academic developers and providers of professional development (PD), it is important to have some understanding of the threshold concepts novice educators encounter as they develop as online teachers. However, the study of threshold concepts about online teaching within a PD context is an under-researched field. By seeking to identify threshold concepts developed by online teachers, the study outlined in this report has provided much-needed evidence to inform the future design of PD programs, activities and resources for novice online teachers in higher education contexts.

Project aim and context

During 2015–2017 the researchers involved in this project set out to develop practical curriculum guidelines to inform the design of transformative PD programs for novice online teachers in higher education. The development of these transformative PD guidelines was informed by the identification of threshold concepts about online teaching, as well as teachers' and students' perceptions of their preferred online learning environments. In this study, threshold concepts are viewed as being 'akin to a portal, opening up a new and previously inaccessible way of thinking about something ... a transformed way of understanding, or interpreting, or viewing something without which the learner cannot progress' (Meyer & Land, 2003, p. 1).

The fields of PD, threshold concepts and online pedagogy form the backdrop of the study. While novice online teachers are the future intended audience for the outcomes of the study, experienced teachers and course developers, as well as students, have contributed to the data gathered during the project. Consequently, this investigation into threshold concepts of online teachers has incorporated the views of key stakeholders in online education, following Cousin's (2009) reminder that it is essential to include teachers, students and academic developers in dialogue as a form of transactional curriculum inquiry.

The project was conducted at three higher education institutions: Avondale College of Higher Education (lead institution), the Australian Catholic University and Texas A&M University. Staff and students from each of these three institutions contributed to this project by completing reflective journals, participating in focus groups and/or providing responses to questionnaires. One researcher from Curtin University of Technology was involved in the early stages of the project.

Project outcomes and outputs

The project adopted a mixed methods multiphase research methodology (Creswell & Plano Clark, 2011) across three research settings. The phases within this research design consisted of quantitative and qualitative data collection, analysis and interpretation. Through these

processes, research-informed practices enabled the development of practical pedagogical guidelines to inform the development of PD for novice online teachers. The pursuit of the study's outcomes was guided by three research questions: (1) What threshold concepts about online pedagogy are perceived as essential for novice higher education teachers teaching in online contexts? (2) How do higher education teachers and students perceive online learning contexts? (3) Having identified teachers' threshold concepts about online teaching, and students' and teachers' perceptions of online learning contexts, what guidelines can be established to inform the design of PD curricula to transform the capacities of novice online teachers in higher education? Analyses of data gathered to answer these questions provided findings that formed the basis of a website ([Threshold concepts for novice online teachers](#)), one of the key outcomes of this project. The website includes details of the project's other outcomes:

- key information about the project;
- practical curriculum design guidelines to inform the development of transformative professional learning programs in higher education for novice online educators;
- a collection of threshold concepts about online teaching and an explanation of the features of threshold concepts redefined in terms of online teaching;
- a summary of what academic teaching staff and students from three institutions perceive to be more ideal (or preferred) in terms of an online learning environment
- references and links to resources about threshold concepts; and
- publications by the project team including those already completed and submitted, as well as those scheduled for submission in 2017.

Key findings

The project's key findings fall into three groups: (1) a collection of threshold concepts about online teaching, (2) perceptions of preferred online learning environments held by students and academic staff from three higher educations and (3) a set of practical curriculum design guidelines to inform the development of transformative professional learning programs in higher education for novice online educators. Although space limitations do not permit inclusion of the full set of findings here, the categories in which each of the findings were classified, along with some examples of the specific findings, are outlined in Table 1.

Table 1: Key findings grouped within categories and selected examples

THRESHOLD CONCEPTS ABOUT ONLINE TEACHING	
Category	Examples of threshold concepts
Preparation and course design	Online course design is critical to the success of online teaching and learning. Preparation for designing and planning online teaching may take longer than preparation for on-campus teaching.
Online presence	Students can learn without the teacher being present. Online presence is different from on-campus presence.
Interaction and relationships	Online learning contexts require a new mode of interaction between facilitators, students and resources. Online teaching requires facilitating interaction, not only presenting content.

PERCEPTIONS OF PREFERRED ONLINE LEARNING ENVIRONMENTS	
Category	Perceptions of online learning environments
Academic staff	<i>I prefer students to approach learning in their own way. I prefer to give the same opportunity to all students to answer questions.</i>
Higher education students	<i>I prefer it when the teacher/lecturer responds promptly to my online questions. I prefer to be treated the same as other students in the class.</i>
Differences	Level of independence, speed of teachers' responses, equity.
CURRICULUM GUIDELINES TO INFORM DEVELOPMENT OF PROFESSIONAL DEVELOPMENT OUTPUTS FOR NOVICE ONLINE TEACHERS	
Category	Perceptions of online learning environments
Wide-scale recommendations	Policies related to teaching and learning should specify expectations about student participation and equitable treatment of on-campus and distance students.
Support services	Institutional support services need to provide training to novice online teachers in why, how and when to operate online communication software and tools; and assessment managing software and tools.
Preparation and course design	When designing an online course, special attention must be paid to developing components that allow for regular communication between lecturers and students.
Online presence	Teachers need to encourage self-regulation in their 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 very 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.

Introduction

This project investigated threshold concepts about online teaching in higher education contexts while building on previous research about threshold concepts, online pedagogy and professional development (PD) for novice online teachers. The research recognised the importance of the journey experienced by novice and experienced academic teaching staff as they develop their understandings and capacities to teach in online learning environments and to prepare materials and courses for such contexts. While much is similar between on-campus learning contexts and online learning contexts, this project acknowledges fundamental differences between on-campus and online learning contexts.

After a collection of threshold concepts about online teaching were identified, they were used to develop a set of curriculum guidelines that can be used to inform the design of PD programs to enhance the development of novice online teachers' expertise in higher education. This had been an under-explored area of curriculum design. To ensure the findings of the project were set within a context that acknowledged students' learning experiences, teachers' *and* students' perceptions of online learning contexts were explored alongside the processes employed to identify threshold concepts about online teaching.

The research-informed PD curriculum guidelines produced in this project comprise general guidelines that may be useful to other universities at an institutional level, as well as specific recommendations for the development of PD programs, activities and resources that are targeted towards academic staff who are learning to develop online teaching expertise.

Aim of the project

During 2015–2017 the researchers involved in this project set out to develop practical curriculum guidelines to inform the design of transformative PD programs for novice online teachers in higher education. The guidelines were informed by best practice principles and practices published in recent scholarly literature about online pedagogy and PD of university teaching staff. In addition, feedback from an expert reference group (ERG) and gathered data that identified threshold concepts about online teaching and perceptions of online learning contexts were used to inform these transformative PD guidelines.

The fields of PD, threshold concepts and online pedagogy formed the backdrop of the study, and experienced teachers, course developers, experts and students contributed to the data gathered during the project. This ensured the curriculum guidelines, developed to inform the design of PD for novice teachers, reflected multiple perspectives from many stakeholders of online education. Consequently, this investigation into threshold concepts of online teachers has incorporated the views of key stakeholders in online education, following Cousin's (2009) reminder that it is essential to include teachers, students and academic developers in dialogue as a form of transactional curriculum inquiry.

Chapter 1: Project context

The project was conducted at three higher education institutions: Avondale College of Higher Education (lead institution), the Australian Catholic University and Texas A&M University. Teachers from each of these institutions contributed to this project by completing reflective journals, participating in focus groups and providing responses to questionnaires. Students from each of these institutions participated in focus groups and provided responses to questionnaires. One researcher from Curtin University of Technology was involved in the early stages of the project.

The project's theoretical context is primarily set within the field of PD; the outcomes and outputs of the project are designed to inform the design of transformative PD programs, activities and resources to best support novice online teachers. Within this context, the research focuses specifically on online pedagogy, with a special emphasis on online teaching. While research into online teaching is extensive, very little research has been conducted into threshold concepts developed by online teachers.

Underlying much of this research is the acknowledgement that face-to-face and online learning contexts differ in fundamental ways. To establish the context of the project, the terms 'threshold concepts', 'online teaching' and 'teachers' require definition. In the context of this study, threshold concepts are 'akin to a portal, opening up a new and previously inaccessible way of thinking about something ... a transformed way of understanding, or interpreting, or viewing something without which the learner cannot progress' (Meyer & Land, 2003, p. 1). The term 'online teaching' has been used throughout this research to

encompass online pedagogy as applied in varied contexts including blended learning, fully online courses and technology-supported modes of study. The term ‘teachers’ is used to mean academic teaching staff, and university lecturers and tutors.

Because of the PD nature of the project, the research procedures were coordinated through the Centre for the Advancement of the Scholarship of Teaching and Learning (CASTL) at Avondale College of Higher Education. The CASTL provides a focus on the scholarship of teaching and learning, which is embedded in all of its PD programs, activities and events. The website that presents the findings of this project, [*Threshold concepts for novice online teachers*](#), may be accessed through the PD section of the [CASTL website](#).

Previous research about threshold concepts and online teaching

Across a range of disciplines, threshold concepts (Meyer & Land, 2005, 2006a) and troublesome knowledge (Perkins, 2006) have been used as pedagogical lenses through which core and complex knowledge of particular disciplines and fields of expertise have been explored. Because the development of threshold concepts and the process of mastering troublesome knowledge can be transformative in nature, these pedagogical lenses assist teachers and learners by identifying core points in a curriculum that may be particularly significant or troublesome for learners. Thus, for teachers, knowledge of the threshold concepts in a particular discipline can assist in their design of curricula. For students, the concentration of effort to learn about threshold concepts in a discipline can help focus their attention on key areas of knowledge. The study of threshold concepts has also been used to overcome a ‘stuffed’ curriculum by identifying ‘jewels in the curriculum’ (Cousin, 2006, pp. 4-5). In terms of PD, this approach can be used to highlight key concepts that form the basis of complex understanding when novice online teachers are learning to teach and design courses within higher education online learning contexts.

Many recommendations for how to teach online have emerged in past decades, mostly by leading educators who have researched the experiences of teachers as they transition into the online space and adopt new pedagogies (for example, Baran, Correia, & Thompson, 2011; Bonk & Dennen, 2003; Garrison & Anderson, 2000). Yet, apart from the three phases of an earlier project conducted by some of the researchers in this project (Northcote, Gosselin, Reynaud, Kilgour, & Anderson, 2015; Northcote, Reynaud, Beamish, Martin, & Gosselin, 2011), there is a lack of research about the specific threshold concepts held by online educators who design and teach university courses. To contextualise online teachers’ threshold concepts, the features of these threshold concepts need to be defined within a PD context that recognises the unique nature of online education.

Chapter 2: Project approach

The project adopted a mixed methods multiphase research methodology (Creswell & Plano Clark, 2011) across three research settings. Within this research design, individual stages consisting of both quantitative and qualitative data collection, analysis and interpretation were conducted. Through these processes, research-informed, data-driven practices enabled ongoing development of practical pedagogical guidelines to inform the development of PD for novice online teachers. By triangulating both quantitative and qualitative data, practical recommendations for professional development were developed for application across institutions and specifically for novice online teachers.

To enable the project's strategies to be implemented across different educational contexts in varied disciplines, the project's approach was structured in four main phases; these were conducted across all institutions involved in the project and coordinated from the lead institution, Avondale College of Higher Education. The primary drivers in each of these phases were the study's three research questions and the dissemination of the answers to these questions. During the project, a Gantt chart documented overall phases and mini-stages within each phase. This chart was updated regularly to suit upcoming deadlines and changes in team members' circumstances and institutional requirements. The phases of the project are outlined in Table 2.

Table 2: Project research questions, phases and processes

Phase 1: Jan–Apr 2016	Project establishment and identification of threshold concepts
Research question 1	What threshold concepts about online pedagogy are perceived as essential for novice higher education teachers teaching in online contexts?
Research processes	Employ research assistant, prepare Gantt chart and project Moodle site. Undertake literature review. Identify and select participants at each institution. Gather data using reflective journals of experienced and novice online teachers. Prepare and submit ethics applications for all institutions. Administer the Online Teaching Self-Efficacy Inventory (OTSEI) questionnaire with experienced and novice online teachers. Content analysis of qualitative data from reflective journals and analysis of quantitative OTSEI data. Comparison of qualitative and quantitative data with literature review and expert panel data to determine answers to research question 1.
Expert reference group	Identify and select participants to contribute to an expert reference group. First consultation with expert reference group.
Publications	Prepare and submit proposal for workshop to Threshold Concepts Conference. Present workshop at Threshold Concepts Conference. Prepare refereed journal article for <i>Higher Education Research and Development</i> .
Phase 2: May–Aug 2016	Perceptions of online learning contexts
Research question 2	How do higher education teachers and students perceive online learning contexts?
Research processes	Continue literature review. Round 1 of online survey to consult with additional experts using a modified Delphi technique (Keeney, Hasson, & McKenna, 2006, 2011; Nicola-Richmond, Pépin, & Larkin, 2015; Powell, 2003; Townsend, Hofer, Hanick, & Brunetti, 2016). Consult with original researchers of Online Learning Environment Survey (OLES) questionnaire to develop revised version (Pearson & Trinidad, 2005; Trinidad, Aldridge,

	& Fraser, 2005). Focus groups with experienced and novice online teachers. Administer revised OLES questionnaire: students and teachers. Content analysis of qualitative data from focus groups to determine perceptions of online learning by teachers and students. Analyse quantitative OLES data (factor analysis, descriptive statistics, correlations) to determine perceptions of online learning by teachers and students. Compare qualitative and quantitative data with literature review and expert panel data to determine answers to research question 2. Construct a Venn diagram to identify similarities and differences in teachers' and students' perceptions of preferred online learning contexts.
Expert reference group	Second consultation with expert reference group.
Publications	Prepare book chapter that draws from and expands the paper from the Threshold Concepts Conference. Continue preparing refereed journal article for <i>Higher Education Research and Development</i> .
Phase 3: Sept–Dec 2016	Curriculum guidelines for professional development of online novice teachers
Research question 3	Having identified teachers' threshold concepts about online teaching, and students' and teachers' perceptions of online learning contexts, what guidelines can be established to inform the design of PD curricula to transform the capacities of novice online teachers in higher education?
Research processes	Collate data gathered from research questions 1 and 2. Round 2 of online survey to consult with additional experts using a modified Delphi technique, based on the work of previous researchers (Keeney et al., 2006, 2011; Nicola-Richmond et al., 2015; Powell, 2003; Townsend et al., 2016). Triangulate collated data to determine answers to research question 3. Develop curriculum guidelines for PD of online novice teachers. Design and create website, <i>Threshold concepts for novice online teachers</i> .
Expert reference group	Third consultation with expert reference group about curricula design of PD for novice online educators (in progress).
Publications	Submit book chapter for edited book from Threshold Concepts Conference. Finalise and submit abstract to International Study Association on Teachers and Teaching Conference.
Phase 4: Jan–Dec 2017	Dissemination of project deliverables (in progress)
Publications, outputs	Finalise and share project website, <i>Threshold concepts for novice online teachers</i> . Further develop project website, in response to stakeholder and user feedback. Finalise and submit refereed article to <i>Higher Education Research and Development</i> . Finalise and submit refereed article to <i>Online Learning Journal</i> . Finalise, submit and present refereed conference paper to Australasian Society for Computers in Learning in Tertiary Education Conference. Revise publications, in response to reviewers' feedback.

Further details of some key aspects of the project are outlined below.

Expert reference group

Because one of the primary reasons for the research approach employed in this project was to identify a set of threshold concepts about online teaching by gathering advice from national and international experts, a central process adopted throughout the project was to regularly consult the project's ERG. This group included:

- Professor Jan Herrington, Murdoch University, Western Australia;
- Professor Ray Land, Durham University, UK;
- Dr Sarah Howard, University of Wollongong, New South Wales; and

- Dr Simon McIntyre, University of New South Wales, New South Wales.

Meetings were held with the ERG at two points of the project, and throughout the project feedback was sought from each ERG member via email or face-to-face meetings. Because of the dispersed locations of ERG members, some meetings were split across multiple dates to accommodate international time differences. The initial ERG meetings were held early in May and June 2016 and the second ERG meeting was held in October 2016. During the 6th Biennial Threshold Concepts Conference at Dalhousie University in June 2016, the project leader met with Professor Ray Land who suggested the Delphi method be incorporated into the research design to further analyse and confirm the presence of the threshold concepts about online teaching that were identified from data that had been gathered during phase 1 of the project. The modified Delphi technique used in the project is outlined below.

Delphi technique used in phase 1 of the project

As a result of Professor Land's recommendation, a collection of additional international and national specialists ([Appendix B](#)) were invited to join the project. They had expertise in:

- threshold concepts;
- professional development;
- online teaching and learning; and/or
- course design.

These additional experts were invited to complete two online surveys, along with the ERG members, using a two-round modified Delphi technique (Keeney et al., 2006, 2011). The two online surveys provided these experts with opportunities to provide valuable feedback about how the project team had identified threshold concepts from previous literature and from the data gathered during the project. This approach enabled the research team to incorporate expertise from esteemed online teachers and scholars into the findings.

Thus, a modified version of the Delphi technique was developed by incorporating two rounds of online questionnaires, to draw together a collection of knowledge from the original panel of experts and an additional group of experts ([Appendix B](#)). Experts in online teaching, PD and curriculum design in higher education were consulted and asked to filter the threshold concepts identified into those that they believed were clearly threshold concepts and those that were not. In [round 1](#), the experts' responses to an online questionnaire using a four-point Likert-scale, ranging from disagreement through to agreement, were sought in relation to each of the 46 threshold concepts about online teaching that had been identified thus far during the project. In round 1 of the Delphi technique, a 75 per cent and above agreement level was used to determine consensus among the experts. This process resulted in the identification of a set of 28 threshold concepts about online teaching, which were presented to the experts in [round 2](#) to which an 80 per cent and above agreement level was used to determine consensus. To ensure the selection of these final threshold concepts were systematically extracted from the collection

of threshold concepts identified during the entire project, the research team applied a final set of five filters:

1. removal of threshold concepts with a weighted average disagreement-agreement response level below 3 on a four-point Likert-scale;
2. removal of threshold concepts with an overall agreement level less than 75 per cent for round 1 of the Delphi survey and less than 80 per cent for round 2 of the Delphi survey, unless the strong agreement levels were 50 per cent or higher than their agreement levels;
3. consideration of experts' qualitative feedback about individual threshold concepts and the thematic clusters into which they were categorised;
4. seeking of qualitative feedback (responses to open-ended questions in the online Delphi surveys) from researchers during which each of the threshold concepts was considered in relation to the literature and direct quotes from participants and experts in the project; and
5. consideration of each threshold concept in relation to novice online teachers. When faced with a final decision as to whether a statement was a threshold concept about online teaching or not, the final litmus test was applied by asking, 'Is this relevant for novice online teachers to know, apply, understand or accept?'.

This filtering process led to the identification of a final set of 12 threshold concepts about online teaching within three categories: preparation and course design, online presence, and interaction and relationships (see [Answers to research question 1](#)). This approach ensured that the final set of threshold concepts was based on a strong foundation by being directly informed by recent research, experts in the field and data gathered from groups of relevant stakeholders.

Participants and data collection

In phase 1 of the project, from approximately January to April 2016, the research team gathered data from experienced and novice online teachers at three institutions using the following data-gathering instruments:

- OTSEI (Gosselin, 2009) ([Appendix D](#)); and
- reflective journals ([Appendix E](#)).

Data gathered from these instruments were analysed and the findings used to provide answers to research question 1, 'What threshold concepts about online pedagogy are perceived as essential for novice higher education teachers teaching in online contexts?' Table 3 shows the number of teacher-participants from each institution who contributed data in phase 1 of the study by completing the OTSEI questionnaire or the reflective journals.

Table 3: Numbers of participants from each institution who contributed data to Phase 1

Institution	OTSEI questionnaire	Reflective journals
Avondale College of Higher Education	19	22
Texas A&M University	88	22
Australian Catholic University	0	26
Curtin University of Technology	0	0
Total	107	70

In phase 2 of the project, from approximately May to August 2016, the research team gathered data from higher education teachers and students at three institutions using the following data-gathering instruments:

- focus groups ([Appendix F](#) and [Appendix G](#)); and
- OLES questionnaire ([student survey](#) and [staff survey](#)).

Data gathered from these instruments were analysed and the findings from the analysis were used to provide answers to research question 2, ‘How do higher education teachers and students perceive online learning contexts?’ Table 4 shows the number of teacher-participants and student-participants from each institution who contributed data in phase 2 of the study by participating in focus groups or by completing the OLES questionnaire.

Table 4: Numbers of participants from each institution who contributed data to Phase 2

INSTITUTION	Focus groups		OLES questionnaire	
	Staff	Students	Staff	Students
Avondale College of Higher Education	8	9	17	35
Texas A&M University	0*	0*	56	68
Australian Catholic University	4	0	1	5
TOTAL	12	9	74	108

*Texas A&M University focus group transcripts are currently being transcribed and analysed.

Development of the revised OLES used in phase 2 of the project

The OLES was used in phase 2 of the study to elicit data regarding perceptions held by teachers and students of online learning environments. The OLES instrument has two versions: 1) Preferred (eliciting responses from participants about their ideal views of online learning environments); and 2) Actual (eliciting response from participants about a specific, often current, online learning environment). For this study, the researchers were not investigating participants’ views of specific online learning environments but their views of their preferred, or ideal, online learning environments. The original Preferred version of the OLES (Pearson & Trinidad, 2005; Trinidad et al., 2005) contained 54 items, arranged in nine scales:

1. computer usage;
2. teacher support;
3. student interaction and collaboration;
4. personal relevance;
5. authentic learning;
6. student autonomy;
7. equity;
8. enjoyment; and
9. asynchronicity.

After consultation and with the permission of the authors (Trinidad and her colleagues) of the original Preferred OLES version, a revised adaptation of the Preferred OLES was developed to match the intentions and processes of the research project. The original nine scales were reduced to eight. The Enjoyment scale was removed because it was not relevant for the Preferred version, but was only relevant for the Actual version, and it wasn't part of the validation of the scale. After revision, the adapted Preferred version of the OLES had 48 items remaining within eight scales, as outlined in Table 5.

Table 5: Scales used in revised version of OLES

Scale	No. of items
Computer usage	6
Teacher/lecturer support	8
Student interaction and collaboration	6
Personal relevance	5
Authentic learning	5
Student autonomy	5
Equity	7
Asynchronicity	6

The project team created one OLES for students and one for staff, and subsequently updated the wording of some items. The eight scales were the same in both the student and teacher versions of the survey. Respondents were asked to rate items using a five-point scale (Almost Never, Seldom, Sometimes, Often, Almost Always). The student survey and staff survey of the OLES used in the project were developed and administered online using SurveyMonkey.

Chapter 3: Project outputs and findings

The project's outputs and findings are outlined below – first by describing the project's website (the main output of the project, which incorporates its detailed findings), the project team's publications (including those completed, submitted and under way) and additional project outputs. Next, the project's outputs and findings are described in response to each of the project's three research questions. Lastly, a summary of the project's outcomes and outputs is provided.

Project website: *Threshold concepts for novice online teachers*



The main output of this project, the [Threshold concepts for novice online teachers](#) website, features curriculum guidelines to inform the design of transformative PD for novice online educators, along with the findings of the project's phases. It is linked to from the lead institution's CASTL website. Table 6 outlines the website's components.

Table 6: Components of the Threshold concepts for novice online teachers website

COMPONENT	DETAILS
Project information	Project title, lead institution, partner institutions, project leader team members' names, source of funding, funding amount, dates.
List of threshold concepts	Threshold concepts about online teaching organised according to preparation and course design, online presence, and interaction and relationships. Land and Meyer's original descriptions of the features of threshold concepts (Land & Meyer, 2010; Meyer & Land, 2003, 2005, 2006b) have been redefined in terms of online teaching contexts.
Perceptions of online learning environments	Preferred perceptions of online learning environments organised according to the following three categories: (1) academic staff, (2) higher education students and (3) the main differences between staff and student perceptions.
Practical curriculum design guidelines for PD programs in higher education for novice online teachers	Practical curriculum guidelines to inform development of professional development outputs for novice online teachers according to institutional level (including wide-scale recommendations across institutions and support services) and academic staff level (including preparation and course design, online presence and interaction and relationships).
Resources and references	List of references related to threshold concepts, links to previous threshold concepts conferences, threshold concepts website, links to project websites featuring research into threshold concepts.
Project publications	Details of project team's publications (published, submitted and in progress) including one conference paper, one conference workshop, two refereed journal articles and one refereed book chapter.

Project publications

Each member of the project team contributed to a number of project publications, as outlined in [Appendix C: Publication plan](#). At the close of the project, members of the project team had presented a conference workshop paper, submitted a refereed book chapter and a conference abstract. They had partially written two refereed journal articles, due for submission in July and August 2017, and have submitted three refereed conference papers, due for presentation in July, October and December 2017 (Table 7).

Table 7: Project publications

PUBLICATIONS PRESENTED OR SUBMITTED IN 2016		
Conference proposal and workshop	Workshop submitted and workshop presented at 6th Biennial Threshold Concepts Conference during 15–17 June 2016 in Halifax, Canada. Title: 'The troublesome edge of teaching online: Using threshold concepts to design professional learning curricula for novice online teachers'	Presented in June 2017, Dalhousie University, Halifax, Canada
Refereed book chapter	In response to the feedback received at the 6th Biennial Threshold Concepts Conference, the research team wrote a chapter for an edited book, <i>Threshold concepts at the edge</i> , which is planned for publication in 2017 by Sense Publishers and edited by Brad Wuetherick, Anne-Marie Ryan, Julie Timmermans and Ray Land. Title: 'At the troublesome edge	Submitted for review in December 2016

	of recognising thresholds concepts of online teachers: A proposed learning threshold identification methodology'	
PUBLICATIONS DUE FOR PRESENTATION OR SUBMISSION IN 2017		
Refereed conference paper	Refereed conference paper for the Australasian Society for Computers in Learning in Tertiary Education Conference (ASCILITE) in 2017. Title: '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")'	Submitted in May 2017
Refereed conference paper	Refereed conference paper for The Ireland International Conference on Education (IICE) Conference in October 2017. Title: "Mind the gap: Contrasting perspectives of online teaching and learning as indicators of teacher and student support needs"	Submitted in June 2017
Refereed conference paper	Refereed conference paper submitted for the 18th Biennial International Study Association on Teachers and Teaching (ISATT) Conference 2017. Title: 'What skills do I need to teach online? Researching experienced teacher views of essential knowledge and concepts in online pedagogy as a foundation for developing professional development for novice teachers?'	To be presented in July 2017
Peer-reviewed journal article	Article for <i>Higher Education Research and Development</i> . Title: 'Threshold learning standards for beginning tertiary online teachers' .	Due for submission in July 2017.
Peer-reviewed journal article	Journal article for <i>Online Learning Journal</i> on the topic of pedagogical guidelines for designing transformative PD programs for novice online teachers.	Due for submission in August 2017.

Answers to research questions

1. What threshold concepts about online pedagogy are perceived as essential for novice higher education teachers teaching in online contexts?

To answer this question, the research team gathered data from academic staff and PD staff from three institutions, including: Avondale Higher Education, the Australian Catholic University and Texas A&M University. Data were gathered using the OTSEI questionnaire ([Appendix D](#)) and reflective journals ([Appendix E](#)). Previous research reporting threshold concepts as being related to online teaching and course design was also sought, along with feedback about threshold concepts of online teaching from an ERG comprising national and international experts on PD, threshold concepts and online pedagogy. A methodology was developed to identify threshold concepts and this became the focus of the refereed book chapter the research team wrote and submitted for review in December 2016 (see Table 7).

Table 8 outlines the final threshold concepts about online teaching that were identified throughout the project. These threshold concepts about online teaching are also featured at the [Threshold concepts for novice online teachers](#) website.

Table 8: Threshold concepts about online teaching

CATEGORY	THRESHOLD CONCEPTS ABOUT ONLINE TEACHING
Preparation and course design (including curriculum design, instructional design, planning, teacher and course preparation)	An online course must be designed to have specific mechanisms to communicate, monitor and give feedback to groups of students as well as individual students.
	Online course design is critical to the success of online teaching and learning.
	Online course design needs alignment between learning activities, assessment tasks and feedback mechanisms to ensure student engagement.
	Preparation for designing and planning online teaching may take longer than preparation for on-campus teaching.
Online presence (including teaching presence, social presence and cognitive presence)	Students can learn without the teacher being present.
	Online presence is different from on-campus presence.
	Online presence, while elusive, must be pursued.
	Students need to be encouraged to be more self-regulated in an online course than in an on-campus course.
	Online presence requires interactive elements.
Interaction and relationships (including teacher–learner, learner–learner, and learner–content interactions and relationships)	Online learning contexts require a new mode of interaction between facilitators, students and resources.
	Online teaching requires facilitating interaction, not only presenting content.
	Synchronous communication methods in online learning contexts, while sometimes challenging to facilitate, have many learning benefits.

The features of threshold concepts have been defined elsewhere by Land and Meyer (Land & Meyer, 2010; Meyer & Land, 2003, 2005, 2006b) as transformative, troublesome, irreversible, integrative, bounded, discursive and reconstitutive, and involving the learner entering a state of liminality. To assist with the interpretation of the above collection of the threshold concepts about online teaching that were identified during this project, the features of threshold concepts were redefined in terms of online teaching, as:

- **transformative:** A threshold concept changes our knowledge about online teaching and the way we view online teaching;
- **troublesome:** The idea of online teaching can be counter-intuitive to the way we have always taught. Online teaching may seem too difficult or too complex;
- **irreversible:** Concepts learned about online teaching are difficult to unlearn;
- **integrative:** Threshold concepts about online teaching are likely to incorporate concepts about other teaching-related issues (e.g. curriculum design, assessment);
- **bounded:** A threshold concept about online teaching is related to an academic's scholarly practice of teaching;
- **discursive:** Evidence of threshold concepts about online teaching will be demonstrated incidentally in an academic's use of language;
- **reconstitutive:** The academic's grasp of a concept may go back and forth across stages of being sure and not sure, as they develop, 'undevelop', construct, and reconstruct the concept for themselves; and

- **engaging the learner in the process of traversing a liminal space:** As the online teacher (the learner, in this context) crosses the liminal space between not teaching online and teaching online effectively, (s)he may experience some level of ‘stuckness’.

2. How do higher education teachers and students perceive online learning contexts?

To answer this question, the research team gathered data from students and teachers by conducting focus groups ([Appendix F](#) and [Appendix G](#)) and by administering a modified version of the OLES (Pearson & Trinidad, 2005; Trinidad et al., 2005) to determine perceptions of students’ and teachers’ preferred online learning environments.

Because factor analysis did not reveal any scale structure in the student or teacher survey data produced by responses to the OLES, individual items were analysed using descriptive statistics. After the mean responses from the teachers’ and students’ responses were analysed, the most highly scoring items and the lowest scoring items were identified to determine which items were agreed upon most and least by the students and teachers in the study (see Table 9 for the five highest scoring items and the five lowest scoring items). More details of these findings are outlined on the project’s website.

Table 9: Perceptions of preferred online learning environments

PERCEPTIONS OF PREFERRED ONLINE LEARNING ENVIRONMENTS (HIGHEST MEAN SCORE)	
Students’ perceptions	Teachers’ perceptions
<i>I prefer it when the teacher/lecturer responds promptly to my online questions.</i>	<i>I prefer students to approach learning in their own way.</i>
<i>I prefer to be treated the same as other students in the class.</i>	<i>I prefer to work with real examples.</i>
<i>I prefer to get the same amount of help from the teacher/lecturer as do other students.</i>	<i>I prefer students to take time to think about their messages before posting them.</i>
<i>I prefer to work with real examples.</i>	<i>I prefer my students to submit assignments online (e.g. email, learning management system, Turnitin).</i>
<i>I prefer it if my work receives as much praise as other students’ work.</i>	<i>I prefer to give the same opportunity to all students to answer questions.</i>
PERCEPTIONS OF PREFERRED ONLINE LEARNING ENVIRONMENTS (LOWEST MEAN SCORE)	
Students’ perceptions	Teachers’ perceptions
<i>I prefer to be involved in group work as part of my activities.</i>	<i>I prefer to give the same amount of praise to all students’ work.</i>
<i>I prefer to participate in online discussions with other students.</i>	<i>I prefer to give the same amount of help to all students.</i>
<i>I prefer to work with others.</i>	<i>I prefer it when students can learn things about the world outside of the class.</i>
<i>I prefer to ask the teacher/lecturer questions online.</i>	<i>I prefer students to collaborate with other students in the class.</i>
<i>I prefer to collaborate with other students in the class.</i>	<i>I prefer to give equal attention to all student questions.</i>

Furthermore, students’ perceptions were compared with teachers’ perceptions. Mean responses for student and teacher data were correlated and a weak negative relationship between the means (−0.26) was found. Then, the five most agreed upon responses, based on calculating the lowest standard deviations, and the five least agreed upon responses, based on highest standard deviations, were identified (Table 10).

Table 10: Most and least agreed upon perceptions of preferred online learning environments

MOST AGREED UPON PERCEPTIONS OF PREFERRED ONLINE LEARNING ENVIRONMENTS	
Students' perceptions	Teacher's perceptions
<i>I prefer to get the same amount of help from the teacher/lecturer as do other students.</i>	<i>I prefer to respond promptly to student questions online.</i>
<i>I prefer it if my work receives as much praise as other students' work.</i>	<i>I prefer it when it is easy for students to contact me online.</i>
<i>I prefer to be treated the same as other students in the class.</i>	<i>I prefer it when students can relate their work to others' work.</i>
<i>I prefer to work on assignments that deal with real-world information.</i>	<i>I prefer students to write and post messages because it helps them to think.</i>
<i>I prefer to study real cases related to the class activities.</i>	<i>I prefer to give the same encouragement to all students in the class.</i>
LEAST AGREED UPON PERCEPTIONS OF PREFERRED ONLINE LEARNING ENVIRONMENTS	
Students' perceptions	Teacher's perceptions
<i>I prefer to learn things about the world outside of this class.</i>	<i>I prefer to encourage student online participation.</i>
<i>I prefer to relate what I learn to my life outside of this class.</i>	<i>I prefer it when students play an important role in their learning.</i>
<i>I prefer to pursue topics that interest me.</i>	<i>I prefer students to read posted messages at times that are convenient to them.</i>
<i>If I have an inquiry, I prefer the teacher/lecturer to respond quickly.</i>	<i>I prefer students to post messages because it improves their writing skills.</i>
<i>I prefer to access assessment information online.</i>	<i>I prefer to use real facts in class activities.</i>

Findings from the data analyses of the students' and teachers' OLES responses with the highest mean agreement score (Table 9) revealed that students were pointing towards the teachers for a better service while teachers were pointing to students for a better performance. Equity featured frequently in student preferences. Not only did items on equity get the highest mean scores with students, but there was the greatest agreement between students on these items. Communication by lecturers features most highly in the student wish list. While questions of equity rated highly for students, three of the equity items were in the bottom five items for lecturers. Both students and teachers put student collaboration, group work and online discussions very low in their preferences. Overall a negative relationship was found between the priorities for students and teachers.

Lastly, when compared, areas of overlap (similarities) and differences were identified between students' and teachers' perceptions of preferred online learning environments, as illustrated in Figure 1.

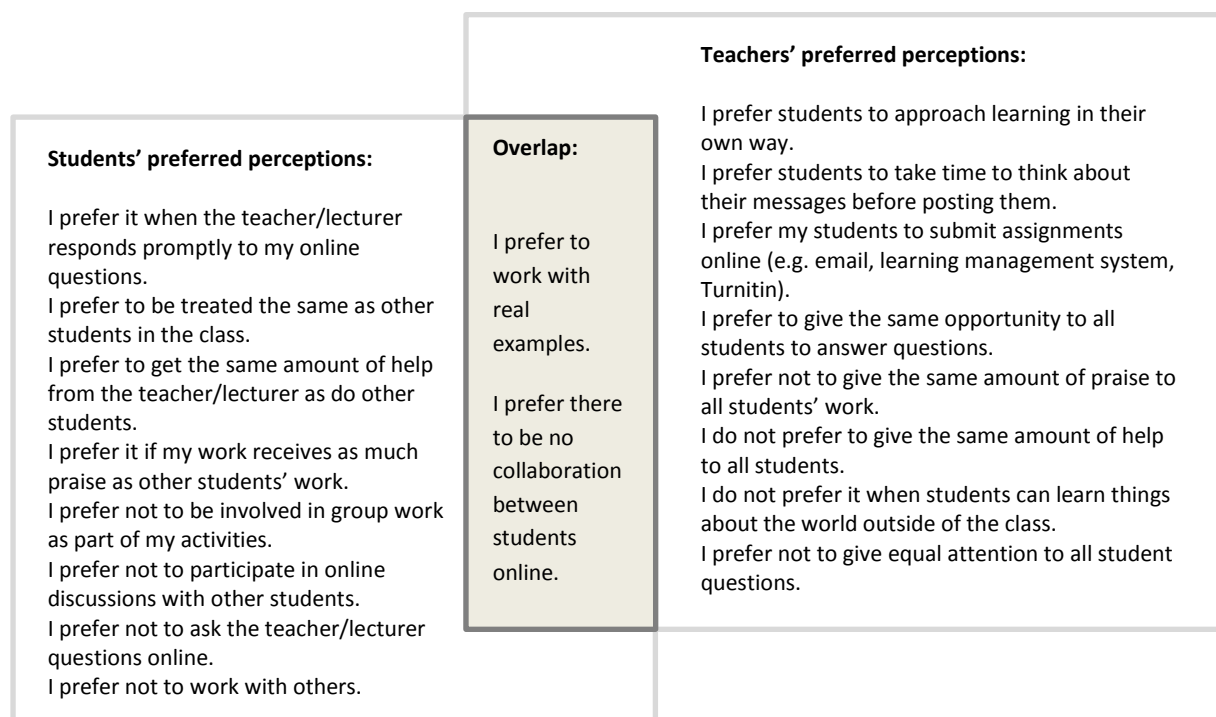


Figure 1: Similarities and differences between students' and teachers' perceptions of preferred online learning environments.

To augment the findings from an analysis of the data gathered from the students' and teachers' responses to the OLES questionnaires, transcripts from the focus groups conducted in phase 2 of the project were analysed. Findings from this analysis revealed the teachers' and students' perceptions about the major skills needed by online teachers (Table 11). While there was some overlap between the perceptions held by teachers and students about online teacher skills, the students clearly expressed a more diverse and comprehensive set of perceptions about the major skills needed by online teachers.

Table 11: Students' and teachers' perceptions of major skills needed by online teachers

STUDENTS' PERCEPTIONS	TEACHER'S PERCEPTIONS
• Support students. • Give prompt feedback. • Track student progress. • Encourage, motivate. • Be interesting and engaging. • Stage the learning. • Communicate clearly. • Troubleshoot technology problems. • Scaffold learning. • Connect on a personal level, get to know students. • Create student-to-student connections. • Make expectations clear. • Give students opportunity to talk, interact, share.	• Developing engaging learning activities. • Planning for interaction. • Clear communication. • Building relationships with students. • Providing scaffolding and support. • Being visible and present for students.

Students were concerned about the quality of teaching and provided more detail about what they expected in terms of support from teachers. Areas of greatest emphasis were prompt feedback and clarity of communication by teachers, going beyond content delivery and establishing a personal presence by more frequent communication and by using information and communication technologies (ICT) such as Skype, audio and video so that students can see that the teacher is present and engaged.

While staff commented that students needed to be more self-regulated online, students spoke of the need to have more support, clarity and connection, progress reports and active learning with peers. This finding indicates that staff expect students to have the skills and motivation to study in an online environment with minimal support, while students commented that they require more guidance, detail and for teachers to provide them with a staged, progressive learning experience. Barriers that prevented teachers from developing the skills required for effective online teaching included issues such as a lack of ICT skills, not being aware of the value of interaction in online courses, a lack of time, students' lack of self-regulation skills, difficulty meeting diverse students' needs, lack of knowledge about learning design and a change of teacher identity in the online context. Overall, student comments on the online learning experience tended to be negative, while staff indicated the need for more time and more training in both ICT skills and learning design.

3. Having identified teachers' threshold concepts about online pedagogy, and students' and teachers' perceptions of online learning contexts, what guidelines can be established to inform the design of professional development curricula to transform the capacities of novice online teachers in higher education?

The research processes described throughout this report have resulted in the drawing together of diverse sets of data from the voices of many stakeholders in online education contexts (students, teachers, experts, administrators, researchers). Specifically, the answers to the study's first two research questions provided research-informed evidence regarding threshold concepts about online teaching and students' and teachers' perceptions of preferred online learning environments. These pools of information were used to establish a set of categorised curriculum guidelines for PD, outlined in Table 12 and also featured in more detail on the project's website. These guidelines are proposed to inform the development of curricula for the transformative PD of novice online educators, essentially answering the third and final research question. However, when considering the context in which to apply these guidelines, educators, administrators and researchers are encouraged to note the two levels of influence in which the categories of these guidelines have been presented. The guidelines are intended to cross-link at the institutional and academic staff level, as shown in Figure 2.

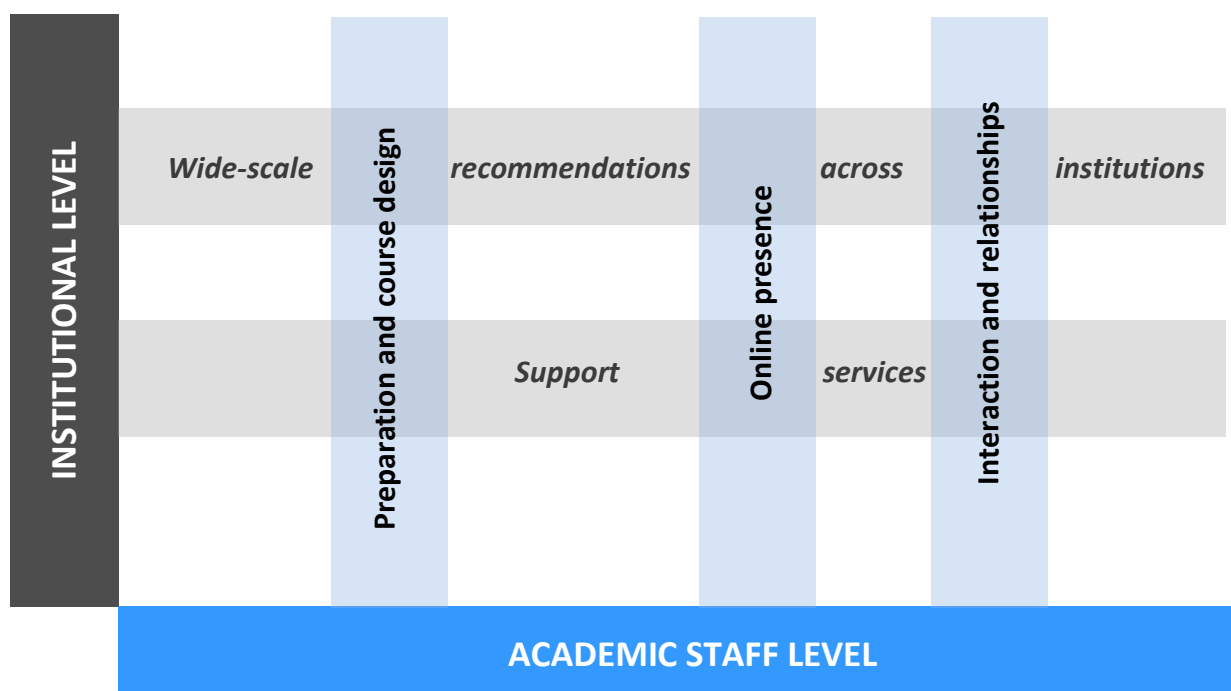


Figure 2: Cross-linking of guidelines recommended at the institutional and academic staff level.

Table 12: Curriculum guidelines for the design of professional development for novice online teachers

LEVEL	PROFESSIONAL DEVELOPMENT CATEGORY	CURRICULUM GUIDELINES TO INFORM DEVELOPMENT OF PROFESSIONAL DEVELOPMENT OUTPUTS FOR NOVICE ONLINE TEACHERS
Institutional	Wide-scale recommendations across institutions	Policies related to teaching and learning should: - 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 - 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 - give teachers time and resources to practise online communication techniques using varied tools - state the expected timeframe within which students should expect to have their questions answered by their lecturers - schedule workload allocations 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: - operate online communication software and tools - use online software and tools to manage students' assessment tasks and provide prompt feedback - meet the needs of both online and on-campus students within the same learning management system course site - structure a course in an engaging manner - clarify instructions and expectations - engage in learning about the major barriers and breakthroughs that experienced online teachers have encountered

LEVEL	PROFESSIONAL DEVELOPMENT CATEGORY	CURRICULUM GUIDELINES TO INFORM DEVELOPMENT OF PROFESSIONAL DEVELOPMENT OUTPUTS FOR NOVICE ONLINE TEACHERS
		- develop an online presence that does not dominate the online space - scaffold, guide and stage learning activities and processes.
Academic staff	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 (learning outcomes, content, activities and assessment tasks) need to be aligned 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 students, and both teachers and students may need to develop an understanding that students can learn without the constant presence of teachers.
Academic staff (continued)	Interaction and relationships	The issues that students find to be important in online courses include equity, prompt responses and feedback, and use of authentic examples. The issues that teachers find very important in online courses include equity, student independence and assessment submission. The issues that students find important do not always align with what teachers find important (see Tables 9–11 for more detail).
		Students' and teachers' 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.

Additional outputs and project milestones

In addition to the outputs and findings outlined above, the following outputs and project milestones were achieved during the project:

- progress report, August 2016;
- final report, March 2017;

- ethics approval for the project from three institutions;
- literature review of threshold concepts related to online teaching, PD and higher education;
- development of ERG;
- data gathering and analysis in phase 1 from teacher-participants via OTSEI questionnaire and reflective journals;
- data gathering and analysed in phase 2 from teacher-participants and student-participants via OLES questionnaire and focus groups;
- development of online version of OLES for students and teachers in consultation with previous creators (Pearson & Trinidad, 2005) of OLES;
- built upon the features of threshold concepts, as defined by Meyer and Land (Land & Meyer, 2010; Meyer & Land, 2003, 2005, 2006b), by situating and redefining them in the context of online teaching and PD;
- development and use of a methodology for identifying threshold concepts, featured in the refereed book chapter submitted in December 2016 for *Threshold concepts at the edge*; and
- Venn diagram identifying students' and teachers' perceptions of online learning contexts, including differences and similarities.

The following project outputs will be finalised during 2017:

- analysis of focus group data during phase 2 from one institution;
- continued updating of project website including links to resources and publications;
- submission of remaining project publications; and
- third consultation with ERG about curriculum design guidelines for PD of novice online educators.

Summary of main project outputs and findings

A summary of the outputs and findings of this project is given in Table 13.

Table 13: Additional project outcomes and outputs

TOPIC	OUTPUTS AND FINDINGS
Threshold concepts about online teaching	Findings: A set of threshold concepts about online teaching, especially designed for novice online teachers, and a methodology to identify threshold concepts.
Features of threshold concepts about online teaching	Findings: Redefinition of each of the features of threshold concepts, as described by Meyer and Land (Land & Meyer, 2010; Meyer & Land, 2003, 2005, 2006b), in the context of online teaching.
Perceptions of preferred online learning environments	Findings: A summary of observations of higher education teachers' and students' perceptions of online learning contexts from three institutions.
	Diagram: Venn diagram identifying students' and teachers' perceptions of online learning contexts, including differences and similarities.
Professional development guidelines	Findings: A set of PD guidelines for those developing resources and activities to support novice online teachers.

TOPIC	OUTPUTS AND FINDINGS
Resource	Website: Website featuring PD curriculum guidelines for transformative PD for online educators.
Conference workshop presentation	Publication: A workshop presentation at the 6th Biennial Threshold Concepts Conference at Dalhousie University in Halifax, Canada.
Refereed book chapter	Pending publication: A refereed chapter submitted for review for an edited book by Sense Publishers.
Peer-reviewed journal articles	Pending publication: Submission of a peer-reviewed journal article to <i>Higher Education Research and Development</i> . Scheduled to complete and submit in July 2017.
	Pending publication: Submission of a peer-reviewed journal article to the <i>Online Learning Journal</i> . Scheduled to complete and submit in August 2017.
Refereed conference papers	Publication: Refereed conference paper accepted for the 18th Biennial International Study Association on Teachers and Teaching (ISATT) Conference. Will be presented in July 2017.
	Pending publication: Submission of a refereed conference paper to the Australasian Society for Computers in Learning in Tertiary Education Conference. Submitted in May 2017 and scheduled for presentation in December 2017.
	Pending publication: Submission of a refereed conference paper to The Ireland International Conference on Education (IICE) Conference. Submitted in June 2017 and scheduled for presentation in October 2017.

Transferability of the project

The project team developed a set of threshold concepts about online teaching that could be trialled and tested in a range of different PD contexts. Likewise, the guidelines that were developed for the purposes of informing the design of transformative PD curricula for novice online teachers could be applied to a range of professional learning contexts across disciplines, institutions and courses.

The [*Threshold concepts for novice online teachers*](#) website, developed to share the findings of this project, is freely available, without password protection. The availability of this resource ensures that the project outputs are accessible to those involved in the project as well as those interested in the project's research processes, outputs and outcomes. For researchers who intend to conduct research beyond the limitations of this study, this website will provide a baseline for their future research pursuits.

It is anticipated that the proposed methodology developed early in the study for identifying threshold concepts of online teaching will be further examined by threshold concept researchers and, consequently, be further developed through trial use and practical application. The researchers involved in the study are willing to provide guidance to other researchers and collaborate on future joint investigations. It is hoped that this methodology may be adapted to identify threshold concepts about a range of topics and issues in other educational contexts and possibly across varied disciplines.

Links with other projects

Previous Office for Learning and Teaching projects have explored curriculum design and learning design to facilitate enhanced student learning within the context of various degree programs (for example, Keppell, Suddaby, & Hard, 2011). The PD curriculum guidelines produced in this project may be used by other academic developers as a means of emphasising the significance of the curriculum design of PD, as identified by Keppell et al. (2011) in their *Good practice report: Technology-enhanced learning and teaching*: ‘The changing global context of learning and teaching in higher education, the changing nature of students, and the impact of technology on learning and teaching all influence a need for teachers in higher education to continually learn through professional development and academic development’ (p. 11).

The principles of curriculum design, as outlined in previous Office for Learning and Teaching projects and good practice reports, have been emphasised as being important in the design of courses and PD curricula. In the case of this project, the curriculum guidelines that were developed are specifically intended to assist in the design of PD programs, activities and resources for novice online teachers. The focus on novice online teachers is important as this group of educators often represent a high demand within universities’ PD programs. Furthermore, the structure that emerged during the categorisation of these curriculum guidelines (Figure 2) suggests that these curriculum guidelines may be most effective if they are considered not only at the foundational level of the novice online teacher within faculties and schools, but also at the broader administrative level of the institution, thus influencing policies and management.

To date, no Office for Learning and Teaching projects have focused on how online teachers’ perceptions of threshold concepts may inform the design of PD curricula for novice online educators by applying transformative curriculum design. Instead, previous research on threshold concepts has tended to focus on the knowledge developed *by students* or it has focused on the use of threshold concepts to inform curriculum design of courses *for students* in discipline-specific contexts, as indicated by the three previously conducted Office for Learning and Teaching projects listed in Table 14.

Table 14: Previous projects this project has built upon

ENGINEERING THRESHOLDS: AN APPROACH TO CURRICULUM RENEWAL (PP10-1607)	
Date completed	2010
Lead institution	The University of Western Australia
Grants program	Priority Projects
Relationship to this project	This project identified a set of threshold concepts within a discipline-specific context: an integrated engineering foundation program. The researchers involved in this project have raised issues regarding the term ‘threshold concept’ and ‘threshold capabilities’. The use of the term ‘threshold concepts’ was also an issue identified by the researchers in the project outlined in this report.
CURRICULUM RENEWAL IN LEGAL EDUCATION: ARTICULATING FINAL YEAR CURRICULUM DESIGN PRINCIPLES AND A FINAL YEAR PROGRAM (PP9-1374)	
Date completed	2009

Lead institution	Queensland University of Technology
Grants program	Priority Projects
Relationship to this project	This project identified a set of threshold concepts within a discipline-specific context: in legal education. Furthermore, this project raised the issue of how threshold concepts are related to curriculum design, albeit for student learning.
A THRESHOLD CONCEPTS FOCUS TO CURRICULUM DESIGN: SUPPORTING STUDENT LEARNING THROUGH APPLICATION OF VARIATION THEORY (PP8-885)	
Date completed	2008
Lead institution	The Australian National University
Grants program	Priority Projects
Relationship to this project	Again, this project focused on threshold concepts in the context of student learning, specifically in the disciplines of physics and law. However, like the project outlined in this report, this Priority Project linked threshold concepts to curriculum design and emphasised the transformative nature of threshold concepts.

Critical success factors and impediments to progress

The critical success factors that supported the progression of the project included:

- **project purpose:** ensuring ongoing clarification of the project's purpose and expected outcomes, as driven by the project's three research questions, throughout all phases of the research;
- **milestones:** using a Gantt chart to identify and track key project milestones;
- **project website:** using a shared project website (set up through the lead institution's learning management system, Moodle). All project team members had password-protected access to this site and could contribute materials to it during the project. This site acted as a hub of information about the project and provided a location where current versions of in-progress documents could be stored and accessed;
- **team meetings:** facilitating regular team meetings (usually held each month, either online or face-to-face) to ensure the team could re-focus their efforts in terms of the project's aims, research processes and outcomes. The meetings where each team member was responsible for presenting or facilitating an agenda item tended to work better than the meetings directed only by the project leader and research assistant. In some team meetings, a workbook was created to guide the discussions on each agenda item. This workbook ensured the meetings remained focused and task-driven; and
- **participants and experts:** willingness of participants and experts to contribute to the research processes, which was essential to the project. We were especially fortunate to have the input of key threshold concepts scholars during the study.

On the other hand, the project team faced a few challenges throughout the project, including:

- **ethics:** delays in beginning data collection due to time taken to attain ethics approval at all institutions. This is a common problem in cross-institutional

projects. As a result, including more lead-up time is recommended at the beginning of such a project, or applying for ethics approval before the project begins, to ensure the process of ethics approval does not impede the project's progress;

- **idea of 'threshold concepts':** the academic community sometimes confusing 'threshold concepts' with 'threshold standards', especially within the Australian Higher Education Standards Framework; and
- **personnel issues:** serious illness, extended periods of travel, change of career paths, job changes and changes to the personal situations of research team members throughout the project. One member retired at the end of 2016, which meant that one institution (Curtin University of Technology) was not involved in the final stages of the project. Although these issues cannot always be predicted, they did impact the progress of the project. As a result, the achievement of some project outputs was delayed.

Future research directions

Based on the project's findings, the following areas for future research are recommended:

- **trial and extension of threshold concepts about online teaching:** The researchers of this project anticipate that the threshold concepts about online teaching, and the features of threshold concepts, which were redefined in relation to online teaching, will be scrutinised and extended by other educators and researchers in the future. The threshold concepts about online teaching that were identified during the project may be used within multidisciplinary contexts and within single disciplines;
- **methodology for identifying threshold concepts:** In the early stages of this project, a proposed methodology was developed for identifying threshold concepts of online teaching. This proposed methodology was outlined in a book chapter that the authors wrote during this project. It is anticipated that this methodology may be appraised, trialled and extended by other researchers who face the challenge of how to identify threshold concepts;
- **nature and features of threshold concepts:** It is recommended that the nature of threshold concepts, especially in relation to the features of threshold concepts identified by Land and Meyer (Land & Meyer, 2010; Meyer & Land, 2003, 2005, 2006b) may be further explored by researchers and educators in the fields of online pedagogy and PD. The way in which these threshold concept features have been rewritten for an online teaching setting may lead the way for other researchers to rewrite these features within other fields of educational research and scholarship;
- **terminology:** Despite the continued use of the term 'threshold concept', our meeting with Professor Ray Land at the 6th Biennial Threshold Concepts Conference at Dalhousie University in June 2016 reminded the team of the

more comprehensive term of 'learning thresholds'. Both terms have been used during this research and in some of the publications, but the term 'learning thresholds' has been favoured because of its more comprehensive nature – it includes all aspect of learning, not just conceptual or intellectual learning;

- **application of professional development curriculum guidelines in varied contexts:** This project has produced a collection of curriculum guidelines that can be used to inform the design of transformative PD programs, resources and activities for novice online educators. These PD guidelines may be applied in generic contexts, such as within universities' centres for teaching and learning, or within discipline-specific or course-specific settings; and
- **owners of threshold concepts:** Throughout the process of reviewing the literature for this project, and throughout the data gathering and analysis processes, the project team members often asked themselves and were asked by others, 'Threshold concepts for whom?' Since the team was investigating the threshold concepts about online teaching required by novice teachers, questions were posed about whether a threshold concept that was relevant for a novice teacher would also be a relevant threshold concept for an experienced teacher. Such questions were also discussed during the consultation meetings with members of the ERG. The team suspects that the decision to recognise a concept as a threshold concept is influenced by the context in which they are developed and applied. Furthermore, future researchers may examine the differences and similarities of threshold concepts about online teaching held by novice teachers compared to experienced teachers.

Chapter 4: Project impact, dissemination and evaluation

This project aimed to impact on the quality of online teaching by novice online educators in higher education contexts. Specifically, the project aimed to impact on the curriculum design of PD programs to ensure they meet the needs of novice tertiary educators, while also taking into account students' perceptions of online learning contexts, and expert voices of experienced online course developers and teachers. Impact of the project's outcomes will largely be enacted through the availability and dissemination of the [Threshold concepts for novice online teachers](#) website. Details of the anticipated impact of the project are outlined in Table 15.

Table 15: Anticipated project impact

	ANTICIPATED CHANGES AT INSTITUTIONS INVOLVED IN THE STUDY			
	Project completion	Completion + 6 mths	Completion + 12 mths	Completion + 24 mths
1. Team members	Groups of disciplinary teachers and educational developers working together to deliver PD on e-learning using threshold concepts.	Collaboration between educational researchers/developers and disciplinary teachers across the partner universities.	Continued professional networking in order to evaluate the PD model and embeddedness across disciplines.	Ongoing refinement of the curriculum for PD with reference to its wider application in situated contexts.
2. Immediate students	Student voice in contributing to curriculum development is embedded in design.	Identification of disparities between student views and teacher views of threshold concepts to assist in design of resources.	Curriculum informed by student voice to provide learner-centred online skills for 21st century learning.	Re-evaluation of the relevance of the online pedagogy for student needs.
3. Spreading the word	Reporting key findings to the Department of Education and Training and to other universities.	Ongoing development of project's website to support curriculum design for PD of online teachers.	Team members to publish a special issue in <i>Higher Education and Research Development</i> on application of threshold concepts to online teaching.	Review and publication of the theoretical strengths of the projects outcomes in international journals.
4. Narrow opportunist ic adoption	Internal reporting at Avondale College of Higher Education and at each of the key institutions	Curriculum approach to PD embedded across Avondale College of Higher Education.	Securing internal funding to extend the project.	Discipline based special interest group to engage in ongoing reflection on the online skills needed by academic staff.
5. Narrow systemic adoption	Cross-disciplinary acceptance of the curriculum design approach internally to ensure support at Avondale College of Higher Education.	Curriculum guidelines for PD accepted internally as a model for PD.	Key threshold concepts for online learning adopted by novice teachers.	Internal networks of academic staff collaborate on online pedagogical skill development.
6. Broad opportunist ic adoption	Publication and trialling of the curriculum design approach at partner universities.		Teaching staff incorporate the skills training into their e-portfolios.	Model of transactional curriculum inquiry evaluated and published.
7. Broad systemic adoption	Evidence-based planning model for PD in e-learning adopted by other universities.	Novice teachers confident that they have a quality framework for their own e-pedagogy.	Project website is evaluated and recognised internationally.	Future research suggestions, outlined in this report, adopted by national or international researchers other than project team.

To further illustrate how the project's impact and dissemination was considered both during and at the end of the project, answers to the following questions (from the IMPEL Framework) served to assist ongoing evaluation of the project.

1. *What indicators exist that there is a climate of readiness for change in relation to your intended project?* Currently there are no evidence-based curriculum design guidelines for PD based on threshold concepts about online pedagogy. There is a need for coherent planning for transformative PD for novice online teachers.
2. *In brief and indicatively, what impacts (changes and benefits) do you expect your project to bring about, at the following levels and stages of the impact management planning and evaluation ladder (IMPEL)?* The impacts expected to be brought about by the project are outlined in Table 15.
3. *What were your strategies for engaging with stakeholders throughout the project?* The strategies employed in this project included (1) stakeholder consultation early in the project including face-to-face consultation, teleconference and email to gather a full range of views; (2) the process of consensus building through engagement of stakeholders across multiple institutions and recognised national and international experts (included in the ERG); and (3) ongoing engagement of stakeholders in a participatory curriculum design process, including briefings, teleconferences and the creation of a website documenting outcomes of the project.
4. *How will you enable transfer that ensures your project remains impactful after the funding period?* The findings of the project are visible via an open website, which includes all of the project's findings, outputs and links to publications. The site also supports strategies to make the materials adaptable in different contexts. The site will continue to evolve in response to feedback gained from the users of the site. Ongoing evaluation of the implementation of PD curriculum guidelines will be the source of future publications intended to continue the dissemination of the findings.
5. *What barriers may exist to achieving change in your project?* See [Critical success factors and impediments to progress](#) in this report for more details about barriers.
6. *How will you keep track of the project's impact? What analytics may be useful?* Google Analytics will be used to track online traffic to the project website and the online versions of any of the project's publications. Citations of the project's publications will also be tracked.
7. *How will you maintain relevant project materials for others to access after the project is completed?* This will happen at a website, developed and housed at Avondale College of Higher Education, with linked websites at each of the participating universities. The website will function as a repository of guidelines, findings, publications and outputs from the project.

Appendix A

Certification by Deputy Vice-Chancellor (or equivalent)

I certify that all parts of the final report for this OLT grant provide an accurate representation of the implementation, impact and findings of the project, and that the report is of publishable quality.

Name: .....Date: 08/03/17

Name: Professor Anthony Williams, Vice President – Academic & Research, Avondale College of Higher Education

Date: 08 March 2017

Appendix B: Additional experts to the expert reference group

AREA OF EXPERTISE	NAME	INSTITUTION
Professional development, higher education teaching, learning and scholarship	Associate Professor Pamela Robinson	Ryerson University, Toronto, Canada
Professional development, higher education teaching, learning and scholarship	Jean Paul Foxe	Ryerson University, Toronto, Canada
Threshold concepts, online course design and teaching, professional development	Diane Boyd	Auburn University, USA
Threshold concepts, online course design and teaching, professional development	Dr Justin Lonsbury	Georgia State University, USA
Threshold concepts and professional development	Dr Catherine King	Elon University, Elon, North Carolina
Threshold concepts and professional development	Professor Peter Felten	Elon University, Elon, North Carolina
Higher education teaching, threshold concepts	Assistant Professor Sarah L. Bunnell	Ohio Wesleyan University, Delaware, Ohio
Higher education teaching, threshold concepts	Professor Emeritus Daniel J. Bernstein	University of Kansas, Lawrence, Kansas
Professional development and online learning	Dr Susannah McGowan	University of California, Santa Barbara
Online learning and design, Indigenous education	Gail Tillman	University of Newcastle, New South Wales

Appendix C: Publication plan

The publication plan below includes modifications completed to the original publication plan. Modifications were due to change of team members and an opportunity to submit a book chapter after the Threshold Concepts Conference in 2016 and an opportunity to present at two additional conferences: 18th Biennial International Study Association on Teachers and Teaching (ISATT) Conference in July 2017; and The Ireland International Conference on Education (IICE), October 2017.

CONFERENCE, JOURNAL OR BOOK	LEAD AND/OR COORDINATOR	DUE DATES	DETAILS OF PAPER/PRESENTATION/PUBLICATION	AUTHORS*
Conference presentation: Threshold Concepts Conference, 15–17 June 2016, Dalhousie University, Halifax, Canada	Maria Northcote	18 March 2016 (submitted) 17 June 2016 (presentation)	Focus of conference paper/workshop: overview of project Title: <i>The troublesome edge of teaching online: Using threshold concepts to design professional learning curricula for novice online teachers.</i>	MN, KG, TR, DR, PK, CM, CB, KB
Refereed book chapter in edited book <i>Threshold concepts at the edge</i> by Brad Wuetherick, Anne-Marie Ryan, Julie Timmermans and Ray Land	Maria Northcote	Submitted 15 December 2016	Focus of refereed book chapter: method of identifying threshold concepts about online teaching. Chapter title: 'At the troublesome edge of recognising thresholds concepts of online teachers: A proposed learning threshold identification methodology'.	MN, KG, PK, CM, CB, KB
18th Biennial International Study Association on Teachers and Teaching Conference, 3–7 July 2017, University of Salamanca, Spain	Catherine McLoughlin	Refereed paper accepted and presentation scheduled for July 2017	Focus of conference paper: professional development for novice online teachers Title: 'What skills do I need to teach online? Researching experienced teacher views of essential knowledge and concepts in online pedagogy as a foundation for developing professional development for novice teachers'.	CM, MN, KG
The Ireland International Conference on Education (IICE), October 2017	Catherine McLoughlin	Submitted June 2017	Focus of conference paper: professional development for novice online teachers Title: 'Mind the gap: Contrasting perspectives of online teaching and learning as indicators of teacher and student support needs'.	CM, MN, KG
Peer-reviewed journal article in <i>Higher Education Research and Development</i>	Daniel Reynaud and Peter Kilgour	Aiming to submit in July 2017	Focus of peer-reviewed journal article: the actual threshold concepts that online teachers develop, titled as and including answers to research question 1: 'What threshold concepts about online pedagogy are perceived as essential for novice higher education teachers teaching in online contexts?'.	DR, PK, CM, MN, KG

CONFERENCE, JOURNAL OR BOOK	LEAD AND/OR COORDINATOR	DUE DATES	DETAILS OF PAPER/PRESENTATION/PUBLICATION	AUTHORS*
EdMedia Conference 2017	Tony Rickards	Due approx. mid-April 2017	Teachers' and students' perceptions of online learning environments Report answers to research question 2: 'How do higher education teachers' and students' perceive online learning contexts?' Focus may be on the teachers' and students' technology use (or another theme that emerges from the data analysis).	Removed due to team member changes
Australasian Society for Computers in Learning in Tertiary Education Conference 2017	Maria Northcote	Submitted May 2017	Focus of conference paper: implications of our study's results for professional development curriculum guidelines Title: '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")'	KG, MN, PK, DR, CM, CB
Peer-reviewed journal article in <i>Online Learning Journal</i> (previously <i>Journal of Online Learning and Teaching</i>)	Kevin Gosselin	Aim to submit by August 2017	Focus of refereed journal article: pedagogical guidelines for designing transformative professional development programs for novice online teachers, including answers to research question 3: 'Having identified teachers' threshold concepts about online teaching, and students' and teachers' perceptions of online learning contexts, what guidelines can be established to inform the design of professional development curricula to transform the capacities of novice online teachers in higher education?'	KG, MN, PK, DR, CM, CB

Appendix D: Online Teaching Self-Efficacy Inventory used in phase 1

Participation in this study is purely voluntary. Thank you for your contribution to the study, if you opt to be involved.

This questionnaire is based on the work of Dr Kevin P. Gosselin. The questionnaire has been reproduced and modified to suit Australian conditions with Dr Gosselin's permission.

Please interpret the term 'online' as 50% or more online.

1.	What is your gender?	Male		Female	
2.	With which ethnicity do you identify?				
	Asian	☐	European		☐
	Pacific Islander	☐	Aboriginal or Torres Strait Islander		☐
	Australian	☐	Other, please specify		☐
3.	How would you describe your current teaching position?				
	Part time	☐	Ongoing		☐
	Full time	☐	Sessional or casual		☐
	Contract	☐	Other, please specify		☐
4.	What type of institution do you currently teach at?				
	Private tertiary college	☐	Private university		☐
	Public tertiary college	☐	Public university		☐
		☐	Other, please specify		☐
5.	How many years have you been teaching in higher education?				years
6.	How many years have you been teaching in your current position?				years
7.	How many semesters have you been teaching online units?				semesters
8.	How many units have you taught online?				units
9.	How many online units have you designed?				units
10.	How many units have you adapted from face-to-face to online formats?				units

Part 1 of 5: Selection of technological resources

The definition for the selection of technological resources in this study is defined by an online teacher's ability to select, utilise and determine the appropriateness of technology to enhance student learning and enrich instruction. Please indicate how confident you are in your ability to accomplish the stated activities by selecting a number for each item.

In the context of online units, I can ...		0=no confidence 10=complete confidence										
11.	select the appropriate software applications to use for my classes.	0	1	2	3	4	5	6	7	8	9	10
12.	obtain the appropriate copyright permissions.	0	1	2	3	4	5	6	7	8	9	10
13.	discern between technological applications that require differing levels of bandwidth.	0	1	2	3	4	5	6	7	8	9	10
14.	determine how difficult various types of technology will be for my students to use.	0	1	2	3	4	5	6	7	8	9	10
15.	select the online unit technology that is most efficient for delivery of materials to students.	0	1	2	3	4	5	6	7	8	9	10
16.	learn how to use new technologies used in my unit without support from my institution (i.e., training, workshops, incentives, etc.)	0	1	2	3	4	5	6	7	8	9	10
17.	select the unit technology that is compatible with students' networks and platforms (i.e., compatible versions of software and networks that are capable of 'talking to each other').	0	1	2	3	4	5	6	7	8	9	10
18.	manage the time requirements needed for learning unit technology.	0	1	2	3	4	5	6	7	8	9	10
		0=no confidence 10=complete confidence										

Part 2 of 5: Virtual interaction

Virtual interaction is defined in this study as a faculty member's effective facilitation of teacher-student interaction, meaningful student cooperation and the ability to establish a positive social climate that engages students through fostering motivation, intellectual commitment and personal development. Please indicate how confident you are in your ability to accomplish the stated activities by selecting a number for each item.

In the context of online units, I can ...		0=no confidence 10=complete confidence										
19.	get students to work together in my classes.	0	1	2	3	4	5	6	7	8	9	10
20.	overcome the influence of adverse student interactions.	0	1	2	3	4	5	6	7	8	9	10
21.	encourage my students to ask questions.	0	1	2	3	4	5	6	7	8	9	10
22.	promote student participation in my units.	0	1	2	3	4	5	6	7	8	9	10
23.	project a positive virtual social presence (the perception of being real).	0	1	2	3	4	5	6	7	8	9	10
24.	effectively express emotion within the online environment.	0	1	2	3	4	5	6	7	8	9	10
25.	use emotion to effectively enrich communication.	0	1	2	3	4	5	6	7	8	9	10
26.	adopt a teaching style that allows for the facilitation of learning through guidance.	0	1	2	3	4	5	6	7	8	9	10
27.	manage the pace of facilitating interaction.	0	1	2	3	4	5	6	7	8	9	10
28.	adequately convey that I am available for consultation.	0	1	2	3	4	5	6	7	8	9	10
		0=no confidence 10=complete confidence										

Part 3 of 5: Unit content migration

The definition of unit content migration in this study refers to the ability to successfully transfer instructional materials from face-to-face to online units; the contents of the transferred information are sufficiently comprehensive to achieve the defined learning outcomes. For the scope of this study, materials refer to information created and prepared by the unit teacher or online instructor, and are exclusive of standard textbooks produced by recognised publishers. Please indicate how confident you are in your ability to accomplish the stated activities by selecting a number for each item.

In the context of online units, I can ...		0=no confidence 10=complete confidence										
29.	prepare the teaching materials I will use in my units.	0	1	2	3	4	5	6	7	8	9	10
30.	select the appropriate digital media format (PowerPoint, digital photographs, Adobe Flash, etc.) to transfer unit content and materials.	0	1	2	3	4	5	6	7	8	9	10
31.	select the appropriate online method to effectively convey unit content once used in traditional style (lecture of face-to-face) classrooms.	0	1	2	3	4	5	6	7	8	9	10
32.	transfer lecture presentations used in face-to-face style units to online formats.	0	1	2	3	4	5	6	7	8	9	10
33.	transfer assignments and assessments (such as exams) used in face-to-face style units to online formats.	0	1	2	3	4	5	6	7	8	9	10
34.	determine the appropriate resources (i.e., technological, personnel, software, etc.) to assist with transferring unit materials from face-to-face to online formats.	0	1	2	3	4	5	6	7	8	9	10
35.	manage the time needed to transfer unit content from face-to-face to online formats.	0	1	2	3	4	5	6	7	8	9	10
		0=no confidence 10=complete confidence										

Part 4 of 5: Online course alignment

The online alignment of objectives, instruction and assessment is defined for this study as encompassing faculty's ability to effectively align learning objectives, unit assignments and learning activities, and assessment strategies and procedures with online units. Please indicate how confident you are in your ability to accomplish the stated activities by circling a number for each item.

In the context of online units, I can ...		0=no confidence 10=complete confidence										
36.	evaluate the degree to which my unit learning outcomes have been met.	0	1	2	3	4	5	6	7	8	9	10
37.	use strategies to increase my students' memory of my unit content.	0	1	2	3	4	5	6	7	8	9	10
38.	provide my students with detailed feedback about their academic progress.	0	1	2	3	4	5	6	7	8	9	10
39.	determine the most appropriate evaluation method for a particular unit.	0	1	2	3	4	5	6	7	8	9	10
40.	clearly articulate the learning goals that I expect my students to attain.	0	1	2	3	4	5	6	7	8	9	10
41.	connect unit assignments with the stated learning outcomes.	0	1	2	3	4	5	6	7	8	9	10
42.	accurately assess the depth of students' learning.	0	1	2	3	4	5	6	7	8	9	10
43.	accurately assess the depth of students' level of engagement.	0	1	2	3	4	5	6	7	8	9	10
44.	engage students from a variety of cultural backgrounds.	0	1	2	3	4	5	6	7	8	9	10
45.	engage students who have a wide variety of familiarity with online learning.	0	1	2	3	4	5	6	7	8	9	10
46.	use written instructions to facilitate student engagement in online units.	0	1	2	3	4	5	6	7	8	9	10
		0=no confidence 10=complete confidence										

Part 5 of 5: Web based unit structure

Web based unit structure is defined for the scope of this study as the ability to construct and design an online unit that includes a clear organisational structure, facilitates straightforward navigation and communication guidelines, is consistent and aligned with an institution's mission, and complies with the Australian Human Rights Commission guidelines. Please indicate how confident you are in your ability to accomplish the stated activities by selecting a number for each item.

In the context of online units, I can ...		0=no confidence 10=complete confidence										
47.	adapt the design of units to the needs of my students (motivation, interest, prior knowledge, etc.).	0	1	2	3	4	5	6	7	8	9	10
48.	design a unit in accordance with the Australian Human Rights Commission guidelines.	0	1	2	3	4	5	6	7	8	9	10
49.	design a unit that is easy for students to navigate.	0	1	2	3	4	5	6	7	8	9	10
50.	create appropriate links to unit pages and materials.	0	1	2	3	4	5	6	7	8	9	10
51.	design a unit that is representative of my institution's mission, goals and objectives.	0	1	2	3	4	5	6	7	8	9	10
52.	design units that address students' concerns and apprehensions about unit content.	0	1	2	3	4	5	6	7	8	9	10
53.	design a unit that another teacher could teach.	0	1	2	3	4	5	6	7	8	9	10
54.	manage the time requirements needed to develop courses.	0	1	2	3	4	5	6	7	8	9	10
55.	design units that meet regulatory agency accreditation guidelines.	0	1	2	3	4	5	6	7	8	9	10
56.	use digital media to create unit content.	0	1	2	3	4	5	6	7	8	9	10
57.	create units that are consistent and structured.	0	1	2	3	4	5	6	7	8	9	10
		0=no confidence 10=complete confidence										

Appendix E: Reflective journal used in phase 1

Dear academic staff,

The title of this study is 'Using online teaching threshold concepts in transformative professional learning curricula for novice online educators'. We invite you to take part in this purely voluntary series of four reflections. This research is supported by a grant to Avondale College of Higher Education from the Office for Learning and Teaching (OLT). If you have any questions or comments about the research, please do not hesitate to contact us. We appreciate your time and effort.

Regards, Maria Northcote, Kevin Gosselin, Chris Boddey, Peter Kilgour, Catherine McLoughlin, Daniel Reynaud, Tony Rickards, Kerrie Boddey

NB: Your participation in completing this set of reflective questions indicates your consent. Please see the attached information statement about this research project.

A. In which discipline do you principally teach?

B. In order to match reflections in subsequent surveys, could you please indicate your first pet's name. If you have not had a pet, please use the name of the first street you lived in.

Reflection 1: From your point of view as an online teacher, what have been the major concerns or areas of 'troublesome knowledge' that have been uppermost in your mind over the past month, about online or blended learning and teaching or online course design?

Reflection 2: What typical questions, if any, have you asked, or have been meaning to ask other staff, over the past month, about online learning and teaching or online course design?

Reflection 3: What understandings, if any, have you developed over the past month, about online learning and teaching or online course design?

Reflection 4: What successes, if any, have you experienced over the past few weeks, about online learning and teaching or online course design?

Reflection 5: Have any of the following concepts been a concern to you over the past month?
Add 'Yes' or 'No' and any relevant comments in the second column.

Concepts related to online teaching	Yes or No	Comments, examples, thoughts
1) the distinctive nature of the online learning environment: understanding that the online environment does not need to replicate the on-campus student experience;		
2) student attention: acknowledging that online students need just as much attention as on-campus students;		
3) the nature of online communication: including synchronous and asynchronous forms;		
4) relationships: developing learning materials that foster the development of relationships between students and their lecturers, and between students and between students and others outside the institution;		
5) identity: what it means to be an online teacher and a facilitator of online learning;		
6) high quality learning: learning as a process that involves interactive activities and knowledge construction, not just the absorption of information;		
7) humanisation: determining how to integrate interactive processes into the online environment in ways that humanise the learning context;		

Concepts related to online teaching	Yes or No	Comments, examples, thoughts
8) sense of place: the deliberate inclusion of learning and teaching techniques and resources that enable students and teachers to develop a sense of place in the online environment; and		
9) technological concerns: including skill development of staff and students, access, use of tools and trouble shooting		

Thank you for taking the time to participate in this study.

Please give this to either Kerrie Boddey, Maria Northcote, Peter Kilgour or Daniel Reynaud.

Appendix F: Focus group question schedule – staff used in phase 2

Inquiry 1: From your point of view, what are the major issues or topics you would like to learn more about in regard to designing units in online (or partially online or blended) contexts and teaching in online (or partially online or blended) contexts?

Inquiry 2: From your point of view, what are the major skills you would like to develop in regard to designing units in online (or partially online or blended) contexts and teaching in online (or partially online or blended) contexts?

Inquiry 3: From your point of view, what major barriers do you encounter or expect to encounter in regard to designing units in online (or partially online or blended) contexts and teaching in online (or partially online or blended) contexts?

Inquiry 4: From your point of view, what major breakthroughs or successes do you experience or expect to experience in regard to designing units in online (or partially online or blended) contexts and teaching in online (or partially online or blended) contexts?

Inquiry 5: Do you have any other comments about the abilities you have developed or see yourself developing in regard to designing units in online (or partially online or blended) contexts and teaching in online (or partially online or blended) contexts?

Inquiry 6: Do you have any other comments about the support you require in regard to designing units in online (or partially online or blended) contexts and teaching in online (or partially online or blended) contexts?

Appendix G: Focus group question schedule – students used in phase 2

Inquiry 1: From your point of view, what are the major things that teaching staff need to know about when they create and teach in online units (or partially online or blended units)?

Inquiry 2: From your point of view, what are the major skills that teaching staff need to know about when they create and teach in online units (or partially online or blended units)?

Inquiry 3: From your point of view, what major barriers do teaching staff face when they learn how to create and teach in online units (or partially online or blended units)?

Inquiry 4: From your point of view, what major successes do teaching staff may experience when they create and teach in online units (or partially online or blended units)?

Inquiry 5: Do you have any other comments about the abilities that teaching staff should have when they create and teach in online units (or partially online or blended units)?

Inquiry 6: Do you have any other comments about the help that teaching staff should have when they create and teach in online units (or partially online or blended units)?

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