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Understanding the design context for Australian university teachers: implications for the future of learning design

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Abstract

Based on the premise that providing support for university teachers in designing for their teaching will ultimately improve the quality of student learning outcomes, recent interest in the development of support tools and strategies has gained momentum. This paper reports on a study that examined the context in which Australian university teachers design in order to understand what role design support tools and strategies could play. In-depth interviews were conducted with 30 academics across 16 Australian universities. The findings suggest that most Australian university teachers have a high degree of flexibility in their design decisions suggesting that opportunities exist for learning design tools and strategies to be adopted.

Keywords

Learning design, higher education, university teaching

Introduction

Recent interest in the development of tools and strategies to support university teachers in designing for teaching is based on the premise that such supports will improve the quality of teaching and ultimately improve the quality of student learning

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outcomes. Significant investment by universities in learning and teaching support services is evident in the sector's encouragement of initiatives focussed on sharing and building of 'good design practice' (see for example projects at http://www.altc.edu.au/). This has led to research activity focused on ways in which university teachers can document, model, implement, share and adapt educational design ideas. This body of work includes a varied set of related approaches such as online collections that enable teachers to publish, search for and comment on learning and teaching ideas. Examples include the *Technology-Supported Learning Database* (http://aragorn.scca.ecu.edu.au/tsldb/), the *Phoebe Pedagogic Planner* (http://phoebe-app.conted.ox.ac.uk/) and *Cloudworks* (http://cloudworks.open.ac.uk/). Work is also being done to advance systematic formalisms for descriptions, such as pedagogical patterns which offer a way of documenting a solution to a recurring design problem (McAndrew, Goodyear, & Dalziel, 2006) (e.g., http://patternlanguagenetwork.org/about/) or learning design sequences which are textual and/or visual representations of a sequence of learning tasks, supports and resources (Agostinho, 2009) (e.g., http://www.learningdesigns.uow.edu.au/).

Complementing these efforts are developments focused on tools to support the design process, including tools for:

- constructing and delivering sequences of learning activities (e.g., http://www.lamsinternational.com/)
- analysis and planning (e.g., http://www.wle.org.uk/d4l/; http://www.phoebe.ox.ac.uk/)
- customising reusable digital resources (e.g., http://www.glomaker.org/)
- creating visual representations of educational designs (e.g., http://kn.open.ac.uk/public/workspace.cfm?wpid=8690)
- providing guidance to adapt existing learning designs (Bennett *et al*., 2007) and pedagogical patterns (Hernández-Leo *et al.*, 2006).
- working with technical specifications (http://www.tencompetence.org/ldauthor/; http://edutechwiki.unige.ch/en/Prolix_graphical_learning_modeller).

All of these efforts assume that university teachers have a need and desire to adopt these support mechanisms and that tools and strategies can be designed in such a way as to be useful in the process of planning and preparation for teaching. Furthermore,

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there is a hope that support tools will enable teachers to adopt new and effective educational designs by exposing teachers to new pedagogical ideas and support their design processes. Key to this process is enabling teachers to learn about new pedagogies during the process of design so that they adapt ideas to their contexts.

However, there is little empirical evidence that confirms or disputes these assumptions. An important issue that requires examination is teachers' contextual pre-conditions to using such supports, specifically the extent to which university teachers are actually able to make design decisions and what influences those decisions. Put simply, if teachers are not able to make decisions about what and how they teach, what types of assessment they offer or what types of learning supports they can make available to students, then the necessary pre-conditions for using design support tools do not exist. This is particularly important to advance the research work conducted in learning designs and pedagogical patterns, which is based on the premise that the essence of a design or a design principle can be abstracted from practice and shared to inspire and guide future practice (Derntl & Botturi, 2006; Fincher & Utting, 2002). But if a teacher does not have a degree of freedom to customise a pattern or a learning design, then this type of support strategy may not provide the most appropriate mechanism to encourage teachers to explore new ways of teaching (and hence learning).

Background

Since the introduction of the Internet in higher education there has been significant pressure to explore new contexts and strategies within which and by which learning can occur. Teachers are no longer expected to meet with students only in a face-to-face environment. And, though initially it was believed by some that online learning would make the teacher redundant, the current state of education supports the belief that effective teaching often encompasses variants of a mixture of online technologies and face-to-face teaching (Goodyear et. al., 2001). Effective teachers are those who creatively vary their teaching techniques in order to promote optimal levels of student engagement and learning (Ballantyne, Bain & Packer, 1999).

Academics working in higher education institutions are recruited because of their demonstration of their skills and knowledge applicable to a particular discipline area.

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In fact, research focused on university teachers' conceptualisations of teaching suggests that they see themselves as scholars of their discipline rather than teachers (Kember, 1997). Their understanding of teaching and learning may come only from their own past experiences as a learner rather than from specific training in the theory and practice of adult and higher education. To develop or improve the educational effectiveness of their teaching practice, academic staff need to be encouraged and supported to try new, pedagogically sound practices. Opportunities for exploring innovative classroom practices can depend heavily on the context within which academics work, as argued by Trigwell and Prosser (2004, p. 419):

> Teachers who perceive that their teaching workload is appropriate, that student characteristics are sufficiently homogenous and at the appropriate academic level, that class sizes are not too large and that they have some control over what is taught, are more likely to adopt a Conceptual Change/Student-focused approach to teaching. When teachers feel that there is no real commitment to student learning in their department, and that they do not have control over what is taught, they are more likely to adopt an Information Transmission/Teacher-focused approach.

Higher education teachers have seen a change in student demographics, teaching resources and roles within their job over the past few decades. In most developed countries there has been a significant increase in the number of people engaged in higher education, including a greater number of mature age students and women seeking formal qualifications, many of whom are balancing study with work and family. Given the evolving nature of the student community, the teaching environment and the ever-changing nature of technology, keeping up-to-date with teaching practice seems a challenge for many. Attempting to provide support for these teachers requires an understanding of the challenges they face and their scope for being able to implement new ideas into their teaching. The research study reported in this paper provides insights into the context in which Australian university teachers design in order to better understand how support tools and strategies could be implemented to assist academics in their design of their teaching.

Methodology

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Data was collected through semi-structured in-depth interviews with 30 academics from 16 Australian universities. The interviews were conducted in 2008 and participants were purposively sampled from a larger group of volunteers who responded to an invitation distributed through the electronic mailing lists of relevant professional associations in Australia (including the Higher Education Research and Development Society of Australasia, the Australasian Society for Computers in Learning in Tertiary Education, the Open and Distance Learning Association of Australia and the Australian Association for Research in Education). Inclusion decisions were made on the basis of preliminary questions to which volunteers responded when accepting the invitation to participate, which asked the discipline they taught in and their years of teaching experience. Each participant was categorised into one of three broad discipline groupings – the Sciences, the Arts and Humanities and the Professions. Within each of these, participants were selected in an effort to cover a range of teaching experience.

Based on these inclusion criteria, perspectives were collected from 11 participants from the Sciences, 10 from the Arts and Humanities, and 9 from the Professions. Of the 30 participants, 14 taught at undergraduate level only, 15 at both undergraduate and postgraduate, and 1 at postgraduate only. At the time of the study the majority of participants taught units[1] that combined face-to-face and online modes (26), 3 taught units that combined online and print-based distance education, and 1 taught only face-to-face mode. All participants had prior experience teaching online. Table 1 summarises the teaching profiles of the participants in the study.

[1] For consistency the term 'unit' is used to describe a component of a programme of study that results in a qualification. 'Course' is used to describe the overall programme.

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Table 1: Teaching profiles of the participants

Name^	Teaching*	Discipline group	Delivery method (Face-to-face/Online)	Years of teaching experience
Christine	UG & PG	Arts	Both	>10 years
George	UG & PG	Arts	Face-to-face	>10 years
Heidi	UG & PG	Arts	Both	<5 years
Julie	UG & PG	Arts	Both	>10 years
Katrina	UG & PG	Arts	Both	>10 years
Kerrie	UG	Arts	Both	>10 years
Kirk	UG & PG	Arts	Both	>10 years
Shane	UG & PG	Arts	Both	>10 years
Steve	UG & PG	Arts	Both	5-10 years
Trent	UG & PG	Arts	Both	>10 years
Bill	UG	Professions	Both	>10 years
Cameron	UG & PG	Professions	Both	5-10 years
Craig	UG & PG	Professions	Both	>10 years
Joyce	UG	Professions	Both	>10 years
Kathleen	UG	Professions	Both and Distance	<5 years
Lily	UG	Professions	Both	>10 years
Michelle	PG	Professions	Both	>10 years
Patricia	UG	Professions	Both	>10 years
Paul	UG	Professions	Both	>10 years
Belinda	UG	Sciences	Both	>10 years
Darren	UG	Sciences	Both	5-10 years
Debbie	UG	Sciences	Both	5-10 years
Deidre	UG & PG	Sciences	Both	>10 years
Gloria	UG	Sciences	Both	>10 years
Kurt	UG & PG	Sciences	Both	>10 years
Lola	UG & PG	Sciences	Both	>10 years
Nigel	UG	Sciences	Online and Distance	>10 years
Richard	UG	Sciences	Both	>10 years
Sally	UG & PG	Sciences	Both	<5 years
Terence	UG	Sciences	Online and Distance	>10 years

^Pseudonyms have been used. *UG = Undergraduate, PG = Postgraduate

During the semi-structured interview, the participants were asked about their teaching approach, the context in which they worked, their approach to designing their teaching, the key influences on their design practices and what supports they accessed and/or used to help them. The interview protocol was informed by an initial literature review of research about teachers' design practices and was reviewed by the six-member research team. The duration of the interviews was between 50 and 90 minutes, and due to the disparate geographical locations of the participants, most of

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the interviews were conducted by telephone. The interviews were audio-recorded, transcribed and analysed by the research team. The analysis comprised developing a coding framework derived from the interview questions and identifying themes that emerged from the interview transcripts. Each interview was double-coded using the coding framework by two researchers. Discrepancies in coding were used to refine the definitions of categories until inter-rater agreement was achieved. The findings reported in this paper focus on one part of the data set that provided an understanding of the context in which teachers do their design work.

Results

The findings are presented below in the form of themes that surfaced from the interview data. These themes illustrate the context in which teachers conducted their design work. Table 2 provides an overall summary of the results by participant, followed by further elaboration with explanatory quotes.

Table 2: Summary of results

Name	Teaching	Discipline group	Set Curriculum	Team planning	Use of learning development unit	Use of Literature
Christine	UG & PG	Arts	No	Both	No	Yes
George	UG & PG	Arts	Yes - Outcomes and content	Both	No	Yes
Heidi	UG & PG	Arts	No	Both	No	Yes
Julie	UG & PG	Arts	No	No	Previously	No
Katrina	UG & PG	Arts	No	Both	Previously	Yes
Kerrie	UG	Arts	No	No	Previously	No
Kirk	UG & PG	Arts	No	No	No	No
Shane	UG & PG	Arts	No	Both	Previously	Yes
Steve	UG & PG	Arts	Yes - Outcomes	Both	No	No
Trent	UG & PG	Arts	Yes - Outcomes and unit description	Both	Yes	No
Bill	UG	Professions	Yes - Content, outcomes and assessment	Yes	No	Yes
Cameron	UG & PG	Professions	Yes - Content	No	Yes	Yes
Craig	UG & PG	Professions	Yes - Outcomes and attributes	Yes	Yes	No
Joyce	UG	Professions	Yes - Content	Yes	No	No
Kathleen	UG	Professions	Yes - Outcomes	Both	Yes	
Lily	UG	Professions	Yes - Attributes and content	Both	Yes	Yes
Michelle	PG	Professions	No	Both	No	Yes
Patricia	UG	Professions	Yes - Outcomes	Both	No	No
Paul	UG	Professions	Yes - Outcomes	Both	No	No
Belinda	UG	Sciences	Yes - Outcomes and content	Both	No	Yes
Darren	UG	Sciences	Yes - Outcomes and Content	No	Yes	Yes
Debbie	UG	Sciences	No	Yes	Previously	Yes
Diedre	UG & PG	Sciences	No	Yes	No	No

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Name	Teaching	Discipline group	Set Curriculum	Team planning	Use of learning development unit	Use of Literature
Gloria	UG	Sciences	Yes - Content	Both	Yes	Yes
Kurt	UG & PG	Sciences	No	Both	Previously	No
Lola	UG & PG	Sciences	Yes - Content	Both		Yes
Nigel	UG	Sciences	Yes - Content	Both	Yes	No
Richard	UG	Sciences	Yes - Not specific	Both	No	Yes
Sally	UG & PG	Sciences	Yes - Not specific	No	Yes	Yes
Terence	UG	Sciences	No	No	Previously	

Set Curriculum

The process by which the curriculum for any course is determined is an important factor in understanding the degree of autonomy university teachers have in deciding what and how they teach. When asked about how the curriculum was set, responses ranged from those who worked within an institution or faculty with a pre-defined – 'set' curriculum through to those who had full control of over what and how they taught.

Eighteen (18) participants indicated that they worked within a set curriculum, though the definition of what this meant in practice varied. Fourteen (14) respondents described a set curriculum as containing any combination of pre-determined outcomes, content and assessment guidelines. Generally a set curriculum offered an overall structure with freedom to move within it, as illustrated by the following two excerpts:

> We stick to the accredited document units as they were accredited in terms of certain number of assessment tasks and the nature of the content, the number of outcomes, the nature of the outcomes and etc. (Paul, Professions)

> I was presented with unit outlines that had already been approved for the units I was going to take over. And so within that unit outline, I had to cover that content material but the way that I delivered that or the things I added to that were completely at my discretion. (Debbie, Sciences)

For two participants whose curriculum was set at an institutional level, curriculum content and objectives were heavily influenced by industry and accreditation

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requirements. For example, in a unit on mining, the institution liased with industry representatives to plan curriculum components. However, the faculty had ultimate control of course planning and aimed to work within a "national approach to mining education" (Craig, Professions). In a nursing example, one participant described a "McDonald-ised curriculum" which was required to satisfy registration across three states and a territory (Bill, Professions).

There were twelve participants who indicated that they were not guided by a set curriculum at all. Typical comments included:

> We all have complete freedom to create our own curriculum. (Christine, Arts)

> It's entirely up to me, there's no national curriculum, there's no professional framework, it's very idiosyncratic and that's characteristic of my discipline area… we teach what interests us provided we stay within the general area. (Kerrie, Arts)

In one case, the reason for the lack of a set curriculum was the dynamic nature of the discipline and the need for units to be changed and updated regularly:

> So the curriculum's not hard core set because as technology changes we need to keep up to date with technology. (Deidre, Sciences)

Some participants pointed out that, regardless of whether there was a set curriculum or complete freedom, it was important to discuss any changes or additions with other teachers in the course because changes in one unit may affect another. This occurred either as an incidental individual action, or through a structured team approach, for example:

> There's a lot of informal negotiation about content between staff because we obviously rotate our teaching roles. (Shane, Arts)

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> In terms of curriculum development, it's entirely up to us to determine what we want in there but we do that as a result of our team meetings. (Debbie, Sciences)

Teaching the same units every year

Another feature of the context that may influence a university teacher's capacity to consider new design ideas is whether they teach the same units every year, and thus have an opportunity to refine the design over time. Eighteen (18) participants stated that they taught the same units each year:

> Here there's a [belief] that it's much more efficient if you do teach a [unit] for some period of time. (Kathleen, Professions)

> I teach the same [units] each year and I enjoy it. (Trent, Arts)

Another eight participants indicated that the units they taught varied. This was generally due to other staff taking leave, different units being made available due to demand, new units being developed, or units being discontinued due to lack of interest or change in curriculum structure. Typical comments included:

> The only changes that would occur otherwise for me would depend on who's on leave and whether there is a spot to be filled somewhere else. (Gloria, Sciences)

> We rotate them a bit depending on who's on leave, who's on sabbatical, what [units] we want to offer that particular year. (Christine, Arts)

Two participants explained that core units were always part of their teaching loads:

> Some units, they vary but the core [units], I've been teaching them for the last four, five years. (Cameron, Professions)

Smaller, more specialised units were often offered on a rotating basis depending on which other units were offered and who was available to teach them. For example,

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one participant spoke about teaching different units each year, though maintained a cyclical approach to this.

> I create them all moving around, depending on what other people are offering or what I thought hasn't been taught in a while, but usually within a three-year cycle I teach all my [units]. (Julie, Arts)

Frequency of new unit design

In addition to having opportunities to redesign units that are taught on an ongoing basis, the need to design new units is also a feature of university teachers' design work. Five participants indicated that they had never been involved in the development of a new unit, but for the remaining twenty-five participants, the frequency of new unit design ranged from "only once" to "every semester". Comments included:

> I guess we [design a new unit] every time we have a new curriculum coming through, which is generally about every four to five years. (Belinda, Sciences)

> On an average, I might say one per year. (Cameron, Professions)

> At the moment I've designed an entirely new [unit] every semester that I've taught and that will be true for the next year as well. (Heidi, Arts)

> When I first started I designed all of them. (Katrina, Arts)

Frequency of unit redesign

Participants were asked about how often they redesigned a unit, rather than designing it from scratch. The purpose of this question was to ascertain how often micro unit design work occurs. This question provoked a range of responses from participants with 3 indicating they seldom redesigned a unit, 14 stating that it was every time the unit was offered (generally every semester or every year), and 9 participants found themselves to be constantly redesigning or 'tweaking' their units. Typical comments included:

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> Fairly rarely. (Richard, Sciences)

> Minor revisions every year. (Kurt, Sciences)

> I'm very fussy, which is probably my downfall so I'll commonly just tweak things as such as I don't think exactly what I wanted was right. (Darren, Sciences)

Redesign sometimes included a process of meetings with colleagues, which were specifically held for the purpose of reviewing (major and minor reviews) and adjusting units:

> We meet twice a year in July and December and review the progress of those [units] in the previous semester. (Craig, Professions)

> We would probably go through every semester after each semester. We have a planning session to debrief, how did it go, what's missing, how do we tweak this, where do we have to move it, what's the next step in the developmental process? (Debbie, Sciences)

Participants indicated that redesign was mainly engaged in to continually improve a unit, to keep up to date and meet industry needs, or for the purposes of personalising a unit when taking over from another teacher.

Team and individual planning

Eighteen participants said that they were involved in both team and individual planning. Illustrative comments included:

> It will vary… we tend to be responsible for a particular studio class, however we might share the lecture series. (George, Arts)

> For example our first year unit, which some of it's team taught, we definitely design the tutorial program and the different modules within the unit… we

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> design together to make sure that it flows and meets with the teaching objective. So we definitely collaborate, but in units where I teach on my own, I actually don't tend to collaborate as much, but I'd ask for advice from my colleagues" (Katrina, Arts)

Seven participants said that they conducted their planning as a purely individual activity. Some comments were:

> In terms of the intellectual content, no you don't put it to colleagues at all. This is completely individualised creation of [units] here. (Kirk, Arts)

> You tend to [plan individually] in science. You have ownership of your own content. (Terence, Sciences)

Five indicated that all of their planning was done as a team. For those who always or sometimes planned in a team, two different approaches were evident. There were those who planned in a structured team approach where meetings were scheduled, and those who took an unstructured team approach where collaboration was more incidental. Examples of unstructured team planning included:

> I tend to work alone… because it's an area I'm so unfamiliar with [it]. I actually got a colleague who knows my area to check my lectures. (Darren, Sciences)

> And for me to make significant changes, I would be definitely talking to most of the rest of the academics in the school, because it feeds to their second-year [units]. (Gloria, Sciences)

> I tend to talk it through with the tutors but I tend to work it myself. (Lily, Professions)

> I do an initial draft myself, and then send it out to colleagues to provide me with feedback. (Michelle, Professions)

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In cases when a structured approach to team planning was used, some participants engaged in a team effort whereby the whole unit was planned together right down to the finest detail. Others would plan an overarching curriculum together, go away and work on it individually and, in some cases, reconvene to discuss their design. For some, the need for a team approach was seen as necessary when different teachers where delivering the same unit across different campuses. The following excerpts illustrated the range of approaches:

> In terms of curriculum development, it's entirely up to us to determine what we want in there, but we do that as a result of our team meetings, of a strategic plan as to where we see the degree evolving, what it is that we want to bring into this, why we think it's important and situated on top of a very detailed, well articulated theoretical framework that underpins the entire degree structure. (Debbie, Sciences)

> Yes, we have stream-oriented teams, [and] we have another team that's looking after core units and then within that each unit will have a team of people particularly in the development stages. So teams could be anywhere from two to four or five people. (Joyce, Professions)

> We called it a 'course advisory group'. Industry people, people from our teaching and learning area, people from our knowledge media area and the academics that were going to be teaching the unit. (Patricia, Professions)

One participant also indicated the perceived benefits of and a desire to move towards a team approach:

> We certainly would like to move towards a more sort of organised team approach to some courses. And the reason we would like to do that is that I think it's good to have another person making decisions with you and it's good to work with other people where there's a division of labour. And it's good to share responsibilities for the hard parts of teaching, dealing with plagiarism cases… I prefer to do it in a team, I think you end up with a much better course. (Shane, Arts)

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Institutional features and requirements

Other factors influencing teachers' freedom to design are structural features of their institutions and the requirements institutions made. The majority of participants referred to common types of policies developed in most tertiary education environments such as: assessment policies; evidence of graduate attributes; planning policies in terms of the development of unit objectives, and unit outline documents; and semester length and contact hours. These questions drew responses such as:

> I suppose with respect to policy, the main thing is that you check the various boxes and you know that you've got to have 30% of your content, 30% of assessment done by the end of Week 5. (Gloria, Sciences)

> We are obliged by our university policy to put certain things online full stop… It is specified in the strategic plan and in the online teaching and learning policy that we have to have an instructor moderated discussion board, we have to have a student discussion board on there, we have to have all of our resources on there and linked if possible. (Bill, Professions)

> You've got to look at what we call 'embedding graduate attributes' in the course and that means what people are really looking for out in the big wide world from graduates. (Kathleen, Professions)

All but two participants indicated that such policies existed, and were somewhat influential in the design process, but did not place great restrictions on what they could design. Typical comments included:

> There are (policies), and how much I know and actually pay attention to them is probably another question. (Christine, Arts)

> We have those and you just have to keep them in mind. (Kathleen, Professions)

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> They tend to be more in this guideline capacity rather than actually enforced. (Katrina, Arts)

Discussion

The findings highlight that the context in which Australian university teachers design has particular characteristics. Firstly, there appears to be significant flexibility and freedom for university teachers in how they design and deliver their units. Forty percent of participants taught in a context where there was no set curriculum thus enabling them the freedom and autonomy to deliver units according to their own design decisions. More than half of the participants (60%) taught within a set curriculum. Generally, this meant there were predetermined learning outcomes, required content to cover or assessment procedures to follow. Yet, the majority of these teachers explained that there was flexibility within this structure in terms of how they delivered their units. Institutional policies on unit requirements such as assessment policies, planning policies, length of semester were reported as influential in the design process, but the participants in this study suggested that these were not overly restrictive.

These findings suggest that the Australian university context possesses the necessary pre-conditions for using design support tools, as teachers do have reasonable scope to make important decisions about what and how they teach. Further, as empowered teachers are more likely to adopt a Conceptual Change/Student-focused (Trigwell & Prosser, 2004) it might reasonably be anticipated that such teachers would be open to incorporating new ideas into their own teaching, and therefore receptive to using learning designs and patterns.

A further finding is that there is both continuity and variation in what teachers teach and design. Continuity was influenced by the nature of the unit, that is, whether it is a core unit with large enrolments or a more specialised unit with smaller cohorts. The majority (60%) of participants stated they taught the same units each year. Almost a third of participants stated that the units they taught varied. This suggests a context in which there may be opportunities to iteratively develop a unit taught over a period of time, but also to teach new units. The teachers in this study were regularly involved in both the design and redesign of units. A majority of participants had been involved in

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designing a unit from scratch and most stated they 'tweaked' units each time they taught them to continually improve them. These activities demonstrate the extent to which varying levels of design activity are a routine part of academic teaching.

This finding suggests that there is an important role for learning designs and patterns to support teachers in the process in developing new units, especially those which present an opportunity to adopt a new approach, moving a unit to a problem-based approach (eg. Bennett, Agostinho & Lockyer, 2005). In addition, however, incorporating new designs or patterns within an existing unit offers the opportunity to make iterative enhancements to units taught year after year. The availability of designs and patterns at various levels of granularity from learning activity to whole unit would cater for these multiple possibilities. Further, the use of a notation system which documents changes over time could be assist in conducting ongoing evaluations. There is potential here for technical specifications to achieve interoperability in order to support reuse and adaptation of designs, but there is still significant work to be done on developing tools which are user-friendly.

The research also demonstrated that teachers engage in both team and individual unit planning. Seven respondents always worked alone when doing unit planning, but the majority were involved in both team and individual planning. Team planning often occurred at a course level, with individuals often left to design their own units within an agreed overall structure and approach. This finding raises some complications about who is doing the designing, as design work has both individual and collaborative characteristics. This suggests that tools and strategies that can be used by both individuals and groups, and that allow for the possibility of multiple inputs and sharing are likely to be more useful than those that assume a single teacher working alone.

This study advances thinking about learning design by improving understanding of the context in which teachers design in order to offer them the most appropriate and thus potentially effective support tools to assist them in this process. This, however, needs further investigation as this study is limited by the relative small sample size. Whilst beneficial to glean insight into teachers' design practices, data from 30 participants limits the ability to make generalised conclusions. The research team is

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currently developing the interview protocol into an online survey in order to collect a larger sample size across an international context.

It should also be recognised that these findings are limited by teachers' self-reports of their contexts – articulating details of their design environment and their recall of their design decisions was a challenge for participants as it is not a discussion that they routinely engage in. As Kane, Sandretto, and Heath (2002) point out, the research focused on university academics beliefs about teaching does not provide a full picture of teaching design and delivery practices. They argue that observational data should also inform our understanding. Such observational data could provide further insights into how learning design tools and supports could be structured and implemented. Observing the design practice of university academics is a difficult process and requires rethinking of methods to capture such practices and this is the focus of further investigation by the members of the research team (Jones, Bennett & Lockyer, 2009).

Conclusion

This paper has reported on a study that investigated the context in which Australian university teachers design in order to understand what role design support tools and strategies might play. Thirty Australian university teachers were interviewed about their design practice and the findings suggest that Australian university teachers can exercise a high degree of choice in terms of design and are not overly constricted by curricular and institutional requirements. Design work is often performed by individuals, within a context of collaboration with colleagues, and there are opportunities to both design new units and continually redesign existing units. These findings provide reasons to be optimistic about the potential for learning design and patterns approaches to be adopted by university teachers. The challenge now is to further develop this emerging understanding of academics' design practices, and bring this understanding to bear on the development of tools and strategies that can support and advance current practice.

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