

The design process of university teachers: A descriptive model

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This poster presents a teacher design process model. The model is empirically derived from research that investigated the design work of Australia university teachers. The dataset comprised detailed interviews from 30 teachers from 16 Australian universities about how they undertook their design work when designing new units and/or redesigning existing units. The findings characterise the design process as a top-down, breadth-first approach, which is iterative, and is conducted prior, during and after a unit's implementation. The significance of this model is that it illustrates a process that has been under-researched and thus provides important insights into how university teachers could be better supported in their design work. Implications from this work are discussed and ideas for future research are presented.

Keywords: design process, teacher design practices, teacher design thinking, learning design

Introduction

Educational design is a fundamental aspect of a university educator's role. Yet, not much is known about the process university teachers undertake to design learning experiences for their students. Given that quality teaching is a strategic objective for most universities, it is important to better understand how teachers conduct their design work so that they can be appropriately supported (see Lockyer, Agostinho, & Bennett, 2016 for a detailed account of support initiatives). This poster presents the results of one component of a large-scale Australian-funded research study that investigated teacher design practices (see Bennett, Agostinho, & Lockyer, 2016a for a detailed explanation of the research project). The results show the process university teachers follow when they design new units/subjects and/or re-design existing units.

Method

Data collection comprised semi-structured interviews of 50-90 minutes in length with 30 university teachers from 16 of Australia's 39 universities. Participants were recruited through mailing lists of key Australian professional academics bodies and purposively sampled based on the following criteria: i. discipline, ii. years of higher education teaching experience, iii. student year level(s) taught, iv. years of online teaching experience, and v. no overlap in discipline from within same institution with less than four participants from a single institution. Participants were asked a range of questions about their teaching context, approaches to teaching, what influences their design practices and what supports they use. They were probed to recall details about their recent design experiences such as the design of a new unit and/or the redesign of an existing unit. An inductive analysis framework was devised to develop codes and summary tables were developed to compare participants' design process accounts and thus identify patterns (see Bennett, Agostinho, & Lockyer, 2016b for a detailed data collection and analysis explanation).

Results

Three key themes surfaced from the data:

- A teacher's starting point depended on the focus of the design problem
- Design involved considering a unit holistically (breadth-first approach) then working on the specifics
- Design was an iterative process that occurred before, during, and after a unit's implementation

The poster will visually present a design process model that depicts the above themes according to the following three design scenarios that emerged from our study (see Bennett et al, 2016b for a detailed account of results).

Scenario 1 - Designing a new unit: Teachers firstly consider the holistic conceptualisation of the unit, ie., the intended learning outcomes, the content to be included, and the student activities and assessment tasks. Learning outcomes or content is considered first depending on the design problem. Once this *unit framework* is established, the detail of the unit is then developed, such as elaborating the assessment tasks, scheduling assessment due dates, determining specific content topics and resources to include, and detailing specific student activities. During this process, teachers think about the specific aspects of the unit in relation to the unit framework, iteratively checking and adjusting to ensure that all the components align.

Scenario 2 - Redesigning a unit not previously taught: When teaching an existing unit not taught before, a teacher conducts a *familiarisation* process whereby he/she seeks to understand the unit framework and specific aspects of the unit. Adjustments to the unit framework and/or modifications to specific aspects of the unit may be made, whilst iteratively checking and adjusting to ensure the components of the unit align.

Scenario 3 - Redesigning a unit previously taught: When teaching an existing unit previously taught, the common starting point is to *modify* or *tweak* the existing unit by making small-scale changes that have been identified by the teacher and/or arise from student feedback. Changes to the unit framework may be made if a significant problem has been detected and/or the alignment is problematic.

Most of a teacher's design work occurs prior to the commencement of a teaching session. But as teaching proceeds, student learning behaviours may prompt the teacher to make adaptive changes to the design. A teacher may also leave some of the unit detail unfinished until after the semester has begun. Depending on the success of unit implementation, the teacher may reflect on the unit framework and specific details to identify future changes, feeding into another cycle of redesign. This usually occurs after the teaching session is complete, although teachers may make adaptive changes 'on-the-fly' during a session and may document their ideas for changes in anticipation of the subsequent cohort.

Discussion

The significance of our research is that it provides empirical insights into an existing practice that whilst may seem anecdotally familiar, has been under-researched. These findings are important because they offer insights into how teachers could be further supported in their design work as many support initiatives have been based on anecdotal assumptions of how teachers design (see Lockyer, et al, 2016 for a more in-depth discussion). Whilst it is premature to speculate on the kind of design support tools that would be beneficial, one feature emergent from our research is the provision of flexibility. That is, a design support tool should enable a teacher to create their unit framework and iteratively add detail to the design in a non-linear way, and document the design in some way to aid easy access/critique/review during and after a unit's implementation.

Another important finding from our research is that our participants' design processes show similarities to design work conducted in other disciplines. The design literature characterises the design thinking process as starting from "abstract specifications" (Razzouk & Shute, 2012, p. 336) where a designer then follows a non-linear "forward (breaking down) and backward (validating) reasoning strategy" (p. 337) to devise a solution. This is synonymous to the process depicted in Scenarios 1 and 2. Furthermore, Scenario 1 illustrates a top-down, breadth-first approach; an approach exhibited by expert design thinkers (Razzouk & Shute, 2012). Our participants, however, did not explicitly reference any design models in guiding their design process. Nor did they talk about their design work in 'design speak'. The significance of conceptualising the design process of university teachers within the broader field of 'design' give us scope to further examine how teachers identify, understand, and articulate their design problem and what problem-solving strategies they employ to craft a solution. This may give us further insights into how teachers can be better supported in their design work.

Conclusion

Whilst our findings make a substantial contribution to a thin evidence base about university teacher design, we have only scratched the surface in our investigation of teacher design practices. Much more needs to be explored. Ideas for future research include examining: design processes of expert and novice teachers to identify similarities and differences; if different types of designs result from different design processes; and investigating the relationship between the design process and the design outcome, and how that influences student learning.

References

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