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Connected learning – designing for scale through co-design approaches

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Abstract

In large classes, students can feel a sense of social isolation and disconnect leading to a poor university experience. Utilising a connected learning pedagogy with three underpinning principles, we have been transforming business education at a large metropolitan university in Australia. Designing and evaluating connections to knowledge, to peers and to society and communities we present some of the emerging themes from our work across 25 units each with cohorts of up to 2000. Students tell us what they value, how they engage using technologies and what they find helpful in our designs. We are beginning to produce a series of reusable Design Patterns that highlight the problem–solution–implementation phases of our Connected Learning at Scale project complete with examples of the patterns in use.

Keywords: *Connected learning; scale; student engagement; networks; design patterns; large classes*

1. Introduction

Large classes have been around for decades with an abundance of studies describing the challenges faced by faculty and students, not least being the feelings both parties have of isolation (McEwen, 2021; Mantai & Huber, 2021). This has of course, been exacerbated during the lockdown periods of the COVID-19 pandemic and the shift to online learning and teaching. Some have argued that delivery at scale is a cheaper way to offer education and that online learning might be perceived through the lens of value for money by students (Wheeler & Griffiths, 2022). How can we retain and keep our students engaged in these trying times?

Our Connected Learning at Scale (CLaS) project uses a co-design approach whereby a multi-skilled team of educational developers, learning designers, media producers and educational researchers work in collaboration with content experts who teach the large units as well as students, alumni and industry partners, to co-design for scale. The team began with Educational Design Research (McKenney & Reeves, 2018) and integrated elements of design thinking and connected learning pedagogy to come up with our own educational development approach in the CLaS project. Evaluation is instrumental to ensure our designs are evidence-based and research informed.

2. Description of the Teaching/Learning Context

The University of Sydney Business School is a faculty in a large metropolitan university in Australia with approximately 11,000 students and 500 staff. A large percentage of our students are international from the Asia-Pacific region and most students who study in undergraduate and postgraduate programs do so in very large classes. In fact, some are so large (over 1800 students) we sometimes refer to them as jumbo units. Our Master of Commerce program consists of 150 units[1] with 8 specialisations which encompass all of the disciplines within the business school. Units run across one semester (16 weeks) and students complete two transdisciplinary core units; and then, from their specialisation, they choose elective units in addition to compulsory foundation and capstone units.

2.1. Challenges in Our Context

Through previous studies and our lived experiences, we know there are many challenges for both students and teachers involved in large class learning and teaching. Our previous designs have endured for many decades and produced excellent graduates. They have tended towards magnification - through bigger lecture theatres, passive recordings, and better audio-visuals;

[1] Units may be known as subjects in some countries.

and multiplication - through hundreds of small tutorials, which leads to the challenge of how to maintain a consistent quality of delivery (Bryant, 2022a).

Another question we may ask is whether large classes lead us to a dilution of the learning experience to the point of consumption rather than engagement? We know that active learning is better than traditional lecturing (Freeman et al., 2014), and that lecture attendance has been dwindling for years (Skead et al., 2020).

2.2. Connected Learning at Scale Design Principles

Working across our core, foundation and capstones units of our Master of Commerce program, we have been using three principles to reimagine a more connected learning experience for students. These principles inform how we are transforming business education.

Principle 1: Information Engagement

In this principle, students both individually and collectively engage, challenge, create and interact with discipline knowledge and skills as opposed to having it broadcast at them in a lecture. We enable students to take a journey 'through' content according to their needs and abilities, stretching and testing themselves.

Principle 2: Connected Participation and Active Learning

Face-to-face teaching time, student learning activities and technology are leveraged to build connections and networks to address, debate and solve critical global and local challenges through innovative pedagogical approaches. Moving to a student-centred classroom encourages our teachers to guide and facilitate active and collaborative learning.

Principle 3: Relevant and Authentic Assessment and Feed-forward

Learning is applied and tested through authentic assessment modes i.e. those that "reflect the challenges that professionals of this discipline face in work" (Villarroel et al., 2018, p. 18), supported by opportunities for students to receive and share relevant, critical, and affecting feedback and feed-forward from both academics and their peers. Leveraging technologies to support these approaches is also part of the thinking behind this principle.

For more details on these principles see Bryant (2022b).

3. Literature Review

3.1. Connected Learning

Connected learning has emerged in the literature and in practice as a way of embedding the social engagements and networks of teaching and learning within a classroom or facilitated by technology and it is motivated by the interests of the students (Ito et al., 2013). These learning networks present as a complex ecosystem of experiences, relationships, linkages, emotions, knowledges, and practices. In addition, "Connections are … constantly intersecting, and the skills in navigating and leveraging that are critical to business (or life) success" (Bryant, 2022a). Meaningful and lasting learning is derived from the shared interests or enthusiasm of the connected learner having opportunities to build and sustain relationships (Ito et al., 2020). Siemens (2005) extends the creation and fostering of relationships (through connectivism) by clustering these areas of interest into a community of shared dialogue and thinking. Unlike didactic learning, connected learning is not a passive form of learning. Connected learning requires students to have choice and agency over the connections they make, how they will leverage those relationships and how they hybridise space to support embodied learning (Fung, 2017).

3.2. Leveraging Networks

Connections are critical for a business education. They have been at the core of successful MBA programs where the networks formed during the program are lasting and are valued by the students involved (Konrad et al., 2017). Group work is a common form of assessment as it replicates work-like interactions and at scale, provides for the effective use of resources for marking.

Tapscott and Williams (2010) argued that students were boycotting the traditional pedagogies of university, arguing that the university of the 21st century will not be a tower, but rather a network, comprised of learners, academics, the community, industry and more broadly those who generate and make content and knowledge. Employers are equally seeking job-ready graduates with a range of trans-disciplinary skills including collaboration, teamwork, resilience and being able to work with others (Bratianu et al., 2020).

4. Empirical Methodology/Data

We have used design-based research (Reimann, 2011) and integrated elements of design thinking to come up with our own approach to the unit developments and their evaluation. Over the past two years we have worked with 25 units across the Master's program and

collected approximately 1,453 student survey responses, had 177 students and 48 tutors attend focus groups, and completed 33 unit coordinator interviews. In this paper we will share our learnings from the student perspective.

5. Analysis and Implications for Practice

We have implemented a wide range of innovative practices based on our three principles across 25 of our largest units. Below we begin to synthesise some of the themes that have emerged from our findings across these units.

5.*1. Student Engagement*

5.1.1. Value

We found that students tend to make judgements about the value of content and activities based on what is being assessed and what is being discussed in tutorials. In both cases, if it is not being discussed or assessed then they assume it is not essential or important and will be more likely to not read or watch or take part in any self-paced online activity. Similarly, students put in effort in the initial weeks but if they find their teachers are not asking about the content in class then their input, and interest, wanes. We need to ensure that our large cohort of tutors (we can have up to 16 working on one large unit) are able to integrate the content being delivered through their tutorials and we provide training and support so that they can effectively use the pedagogies and online tools to engage with their students (Ito et al., 2020).

Authentic assessments are highly valued by students and they sustain their interest and engagement in the content. In addition, many students value the opportunity to test their understanding on a regular basis as this encourages them to revise the content. It also gives them opportunities to 'connect' to the discipline knowledge (Siemens, 2005).

5.1.2. Accountability

This theme was particularly prominent when discussing group work for both assessment and class activities. Students feel demotivated when their peers do not participate and they see accountability as a way to encourage participation. For some, this presented as using marks for participation but others felt this disadvantages them (international students). There has been a shift though, with the move to the online context through the debate of *camera off* vs *camera on*. Engaged students are starting to express the desire for teachers to enforce this in breakout rooms which enables the 'small class feel' even though they belong to a very large cohort.

Other ways this is presenting is via a growing desire by students for peer assessment in group tasks in order to create accountability.

5.1.3. Tone

We found that our students make judgements very early on about the tone of the unit. It is important that the students feel a connection to the unit coordinator, especially if they do not 'see' them on a regular basis (recorded or online lectures). So, particularly the first video/lecture of the unit can set the tone for the entire semester. It is also important to ensure that all of the tutors feel connected and part of a holistic teaching team (Mantai & Huber, 2021) and continue with a similar tone to provide a consistent student experience.

Students (especially those with workplace experience) appear to want a more formal and professional tone and are less likely to take something seriously if it does not have this tone. It is important therefore, to clarify expectations around informal responses required in some activities such as first-person language where it's more important to brainstorm and share ideas. As opposed to other learning activities where replies need to be supported by references. It's common for students to feel 'lost' in large cohorts and tone can help scaffold them through their learning journey (McEwen, 2021).

5.2. Peer Interaction via Technology

Students found tools such as online whiteboards to share ideas (using media as well as text) helpful in comparing their ideas to others and also found them helpful when revising. However, they sometimes got frustrated due to the lack of structure with these tools.

Students found use of polls for voting an entertaining way of breaking up content and encouraging curiosity. Students admitted to engaging with them even when time-poor (Ito et al., 2013). This is another opportunity for students to connect with discipline knowledge as well as with each other if they see where their understanding sits within the cohort. In fact, leveraging these large data sets to promote learning can instill a sense of belonging and connection (Bryant, 2022a).

The use of online discussion boards is a widely researched topic. Our students indicated that whilst they *read* the posts to compare their views to others, time plays an important factor in their decision as to whether or not to *post*. Students like to 'like' posts rather than repeating what has already been said – somewhat of an issue in such large classes. They also told us that when they identify a conflicting viewpoint to their own, they are encouraged to further investigate/study.

Peer feedback tools are often used to manage (teacher) workload in large classes and are also welcomed by students, but they identified the issue of conflict arising if they provide critical feedback. Hence, they would prefer to provide anonymous feedback or unidentifiable responses (such as scores over comments). This raises the question though, whether this in fact, discourages connections between peers. More guidance on providing constructive feedback was welcomed by students.

5.3. Student Interaction with Content via Technologies

Students' perceptions of the technology used to interact or connect with knowledge and information varied widely according to the type of tools.

Videos are increasingly being used to deliver content. One of the benefits to large cohorts we envisaged in our designs was to use video to connect students to industry and the community through a range of expert voices and professions. Students reported checking the number and length of the videos each week and making a decision to only watch those up to 10 minutes long. They wanted more agency over their learning (Fung, 2017) for example to control the speed (faster not slower) and requested subtitles be made available. Students also wanted to know the key points or takeaway messages (for revision) and preferred their lecture content 'chunked' to retain their attention. There was a variance here however with some students still wanting the entire lecture as one video which indicates that not all students are ready for 21st century learning as Tapscott and Williams (2010) predicted.

Many of our videos embed reflective prompts and students reported writing in the initial weeks but then in later weeks, just writing *anything* to keep the video going. However, they did agree that they continue to engage with the reflective questions even if simply as a prompt to think and reflect internally. This prompts us, as designers, to consider the value of video resources and reflection, and not to overuse them. In large cohorts, tutors need to be connecting back to students through these reflections so that students understand the value of such activities and feel heard (McEwen, 2021). It can also offer tutors insight into areas or topics that may need reviewing in class.

In regard to readings, students reported being less likely to engage with them if there was no exam and beyond this, engagement was interest driven (Ito et al., 2013). Students also wanted to better understand the purpose of the reading and explained the importance of retaining quality of the document when scanned. Again, if the tutors reiterate the value and purpose of the specific readings and call on students to recount or use the knowledge from the readings in class, this can assist students in making those connections with discipline knowledge.

6. Conclusion

Our findings are nascent and we still have some way to go to solve the many complex issues involved in teaching and learning at scale. However, we are beginning to see increased trends in satisfaction scores and we are working through opportunities to disseminate our findings in contextually sensitive ways. Development is underway to translate our findings into a series of reusable Design Patterns that highlight the *problem–solution–implementation* phases of our CLaS project complete with examples of the pattern in use (Wilson et al., 2021).

Some of our patterns to date include 'live Q&A', 'student-generated data', 'micro-deadlines' and 'object-based learning at scale'.

It is through these many different ways of connecting to discipline knowledge, to peers and to the wider society that deep learning is happening and that students are creating lasting and meaningful experiences throughout their time at university.

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