

Embedding Universal Design for Learning in the Large Class Context: Reflections on Practice

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ABSTRACT

At the heart of universal design for learning (UDL) is an appreciation of the variability and diversity of learners. This chapter reflects on the experience of embedding the principles of UDL in the context of a large, higher education class comprising 400+ students. The case study examines the deliberate alignment of the multiple means of representation, expression, and engagement pillars of UDL with the curriculum, teaching, learning, and assessment pillars of pedagogy. Creating a variety of avenues to the core concepts addressed the diversity in the group, allowing for deep engagement with some complex ideas. Provision of choice around assessment developed a sense of agency as students could tailor their work to align with their interests and experiences while simultaneously meeting the learning outcomes, thereby enhancing engagement. The principles of embedding UDL in large class pedagogy can be applied across higher education albeit they may need to be adapted for the specific requirements of the content area.

INTRODUCTION

Pedagogy is a complex concept incorporating teaching, learning, curriculum and assessment as well as relationships and values (Nind et al., 2016). Recognizing and acknowledging learning diversity from the outset of the pedagogical experience by designing flexible, varied routes through the curricular journey is at the core of the Universal Design for Learning (UDL) framework (Rose et al., 2014). This case study examines the enactment of pedagogy in a large class setting (400+ students) using the principles of UDL to maximize access to the curriculum and understanding of the threshold concepts in a final year module on an initial teacher education (ITE) program.

First, the literature in relation to large classes in higher education is examined to illuminate the challenges and possibilities inherent in that teaching and learning context. Second, the manner in which UDL was embedded in the pedagogical approach is described. This is followed by a reflective analysis of that practice from the perspective of the author who was also the teacher. Finally, conclusions are drawn and implications arising are explored particularly in light of the COVID-19 pandemic and the move from face-to-face to online teaching and learning. The description of, and reflective discussion around, the case study are situated in the personal and professional context of the author and hence, the pronoun ‘I’ is used in the relevant sections of this chapter.

LARGE CLASSES IN HIGHER EDUCATION

There is no agreed definition of the term ‘large class’ in the higher education context (Maringe & Sing, 2014). Having said that, Exeter et al. (2010) found that most studies in large class contexts typically related to classes of between 100 and 500 students, an observation substantiated by Maringe & Sing (2014). Regardless of how class size is quantified, the pedagogical assumptions arising when “the numbers of students pose both perceived and real challenges in the delivery of quality and equal learning opportunities to all students in that classroom” (Maringe & Sing, 2014, p. 763) need to be examined. The perception that a class is large may depend on a myriad of factors such as the physical environment, the

activities undertaken in the class and the number of students, the discipline and/or institutional norm (Kerr, 2011), unequal access to teaching supports, the differing characteristics of higher education in developed and developing countries (Hornsby & Osman, 2014), and the experience and confidence of the teacher (De Matos-Ala & Hornsby, 2013).

Class size matters most in relation to the learning experience which, in the higher education (HE) context, requires students to engage in higher order thinking, to problem solve and to apply concepts (Hornsby & Osman, 2014). However, when faced with classes which are perceived to be large, it is often assumed that a banking, transmissive, 'talk-at-them' approach is the only teaching option (Stoerger & Krieger, 2016). Moreover, it is argued that in a large class, the educator will not have capacity to support individual students, teaching to the 'middle' (Arvanitakis, 2014), leading some to the conclusion that smaller classes are superior because they allow for active learning strategies to enable students to take responsibility for their own learning whereas that responsibility is seen to rest, by default, with the teacher in the large class context (De Rogatis et al., 2014). Conversely, based on the same set of assumptions, some perceive large classes as forcing students to take *more* responsibility for their own learning compared to small class contexts (Mulryan-Kyne, 2010).

Yet, by shifting the focus from the numerical characteristic of the large class context to the pedagogical elements such as curriculum, instructional approaches and assessment strategies (De Matos-Ala & Hornsby, 2013), teaching large classes can be assumed to require the same skills as those needed to teach smaller classes. Those skills include the ability to motivate students, to be organized and systematic in presenting concepts (Exeter et al., 2010) and to consider how assessment can support both teaching and learning.

The focus on either numerical or pedagogical characteristics notwithstanding, it must be acknowledged that large classes present particular challenges for teaching and learning. Some teachers may find it difficult to form a relationship with students in the large class context. Therefore, students who need student/teacher interactions for motivation are disadvantaged by the distance (Allais, 2014) and the impersonal nature of the large class setting, especially those who have particular learning needs arising from disability or disadvantage (Hornsby & Osman, 2014). Students may be further marginalized because they are afraid or reluctant to ask questions in class (Mulryan-Kyne, 2010), thereby increasing the sense of anonymity in the large class context.

The limited range of perceived teaching approaches can lead to surface level and/or rote learning, an issue which seems to be especially associated with large classes (De Rogatis et al., 2014; Foley & Masingila, 2014; Hornsby & Osman, 2014). Assessment approaches may also be limited to closed, multiple-choice question (MCQ) type assessments frequently chosen to alleviate a staff workload which is made heavier by the scale of the class. Provision of feedback is limited also (Foley & Masingila, 2014), potentially augmenting the lack of focus on deep learning and critical thinking. While HE assessment practices are attracting researchers' attention, "there has been little research showing how these elements can be transferred to the large class context" (Broadbent et al., 2018, p. 308). Student engagement is another issue associated with large classes because of the tendency of teachers to resort to a didactic style of teaching thereby straining students' attention span (Arvanitakis, 2014), and rendering students passive and/or bored (De Matos-Ala & Hornsby, 2013). Absenteeism from large classes is often tolerated or ignored (Mulryan-Kyne, 2010). Indeed, there is anecdotal evidence to suggest that some institutions, faculties, schools and/or programs institutionalize this tolerance by requiring attendance at workshops and seminars (small classes), while making lectures (large classes) optional. Even this vocabulary is laden with assumptions, aligning the structure of learning with class size even though 'large' and 'small' are not clearly defined anywhere when it comes to student cohorts in HE.

The specific challenges of working with large class cohorts have to be considered within the wider context of teaching in HE generally. Unlike what is the case for teachers of primary and secondary level students, teaching is just one element of the identity of tertiary level academics who are also expected to research, assume high levels of administrative duties and provide outreach service to the community (Trautwein, 2018). Further, the university space is contested and within it institutional demands may cause the research role to be prioritized over teaching (Cartney, 2015) leading to staff simplifying their approach to large class teaching or 'buying out' their teaching duties to fulfil the demands of research projects. Moreover, academics are usually employed on the basis of their expertise in a particular field or discipline, seemingly with the expectation that this will somehow translate into an expertise in teaching (Becker & Denicolo, 2013) which causes academics to define themselves as content experts (Young, 2010), rather than as teachers. Therefore, when faced with very large, very diverse cohorts it is perhaps unsurprising that teaching approaches are perceived to be limited.

Teaching in HE is sometimes broadly conceptualised in two ways: (a) a 'teacher-focused' approach wherein teaching is viewed mainly as the job of imparting knowledge and information, and (b) a 'student-focused' approach wherein the focus is on students' experiences and learning (Barnett & Guzman-Valenzuela, 2016). Prosser and Trigwell (2014, p. 792) explain this dual conceptualisation further:

In an approach where the intention is mainly to transfer information, the teachers focus their attention on what they do (for example, on forward planning, on using an armoury of teaching competencies, on use of the literature and on their ability to use technology). They consider that the complexity of the content of their subject matter requires the use of their own subject matter knowledge and these organisation and presentation skills. They use these skills to transmit the information about the curriculum on the assumption that such a process will lead to student learning. In an approach where the intention is to change or further develop the students' conceptions of the subject matter, the teacher may develop and use some or all of the knowledge and skills described above, but the focus of their attention is on the students (not on themselves) and on monitoring students' perceptions, activity and understanding.

While the thrust of the argument is clear, there is perhaps, an unhelpful binary. It might be more accurate to say that when HE teachers engage in the transfer of information their focus is actually on the disciplinary content in which they have expertise and *not* on themselves nor their pedagogical skills. It could be argued that when teachers focus their attention on student learning, they need to increase the focus on themselves as teachers to maximize learning by aligning teacher actions with student actions. This is even more critical when there is a large, diverse cohort of students to ensure consideration and inclusion of all learners. Considerable attention has been paid to the enactment of inclusive policies and practices at primary and secondary educational levels internationally (Black-Hawkins, 2014; Hart & Drummond, 2014) in an effort to address diversity in schools. Even so, inclusive education remains a contested term because of the multitude of interpretations and meanings attributed to the term itself (Runswick-Cole, 2011).

The UDL framework supports pedagogical design that can improve quality of higher education not just for students with disabilities but for all 21st century learners (Fovet & Mole, 2013). It decreases some of the barriers to learning associated with large cohorts and allows for improvement in relation to the attainment of learning outcomes (Dean et al., 2017). It also reduces stress on the part of students because it empowers them to take responsibility for their own learning due to the embedded flexibility and multiple avenues of engagement (Kumar & Wideman, 2014). Curricular goals tend to be more explicitly aligned with pedagogical practice (Smith, 2012), lending clarity to the learning experience.

Loosely, the pillars of UDL can be conceptualized within the definition of pedagogy offered by Nind and colleagues (2016) whereby the 'multiple means of representation' perspective aligns with teaching, the 'multiple means of engagement' perspective aligns with learning, and the 'multiple means of action and

expression' perspective aligns with assessment, all of which are described and encapsulated in the curriculum. Of course, each of these elements seep into each other; for instance, it is difficult to separate learning from assessment or teaching from learning. Indeed, each pedagogical element needs to be considered in relation to the others. However, it may be helpful to consider the general alignment of the UDL pillars of multiple means of representation, engagement and expression with the curriculum, teaching, learning and assessment pillars of pedagogy, especially for those who are unfamiliar with the former or do not have expertise in the latter.

CASE STUDY

This section provides a descriptive account of the author's engagement with the UDL framework to address some of the challenges and possibilities explored previously in relation to large classes. First, the contextual background to the case study is outlined. Then, the process of embedding UDL in pedagogical practice is described.

Contextual Background

Participation in HE in Ireland has grown significantly in recent decades from five per cent of 18-year olds in 1960, to 20% in 1980, to 65% in 2011 (Hunt, 2011). This increase in the Irish context is mirrored internationally (Mulryan-Kyne, 2010). The student-instructor ratio in Irish universities has become less favorable in recent years, increasing from 19.4:1 in 2007 to 23.0:1 in 2011 (Clancy, 2015). The specific context of ITE programs has also seen significant changes in the last decade. The national strategy of consolidation of ITE programs has seen the amalgamation of some programs and providers (Sahlberg, 2012, 2017). In 2012, undergraduate ITE programs were extended from three to four years in length, while graduate entry programs were extended from eighteen months to two years in length. This change was driven by the Irish response to unfavorable literacy and numeracy scores in the international context (Department of Education and Skills, 2011).

The module which is the focus of this case study is one element of a large, undergraduate ITE program with approximately 440 students in each of the four years. The program is provided in a university context since 2016 as a result of the consolidation policy alluded to above. The concept of inclusion is examined in a range of contexts across the program with some collaborative partnerships developed between instructors to ensure clarity for students. This case study module examines the notion of inclusion in the context of schools through two distinct lenses: (a) poverty and social inclusion and (b) special educational needs (SEN) arising from disability and/or circumstance. It provides an opportunity to consolidate students' prior learning and understanding as they near the end of their ITE journey. Across both strands, inclusion is considered at international, national, school and individual teacher levels. A colleague coordinates the former strand while I manage the latter; both are treated equally in terms of time, content and assessment. The module is considered to have 125 hours allocated across one semester comprising ten teaching weeks. Forty hours are provided for teaching (20 hours for each strand) and the remainder is provided for independent learning. While there are two distinct strands, they overlap in relation to content, speakers and explicit links are made between both as the module progresses. This is a relatively new module which has experienced five cycles to date. The remainder of this chapter focuses on the strand for which I have responsibility and which is the context for embedding UDL in my practice.

When the module was first introduced, I used a range of approaches to present concepts, such as guest speakers and videos, digital tools to allow for interaction in the class, and one or two in-class tasks. The assessment for my strand was an examination which comprised MCQs chosen from a pool of questions written by the students themselves, which they all had access to, and a case study which required students to apply some of the ideas, concepts and skills learned in the plenary and workshop sessions, supported by engagement with a similar case study in-class. At the end of the first iteration, I reviewed the strand in relation to teaching, learning, assessment and curricular content by explicitly embedding UDL for each

element. However, the revisions arising took some time to develop and because of university regulations regarding notification of changes to assessment specifically, I had to complete a second cycle with the examination assessment format before I could implement the changes to assessment. However, I was able to change approaches to teaching and student engagement in-class immediately.

I reviewed my pedagogical approach to the strand for four key reasons:

1. As a teacher educator, I wanted to model the attitudes, beliefs and practices I wished to develop in my student teachers by explicitly enacting them myself (Hallett, 2010).
2. The term ‘inclusive education’, is a contested concept with different and wide-ranging meanings and interpretations attributed to it (Runswick-Cole, 2011), as are the terms of ‘special education’ and ‘disability’, requiring critique and deep levels of consideration. While developing opportunity for deep learning is challenging in the context of very large student cohorts (Hornsby & Osman, 2014), I believed it was possible and therefore, wanted to provide opportunities to make that happen. Moreover, the Teaching Council has identified inclusion and special educational needs as priority areas for inclusion in all ITE programs (2017). Additionally, the preparation of teachers for inclusive education was being examined at a national level, culminating in a range of recommendations (Hick et al, 2019).
3. I wanted to broaden my students’ perspective on education. The program prepares teachers for primary and special schools with the very heavy emphasis on primary schools. I wanted to widen the scope of the module to allow students to consider societal implications of inclusive and exclusive policies and practices, outside of the confines of primary schooling so as to draw implications for their future professional practice
4. I wanted my students to develop a sense of agency in relation to their learning and their future role as teachers.

Embedding UDL in Pedagogical Practice

Embedding principles of UDL in the pedagogical approach required consideration of each of the structural elements of the module strand to ensure multiple pathways to the core concepts. Table 1 provides an overview of that alignment.

Table 1. Alignment of UDL principles with curricular content and structure. Source: Author’s course.

UDL Principles	Plenary Sessions (400+ students)	Workshops (35-40 students)	Independent Study
	<i>Large, tiered room. 16/20 teaching contact hours.</i>	<i>12 workshop groups in total. Flat rooms, movable furniture. 4/20 teaching contact hours.</i>	<i>Engaging individually with materials. Engaging with assignment.</i>
Multiple Means of Representation	Direct teaching. Co-teaching. Guest speakers: individual and panel. Peer (student) presenters. Video.	Case study approach. Direct teaching. Use of exemplars to illustrate concepts and tasks and support feedback.	Required and optional range of materials provided on virtual learning environment (VLE) - Moodle. VLE structure/layout aligned with each session and concept. Recorded guidance and instruction.
Multiple Means of Engagement	Think, Pair, Share. Padlet™. Catchbox™. Whole class Q&A.	Split into five sub-groups. In-class feedback twice per session per sub-group.	Choice of who to work with.

	Workshop.	Completed on workshop Google Doc™. Written feedback provided on document following sessions 2 and 3.	Choice of how many to work with (individual up to group of 5 max).
Multiple Means of Action and Expression	Kahoot™ (formative assessment and feedback). PeerWise™ (5% of overall mark). Minimum 80% Attendance (5% of overall mark).	Iterative task, built over four weeks. Sub-groups contribute to case study from five perspectives. Each sub-group element marked (10% of overall mark).	Choice of research task. Some tasks suggested. Option to design own task. (80% of overall mark).

Plenary Sessions

Multiple Means of Representation

The contested nature of the core concepts of ‘special education’ and ‘inclusive education’ needed to be represented in a way that acknowledged that diversity of thought. Plenary sessions which are two hours long vary in format both within and across sessions. Sometimes, I directly teach by explaining terms, concepts, policy and so on. That directive teaching is supported by use of videos, quizzes and multiple opportunities to discuss ideas in pairs or small groups using the think-pair-share approach. Guest speakers are also invited to present multiple perspectives on educational inclusion and exclusion, either individually or in a panel format with up to six members. Some guests provide their professional insights while others speak from a very personal perspective. I moderate all guest speaker sessions to ensure that students are afforded the opportunity to ask questions and to make links between each session. Every guest speaker talks about inclusion and exclusion but from completely different perspectives. The panel format often results in lively discussion between speakers, as they map their own perspectives onto that of others.

I also invite at least one colleague from a school placement to co-teach a workshop style session within which we collaborate to enable our students to consider inclusive lesson planning. We do this to provide an opportunity for students to map the theory of inclusive pedagogy onto the reality of expectations for their final school placement. I could do this myself; however, by co-teaching, my colleague and I provide a visual representation of both distinct modules coming together.

Multiple Means of Engagement

Students are free to share their thoughts and/or ask questions in class using a ‘throw-and-catch’ microphone which enables them to speak at a normal volume instead of having to raise their voices to be heard by others. Alternatively, students can opt to use an online, anonymous question-and-answer (Q&A) board, thereby enabling those who are too shy to speak up in class to have a voice. The questions are visible to me and my students on our own devices but I also stop a couple of times during each session to show the questions on the screen and to address any misunderstanding. All questions are answered again in writing on the Q&A board after class to ensure clarity. Students are also free to post questions between classes which are also answered in writing.

Sometimes, students from the group present to their peers. All students partake in elective specialist modules, one of which focuses on similar content. As part of their assessment for the final module on the specialty, some students present on inclusive pedagogy to their peers in my module, usually taking an article and presenting their interpretation of the key message vis-à-vis inclusion to the full cohort of their peers. I collaborate with the coordinator of the specialty module to ensure that the focus of the article and presentation aligns with the key concepts I am teaching in my module.

The co-taught lesson-planning session referred to above is organized in a workshop-style format with students placing themselves in the shoes of a placement tutor and evaluating a sample lesson plan to identify its strengths and make recommendations for improvement in terms of inclusive pedagogy. The workshop is iterative, with directive teaching from both teachers followed by an opportunity to use a think-pair-share approach while working through the lesson plan over at least three cycles. Samples of student work is collected and shared anonymously with the group in class at key points during the session, with both teachers commenting on the work of students, clarifying issues and teasing out more complex ideas and concepts. Afterwards, we post our own evaluation of the same lesson plan on the VLE with detailed explanation of the reasons underpinning our evaluative comments and recommendations.

Throughout all plenary sessions, I walk around the room - up and down the steps of both aisles, across the back of the theatre as well as around the presentation space at the bottom. I wear a headset rather than use the microphone at the podium, which enables me to move easily without compromising sound quality. I do this to emphasize my proximity with students as much as possible and to monitor attention and engagement.

Multiple Means of Action and Expression

Managing multiple means of action and expression in a large class cohort is challenging. Formative assessment and feedback is embedded in the teaching and learning design. Students are provided with many different opportunities to express their understanding of key concepts, supported by structured tasks, such as in-class digital quizzes, and feedback. The tasks above provide an opportunity for my students and me to get a sense of the overall understanding of the class. They also engage in a peer engagement task using an online platform and focusing on exploration of Irish educational policy; most of this work is carried out in class. They are required to (a) create two questions to be answerable by their peers accompanied by the 'correct' answer and rationale; (b) answer five questions created by other students; and (c) provide feedback to two peers whose questions they have answered, commenting on content and/or accuracy of the question and/or what they learned from the question and the answer/rationale provided by the author. While minimum levels of engagement are required from the outset, many students go way beyond this, creating many questions and answering scores of questions posed by their peers.

Workshops

Multiple Means of Representation

Students are taught, in these workshop-style groupings which are one hour in duration and timetabled across four consecutive weeks, using a case study to develop a learning plan for an individual pupil. Each workshop group uses a shared online document to record their work divided into five sections for each of the sub-groups of eight students. Each workshop session is topped and tailed with some direct teaching but the majority of the time is allocated for student to work on the task, building up their learning plan over the four-week period. In addition, exemplars are used in the sessions to illustrate the planning process, and to allow both myself and the students to discuss each element of the process. Students can see their own work, and the work of others, develop over the four weeks

Multiple Means of Engagement

While this work could already, to some extent, be conducted in a modified manner in the plenary context itself, the depth of learning and engagement with the process is greater in the smaller groups. Students work on the same case study over four weeks, within the same group, building slowly a coherent individualized educational document. The workshop group is split into five sub-groups comprising approximately of eight students; all five sub-groups input their work each week into a Google document which is shared by the entire workshop group. The iterative process provides layered engagement over the

course of the four weeks of workshop wherein the work of each sub-group acts as an exemplar for the others throughout the process; this process is moderated by teacher interaction and feedback during each class. Students may also access the document between classes to view the work of the other sub-groups and the written feedback on that work.

The use of examples of other individualized plans based on different case studies provides another avenue of engagement during the workshops. The cases chosen are deliberately quite different to the ones the students are working on, but the process of the task is mirrored in the examples which are used at points of direct teaching throughout the four weeks in order to illustrate the planning skills demanded of the students during the workshops.

Multiple Means of Action and Expression

Feedback on students' work is provided orally in class and afterwards in writing within the shared document. During each workshop, I try to sit with each sub-group twice to allow them to ask questions and/or show me their work. This allows me to identify patterns of understanding and confusion which informs my teaching. Written feedback is provided on two separate occasions across the four-week period. When each of the twelve individual learning plans have been completed by the end of the fourth workshop, they are shared on the VLE so that the full class can see the range of approaches taken by their peers.

Independent Study

Multiple Means of Representation

A range of materials are provided on the VLE to support learning; some are required readings, while others are optional. The intention is that the range of materials will address the learning needs of the students and acknowledge that there is a diversity of prior knowledge and understanding within the class. The VLE is clearly signposted and aligns with the taught elements of the module. Recorded guidance is also provided to aid navigation. The university has supported the redesign of the VLE to align with the UDL framework (Teaching Enhancement Unit, n.d.).

Multiple Means of Engagement

Students engage in an independent task which they complete in their own time. They are provided with the choice of whom to work with and how many partners to work with, options ranging from working independently to collaborating with a maximum of four other students.

Multiple Means of Action and Expression

Students may choose from a range of tasks to complete, including the option of designing their own task. If students choose this option, they are required to submit a short proposal for the assignment, describing the focus and how it meets the relevant module outcomes. The independent tasks are changed every year to maintain academic integrity as much as possible. In addition, the tasks require students to apply what they have learned about inclusion from policy and literature. For example, some of the choices provided have included analysis of a real school-based scenario, development of a handbook to support fellow students when on placement, and development of a handbook to support newly qualified teachers. Formative feedback has been offered on drafts of the assignments in a face-to-face 'drop-in' style 'clinic' to discuss their work and provide suggestions for improvement.

REFLECTION: IMPACT OF UDL ON LARGE CLASS PEDAGOGY

It would not be fair to say that embedding UDL transformed my practice; it did not. I was already quite comfortable in terms of my teaching, particularly in relation to using a range of approaches to present concepts and to organize of learning environments. However, I do think that it raised my teaching practice

to a higher level and transformed my approach to assessment. In this section, I reflect on the impact of explicitly embedding UDL on large class pedagogical design from my own perspective and that of the students in my most recent face-to-face cohort.

Student Perceptions

Student evaluations are not always regarded as sound evidence for evaluating teaching (Spooren et al., 2013), but they do provide some indication of students' perspective. Anecdotally, through conversations and emails with students, it appeared that they valued the learning experience over the course of the semester. Evaluations at the end of the module generally support that anecdotal evidence even though there are mixed responses in relation to some elements.

Table 2: Extract from module evaluation artefact for most recent face-to-face class group (total number of respondents = 318). Source: Student evaluation artefact from author's course.

Statement	Agree	Somewhat Agree	Disagree
Having a choice of task for the independent task was good	95% (301)	5% (17)	0% (0)
Having a choice of who to work with was good	88% (278)	12% (38)	0% (1)
Having a choice of how many to work with was good	89% (282)	10% (31)	1% (3)
Peerwise helped me to learn about policy and legislation	62% (196)	34% (107)	6% (18)
I enjoyed engaging with my peers on the policy task	51% (161)	39% (122)	11% (35)
The in-class tasks in the large plenary classes helped me learn about my learning	83% (261)	18% (56)	0% (1)
I am happy that attendance and participation at plenaries was rewarded with marks	82% (259)	14% (43)	5% (15)
I am happy that the work in the individualised planning workshops counts towards the final grade	88% (279)	9% (30)	3% (9)
The guest speakers enhanced my understanding of inclusion	95% (300)	5% (16)	0% (1)
The co-taught lesson planning session aided my understanding of an inclusive approach to lesson planning	72% (226)	28% (88)	1% (4)

Plenary Engagement

The engagement of students was evidenced in their willingness to use the 'throw-and-catch' microphone and the digital Q&A tool used to ask questions. In general, students are reluctant to ask questions in the large class context (Mulryan-Kyne, 2010); however, that can be ameliorated with the use of technology and strategies which allow students to share their thoughts with each other first before sharing with the group.

The microphone was a great idea. I never speak in lectures but it was easier to when it was being passed around.

The course was very interactive, which I found very enjoyable. I enjoyed coming to lectures and workshops as I knew it was going to an active and informative learning experience every week. The use of PeerWise, in-class tasks and Padlet was very engaging and I learned a lot from them.

The use of videos, technology and guest speakers greatly increased student engagement as well as my own. The more the students reacted to each means of presentation, the more enthusiastic and engaged I became. Providing a range of approaches resonated with students and enhanced their learning and understanding, mirroring findings by De Matos-Ala and Hornsby (2013) in a similar context.

Guest Speakers

At times, the literature around large classes highlights the fact that students are reduced to the role of passive listeners. Listening is not passive, it is active. When we listen, we make connections with prior knowledge and experiences and, through this, we construct new understanding. During the plenary sessions with the guest speakers, there was a tangible silence but there was nothing passive about it. As I wandered the room while the speakers described their own experiences or explained their work, it was evident to me that students were actively engaged in their listening. Most did not even notice me passing as they were paying rapt attention to the speakers. Commentary from the students supports my observations:

The work that has gone into selecting speakers has greatly advanced my learning in inclusion. It was interesting to hear it from different perspectives.

The guest speakers were excellent. They contextualized all the material we were covering and were very inspiring.

I found the guest speaker panels the most helpful and engaging. They enabled me to gain insight into real life experiences, and showed me that teachers can have a major impact on the lives of their pupils

The multiplicity of guest speakers in itself addressed the multiple means of representation pillar of UDL, especially in the panel format because of their interactions with each other as well as with the student audience. The facilitation / mediation of the guest speakers was crucial because the questions and comments from students, posed during each session, allowed me to formatively assess understanding and to fill in the gaps right there in a timely manner, as well as afterwards in writing on the Q&A tool. The contested, theoretical and, sometimes conflicting, concepts of special education and educational inclusion were evidenced in the diversity of the lived realities of the speakers, both professional and personal.

Co-Teaching

When co-teaching the lesson planning session with a member of the school placement team, the optics of two staff members collaborating with each other was powerful, and much more effective in terms of student engagement than just addressing the idea of inclusive planning and teaching in our own discrete modules. Co-teaching created an opportunity to provide students with two perspectives (Money & Coughlan, 2016; Zapf et al., 2011) and to model problem solving skills using a teaming model of co-teaching (Friend et al., 2010), by bouncing ideas off each other and augmenting our respective responses to student queries (Logan & Farrell, 2018a, 2018b). It allowed us to (a) show that there are often no easy answers, and that there are differing perspectives and opinions, highlighting the importance of the decision making process when designing inclusive lessons; (b) manage a workshop-style session on a scale where we could allow students to work in pairs or groups and provide feedback in-class, thus clarifying ideas and concepts there and then; and (c) assess learning to identify gaps in student understanding and areas of the curriculum which perhaps needed to be reimagined.

Co-teaching allowed for increased interaction between teachers and students (Logan & Farrell, 2018a, 2018b). It also provided an opportunity to model the art of co-teaching itself, a practice that all our students will be expected to undertake in schools to facilitate inclusive pedagogical practices (Department of Education and Skills, 2017a; 2017b). The process of planning the co-taught session enabled us as teachers to learn from each other, to clarify the detail of our practices, and to make links to our respective curricula, thereby bridging the gap between each element of the program for our students. Modularization of academic programs creates boundaries around curricular elements; co-planning and co-teaching

allowed us to remove those boundaries. Again, some of the commentaries from students seemed to support my perception:

I also found the co-taught session ... extremely beneficial. It modelled good practice of teaching and also gave us a chance to ask questions and will inform my future lesson planning.

The co-taught lesson with a member from the SP team looking at a lesson plan through an inclusive lens was particularly beneficial

Your co-teaching session with [XX] was a practical demonstration and motivated me to want to try it and not be 'scared' of it.

The data in Table 2 indicates that 28% of the students 'somewhat agreed' that the co-taught session met the intended learning outcomes. It is difficult to definitively state the reason for this uncertainty; some feedback comments indicate that it may be related to a perception that greater depth of examination of the skills and concepts was required.

The co-taught lesson ... confused me slightly as I found the learning outcomes section difficult to adapt and by the end of the lesson I was still quite confused. But at the same time this lesson was overall very helpful- that was just one aspect that I was not sure about. I thought the lesson itself was a good choice.

The co-taught session ... was good but not that helpful as we had covered many elements of that before and it didn't look into further detail.

Workshops

Student engagement appeared to be very high during the workshop sessions. They were topped and tailed by direct input from me, but most of the time was spent working with their peers. Providing on-the-spot feedback seemed to increase engagement. Across all twelve workshop groups, there was a sense of progression. Feedback on a task is often provided once and therefore, can sometimes be viewed as parallel to and disconnected from the task itself, leaving students to come to their own conclusions about their work (Bradford, 2019). The iterative, multi-stage format of the workshop task provided an opportunity for iterative, multi-stage feedback. This allowed deep engagement and action on the part of students in response to the feedback (Carless, 2015). The following sample comments appear to support this perception.

I found the seminars extremely beneficial as we had an opportunity to learn from one another. As well as this, the consistent feedback was extremely welcome.

I found that the workshops were very beneficial as we were able to engage in the IEP planning process in small groups, and were able to get individualized feedback which really helped me to understand the process better.

The completion of an IEP in the seminars was excellent as it was a step by step approach and this is something we can refer back to in our teaching career.

The final comment above indicates an understanding of the pedagogical approach to assessment which might be applied to pedagogy in a primary classroom.

I did not allow choice of grouping for the workshops because of the administrative burden it would entail. However, I did believe that this placed an onus on me to ensure that this element of the assessment

process was fair, and seen to be fair, especially as it would have a direct bearing on the assessment outcome (Noonan, 2013). To do this, I sat with some groups and deliberately engaged individual students I perceived to be disengaged. If a student missed a workshop, they had to contribute in their own time on the Google document, which I checked. If they missed more than one workshop, they had to complete a similar task independently; only four students found themselves in this situation.

The workshops also enabled me to get to know students in a way that the full plenary sessions would not allow. While the workshops were focused on a particular part of the curriculum, they did allow me to assess learning generally as students asked questions and made comments which related the workshop content to other content in the module.

Time and Workload

It has to be acknowledged, however, that the amount of time spent on this module is significant. Having said that, it is the class I most love teaching. Students strive to do more if they see that their teacher cares about them and the subject; it is particularly important to make such a connection with students in very large groups. The energy invested is returned exponentially; teaching both the plenary and workshop sessions increases my energy levels rather than decrease them. Teaching is a relational activity, which can be lost in the large class context due to lack of student-teacher interaction (Allais, 2014), but this is not the case when due consideration is given to that context. Large class size matters, but only insofar as it is or is not taken into consideration when designing pedagogy. Everything is scaled up with large classes – administration, emails, and marking. Embedding active learning methodologies and providing multiple pathways to learning adds to an already onerous workload. It is not the class size alone which needs to be fairly recognized in a workload model but also the nature of the pedagogical approach. I could teach this module by ‘delivering’ lectures and putting some useful resources online; the module would be good enough and students would probably learn. In that instance, I would argue that my workload in relation to teaching would be less than that of someone teaching a class of 40 students using a multiplicity of active learning methodologies such as problem-based learning, case studies, group-work and so on. However, to embed the strategies usually associated with small group teaching with large student cohorts requires a significant amount of time in terms of planning and student-teacher interaction and that associated workload needs to be acknowledged and supported.

Assessment and Feedback

Provision of choice is central to the UDL framework and it is this aspect that I believe has most impacted my pedagogical approach to large classes, because it has allowed me to integrate multiple means of action and expression in a meaningful way. Students were rewarded for in-class engagement in a variety of ways: peer-to-peer engagement using PeerWise to explore policy, attendance at plenary sessions, and development of the individualized plan in the workshops. These tasks allowed for a range of ideas and issues to be explored in the supportive environment of the classroom where I could respond to questions and uncertainty. The least popular assessment task was the policy task. Those students who elaborated, seemed to indicate that the volume and nature of the content they had to engage with was challenging, but that they really liked the platform used for the task (PeerWise). Some of the comments illustrate this range of views.

I believe the PeerWise task was very helpful as beforehand I didn't have much knowledge on legislation and policies. I also feel the in class tasks were of good benefit as they made us engaged throughout the whole lectures.

I really appreciated how there was space for the PeerWise task to be completed outside of class time. I appreciated that time was given during the class to complete the PeerWise task but I liked that it was not necessary to do it during that time as I don't enjoy pressurized situations like that.

PeerWise was very effective in getting us to learn from each other about inclusion.

PeerWise is an excellent idea but it was unrealistic for us to look at all those documents at one. It could maybe have been a continuous thing, fortnightly or something looking at one document at a time.

Peerwise was a good idea but I did not think it was the most helpful in relation to policy and legislation. Answering the questions was helpful but I think when creating the questions, it was easy just to take a small part of the policy and legislation to create your question - you did not necessarily need to read and understand most of the policy documents.

The provision of choice in the independent engagement with assessment has really resonated with students. It is evident from the feedback (Table 2) that students appreciated choice in relation to their independent task, with 100% in agreement that being able to choose the topic and who to work with was good, and 97% agreement that being able to choose the number of people to work with was useful. Written comments about the independent task suggest it enhanced their learning and understanding.

I think the independent task was a useful form of assessment because it gave us the chance to revise and research strategies we will be able to use on placement.

The assignments were well explained with clear concise criteria. I liked that we could pick our own group, it advanced my learning more working with people who I knew would build my knowledge, especially in 4th year when we know who is on our same page.

I really enjoyed the choice in assignment. It really helped knowing we could choose what we would like to do, which motivated our group in doing well.

The assignment offered choice and collaboration which I believe every module should consider

Having choice was really useful as it creates a sense of agency

Students were able to self-assess against clear criteria in the rubric (Malecka et al., 2020). The drop-in feedback service was over-subscribed, lasting ten hours over the course of one day. Students were hungry for feedback and delighted to be able to speak with me about their work. The face-to-face context allowed students to enter into a dialogue with me, justifying their choices and questioning my comments on their work; this, in turn, led them to reflect on and evaluate their own work (Carless, 2015). However, the one-to-one nature of the 'drop-in clinic' did not tap into the potential for peer learning; I observed almost no students discussing their work with peers in other groups as they waited for me.

IMPLICATIONS

Creating a Sense of Classroom Community

Creating a sense of community in the large class context can be challenging due to the sense of isolation experienced both by teachers (Cole & Kosci, 2010; Maringe & Sing, 2014) and students (Arvanitakis, 2014). The UDL framework supported that sense of community in a range of ways. It heightened my own engagement with the material because I had to reflect on how I might present the concepts in a way that enabled deep learning on the part of the students. That heightened engagement was evident to the students, and this narrowed the distance between us. Using a range of platforms to enable the student

voice in the plenary sessions changed the dynamic in the room over time. The capacity to post questions anonymously during and between sessions on a shared platform allowed students to see that their questions were relevant and that many others had the same questions. The ‘throw-and-catch’ microphone made it much easier for students to speak in class without having to raise their voices to be heard and it was a source of fun especially when it hit me on the head on more than one occasion.

The in-class think-pair-share activities enabled workshop-type formats usually associated with much smaller groups. Providing the opportunity to enable peer engagement and feedback using PeerWise allowed students to share their understanding in a whole-class format. The guest speakers brought personal stories, feelings and emotions with them into the classroom; students were not intimidated by the class size and competed with others to ask questions. Sharing my own proximity evenly with students by using a roving microphone and strolling to every part of the room at least once during a session greatly diminished the physical distance between me and those in the middle and at the back. Harnessing the experiences of some students by allowing them to present to their peers brought concepts to life, making these more meaningful and real. Embedding multiple avenues into the pedagogical landscape means that more people can achieve the learning outcomes which creates an energy that, for me, is most powerful and impactful in a large class context.

Scholarship

Experiential learning is defined as ‘the process whereby knowledge is created by the transformation of experience’ (Kolb, 1984, p. 41). My pedagogical knowledge and understanding has increased, particularly in relation to the role assessment plays in enhancing learning and engagement, by considering multiple ways students may express their understanding. Furthermore, my increased knowledge relating to large class pedagogy has had a direct impact on the other key element of my academic persona – research and publication. This has reduced the contested space anomaly of academic life for me (Cartney, 2015), because teaching and scholarship are aligned. In Ireland, publications in the field of HE teaching and learning have risen sharply since 2000 with most publications having a disciplinary focus (O’Sullivan et al., 2015). As a teacher educator, researching my approach to inclusive pedagogy also aligns with the curricular content of my discipline which is teacher education. In the last two to three years, I have presented on this work at conferences, published in conference proceedings (Farrell, 2019); established, in collaboration with a colleague, an annual symposium (Farrell & Logan, 2019); embarked on doctoral research in the field; and, most recently, completed research on the impact of COVID-19 on the large classes in my own institution (Farrell et al., 2021).

The potential for the development of scholarship in relation to student work also presented itself with the publication of one group’s assignment (Bolger et al., 2018). The publication was supported and co-published by my own university and a not-for-profit organization. That experience has prompted me to think about explicitly building in the notion of scholarship and dissemination as an integral part of this final year module. To that end, I am in the process of developing a website which will curate exceptional assignments – resources provided by students for students. They may be used by others such as teacher educators or qualified teachers, but these do not represent the intended audience. A mechanism for publishing the assignments will be developed in-house by me, but there is merit in collaborating with outside agencies to co-publish in order to (a) further heighten the awareness student teachers have of the world, outside the primary school and (b) for me to develop relationships which may yield other types of collaborations in terms of my own disciplinary work.

Developing the scholarship and thereby maximizing the impact of assessment tasks, is important, especially for final year students as they embark on their professional journeys. I believe that providing

choices resulted in many students perceiving value in the task and the worth of their own work, creating high levels of engagement and leading, therefore, to the production of high quality assignments.

Workload

Unlike what is observed in the primary and post-primary sectors, teaching is only one aspect of the role of a higher education academic. Often, the demands of scholarship, administration and service compete with those of teaching (Cartney, 2015). The requirement to research and publish, in particular, often pushes teaching aside as a priority. The workload associated with this case study cannot be underestimated; developing this pedagogical approach for my large class did take time to plan and to implement in practice. There are a few issues to consider here.

Firstly, the binary separation of the teaching and research demands within academic life needs to be considered because it results in these demands competing against each other at individual, school, faculty and institutional level, with teaching often perceived as the lesser of the two. Alignment of teaching and research allows for improvement in pedagogical practice, while simultaneously providing opportunities for publications in relation to HE pedagogy generally and specifically in relation to a teaching and learning within a particular discipline.

Secondly, it is not the application of UDL that consumes time, but rather the large scale of the class which is a challenging variable with or without UDL. The number of students accessing HE is increasing worldwide (Allais, 2014), and that is often manifesting itself in the creation of very large class cohorts with little consideration given to the demands that this places on the creation of a meaningful learning environment. Faculty need to be supported in embedding sound pedagogical practices in these contexts, and that requires recognition of class size at an institutional level. The notion of 'impact' is often associated with publication, in particular with regards to journals; it needs to also be associated with teaching, particularly in relation to very large classes where the potential for meaningful impact is also inherently connected to scale.

Thirdly, linked with the point above, the potential for student scholarship arising from the redesigned assessment process was an unexpected outcome which I attribute mainly to the agency provided to students when afforded choices in the assessment process. Agency increases motivation which, in turn, raises standards. If the potential for dissemination to a wider audience can be built in to the assessment process, academic integrity is enhanced and the impact of teaching and learning is increased, making visible the possibilities for deep learning in that context. Moreover, dissemination and publication provide a potential avenue for collaboration with outside agencies in the related field for example in relation to task design, joint publication, provision of expertise.

Finally, UDL suggests ways to address some of the perceived limitations of large class teaching which, in turn, creates a sense of success and progression for the large class teacher. Initially, this requires investment of time, as the large class teacher embeds elements of the UDL framework in the pedagogical design of the module. As time passes, UDL frames pedagogical thinking as well as actions. At first, instructors should take small steps. They should begin by identifying one or two elements of pedagogical practice that could be reflected upon using the UDL lens and make the relevant changes. The acknowledgement of the workload associated with teaching large classes is often based on an institutional assumption the teaching in that arena is limited to a 'talk-at-them' approach and this can inhibit the potential and/or motivation for instructors to develop active learning environments leading to deep engagement and learning for students.

Moving to the Online Context

Over the last few years, much of my energy has been invested into creating a face-to-face pedagogical space for the students in my large class which mirrors that which might be expected in a much smaller classroom. A significant amount of time has been invested in developing and enhancing the learning experience in this complex, face-to-face context. Then, in March 2020, that context vanished completely, replaced by an online, virtual classroom environment. When COVID-19 impacted on my professional life, I was teaching another very large first year class within the same program. I had taught them face-to-face for five weeks and then transitioned online for five weeks. This brief experience informed my thinking for the forthcoming semester when I was to teach the final year module for the sixth iteration, this time completely online.

I was convinced of the value of using UDL to inform the restructuring of the module in the online context, for the sake of myself as a teacher and, particularly, for the sake of the learning experience of my students. It took a while to re-conceptualize the module for the online context. Two things were quite clear to me though. First, supporting students' action and expression, with regards to their knowledge and understanding, would be key to maximizing learning and engagement. Second, collaborating with the students to create a sense of community was going to be crucial in the online space (Ní Shé et al., 2019), particularly as the online platform to be used was Zoom Webinar which has capacity to host 400+ people but does not allow cameras for attendees. Due to the impact of COVID-19 on school placements, the program timetable was also radically altered. The impact on the module was that the two strands were split over two semesters, with each strand concentrated in a 5-week teaching period rather than ten. Embedding the principles of UDL in this context resulted in the following structure:

- Eleven of the twenty timetabled teaching hours were dedicated to asynchronous engagement with materials, including purpose-made videos from a range of speakers (guests and students themselves), as well as videos provided by me for context and direct teaching. Students also engaged with an individualized planning task supported by step-by-step teaching videos and exemplars with voice-over.
- During these hours, I was available in a Zoom Meetings room if students wished to drop in to ask questions and clarify instructions.
- Nine of the twenty timetabled teaching hours were used for synchronous classes, which included panels of speakers comprising those who had provided the short asynchronous videos, which provided a multiplicity of perspectives. Student representatives joined me on screen to moderate the chat and pose questions of speakers. The explicit collaboration with the student representatives in the live plenary classes enabled the student voice and helped to create a sense of community.

Effectively adapting this module to the online space was enhanced by my assumption that the three pillars of UDL needed to be embedded. The blend of synchronous and asynchronous engagement with content, coupled with the 'drop-in' room, enabled students to engage in multiple ways within the strand itself. Assessment continued to provide choice to enable multiple means of actions and expression. The length of time available did force me to reduce opportunities for peer-to-peer engagement with policy and legislation, but changing the requirements of the main task allowed me to embed that aspect of the curriculum more explicitly there instead.

Students were invited to submit a draft of their main assignment for peer assessment and evaluation. Only fifteen of 132 assignment groups chose to do this; they were organized into five separate peer assessment and feedback groupings to read each other's work, to provide short written feedback, and then to meet with me online to discuss the feedback to ensure it was fair and accurate in relation to the expectations of the rubric. I collated the overall patterns of feedback across all fifteen assignments and provided the overview to all of the other groups who had not taken part. Assessment and feedback in the large class

context is challenging; I intend to research and grow this initiative over the next few years to identify possibilities for enhancing this pedagogical aspect of my work within this module. As outlined above, the alignment of teaching and scholarship is crucial to justify the time invested and to maximize the impact of this work in generating and disseminating practices that may be of use to others in similar contexts.

Using UDL as a frame of reference for the redesign of this module enhanced the sense of community in the online context. It supported the six principles for teaching, learning and assessment in large online classes (Hornsby, 2020) - active learning, equity, inclusion, student success, development of appropriate skills and attributes, and, most importantly, an ethos of care which was particularly important during a time of crisis. My previous experience of using UDL as a pedagogical frame provided me with the confidence to utilize approaches which enacted these principles in the online space, and the built-in flexibility allowed for easier transitions and enabled more fluid responses to change.

CONCLUSION

This chapter explored one academic's experience of and reflections on 'pedagogy as enacted' (Nind et al., 2016), using the UDL framework in HE within a large class context. As outlined in the case study description, there were four reasons for undertaking the explicit alignment of pedagogy in the large class context with UDL: (a) to model good pedagogical practice for my student teachers, (b) to provide opportunity for deep engagement with complex concepts, (c) to situate primary school education in the wider societal context, and (d) to develop a sense of agency among my students in preparation for their future role as teachers. The feedback from students suggests that the multiplicity of avenues to the learning outcomes allowed me to realize these intentions. Obviously, as a teacher educator, explicitly using UDL in my own pedagogical practice provided me with the opportunity to model the possibilities of UDL so that the students themselves, in turn, could embed it in their own classroom practice (Hallett, 2010).

Although this case study is rooted in ITE, it has relevance across the disciplinary continuum of HE for a range of reasons. Many disciplines are teaching large class cohorts and all aspire to develop deep learning. There can be an assumption that pedagogical challenges are discipline-specific (Young, 2010) and therefore, instructors may not engage with pedagogical scholarship arising from disciplinary fields other than their own. However, many of the issues encountered in this case study are likely experienced across disciplinary boundaries, i.e. student engagement, assessment integrity, classroom community, presenting concepts, and so on. Considering threshold concepts in a subject requires the teacher to view the subject not just in terms of content but also in relation to how that content can be communicated (Cousin, 2010). The UDL framework provides a platform to align these two pedagogical imperatives to ensure access. Even if teachers set out to use UDL with certain learners in mind, their considerations in relation to lesson design for those students will likely benefit all (Association for Higher Education Access and Disability, 2017); this will lead them to move away from the notion of accommodations for some to one of accessibility for all (Eitzen et al., 2016), and this has as much to do with social justice as it does inclusion (Hanesworth et al., 2019).

As a HE teacher, changing my practice to explicitly address the diversity in this large class module has enabled me to form a relationship with my students mainly because the avenues of engagement energized the teaching-learning dynamic in the classroom, an energy that was amplified because the class was large. It also has increased my confidence, not just in relation to my engagement with this module, but across all of my teaching contexts. It has required an investment of time but aligning teaching and scholarship maximizes the impact on the demands of my academic role. If embarking on a similar journey, I recommend that others start small, reflect on what works, and build from there.

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