Pedagogy for Higher Education Large Classes

(PHELC)

Proceedings of the Sixth PHELC Symposium 7 June 2024

Facilitated by Dr Anna Logan and Ann Marie Farrell, Dublin City University

Editors:
Anna Logan and Ann Marie Farrell

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Dublin City University

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Acknowledgements

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Thank you to all who presented at PHELC24 and in particular our inspiring keynote speaker Jaclyn Broadbent of Deakin University, Melbourne, Australia. Finally, thanks to all who were in attendance and part of the vibrant and energising learning community at PHELC24.

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Introduction

Welcome to the proceedings of the sixth Pedagogy for Higher Education Large Classes (PHELC) Symposium which this year was a fully online event. Once again, we were pleased to receive funding for PHELC from Dublin City University under the Strategic Alignment of Teaching and Learning Enhancement (SATLE) Funding in Higher Education administered by Ireland's National Forum for the Enhancement of Teaching and Learning in partnership with the Higher Education Authority. We thank Monica Ward, Dean of Teaching and Learning and Martina Crehan, Head of DCU's Teaching Enhancement Unit for this support. Securing funding enabled us to offer registration for PHELC24 free of charge, removing possible barriers for Irish and international attendees and this year, we were delighted to welcome participants from 17 countries across 5 continents.

We are particularly appreciative of our wonderful DCU colleagues, Rob Lowney, Aisling Twohill, Conor Sullivan and Karen Buckley who once again supported us before, during and after the event. Huge thanks to Gitzy Fragiotta who provided invaluable administrative support for PHELC24.

We extend a special word of thanks to the wonderful Jaclyn Broadbent who opened the symposium with a keynote titled 'Aligning the Summative and Formative Purposes of Assessment: Assignment Design, Feedback and Moderation at Scale'. Jaclyn's passion for teaching and learning and her commitment to delivering high-quality, challenging and supportive learning experiences and to designing and implementing innovative, engaging and student-oriented teaching practices at scale was inspirational and set the stage for six short presentations and lively discussion with panels at two Q&As. While there was a strong focus on assessment design and approaches to feedback and moderation at scale and on equality, diversity and inclusion, the challenges and opportunities for building relationships in large classes also emerged as a very significant theme at PHELC24.

Since the first PHELC symposium in 2019 a total of 49 papers have been presented as long or short papers, posters or video-recorded lightning talks or as keynotes. The six PHELC symposia to date have also, at various times, featured workshops, round table discussions, plenary sessions and Q&A. We have been honoured to welcome no less than seven eminent keynote speakers: David Hornsby (2020 & 2021), David Carless (2020), James Arvanitakis (2021), Jacqueline de Matos Ala (2022), Frederic Fovet (2022), Elaine Huber (2023) and Jaclyn Broadbent (2024). We are pleased to have published 52 individual articles and six sets of Proceedings (including this one) in open access at the PHELC Community on Zenodo.

Recognising that large classes are a feature of higher education internationally, we have always tried to ensure that those who teach and support teaching and learning worldwide, regardless of geographical location or circumstance, would be able to access and participate in PHELC. Taking the decision to stay online and securing funding has been seminal in enabling us to demonstrate respect for diversity and promote equality of opportunity within the PHELC community and we are very pleased that we have had representation from all continents in terms of presenters and attendees.

As we say each year at the symposium, PHELC began somewhat accidentally. In 2019, the organising committee of the Higher Education Advances (HEAd) Conference invited us to convene one of the pre-conference workshops focusing on large class pedagogy. As it turned out, this face-to-face event became the first of six annual events. The first two (2019 & 2020) were formatted as pre-conference workshops for the HEAd Conference with the second one pivoting online due to the COVID-19 pandemic. We then made

the decision to establish PHELC as an event in its own right, using the online format which we felt provided the greatest opportunity to include people from all over the world.

As convenors of the PHELC Symposium for the last six years, we have loved facilitating peers from all over the world to speak to the issues imbued in teaching large class cohorts in higher education. We have learned so much ourselves, not just from the presentations but also from the resulting discussions and debates afterwards. The energy, commitment, dedication, enthusiasm and motivation of presenters and attendees has been evident throughout. We tend not to have a 'theme' for the symposia, preferring instead to rely on the large class concept as a theme in its own right. This has resulted in presentations across all pedagogical aspects such as learning, teaching, assessment, curriculum, relationships and so on. The main characteristic across all six symposia is the positivity with which large class teaching is viewed albeit that challenges are acknowledged and considered. We are also delighted that we took the time to develop our website (www.phelc.ie); to publish papers from the symposia; and to provide recordings of the presentations since 2020 onwards, thereby reaching an even wider audience and including those who could not attend the actual event.

At this year's symposium, when summing up the event, we flagged our intention to perhaps pause the organisation of the event in its current format and to review where we are at now with PHELC and where we might go in the future. We may indeed continue with the symposium as an annual event. Or, we may move to a change in the timing of the symposium and consider other ways of facilitating collaboration and scholarship in this space - we are not sure yet. To date, we have led PHELC ourselves with fantastic support from colleagues in our university without whom we would struggle to ensure that the event passed off without any glitches. However, going forward, we may need to consider broadening the organisational base of PHELC.

So, we are at a crossroads. If you have any questions, thoughts, suggestions, comments or observations, we would be delighted to hear from you. In the meantime, we plan to put some time aside in the latter part of 2024 to review the past and plan for the future. We will let you know the outcome in due course.

As always, we encourage you to keep an eye on our website www.phelc.ie and follow us @PHELCprofessors on X, formerly Twitter. We hope you enjoy reading these proceedings and look forward to connecting with you again.

Anna Logan and Ann Marie Farrell (Editors)

Pedagogy for Higher Education Large Classes (PHELC)
Sixth Annual Symposium - Online
7 June 2024

Facilitated by Dr Anna Logan and Ann Marie Farrell, Dublin City University

Twitter: @PHELCprofessors #PHELC24 @AnnMFarrell @logananna11

Please check your local time equivalent (timeanddate.com may be useful)

10.45-11.00 (Irish/British Standard Time) 11.45-12.00 (Central European Time) 17.45-18.00 (Hong Kong Time) 05.45-06.00 (Eastern Daylight Time) 19.45-20.00 (Australian Eastern Std Time)	**Log on / Registration** *We recommend that you log on to the zoom link at this time in case there are any difficulties.*
11.00-11.15 (Irish/British Standard Time) 12.00-12.15 (Central European Time) 18.00-18.15 (Hong Kong Time) 06.00-06.15 (Eastern Daylight Time) 20.00-20.15 (Australian Eastern Std Time)	**Welcome: Introduction to symposium and participants** **Dr. Anna Logan (@logananna11) & Ann Marie Farrell (@AnnMFarrell), Dublin City University**
11.15–12.00 (Irish/British Standard Time) 12.15-13.00 (Central European Time) 18.15-19.00 (Hong Kong Time) 06.15-07.00 (Eastern Daylight Time) 20.15-21.00 (Australian Eastern Std Time)	***KEYNOTE:*** **Jaclyn Broadbent (@JaqiBFT), Deakin University, Melbourne** *Aligning the summative and formative purposes of assessment: assignment design, feedback and moderation at scale*
12.00–13.00 (Irish/British Standard Time) 13.00-14.00 (Central European Time) 19.00-20.00 (Hong Kong Time) 07.00-08.00 (Eastern Daylight Time) 21.00-22.00 (Australian Eastern Std Time)	**Short papers: Session 1** **Karen Buckley, Dublin City University (@Karen_Buckley_)** *Talking the Talk: Interactive Oral Assessment to Promote Academic Integrity in Large Postgraduate Teacher Education Programmes* **Conor Hanly, University of Galway** *Student Engagement in a Large Flipped Class* **Keith Murphy, Technological University of Dublin (@KeithMu23476082)** *Neurodiverse Students Learning in Large Lecture Theatres: Challenges and Opportunities* **Q&A Session (keynote and short paper presenters)**
13.00-13.30 (Irish/British Standard Time) 14.00-14.30 (Central European Time) 20.00-20.30 (Hong Kong Time) 08.00-08.30 (Eastern Daylight Time) 22.00-22.30 (Australian Eastern Std Time)	**Coffee Break** **Wheel of Fortune (prizes)**
13.30-15.00 (Irish/British Standard Time) 14.30-16.00 (Central European Time) 20.30-22.00 (Hong Kong Time) 08.30-10.00 (Eastern Daylight Time) 22.30-00.00 (Australian Eastern Std Time)	**Short papers: Session 2** **Heather Bennett & Bridget Curren, State University of New York (SUNY)** *Ungrading: Using Feedback and Reflection to Address Equity Challenges in Large Classes* **Peter Felten, Elon University, North Carolina (@pfeltenNC)** *Relationship-Rich Education at Scale* **Michael Murphy, University College Cork** *Using an Individual Reflective Journal based on the Belbin Team Roles Framework to Manage Group Projects in Large Classes* **Q&A Session (short paper presenters)** **Wrap Up** **Social Event & Wheel of Fortune (again!)** *More spot prizes. Chat. Some sparkling drinks to celebrate the sixth PHELC symposium*

PHELC24 is sponsored by the DCU SATLE fund (Strategic Alignment of Teaching and Learning Enhancement)

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KEYNOTE ADDRESS

Aligning the summative and formative purposes of assessment: Assignment design, feedback and moderation at scale

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Abstract
This paper discusses the complexities of assessment practices in large university classes, emphasising the balance between summative and formative purposes to improve teaching and learning. Large classes, often defined as having over 100 students, pose challenges for lecturers such as increased workload, reduced interaction, and difficulty providing consistent feedback. The study focuses on a first-year psychology course with over 1500 students, implementing strategies like exemplars with detailed rubrics, audio feedback, and rigorous moderation. These methods aim to enhance understanding of assessment standards and foster continuous improvement. Reflections by the author suggest that integrating formative elements into summative assessments can significantly enhance learning outcomes and student engagement, even in large class settings.
Keywords: *Summative assessment; Formative assessment; Feedback; Moderation; Large class; Higher education*

1. Introduction

Designing an assessment effectively is a complex process, particularly as there are inbuilt tensions between its certification and enhancement of learning purposes; the fundamental double duty of assessment (Carless, 2015), with implications for task and rubric design, alignment with teaching approaches and learning outcomes, provision of feedback, monitoring of progress, evaluation of quality work and student role. This complexity is magnified when teaching large class cohorts. There is no agreed definition for the term 'large class'; however, there seems to be general agreement that student numbers of >100 can be considered to fit this definition (Exeter *et al.,* 2010). Teaching a large class presents significant challenges in designing, managing, and standardising assessment practices (Broadbent *et al.,* 2017).

This paper reports on the alignment of the formative and summative purposes of assessment in the context of a very large class cohort (1500+) with specific reference to assignment design, provision of feedback and moderation across a large set of tutors. This paper supports the keynote presentation for the PHELC24 online symposium.

2. Large Classes in Higher Education

There is no agreed definition of the term 'large class' in the higher education context (Maringe & Sing, 2014). This is particularly evident in one study in which 66 academics quantified unmanageable class sizes as numbering between 30 to 1,500 students (Mantai & Huber, 2021). Most studies seem to have settled on 100 or more students to the term 'large class' (Exeter *et al.,* 2010). However, regardless of the quantification of class size, the challenges associated with teaching at scale are likely linked as much to teacher perception as student numbers (Maringe & Sing, 2014). Higher education teachers may associate class size with increased workload and hindering meaningful instruction (Allais, 2014). They may also be perceived as hindering achievement, performance (Hornsby & Osman, 2014) and learning because less discussion and interaction is leading to passivity (Mulryan-Kyne, 2010).

3. Assessment at Scale in Higher Education

Assessment is one pillar of a wider pedagogical ecosystem, which also includes teaching, learning and curriculum, all of which are bound by relationships and values (Nind *et al.,* 2016). Within that ecosystem, assessment is sometimes viewed as the most important element, which, if badly conceived, designed and implemented, may render teaching and learning ineffective (Biggs & Tang, 2011). Moreover, while students might evade the teaching practices of a programme, they are "unequivocally compelled to participate in the assessment process" (Sambell *et al.,* 2017, p.140), which profoundly impacts what students and teachers do (Carless, 2015) and likely what they choose not to do.

Assessment in higher education has been influenced by a relatively limited range of perspectives (Boud *et al.,* 2018), with research in the field generally focusing on one aspect of the assessment process while simultaneously, by default, rendering other aspects invisible (Ajjawi *et al.,* 2021).

As well as the challenges posed for teaching and learning as outlined above, large class cohorts can present real challenges in terms of assessment design, management and standardisation of practices, the implications of which have not been well researched (Broadbent *et al.,* 2017). Due to the sheer scale of a large class, it may be perceived that assessment options are limited (Kerr, 2011); that continuous assessment is not feasible (De Matos-Ala & Hornsby, 2015); and that meaningful feedback is difficult to provide (Allais, 2014; Broadbent *et al.,* 2017). Having said that, technology has allowed higher education teachers to assess learning in-class (Voelkel & Bennett, 2014), providing feedback for both teachers and students instantly at a whole class level.

4. An Example of Summative Assessment with a Formative Flavour: Design, Feedback and Moderation at Scale

This case study focuses on a first-year psychology subject comprising 1500 students distributed across four campuses, including a fully online context. The subject examines behavioural changes related to health

and wellbeing and is taught over eleven weeks in one semester. Students are tasked with undertaking changes in their health behaviours and reflecting on these changes through various forms of assessment, including ten weekly online quizzes, three linked reflective journal entries, and an end-of-term examination. The reflective journal is the central assignment, designed to integrate both summative and formative assessment elements. Over the years, curriculum, teaching and assessment practices have been formally evaluated many times, resulting in iterative changes.

4.1. Assignment Design

The journal assignment is developed within the authentic assessment paradigm, requiring students to engage in real-world tasks by applying behavioural change theory to their contexts. The assignment accounts for 60% of the overall subject mark and consists of three iterative phases. In each phase, students create a two-minute video and complete a 700-900 word written component. Each subsequent phase builds on the previous one, with increasing complexity and decreasing support. (see Figure 1 for more detail). This design aims to balance the dual purposes of assessment—certification of learning and enhancement of learning.

To address students' reluctance to engage with non-graded tasks (Jessop *et al.,* 2014), each of the three journal entries attracts a grade. This approach ensures that students remain motivated to complete the assignments while receiving ongoing formative feedback that enhances their learning and performance.

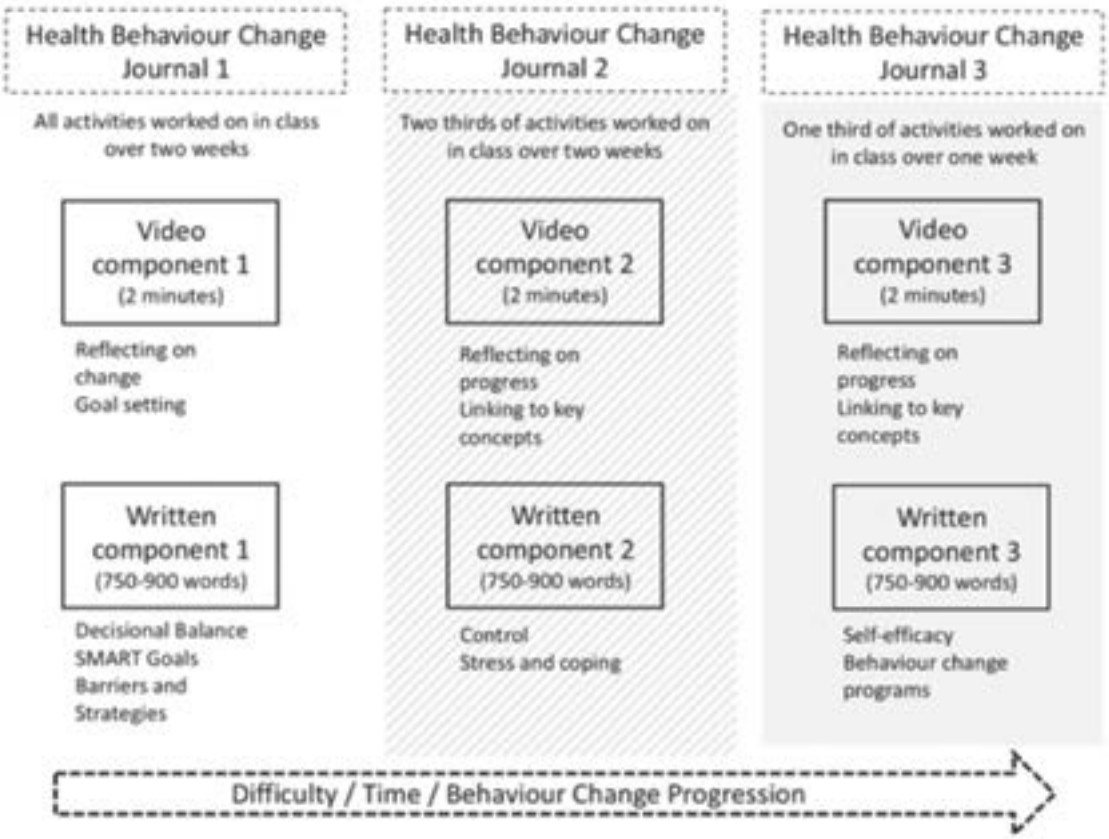

Figure 1. Three linked health behaviour journal assessments. (Figure taken from Broadbent et al., 2017)

4.2. Use of Exemplars and Rubrics

Formative feedback is built into the assessment process to improve learning (Shute, 2008) at whole class and individual levels. Students often struggle to evaluate quality through rubrics alone (Dawson, 2017). To mitigate this, exemplars are provided alongside detailed rubrics to illustrate the expectations for each task explicitly. The exemplar mirrors each of the three journal phases, offering students a concrete example of high-quality work. This strategy ensures consistent messaging and helps students understand the standards required for success. The exemplars and rubrics together foster a clearer understanding of assessment criteria, encouraging students to self-assess and improve their work based on these benchmarks. This approach ensures that the same message reaches each student in the same manner at a whole class level.

4.3. Provision of Feedback

Providing meaningful feedback in large classes is challenging, but audio feedback offers a practical solution. Audio feedback can convey more nuance and detail than written comments and is often perceived as more personal and engaging by students. In this case study, markers provide personalised audio feedback for each journal entry, focusing on current performance and offering specific guidance for future improvement. This feedback method not only saves time for educators but also enhances the quality of feedback, thereby supporting student learning more effectively.

The iterative nature of the assessment tasks, where feedback from one task informs the next, promotes continuous improvement and deeper learning. This approach aligns well with formative assessment principles, emphasising the importance of using assessment to support learning rather than to measure it. Feedback is designed to be actionable, helping students understand what they did well and how they can improve in future assignments (see Figure 2).

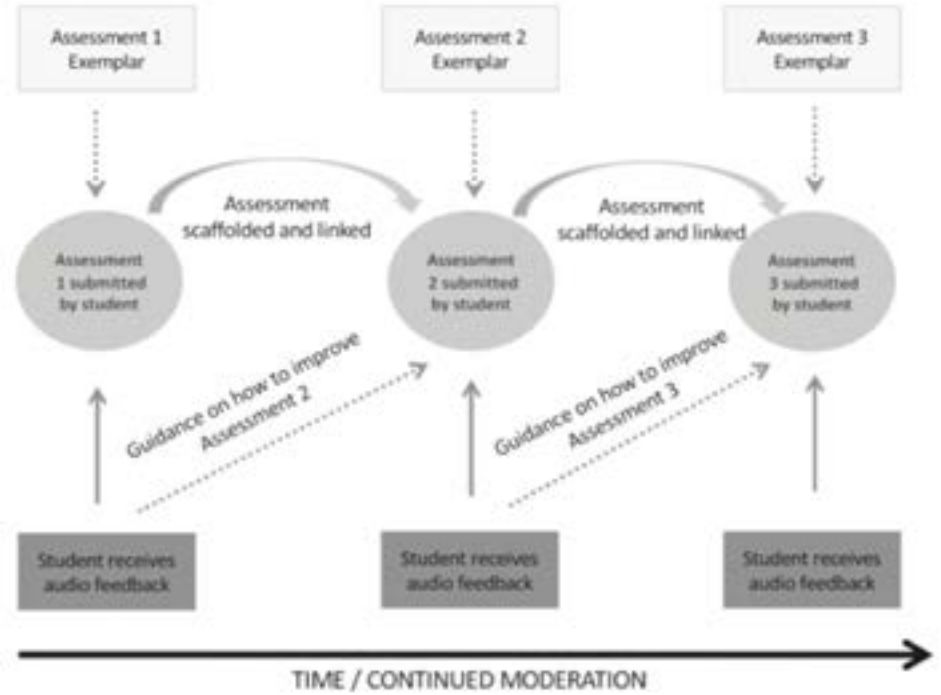

Figure 2. How the assessment, exemplar and feedback in the case study fit together.

(Figure taken from Broadbent et al., 2017)

4.4. Moderation Across Tutors

Ensuring consistency and equity in feedback is crucial, especially with a large number of tutors involved. Rigorous moderation processes are enacted before and during the marking and feedback phases. Detailed resources and training are provided for tutors to ensure they understand the assessment criteria and can deliver consistent, high-quality feedback. A subsample of assignments is double-marked by different tutors to check for consistency in grading standards. Additionally, three full-time subject staff moderate across the team, providing personalised audio feedback to part-time tutors. This feedback includes examples of how to improve the quality of their grading and formative feedback.

Tutors are encouraged to observe their peers' feedback methods to evaluate and enhance their own practices. This peer observation and feedback loop helps to ensure that all students receive fair and consistent feedback, which is critical in maintaining the integrity of the assessment process in large classes.

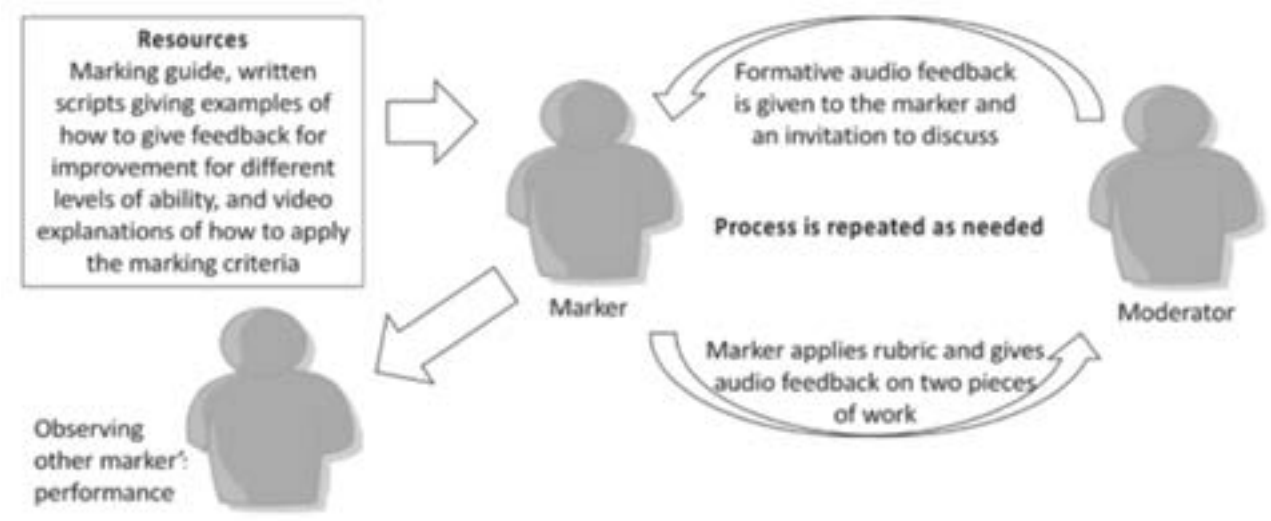

Figure 3. the marking and audio moderation process.

(Figure taken from Broadbent et al., 2017; also see Broadbent, 2018)

5. Advice for Implementing Formative Practices in Large Classes

The implementation of summative assessments with formative elements in large classes offers significant insights for educators aiming to enhance student learning while managing practical constraints. This approach, as demonstrated in the description above, integrates exemplars, rubrics, and audio feedback to create a more effective and engaging learning environment.

For educators considering the integration of formative elements into summative assessments in large classes, several practical strategies can be gleaned from this study.

Here are key recommendations:

1. **Utilise exemplars with rubrics**: Using exemplars accompanied by detailed rubrics and feedback allowed students to understand the standards expected in their assessments. By providing concrete examples of high-quality work, students were better able to grasp the criteria for success and were more likely to engage deeply with the material. This method fosters a clearer understanding of assessment standards and encourages students to self-assess and improve their work based on these benchmarks. It is recommended that exemplars should be made available online to ensure all students have equal access. Annotations or video explanations of how the rubric applies to the exemplar can further clarify expectations.
2. **Implement audio feedback**: Audio feedback helped us address the challenges of providing detailed, personalised feedback in large classes. We found that audio feedback could convey more nuance and detail than written comments and was often perceived as more personal and engaging by students. We found this method saved time and enhanced the quality of feedback, thereby supporting students' learning more effectively. However, it is essential to provide training and support for markers unfamiliar with this technology to overcome any technical barriers.
3. **Iterative assessments**: The iterative nature of the assessment tasks, where feedback from one task informed the next, promoted continuous improvement and deeper learning. This approach aligns well with the principles of formative assessment, which emphasise the importance of using assessment to support learning rather than to measure it. We recommend that assessment tasks are designed so that feedback from one task informs the next. Breaking down larger assessments into linked summative tasks can also help manage workload while providing opportunities for students to apply feedback.
4. **Rigorous moderation**: Rigorous moderation processes ensured that all students received equitable feedback, which is crucial in large class settings where variability in marking can be a significant issue. This includes providing formative audio feedback to markers and regular calibration sessions to align grading standards.

6. Conclusion

The integration of formative elements into summative assessments, particularly in large class settings, offers a balanced approach that addresses both the need for clear, consistent standards and the enhancement of student learning. The study demonstrates that exemplars, detailed rubrics, and audio feedback can significantly improve the quality and impact of assessments. By using these tools, educators can provide more personalised and actionable feedback, fostering a learning environment where students can continuously improve and engage deeply with the material. For more details about these practices see Broadbent (2018) and Broadbent *et al.,* (2017).

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Talking the Talk: Interactive Oral Assessment to Promote Academic Integrity in Large Postgraduate Teacher Education Programmes

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Abstract

This paper explores the use of Interactive Oral (IO) assessment in a large postgraduate teacher education programme (>100) as a means to uphold academic integrity while enhancing student learning and engagement. Amidst the growing concern from the rapid emergence of generative AI tools, this paper suggests a well-designed Interactive Oral assessment for large class teaching and learning can offer a suitable alternative to traditional examinations and promote academic integrity among students. The paper addresses the importance of robust assessment design and the potential of Interactive Oral assessments to create inclusive, sustainable, and meaningful assessments for postgraduate learners. This paper draws from recent literature exploring Interactive Oral assessment and large class pedagogy and shares illuminating results from a recent student and staff evaluation at an Irish Higher Education Institution (HEI) to build the capacity of those who teach and support teaching and learning in Higher Education large classes.

Keywords: *Assessment; Academic integrity; Large class; Interactive Oral Assessment; Teacher education*

1. Introduction

The development of valid, reliable, and fair assessments is a continual challenge that has become more pronounced with the rise of free-to-use generative artificial intelligence large language models (e.g. ChatGPT, Sydney) and other online tools. Therefore, we must reconsider innovative forms of assessment that provide opportunities for authentic, meaningful ways for students to demonstrate learning. This paper examines the role of Interactive Oral Assessments as a useful innovation in large class teaching and learning, which may address these challenges while enhancing learning outcomes and maintaining the integrity of the academic process.

The emergence of generative Artificial Intelligence (GenAI) tools such as ChatGPT challenges the academic integrity of traditional higher education assessment (Concannon et al., 2023). In response to this challenge, Higher Education Institutions (HEIs) need to develop awareness and understanding of generative AI tools and how to design assessments that preserve academic integrity while harnessing the opportunities

to innovate assessments and harness the potential of AI tools for educational good (National Academic Integrity Network, 2023).

UNESCO's Education for Sustainable Development (ESD) Framework for 2030 is a pivotal initiative that aims to equip learners with essential knowledge, skills, values, and attitudes to tackle pressing global challenges like climate change, biodiversity loss, and inequality. The framework advocates embedding sustainable development principles in education to drive societal transformation. It emphasises holistic and interdisciplinary learning, critical thinking, values education, and participatory learning. Interactive Oral assessment, as an alternative strategy for evaluating learning, aligns with the UNESCO ESD framework so learners can enhance understanding, develop critical thinking, value reflection, and enhance engagement, thereby extending the cognitive, socio-emotional, and behavioural dimensions of learning (UNESCO, 2023).

This paper will describe how Interactive Oral assessment was designed for a large teacher education programme at an Irish Higher Education Institution. The author will discuss the findings of a student evaluation, emphasising the role of IO assessment in fostering a culture of academic integrity, enhancing student engagement, and aligning with broader educational goals. The paper will also address potential challenges and considerations for implementing this type of assessment in large classes.

2. Description of the Teaching and Learning Context

The teaching context involves a Postgraduate NFQ Level 9, ten ECTS modules with 115 learners, designed to provide foundational knowledge and skills for inclusive education to qualified, practising teachers across Primary, Post Primary and Further Education settings. The module content focuses on the historical development of special and inclusive education in Ireland, critical examination of related international and national frameworks, and exploration of key theories and literature. It aims to cultivate a reflective and critical approach to inclusion in education, examining learners' attitudes and the broader educational system's role in fostering inclusivity.

The module encompasses a variety of teaching strategies to address its comprehensive objectives, which include developing a critical understanding of disability and inclusive education concepts, examining relevant legislation and policies, and fostering critical reflection on attitudes toward inclusion. Over the last four years, students demonstrated their learning via a 4,000-word literature review, encouraging deep engagement with a chosen topic and developing critical inquiry skills. This review of relevant literature provides the opportunity to present critical inquiry and engagement with the assignment topic and relevant reading. The inquiry skills including interpretation, analysis, inference, and evaluation are reflected in a balanced and objective interrogation of relevant policy, research, and literature.

Over the last two academic years, we have observed a steady increase in support requests from students, namely concerning extension requests or delayed submissions. Despite a long lead-in time from assignment briefing to submission (4 months), we received extension requests from 25% of the large cohort who submitted an assignment. Additionally, large student numbers (100+) are accompanied by sizable marking

loads (Jessop *et al.,* 2012), which necessitates reliance on many additional markers, including temporary marking staff, to support the assessment and administration of all assignments. For large student cohorts, decisions about assessment design involved managing resource limitations (such as financial cost, staff availability, turnaround time and related metrics). A further consideration concerns the challenges associated with marking consistency across large classes, using multiple assessors. Traditionally, module coordinators develop training programmes, pre-marking activities and lengthy consultation sessions to ensure agreement and understanding of grading strategies.

Interactive orals (IOs) offer a viable alternative to traditional assessment in large class teaching. They are a fair and reliable assessment method. IO aims to create a more dynamic and engaging evaluation environment, encouraging students to demonstrate their understanding in a professional, conversational setting. This shift intended to model inclusive practices, reduce academic misconduct, and promote essential transversal skills like critical thinking and professional communication.

2.1. Interactive Oral Assessment

Designed within an evidence-based framework pioneered under the leadership of Danielle Logan-Flemming, Griffith University, IOs were first implemented at Dublin City University (DCU) in 2020 and successfully developed as a reliable form of assessment across the University in all disciplines (Ward *et al.* 2023). Research shows that IOs have the potential to develop many transversal skills, such as critical and creative thinking, professional communication, and personal agility (Tan *et al.,* 2021; Sotiriado, 2020).

An Interactive Oral Assessment (IO) is a two-way conversation using a professional scenario to stimulate a free-flowing discussion. It is designed to be a curious type of conversation where the assessors' prompts or questions allow students to showcase their learning in a professionally aligned environment. It facilitates the exploration of a student's deep and higher-order understanding of a topic. It is different from an oral exam or a viva where a question-and-answer format is used within strict exam conditions that can be sometimes stressful for the student.

IOs offer a viable alternative to traditional written assessment. Research indicates they are a fair and reliable assessment method (Sotiriadou *et al.*, 2020). Over the last three academic years, 11 DCU academics have used IO assessment across 15 different courses with 21 different cohorts. In total, almost 3,000 DCU students have experienced interactive oral assessment resulting in very positive feedback from assessors and students. Building on the success of IO and working with champions within DCU to develop a robust assessment mode intends to model inclusive practice, discourage academic misconduct and promote transversal skills (professional communication, collaboration, and critical thinking.)

Specially tailored for higher education and drawing inspiration from the International Baccalaureate curriculum, Interactive Oral Assessments (IOs) are authentic, spontaneous exchanges between a student and an evaluator, or among students themselves (Ward *et al*., 2023). These assessments are rooted in constructivist theory, embracing andragogical strategies that emphasise active, contextualized learning. IOs serve to solidify knowledge in practical settings, thereby bolstering employability skills. They provide

a genuine assessment experience, situated in a real-world or industry context, where students must articulate, synthesise, and apply their knowledge and skills orally.

2.2. Design Considerations for Interactive Oral Assessment

Insights gathered from Sotiriadou *et al.* (2019) research on Interactive Oral Assessments (IOs), along with support from a partnership with the research team from Griffith University in Australia, DCU formed an interdisciplinary Interactive Oral Assessment community of practice (IO CoP), aimed at advancing and refining the implementation and design of IO practices among those who teach at the HEI. The engagement with Griffith University, particularly benefiting from the expertise of a seasoned practitioner and her colleagues, played a pivotal role in the CoP's achievements. Members of this community brought a variety of approaches to the table, fostering a mutually beneficial learning environment and enhancing the collective expertise in IO practices.

Many of the challenges of implementing Interactive Oral assessments relate to scheduling and perceived time of marking, particularly in large classes. However, oral assessments are scalable, and these concerns can be remedied with careful design, and planning, including collaboration among staff in a programme when possible.

An additional challenge for many students and assessors is their relative inexperience with this type of assessment, which could lead to anxiety. Therefore, scaffolding the assessment and giving students practice in explaining their understanding during the learning process is vital (Theobold, 2021).

Figure 1.0: Interactive Oral Assessment as Authentic Assessment Design. (Sotiriadou et al., 2020)

Drawn from the work of Sotiriadou *et al.* (2020), Figure 1.0 illustrates the key objectives and characteristics of effective IO assessment design, which are further explored below:

- Alignment with Learning Outcomes: Align the assessment task with the module and/or Programme Learning Outcomes to ensure coherence in learning objectives.
- Contextualisation and Authenticity: Craft the assessment to be authentic. Instead of hypothetical questions, have students assume roles or personas to navigate real-life scenarios.
- Duration of Assessment: Determine the optimal length, balancing sufficient time for students to demonstrate learning without causing fatigue. A 10–20-minute duration is recommended.
- Marking Rubric: Develop a marking rubric corresponding to the Course Learning Outcomes (CLOs) to guide consistent and objective evaluation.
- Procedures and Protocols: Establish clear procedures for conducting assessments. Develop a varied question/scenario bank to ensure equivalency in challenge and alignment with CLOs, drawing on effective prompting techniques.

Scaffolding

- Preparation: Ensure students understand the assessment's purpose, structure, and success criteria early in the module timeline.
- Practice Opportunities: Integrate practice sessions within the curriculum, such as peer-to-peer exercises, and provide exemplars with feedback to model expected performance.
- Communication Enhancement: Foster communication skills within the classroom to reduce assessment anxiety and build confidence.

Scheduling

- Time Management: Allocate adequate time for both the Interactive Oral Assessment and subsequent marking within each time slot. Allowing for some spillage in case of unforeseen technical issues.
- Logistics for Large Cohorts: Utilise digital scheduling tools for managing numerous appointments. Distribute allocations among assessors, ensuring they are well-versed in the assessment's protocols and rubrics.

Implementation

- Equitability: Maintain fairness by involving multiple assessors in conducting and evaluating the assessments, guided by the established rubric.
- Record Keeping: Record interviews for moderation purposes and to resolve any grade disputes.
- Supportive Environment: Create a relaxed atmosphere using conversational techniques to minimise student stress and enable optimal performance.

3. Student Evaluation Results

A comprehensive evaluation of the assessment experience, as voiced by students who engaged with IO, offers insightful reflections on its effectiveness, appeal, and pedagogical value within large postgraduate teacher education programmes. This evaluation highlights the strengths and areas for enhancement in the IO approach and underscores its impact on student engagement, understanding, and overall learning experience. Through a detailed analysis of feedback on various aspects of the IO, ranging from preparation and support to the inclusivity of the pedagogy, this section will offer some insights into how the IO resonates with students' learning preferences and aligns with the programme's objectives. Additionally, it will explore suggestions for refining the assessment process, ensuring that it fosters a meaningful and supportive learning environment for all participants.

Most students (85% of 123 respondents) rated their overall satisfaction with the Interactive Oral Assessment positively. Notably, 103 respondents awarded high scores, indicating a strong appreciation for this assessment method. Students found various supports and resources valuable in their preparation for the assessment. The sample interactive oral video was highlighted as useful and received high usefulness ratings from most respondents.

Eighty-six (70% of respondents) students felt that the Interactive Oral Assessment effectively facilitated a deeper understanding of the module content, with several respondents specifically mentioning the practical nature of the assessment in enhancing their learning. When asked about the appeal of the assessment, students appreciated its practicality and interactive nature. Comments highlighted the benefit of engaging in a realistic, conversational format that differs from traditional written assessments.

Respondents acknowledged the Interactive Oral Assessment's role in supporting inclusive pedagogy. The assessment was seen as beneficial for a diverse range of learners, including those who excel in verbal communication and those who appreciate practical, real-world learning contexts.

While overall feedback was positive, some students suggested enhancements such as more specific scenarios and additional preparatory resources to further support diverse learning needs. Notably, most students expressed gratitude for the supportive environment and the unique assessment experience. The practical nature of the assessment and the opportunity to engage in a meaningful conversation were frequently praised. Some students recommended narrowing the focus of the assessment scenarios and providing more detailed preparatory materials to enhance clarity and relevance.

Overall, Interactive Oral Assessment was well-received by students, who found it to be an effective, engaging, and inclusive method of demonstrating skills and knowledge. While there are areas for improvement, particularly in terms of scenario focus and additional support resources, the assessment overall was viewed as a positive and beneficial component of this large postgraduate teacher education module. Future iterations of the assessment will benefit from incorporating student feedback to further refine and enhance its effectiveness and inclusivity.

4. Challenges and Implementation Considerations for Large Classes

Reflecting on implementing IO as a fair and reliable assessment method provides a nuanced understanding of practical implications and the pathways for optimising its effectiveness in large class settings. Several challenges and strategic responses have been considered and can be shared with fellow educators to build capacity sustainably. These include:

Resource Intensity: Implementing IOs in large classes necessitates a substantial investment in staff and material resources. The requirement for several trained assessors and the logistical demands of coordinating such assessments are significant. Institutions may consider developing communities of practice (CoP) to allow for the sharing of expertise, the development and sharing of materials, and the provision of opportunities for discussion, which offers invaluable support. Tangible examples of this support were evident in the DCU CoP through collaborative designs that were constructively aligned, scaffolded assessment strategies that had an integrated IO component, scenario planning, and the development of rubrics and prompts for the IOs. CoP members helped their colleagues create examples of recorded IOs for each pilot, which were captured during the weekly CoP meetings.

Consistency: The integrity of IOs hinges on the standardisation of assessment protocols. To this end, developing comprehensive assessor training strategies and robust assessment rubrics is vital. These measures ensure that despite the scale of implementation, every student's work is evaluated against a consistent set of criteria, thereby upholding fairness and reliability.

Technology Dependence: While technology can streamline the administration of IOs in large classes, it also introduces potential pitfalls, such as technical malfunctions and issues of digital access and literacy. Institutions should invest in reliable technology platforms and provide adequate technical support and training for assessors and students. Furthermore, contingency plans should be in place to address any technological disruptions during the assessment process.

Student Anxiety: IO, as an innovative assessment approach, can be intimidating, possibly impacting students' performance. To alleviate this, educators can employ various strategies such as conducting mock assessments, offering clear and detailed guidelines on what is expected, and establishing robust support systems. These approaches can help demystify the assessment process for students, reducing anxiety and enabling them to showcase their true capabilities.

The thoughtful integration of IOs in large class settings necessitates a strategic approach that balances resource scalability with the maintenance of assessment quality and student support. By addressing the identified challenges, institutions can leverage IOs to foster academic integrity, enhance student engagement, and promote deeper learning in large classes.

5. Conclusion

The paper reiterates the impact of Interactive Oral assessments in the contemporary educational landscape, particularly in large postgraduate teacher education programmes. The author contends that they have the potential to uphold academic integrity, enhance student learning and engagement, and contribute to sustainable educational practices. Arguably beyond teacher education, the benefits observed in terms of authenticity of assessment could potentially be relevant to the assessment of large cohorts in postgraduate professional learning programmes in other disciplines.

Findings from student evaluation at DCU support the emergent literature on IOs. They reveal the effectiveness of IOs in enhancing student engagement and learning. Overall, students who participated in IOs demonstrated a deeper understanding of the subject matter and favoured IO as a viable approach to assessment.

Most students found IOs more engaging than traditional assessments, citing the interactive and conversational nature of the assessment as critical factors. Students reported a better grasp of the course material, attributing this to the active learning aspect of IOs, which required them to articulate their thoughts and respond to immediate prompts from an assessor.

This paper synthesises the evaluation findings and emerging literature on Interactive Oral assessments' role in fostering a culture of academic integrity, enhancing student engagement, and aligning with broader educational goals. It also addresses potential challenges and considerations for implementing these assessments in large classes.

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Student Engagement in a Large Flipped Class

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Abstract
This paper reports on two criminal law classes in which I instituted a flipped-class methodology. The classes were mandatory and contained large numbers of students (over 120 in each). The asynchronous out-of-class materials were well received but students were reluctant to engage in discussions and other interactive activities in the synchronous classes. The students were much more willing to speak privately at the end of the classes, which limited their opportunities to learn from each other. Nevertheless, of the 44 students who mentioned the synchronous classes in feedback, twice as many (n=29) supported discursive and interactive classes as opposed them (n=15). The paper reviews the literature on a number of possible solutions, and concludes with some reflections on how I might adapt this literature to improve synchronous sessions as part of an overall flipped methodology.
Keywords: *Student engagement; Flipped class; Class discussion; Large classes*

1. Introduction

This paper reports on my attempts to increase student engagement through discussion and argument in two flipped Criminal Law modules, both of which contain large numbers of students. In one respect, the paper is a report on relative failure – while students appeared to be generally happy with the flipped method, as an educator I was disappointed with how the in-person sessions developed. I reflect on what went wrong, and how I might improve these results in the future.

2. Description of the Teaching/Learning Context

I have taught criminal law to undergraduate students for many years on both Law (second years) and Arts (final years) programmes. Roughly 145 and 120 students, respectively, registered for the classes, both of which were held in traditional tiered lecture halls with fixed seating and relatively good acoustics. Criminal law is a mandatory module for both sets of students. I have adopted a fully flipped methodology in both classes. A flipped class has been defined as

> [A] pedagogical approach in which direct instruction moves from the group learning space to the individual learning space, and the resulting group space is transformed into a dynamic, interactive learning environment where the educator guides students as they apply concepts and engage creatively in the subject matter' (Schaffzin, 2016, p. 665-6).

I adopted this pedagogical method in the expectation that students would find greater flexibility and a deeper learning experience through this pedagogy.

I broke each topic into smaller chunks, and for each chunk I prepared narrated videos and quizzes to be viewed asynchronously. However, the founders of the flipped methodology (Bergman & Sams, 2012 and 2014) suggest that its real payoff lies in the 'use of class time for hands on activities or other means of encouraging students to practice, apply and demonstrate mastery of the content learned from the pre-class requirements' (Harris *et al*., 2016, p. 325). I have considerable experience with discussion-based classes at postgraduate level, although these classes typically had twelve or fewer students who were older than my undergraduate students. The postgraduate students were highly engaged, but it was unclear whether this was due to class size or to the students' relative maturity. My guess at this juncture is that the former is more likely as the postgraduates were only a year or two older than the undergraduates. I will return to the issue of class size later.

Students in both undergraduate modules were scheduled for two one-hour classes each week, one of which I used for revision and questions/answers. I designed the second session to be discursive to help students delve deeper into the material. I stressed to the students from the very first class that participation was important, and that I expected and wanted them to engage with me and with each other. I explained that they could learn much from each other: Arvanitakis points out that 'students in the lecture hall are not empty vessels but are themselves full of knowledge' (2014, p. 740), and that this knowledge is a learning resource (ibid, p. 744). Further, engaging in debate is a skill that all lawyers must develop. I used *Vevox* polls, an online polling app which has been shown to increase student engagement 'without the fear of being put on the spot to answer a question' (Czekanski & Wolf, 2013; Greenwood, 2023; Lowney, 2023).

In a standardised feedback survey, with 149 responses between the two classes,[1] some students (n=15) indicated that they disliked these sessions, but twice as many (n=29) liked them. One said, '*I really enjoy the class discussions which further increase learning by letting us speak and teach each other*'. Another said, '*The in-person classes are a great overview of the topics and I really enjoy how there are times [sic] for questions when needed*.' Yet in class, most students would not volunteer to engage in discussion. But when called upon individually, they had no difficulty in answering and giving coherent opinions. As the weeks went by and it became clear that students were reluctant to speak in class, I tried asking students to raise their hands to indicate who had voted what way in the *Vevox* polls, and then called on individual students to justify their position. Perhaps predictably, the students soon learned not to raise their hands!

Fritschner (2000) sets out six levels of student participation:

- Breathing and staying awake;
- Coming to class, taking notes and completing assignments;
- Writing reflective and thoughtful papers;
- Asking questions in class, making comments and providing input for class discussions;

1 With a total of 265 registered students in the two classes, the response rate was 56 percent.

- Doing additional kinds of research or coming to class with additional questions; and,
- Making oral presentations where the students themselves became the teachers.

My hope coming into the semester was that students would reach at least level 4, which would indicate active learning and perhaps even critical thinking. In practice, the vast majority of students rarely exceeded level 2. Students asking their questions after class instead of during the class denied other students the opportunity to learn from those questions and the discussion that developed from them. Added to this, as noted, was students' reluctance to volunteer answers/opinions despite being able to do so when called upon. These experiences suggest that students had not grasped how much information and understanding they can gain from each other (Precourt & Gainor, 2019; Nadile *et al.,* 2021). As a result, students could not have derived as much from these sessions as I had hoped.

3. Literature Review

The annual Irish Survey of Student Engagement confirms that a minority of students at the University of Galway take responsibility for most classroom questions and comments (ISSE, 2022).[2] Almost 60 percent of student respondents reported either never contributing or doing so only sometimes. This result implies that some 40 percent contribute frequently, a figure that almost certainly overstates the true level of student participation; studies have found that students seriously overestimate their own participation levels (see, e.g., Howard *et al*., 2002; Burchfield & Sappington, 1999). This is especially true when the estimation occurs at the end of the semester (i.e., in a student feedback survey) rather than immediately after each class (Krohn *et al*., 2011).

My experience has been replicated many times in the literature. Rocca notes that instructors face a 'regular struggle to get students to ask questions and participate in discussions' (2010, p. 185). Multiple studies have shown that a minority of students are responsible for the majority of class contributions, a situation that Karp & Yoels described as a 'consolidation of responsibility' (1976). In Karp & Yoels' study, between three and five students accounted for half to three-quarters of all students' comments in class. More recently, Howard & Henney (1998) found that 92 percent of interactions were made by around 5 'talkers' (defined as students who made at least two contributions in the session; they made up less than 30 percent of the total number of students). Over half the students in the session in question made no contribution at all, aligning with the Howard *et al*. (1996) finding that 28 percent of students accounted for 89 percent of all student comments.

The challenge is to find a way to encourage students to participate in large discursive classes. This is especially true now that large classes that have become such a feature of modern university education as a result of massification (Hornsby & Osman, 2014). Cold calling is an option. Cold-calling arises when instructors call on a student individually to answer questions without waiting for that student to volunteer an answer. Not surprisingly, cold-calling results in greater and wider student participation than reliance upon voluntary responses (Carstens *et al*., 2016). Many academics dislike this option, believing that it

2 As its name suggests, the ISSE is an annual survey of third-level students about their experiences in Irish higher education institutions. Over 300,000 students have completed these surveys since 2013.

makes students feel uncomfortable (Dallimore *et al*., 2005 and 2006). Dallimore *et al.* found, however, that this belief has little substance. Their study of an undergraduate management accountancy module with over 600 registered students concluded that cold-calling is 'effective at increasing the number of students who answer questions voluntarily; furthermore, in classes with high cold-calling, voluntary participation increases over time' (2012, p. 306). The authors suggest that 'cold-calling encourages students to prepare more and to participate more frequently; the more they prepare, and the more frequently they participate, the more comfortable they become when participating' (ibid, p. 331).

Making better and more extensive use of technology that anonymises student contributions is a further option. Fassinger noted that "students' reactions to a class may have more to do with peers' behaviours than with the course structure or a faculty member's actions" (1996, p. 29). Similarly, Nadile *et al.* (2021) found that fear of being negatively evaluated on foot of questions/opinions acts as a disincentive to participation, especially among female students.[3] Polling apps like *Vevox* and *Kahoot* allow students to participate anonymously as individuals (Greenwood, 2023). Other technologies such as *Padlet* allow groups to participate while retaining an element of anonymity for the individuals in those groups.

Another option is to offer some degree or level of credit for participation. Sommer & Sommer (2007) reported on an experiment in which a small amount of class credit was offered on alternate days. Participation increased on both days but the increase was significantly higher on the credit days. Similarly, Foster et al. (2009) found that low-responding students engaged more during classes in which participation credit was offered than in classes in which no credit was offered. Nevertheless, a number of practical objections can be raised to the practice. First, what credit is to be given? In the reported studies, the amount of credit on offer was low; one of the instructors in Karp & Yoels' study (1976), for example, offered a maximum of 22.5 participation points out of a total of 520 points – less than five percent of the total score for that module. But should the credit be given to reflect the fact of the contribution or its quality? If the latter, how is the quality to be measured? And what about the process of external assessment? A further difficulty is that if participation credit is to be offered, it must be available to every student. In a small class, this is not much of a problem, but both of my criminal law classes have well over 100 registered students. Even if every minute of a session were to be given over to discussion, only a fraction of students in such a large class will be able to participate. The likelihood of complaints and appeals is obvious. Finally, on a purely logistical level, recording participation scores will add to the instructor's burden in every class. Krohn *et al.* (2011), however, suggest allowing students to self-record their participation, and found a high degree of agreement between such self-reports and independent observation where the self-reporting was done at the end of each class.

Finally, we might attempt to deal with the underlying issue: the existence of large classes. Rocca (2010) notes a considerable body of research demonstrating that students are more likely to participate in a smaller class than in a larger class. One of the earliest studies, done by Karp & Yoels (1976), found that both students and teachers considered large class sizes to be an impediment to students engaging in class discussions. Their

3 I have not considered the gender and age make-up of classes as these are issues over which a teacher has little control, especially in mandatory modules.

study confirmed these sentiments: students in smaller classes were twice as likely to participate as students in larger classes (48 percent as opposed to 24 percent), and were five times more likely to make two or more contributions. Fassinger (1996) found that students making more than one contribution was the norm in smaller classes (twenty or fewer students) but not in larger classes (52 percent versus 29 percent). Similarly, Fritschner (2000) found that almost half of all interactions (47 percent) occurred in smaller upper classes, against only 29 percent in the larger introductory classes. Indeed, Howard and Henney (1996) concluded that 'the effect of larger class size [is] the largest significant predictor of student participation'. These studies suggest that breaking a large class into several smaller groups might be the easiest way to encourage greater student participation in class discussions (Ferguson, 1986, p. 217-8). There is a limit, however, on what individual academics can do. Large classes are a reality, and the resources made available to universities have not kept pace with the massification of third-level education and are unlikely to do so in the future (Hornsby & Osman, 2014, p. 713).

4. Reflection

In many respects, flipping my criminal law modules was a success but the in-person discursive sessions were disappointing due to the unwillingness of students to engage in discussion and debate. These are large classes (well over 100 students in each), and as noted, the literature shows that student engagement tends to be greater in smaller groups. Individual lecturers in mandatory modules have little control over the number of students registering in their classes. It is not open to me to simply cut the number of students in my criminal law classes, no matter how well advised doing so might be pedagogically. But there are other steps that might be taken to align classes with the literature, especially in the context of a flipped methodology. Rather than all students being required to attend all in-person sessions every week, perhaps I might divide the cohort into four sub-groups, with each attending on successive weeks. As the students will already have had the benefit of the pre-recorded classes, a reduction in scheduled class times should be officially permissible. But it might be argued that reducing class time undermines one of the principal benefits of flipping classes – providing time for students to engage in activities that will help to develop their mastery of the subject. Perhaps in an ideal world. But in a world of large classes that militates against student participation, it is surely better to have fewer in-person classes that are of a higher participatory quality.

Reducing class sizes is only one aspect of improving student engagement; other logistical issues intersect with class size to affect such engagement. The architecture of the classroom is one such issue (O'Hare, 1998; Kennedy (2002). Traditional lecture halls and classrooms are not particularly helpful for hands-on group activities (Wannarka & Ruhl, 2008). Rocca (2010) points to literature that found that classrooms in which seats/desks can be arranged in a circular or a U-shape encourage greater levels of student participation. Thus, it might be better to use classes designed for problem-based learning. In Galway, we have a new moot court room that is especially advantageous – it is relatively small with movable furniture and is well served technologically (two large screens). These factors will allow me to divide the class into even smaller groups of three or four to work on problems together as well as individually. Teachers should also get

over their aversion to cold-calling, which does not have to be a confrontational, adversarial process. In a more intimate setting than a traditional lecture, in which the learning materials and outcomes have been identified to students in advance, cold calling can be done in a relaxed and informal way.

Discussion and argument are valuable skills for law students to develop, and the use of polling apps like *Vevox* are excellent tools to kickstart discussions. But the scaled-down flipped in-person class set out above is an excellent opportunity to introduce more realistic problem-solving skills. In my classes, I drew up specially prepared and accurate Books of Evidence that contained indictments, charge sheets and witness statements that were presented more realistically than the traditional one-paragraph scenario. Groups of three or four students can work on these Books of Evidence together, presenting their conclusions to the whole group via *Padlet* or some such technology. Apps such as these allow students a degree of anonymity in that the results presented to the class will be done as a group, thereby ticking yet another participation box.

Finally, some academic credit *could* be offered for attendance and participation, and as noted, there is some research to suggest that participation rates increase by doing so. I confess, however, that I rebel against the idea of giving academic credit to law students for merely doing the most basic of Fritschner's (2000) levels of participation, which they should be doing anyway. From this strategy, therefore, I respectfully dissent.

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Neurodiverse Students Learning in Large Lecture Theatres: Challenges and Opportunities

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Abstract
This paper explores the impact of massification in higher education, particularly in large classroom settings, on students who identify as neurodivergent. It focuses on how these students navigate learning in such environments and examines pedagogical practices that may affect their inclusion and learning outcomes. The author, with experience teaching classes of various sizes in higher education, notes the challenges that arise when neurodivergent characteristics clash with the demands of large classrooms. Neurodiversity encompasses a range of neurological challenges. This paper aims to investigate how these challenges intersect with large class settings and impact teaching and learning dynamics and considers strategies to maximise engagement, participation and learning for neurodiverse students in large higher education classes.
Keywords: *Neurodivergent; Large classroom; Inclusion; Pedagogical practices*

1. Introduction

This paper explores how students who identify as neurodivergent navigate university large classroom settings in relation to their learning. Neurodiversity is an umbrella term for a range of different neurological challenges. These can be referred to as specific learning difficulties and development disorders which can include dyslexia, dyspraxia, attention deficit hyperactivity disorder, dyscalculia, autistic spectrum, and Tourette syndrome. The term large is often contested (Kerr, 2011) and there is no accepted definition of what a large class is although 'studies in this area tend to draw evidence from classes with more than 100 students' (Maringe & Sing, 2014: 763). However, in this paper, large will be used in relation to if, when or how this impedes on the learning and teaching of a student who is neurodiverse. Consequently, the focus will be on pedagogical practices which may or may not be appropriate for this student cohort and their teaching, learning and inclusion in the educational setting. The author has taught classes of varying sizes of 20, 60 and up to 118 students in higher education, which had neurotypical and neurodivergent students. The characteristics of being neurodivergent can often create issues for teaching and learning in large classes. Difficulties with reading speed, note taking, spelling, proof-reading, deciphering academic language at speed and memory retrieval are all common characteristics of having dyslexia and are skills which are often needed in a large and often noisy classroom. According to Vincent *et, al.* (2017) students with neurodiversity constantly feel out of place and this can be exacerbated by large, busy, and noisy spaces.

2. Description of the Teaching/Learning Context

Large classrooms are increasing within higher education, particularly where an institution uses neoliberal criteria of optimal revenue, profitability and financial sustainability as prime objectives for quality assurance and strategic development (Minz, 2021). The university in this context is a Technological University, which teaches mainly applied courses, where graduates are considered 'job ready' when they are finished, and ninety percent of the student cohort enter directly following completion of secondary school. One of the most difficult experiences for these students can be the transition from a formal school setting to a higher education institution which can be a daunting prospect for all students. Class sizes consisted of between 100 to 120 students and contact was a three-hour lecture for each module a week in a social care class. These courses are applied and require a more 'hands on' approach which may be difficult to achieve in large classes. Teaching practices used were what Freire (1970) described as the banking method, whereby I stood at the top of a lecture theatre and imparted content. In contrast with using teaching strategies which encourage student participation and engagement such as, group or pair tasks, posing questions and using multimedia, didactic and transmissive approaches to teaching and learning which for example could include the lecturer standing at a podium and talking at students, can often be non-productive in this environment and students can become easily lost, especially those students who identify as neurodivergent. Moreover, this approach severely limited student participation and engagement, developing connections or relationships, and ultimately affected attendance. One of the main issues identified in research by Murphy (2023) was the lack of knowledge around neurodiversity and how it affects learning by academic staff and their peers. Students who are neurodiverse pose a particular challenge to academic staff because their difficulties are hidden, and they are often lost in the large class environment.

In large classrooms or lecture halls, the challenges for neurodiverse students may be intensified (Jacobs *et al*, 2020). Using the traditional banking (Freire, 1970) 'talk-at-them' approach to teaching, students became bored, started to talk among themselves, and use their phones and consequently the noise levels increased in the room and over-stimulation became heightened making it even more difficult for neurodiverse students to learn in the large groups in these 3-hour long lectures. High noise levels made it difficult for students to concentrate and focus on the content being presented. This was especially true for students who were sensitive to auditory distractions or who had difficulty filtering out background noise. These large group classrooms were also over-stimulating, with various visual and auditory stimuli competing for students' attention. This often led to sensory overload and distracted students from the learning objectives. During the last class of each semester, an overview and review of the year and discussions around final assessments are usually held. This generally led to high attendance and engagement from students. I always tried to take advantage of this high attendance to ask the students to complete a short feedback sheet with four simple questions in order for me to try and improve the content and teaching and learning for those students following on next term. I found this was a much better way to record findings within such a large class than an end of module survey completed outside of class. I would ask the students 'what did you like/dislike about this module' and a large proportion of the feedback would relate to: 'class too noisy', 'too much chitter/chatter', 'can't think', and more comments like this which related to the environment. All the discussion above led me to reflect on my pedagogy and implement some changes within my practices.

3. Literature Review

Cook-Sather *et al.* (2014), Dunne (2016), and Mercer-Mapstone *et al.* (2017) discuss the concept of 'students as partners' and how the notion of co-created learning and teaching has gained traction in higher education. This notion encompasses various levels of involvement and implies a deeper level of student engagement and agency emphasising "collaboration between students and educators, where students are actively involved in the design, delivery, and assessment of their learning experiences" (Bovill, 2020, p. 1024). Student engagement encompasses involvement in both learning and teaching processes, as well as participation in student representation and governance structures according to Bovill (2020). Nonetheless, while both student engagement and students as partners involve student involvement, as well as a greater level of collaboration and shared responsibility between students and educators in shaping the learning experience, this may present particular challenges within large class environments.

According to Altbach (2009) and Maringe and Sing (2014), 'momentum around increased participation and student mobility in higher education in an increasingly globalising world is gathering pace and, in the process, changing both the demography and size of university classrooms' (Maringe & Sing, 2014: 761). These changes have implications and consequences for the quality and equity of learning and pedagogical practices. Although there is literature relating to teaching large classes, the challenge that is emerging in higher education is how these impact on students from diverse backgrounds. Consequently, large class sizes have become not just about numbers, they are also related to the complexities and challenges of delivering both equality and quality learning opportunities for all students.

There is little evidence at present to suggest an ideal class size for effective university learning. According to Cuseo (2004), there is evidence which suggests diminishing returns in terms of opportunities to learn as class sizes increase and a 2018 report by the European University Association (2018) noted that 'teaching in small groups was found useful by practically all institutions' (Gaebel & Zhang, 2018: 55). AHEAD (2021) suggests that half of the students registered with a disability in higher education in Ireland are neurodiverse and many of the challenges they face can be exacerbated in a large class size environment. These larger environments can often overwhelm neurodiverse students, and this will not ensure a truly inclusive learning environment according to Miciak & Flecher (2020).

Larger classrooms can be equally as challenging for instructors as well as students due to the pace and demands. The Universal Design for Learning (UDL) model which is underpinned by the three UDL principles of engagement, representation, and action and expression (CAST, 2011; AHEAD, 2021) promotes an inclusive model for students of all abilities and provides high quality individual supports for those students who need them. UDL ensures support services are funded 'to engage in delivering quality-assured reasonable accommodations, and to collaborate across campus and promote more inclusive practice in the mainstream delivery of programmes' (AHEAD, 2021:5). This model was developed using the voices of students, academic staff, management, and student support staff which ensures their three principles underpin the delivery of the programme or as Franklin phrased it: 'Involve me and I will learn'. Nonetheless, Fovet, (2021) found that even among UDL advocates and implementers in higher education (HE), there has been some hesitation when it comes to implementing and using UDL in large class contexts.

4. Analysis of/Reflection on/Implications for Practice

As an educator I reflected on the traditional methods of teaching I was using in these larger learning and teaching spaces and how I might make them more inclusive for neurodiverse students. I wondered how I might create a learning environment that is inclusive for all students, regardless of the class size. How I might better engage all of the students all of the time or even some of the time, would it be feasible to use the Universal Design for Learning model in this space, or if applied courses are being taught, courses that require discussions around sometimes sensitive material and experiential learning? Although Nieminen (2021) found that it can be almost impossible to achieve a curriculum that tackles the needs of all learners, upon reflection of my own pedagogy practices, I decided to implement some changes to make my classrooms as inclusive as possible.

4.1 Teaching Practices

According to Sanger (2020) large classes give rise to specific pedagogical challenges, particularly in relation to inclusion and accessibility. This is where I decided to try and implement change to make my classrooms more inclusive and accessible. With the support of our department, school, and university, we made some changes to how we delivered content. The three-hour lecture was changed to a one hour and thirty-minute class. The content and theory on the day's topic was delivered to the whole class group and then the whole class was divided into four groups of 28 students in one hour tutorial style classes. Students reported back that this worked better as they received the content in the whole group, however, when they sat in the smaller groups, it provided a space for the applied work to be carried out in a safe space, the discussion was meaningful and that they learned better.

Some other pedagogy changes I made revolved around the content I was using. I used less text in my PowerPoints, included more images and used more visuals. All my notes on our shared learning spaces were changed to Word documents so students could edit as they saw fit. I released the PowerPoint the day before our classes, as opposed to the hour after the lectures. This can offer neurodiverse students and indeed all students the opportunity to study these ideas and new concepts before they encounter them for the first time in the large class environment. This allowed students to view the content and examine any words or theory they were not familiar with before the classroom lecture. The reason for this is that neurodiverse students can get lost very easily in lectures when they are trying to decipher content for the first time and become very frustrated and detached when they cannot catch up.

Informed by students' input and their feedback, changes to assessments were made. The traditional two academic essay style assessments were replaced with a presentation type assessment whereby students worked in groups of four and presented the content to their small group. This could be through a PowerPoint, a video, role play or any other means which was discussed with and agreed with me. The second assessment was a traditional style academic essay using a brief from the lecturer and the end of term assessment was a short multiple choice questionnaire on the topics covered. This changing of the assessments proved to be easy to implement as the module was 100% continuous assessment. The students enjoyed this process as they felt they had some control over their learning and how they were assessed.

4.2 Other Changes

I also changed all my material to font style Verdana, which my research in 2021 found to be the preferred font (Murphy, 2022). Students fed back that this worked very well for them. Some other changes I made were including some voice content on each slide, a brief recording on the assessments to bring clarity and leaving content accessible until after the student's exams were completed. Links to short YouTube videos and other varying resources were also reported to be helpful. Nonetheless, in the larger spaces, students still reported issues with note taking, comprehension and memory recalling of specific subject-related academic language due to the nature of the large space. Some ways I compensated for this was through the use of assistive technology in lectures. Voice overs on the slides on Moodle allowed students to use listening devices so they could hear the discussion around the PowerPoints at the minimum in the classroom and they could be used outside the classroom for the duration of the module. After discussion in the classroom with the students, they were allowed on their phones only for them to use their devices for listening to the slides and/or searching for words they did not understand. We agreed to commit to a non-share with others of any recordings from my modules and some students also used a LiveScribe pen in my lectures.

I found these UDL principles difficult to implement within the larger class due to time constraints, disturbances, attention, and the effort it often took. However, within the smaller tutorial style setting where the applied parts of the course were delivered, UDL was much easier to incorporate within the teaching and learning environment. This allowed both myself and the students greater representation through being more visible and accessible in the classroom. Engagement between students and the learning increased also and the discussions were very beneficial to all. Action and expression was very evident then due to the discussions, building of personal connections with the learners and allowing students to demonstrate their skills and competencies in multiple ways.

5. Conclusions

The implementation of a state-wide awareness and educational campaign around neurodiversity and inclusiveness is important. University staff and academic staff need to be given continuous professional development on neurodiverse differences, what they are, what they are not, how it affects a student's educational experience and what can be done to develop a more inclusive classroom. It would also be beneficial to implement strategies and technology to minimise noise within large classrooms to create more inclusive and accessible learning experiences that support the diverse needs of all students.

Whether classes are large or small, educators can consider creating structured learning activities that help students stay focused and engaged, breaking down content into smaller, digestible chunks, incorporating interactive elements, and providing opportunities for movement or hands-on learning. Incorporating feedback from students and developing options for students to customise their learning experiences can help accommodate diverse needs and preferences.

Implementing inclusive teaching practices can help create a supportive learning environment for all

students, regardless of their sensory sensitivities. This may involve incorporating UDL principles into course materials and activities, such as providing multiple modes of representation, expression, and engagement (CAST, 2011). Additionally, fostering a culture of respect and understanding among students can encourage empathy and support for other students who may experience sensory challenges.

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Ungrading: Using Feedback and Reflection to Address Equity Challenges in Large Classes

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Abstract

This paper provides an overview of ungrading, the practice of removing traditional grades from assessments to prioritize students' processes and improvement and explores ungrading as a strategy to increase equity. We discuss how ungrading was implemented in the specific case of an undergraduate general education history course in Singapore in Spring 2019; the course included 120 students across three course sections. While a final grade was required by the program, all assessments within the course were ungraded.

Through this example, we highlight effective practices, especially the use of reflective essays. We explore how these essays enabled collaborative grading, in which learners and instructor both contributed to the assignment of a final grade. We address how this afforded opportunities to apply equitable practices, including opportunities to affirm students' diverse identities and individualize learning paths, despite the size of the class. Finally, we discuss additional implications for ungrading in large courses, including the use of collaborative grading in STEM settings, persistent inequities, and the impact of ungrading on instructors' workload.

Keywords: *Ungrading; Undergraduate education; Teaching and learning; Large classes*

1. Introduction

Ungrading addresses two common issues related to equity in large classes: the challenge of fostering a sense of belonging and the difficulty of individualizing learning pathways. As such, ungrading can be a powerful tool for increasing equity in large classes. In the following sections, we define ungrading and examine the intersections of research around ungrading, equity, and large classes. We then detail a specific example of ungrading in a large class facilitated by one of the paper's authors in spring 2019 in Singapore, including the instructor's rationale for implementing ungrading. In our analysis of students' work in the course, we reflect on how ungrading created opportunities to affirm students' diverse identities and customize learning paths, thereby enabling a greater sense of belonging and creating equitable opportunities to thrive within the course structure. In closing, we briefly consider additional implications for STEM, equity, and workload when implementing ungrading.

2. Literature Review

2.1. What is Ungrading?

> *The word "ungrading" means raising an eyebrow at grades as a systemic practice, distinct from simply "not grading" (Stommel, 2023).*

Ungrading, sometimes called "de-grading or "going gradeless," is the practice of removing numeric and letter grades from some or all assessments for students' learning and instead focusing on feedback, iteration, and improvement of learners' skills. This can take the shape of removing grades from some assignments or eliminating grades from a course altogether (though a final grade usually is still required by an institution or program) (Elbow, 1997; Stommel, 2023). There are also multiple frameworks for ungrading, including contract grading, labor-based grading, and collaborative grading.

Contract grading involves a negotiated agreement between an instructor and student stating what tasks a learner needs to complete and to what standards in order to achieve the grade the student is aiming to earn (Litterio, 2018). Labor-based grading is similarly negotiated, but places greater emphasis on time and work and minimizes the impact of some traditional assessment standards, especially quality of writing standards (Inoue, 2023). Collaborative grading, in which learners and instructor determined final grades together based on students' perception of their achievements and the instructor's observations of their growth throughout the course, was the foundation for the example detailed below (Whysel, 2022).

2.2. Ungrading in Higher Education

Ungrading has received significant attention as an alternative approach to traditional harsh numeric grading practices. It demonstrates potential to be a student-centered approach positioned to combat issues of equity, learning gaps, accessibility, self-efficacy, and student autonomy (Stommel, 2018; Blum, 2017). A study of Undergraduate Library and Information Science students revealed that ungrading enhanced the learning environment, making it more inclusive and encouraging students to take responsibility over their own learning outcomes (Rapchak et al., 2023). Another study revealed similar results: ungrading utilized in an upper-level computer science course increased student learning motivation, autonomy, and self-efficacy. The same study revealed decreases in stress and anxiety with ungrading in place (Spurlock, 2023).

2.3. Ungrading, Equity, and Large Classes

Research shows that harsh grading practices can further the learning gap in already marginalized groups (Ko, 2021). For example, the utilization of harsh grading practices in large enrollment introductory level foundation or prerequisite courses, known as "weed out courses", has been demonstrated to significantly impact student success. In one study, STEM students receiving D, F, or W grades in these "weed out courses" were at risk for not returning to their institution for the following year. The same study demonstrated that students with otherwise good GPAs elected to switch out of their STEM major if they performed poorly in a "weed-out course" their first two years of college (Weston et al., 2019).

High enrollment can be a limiting factor in the feedback and time intensive approaches of ungrading. However, preliminary evidence in a large, freshman software engineering course and in general education

college physics course reveals promise. In a two-year case study of utilizing ungrading in a large enrollment, higher education software engineering program, the instructor utilized the collaborative feedback model of ungrading to address systemic issues of equity. In her study, she found that the quality of group final projects submitted increased with each iteration of ungrading for that given semester. The same study also found an increase in positive classroom culture, a shift to self-improvement over points, and a re-valuing of the intrinsic curiosity that leads to deeper learning (Brewer, 2024).

Furthermore, a recent study investigated the use of Artificial Intelligence (AI) for ungrading in a general education college Physics course to address equity issues and lack of diversity in assessment strategies. The study found that, in conjunction with the vast capabilities of generative AI, creating diversified assessments lead to an emphasis on students' individual areas of growth. The same study found that using AI to generate personal learning plans resulted in a real-time focus on student individual progress as well as a deviation from vague, blanketed formative assessment tools (Crogman et al., 2023). Johanna Brewer, professor of software engineering and author of the case study cited above states the following in reference to the conclusion of her work with ungrading:

> *By eliminating exams, rarefying rubrics, and prioritizing collaborative work products, it is possible to rewild computer science classrooms to become more inclusive spaces for exploration (2024, p. 15).*

2.4. Problems with Ungrading

Ungrading is not a cure-all for inequitable education. In some cases, ungrading may actually widen equity gaps by removing an important piece of structure from the course (Supiano, 2022). Craig (2021) notes that contract grading in a single class does little to address systemic racism in higher education or bolster success for BIPOC (Black, Indigenous, Person of Color) students. Likewise, Dyer (2024) critiques the outsized impact of implicit biases in ungraded courses; instructor's evaluations of student's work and student's assessment of their own work is inherently biased and therefore cannot decrease inequity. Craig and Dyer agree that traditional grades are inequitable and that alternatives are necessary to increase equitable grading in which all students receive the appropriate grade for their work, regardless of identity. However, they do not see ungrading as a viable solution to problems of inequity.

3. Description of the Teaching/Learning Context

3.1. University at Buffalo, Singapore Institute of Management (Spring 2019)

The example of ungrading detailed in this paper took place in spring 2019 in a World Civilizations I course consisting of 120 students across three sections of the course. The course was conducted as part of the University at Buffalo, Singapore Institute of Management undergraduate program (UB-SIM program) and included students at all stages of their degrees. The UB-SIM program is a private education option, hosted in space rented from SIM, for Singaporean and other Southeast Asian students and as of Spring 2019 it served around 1500 students. The program offers a small number of majors: Business, Communications, Economics, International Trade, Psychology, and Sociology. Upon completion of their degree, students

receive a University at Buffalo degree just as if they had attended the university in Buffalo, NY, but without the added expense of years studying abroad.

In keeping with University at Buffalo's liberal arts tradition, students are required to take general education courses to complete their degrees. The example course detailed below, World Civilizations I (encompassing the period from 3500 BCE to 1500 CE), was one option to fulfil the history/sociology general education credit. The instructor was experienced, having taught the course from Fall 2014 to Spring 2019. As the UB-SIM program did not offer a history major, the course syllabus was subject to approval by the program directors but did not need to adhere to departmental. This left the instructor free to experiment with alternative assessment methods.

3.2. Why Ungrading?

In Spring 2019, the instructor chose to experiment with ungrading through the use of a collaborative grading framework. The choice was partly an extension of the instructor's previous teaching practices. In earlier instances of the course, the instructor implemented practices shared in common with collaborative ungrading, including co-creating syllabi and rubrics with students, facilitating process-oriented projects that weighed growth alongside the final output, and inviting metacognitive reflection about the ways course material intersected with students' experiences. Eliminating all but the final grade from the course was an organic next step.

The instructor was also seeking a way to reduce grading time in a large course. In spring 2019, the class consisted of 120 students, distributed across three sections. Enrolments in previous terms ranged from 130 to 195 students. Her hope was to eliminate the "data entry" portion of assessment and instead focus on conversations with students and robust feedback (Burnett, n.d.). Ideally, this would result in both less time grading and a more satisfying assessment experience for everyone. As noted in the reflections below, only the latter was ultimately true.

3.3. Introducing Ungrading in the Course

During the first class, the instructor presented the syllabus to students and asked them to review the document in small groups then post questions about the course in a Google Slides Q&A. The syllabus included a list of the assessments for the course (attendance, participation, pre-class responses, engagement and learning essays, scaffolded stages of a final group project) followed by details about ungrading in the course.

The instructor explained the course would employ a collaborative ungrading framework in which both students' assessment of their work and instructor observations would determine final grades in the course. Two Learning and Engagement Essays, submitted by students at the middle and end of term, served as the mechanism for collaborative ungrading. In these essays, the instructor tasked students to suggest their own grade and support this suggestion by reflecting on their learning and participation in the course. In 1000-1200 words, students would answer the following questions:

1. What have you learned in the course? (This could include details about content knowledge, acquired skills, or new outlooks).

2. How have you engaged with the class content, activities, and/or your peers and prof?
3. Are there any ways you would like to improve your learning or engagement going forward?
4. If you had to choose your grade for the course now, what would it be?

The instructor requested that learners include a title, introduction, thesis statement, conclusion, and best effort at accurate grammar and spelling. Students also needed to include references to course content, evidence of self-awareness and reflection, and an honest assessment of what they were doing well and what still needed work. Finally, the explanation included reminders that the assignment was not graded and therefore creativity (for example, including GIFs or submitting a video essay) was encouraged.

The instructor reserved the right to adjust the final grade suggested in an essay in three instances: if a student suggested a grade that was lower than their work merited (as observed by the instructor), if a student did not consistently attend class and/or did not complete a significant portion of the assigned work, or if a student failed to correct issues related to academic honesty.

4. Reflections

Equity was not one of the instructor's original goals for ungrading and, as noted above, ungrading alone cannot reduce inequality in education. However, the framework as implemented in the World Civilizations course did create opportunities to affirm students' diverse identities and individualize students' learning paths. The Learning and Engagement Essays submitted by students demonstrated the extent to which ungrading successfully achieved these goals in the World Civilizations course.

4.1. Affirming Students' Diverse Identities

Carey Borkoski (2020) writes of belonging:

> *When there is belonging, the individuals in the community believe and trust that they are valued as people within the community. This is not about assimilation or congruence. Instead, it's about creating feelings of social connectedness, support, and respect.*

She notes the myriad benefits of a strong sense of belonging, including increased student motivation, improved relationships among instructors and students, higher GPAs, and higher rates of persistence, retention, and graduation (Boroski, 2020).

Affirming students' identities and perspectives is a key piece of fostering belonging. Reflecting on class conversations about the history of Christianity in the Roman Empire, a student shared their perspective, "I feel that the more educated I get, the more sceptical I get regarding this 'faith'" but then qualified, "I'm not disagreeing with Christianity." Another student noted regarding a class on Judaism, "Learning this topic was hard due to my religion bias-ness but I do agree with the class takeaway on how belief and action are central to my identity." The students initially were apologetic about their perspectives, which afforded the instructor an opportunity to affirm the learners' perspectives. In the essay feedback, she noted that students'

disagreement was welcome in the course and did not prevent them from effectively understanding and analyzing the content.

4.2. Individualized Student Learning Paths

Blum (2017) notes the effectiveness of students developing individual plans for demonstrating learning and engaging in self-evaluation. These practices proved similarly effective in the World Civilizations course. Collaborative ungrading allowed students to create their own path to demonstrating learning, draw the instructor's attention to students' strengths, and celebrate their growth during the course.

For example, many students wrote that they did not feel comfortable speaking in front of the whole class (a traditional marker of participation) and instead chose to participate in other ways:

> *I feel more comfortable speaking up and expressing my ideas through the small groups in class discussions. On top of that, I find myself questioning more about what we learn in a class like the time I approached you to ask about the fall of the Ancient Egyptian Empire.*

Students also frequently highlighted engagement practices the instructor could not have observed otherwise, including contributions to small group discussions, a specific point they were proud of in an assignment, or some external research they completed after an idea in class piqued their curiosity. One student explicitly connected the size of the course and the benefit of having a space to detail areas for growth:

> *The class is quite big, so I'm not sure if you already noticed this, but I have not been putting my best effort into preparing for class.*

In their second essays, students also drew attention to how they had improved throughout the course, often referencing feedback the instructor provided in the first essay:

> *I mentioned in my previous Engagement & Learning Essay that I found myself succumbing to technological usage but I have learnt to put my phone either in my bag or under the table since, because "Out of sight, out of mind" right?*

The second learning essays afforded students a space to celebrate their improvements and provided opportunities for the instructor to affirm and encourage their continued growth.

4.3. Ongoing Challenges for Equity and Workload

In the UB-SIM program, student qualitative data revealed that ungrading enhanced student personal identities and enriched their individual learning paths for a large class of general education humanities students. Students in this iteration of collaborative ungrading demonstrated increased personal growth, improved metacognitive strategies, and were able to adopt the role of an active facilitator in their own learning process. As demonstrated in the literature review, ungrading can also be applied in a STEM setting with similar positive effects on student engagement, growth, and autonomy.

Nonetheless, elements of inequity persisted. The instructor found she needed to increase female student's grades more frequently than male students and, like Dyer (2024), noticed male students were more likely to challenge instructor feedback or the final grade than other students. Looking back, the instructor also wonders in how many cases the final grade was influenced by implicit bias. For example, did students who attended class less frequently receive equitable feedback and final grades?

Finally, given the focus of this paper on large classes, it is worth noting that ungrading did not significantly reduce instructor grading (or assessment) time in the example detailed above. The size of the class proved too great an obstacle. However, the course instructor found that she was able to eliminate some of the more tedious aspects of grading (such as attendance tracking or discussion grading). It is possible that the use of AI, as noted in the literature review, will help further reduce grading time while still enabling individualization of feedback in future courses.

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Relationship-Rich Education at Scale

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Abstract
Decades of research demonstrates that student learning and well-being in higher education are enhanced by positive relationships with peers and instructors, particularly for students from groups that have been marginalized in society. Yet one common and significant challenge with relationship-rich education is scale. After reviewing the literature on educational relationships and large enrolment classes, this paper offers three research-informed practical strategies that any instructor can employ to create a relationship-rich class environment that will contribute to equitable student learning and well-being.
Keywords: *Large classes; Relationships; Wellbeing; Classroom environment; Peer communication; Student-teacher relationship*

1. Introduction

Decades of research demonstrates that student learning and well-being in higher education are enhanced by positive relationships with peers and instructors, particularly for students from groups that have been marginalized in society. Yet one common and significant challenge with relationship-rich education is scale. How can instructors build educationally meaningful relationships in a class with several dozen – or many hundred – students? Answering that question can feel overwhelming to instructors, and students often enter large enrolment classes *not* expecting to connect with their professor and peers. Despite these challenges, relational education is possible even in the largest classes.

After briefly reviewing the literature on educational relationships and large enrolment classes, this paper will offer three research-informed practical strategies that any instructor can employ to create a relationship-rich class environment that will contribute to equitable student learning and well-being – without requiring busy instructors to dedicate even more of their time to their teaching.

2. Literature Review

2.1. Relationships in Higher Education

Research demonstrates that the interaction with instructors impacts positively on "the breadth and depth of student learning, retention, and graduation rates, and a wide range of other outcomes, including critical thinking, identity development, communication skills, and leadership abilities' (Felten & Lambert, 2020, p.

5). Positive student-instructor interactions also increase students' academic self-concept and achievement (Parker, Trolian, & Stolzenberg 2021), mental well-being (Baik et al., 2019), and identity development (Bovill et al., 2023). These relationships are significant for all students, and scholars in the U.S. have shown that they are particularly influential for first-generation students and students of color (Kezar & Maxey, 2014).

Research also reveals that student-student peer interactions are also "positively related to general learning, cognition, racial identity, intellectual/academic self-concept, autonomy, well-being, moral development, retention/graduation, and expected career outcomes" (Mayhew et al., 2016, p. 553). Student peer relationships are particularly important for undergraduate mental health (Hefner & Eisenberg, 2009) and sense of belonging (Nunn, 2021). Interactions across differences (e.g. ethnicity/race, immigration status, religion, and so on) with peers also support student learning and identity development (e.g., Milem, 2003).

Reflecting on this body of literature, Bovill (2020) concludes that a "relational pedagogy [that] puts relationships at the heart of teaching and emphasizes that a meaningful connection needs to be established between teacher and students" and among students (p.3).

2.2. Teaching Large Enrolment Classes

Higher education teachers may be overwhelmed when working with large class cohorts (Mulryan-Kyne, 2010) and student evaluations can evidence dissatisfaction with large class learning contexts (Persky & Pollack, 2010). However, there is no agreed definition of 'large' classes in higher education (Maringe & Sing, 2014) with studies quantifying the concept anywhere between 30 and 1,500 students (e.g. Black et al., 2021; Mantai & Huber, 2021), although most studies seem to have settled on 100+ as a baseline for a class to be considered 'large' (Exeter et al., 2010). The perception of 'large' is often influenced by experience, discipline and institutional norms (Kerr, 2011).

Assumptions of what is possible (or not) in terms of pedagogy in the large class context influence related decisions and practices. As numbers increase so too does the complexity of the pedagogical challenge presented, requiring creativity on the part of the teacher (Zorn & Kumler, 2003) to "overcome some of the perceived challenges rather than accepting the assumption that a didactic, lecture-style approach is the only feasible teaching method" (Farrell et al., 2021, p.30). Certainly, very large class contexts present practical difficulties such as the physical distance between teacher and students (Cole & Kosc, 2010) which makes eye contact and two-way communication challenging (Allais, 2014). This is compounded by the limitations of the physical classrooms used for very large groups (Maringe & Sing, 2014) which often have rigid seating arrangements, making it difficult for easy movement of students and staff. Connecting in online large enrolment classes is no easier (Glazier, 2021).

For all of the above reasons, and perhaps others not outlined, teachers may experience difficulties forming relationships with students in large groups (Auslander, 2000). Or, perhaps it is more accurate to say that they may experience difficulty forming positive relationships. Moreover, students' approaches to and perceptions of learning in the large class context are related to their teachers' approaches to and perceptions of teaching (Prosser & Trigwell, 2014).

Large classes provide possibilities and opportunities for both teaching and learning. They can possess an

inherent energy (DeRogatis et al., 2014) which, if activated and harnessed by the teacher, can be highly effective. Learning experiences and outcomes for students are enhanced when the teacher is personally involved and invested in the large class context (Goodman, 2008; Long & Coldren, 2006). Building a relationship with students in a large class shows care on the part of the teacher and the creation of "a classroom community in large classes is key to active discussion and interaction" (Iaria & Huball, 2008, p.6). Arvanitakis (2021) argues that large classes offer possibilities teaching and learning if the inherent possibilities are harnessed. He advocates three key considerations in this context:

1. Take advantage of class size to enhance understanding.
2. Explicitly and deliberately embed opportunities for interaction regularly within and across sessions.
3. Draw on the wealth of experiences and knowledge within the student cohort.

Indeed, a sense of classroom community can be built up using specific peer-peer strategies which are not too onerous or time consuming. In short, despite the difficulties presented by large enrolment classes, relationship-rich education is possible – and beneficial.

3. Research-based Practices to Scale Relational Education

The literature documents a wide range of practices that support relational education at scale. The following three are among the most efficient and effective, no matter class size or format.

First, explain to students that educationally purposeful peer relationships will support their academic success and well-being. Students, particularly first-generation ones, often do not know this – and some students became deeply disengaged and isolated when Covid disrupted their education. To help them to actively build constructive relationships with peers, instructors should tell them that doing this matters. Martha Mullally, a biology professor at Carleton University in Canada, does this regularly in her large courses (Supiano 2023), telling students, "The reality is that science is a team sport" so if you want to be successful as a student and professional in STEM fields you need to learn to work well with diverse people. She also stresses that learning with peers is more effective than studying on your own – plus it is more fun. Making the benefits of peer relationships explicit to students is a vital first step toward relationship-rich education.

Second, use structured active learning to help students develop those peer relationships during class time. In STEM education, the research is clear that active learning increases student learning (e.g., Freeman et al. 2014) and narrows achievement gaps (e.g., Theobald et al. 2020). Active learning strategies are "relationship accelerators" because these approaches spark and support educationally purposeful student peer connections (Felten et al. 2023, Chapter 7). However, simply offering optional chances to connect is not enough, particularly in large enrolment courses where students often feel (and are) isolated and anonymous. Instead, active learning should be structured into the design of your course, making this relationship accelerator required of and rewarding for students (Hogan & Sathy 2022, p. 32). One particularly impressive study shows that these structured interactions are central to student learning (particularly for U.S. Black and Hispanic undergraduates) in large enrolment biology courses, regardless of whether those

are taught online, in-person, or in a hybrid format (Gavassa et al. 2019). Making the peer-peer educational interactions integral to a course is a second step toward relationship-rich education at scale.

Third, balance student- and instructor-created groups to help students develop diverse and meaningful peer connections during active learning exercises. Annika Fjelkner Pihl, a business professor at Kristianstad University in Sweden, has done helpful research on this topic. For several years she has taught large enrolment (~200 student) first-year courses in business at her university. She noticed that when given the opportunity to form their own groups for active learning and assignments, her students tended to pick peers who were like them in significant ways (e.g., immigrant/international or Swedish native; residential or commuter). Since her academic program prepares students to work in diverse professional settings, this homogeneity concerned her; however, when she formed student groups to ensure diverse interactions, she found that students reported being more stressed and anxious because they were working with unfamiliar peers.

Her research describes one effective way to support student well-being and also to help students learn to work with diverse peers. She begins the academic year with students regularly working in teacher assigned small groups on low stakes (not significant for the course grade) learning activities. She frequently changes group composition at this stage so students have the chance to collaborate with many peers. Then, as the course progresses, she increasingly shifts to students selecting their own groups for higher stakes learning activities. This approach leads to students choosing more diverse peers than they would have at the beginning of the year, but not reporting higher stress or anxiety. Figure 1 illustrates this pattern.

(Figure 1, adapted from Fjelkner Pihl, 2021, p. 93)

Sequencing how student groups are formed seems to achieve two important academic goals in a relational way – preparing students to work and learn with diverse peers while attending to their well-being.

These three steps are not the only path to relational education at scale, but they do suggest that by designing our courses for structured peer learning we can give students the benefits of relationship-rich education without overwhelming already busy instructors.

Note: Portions of this article originally appeared as a blog post: Felten, P. (2024). Relationship-rich education at scale, aka the too many bodies problem. Center for Engaged Learning. https://www.centerforengagedlearning.org/relationship-rich-education-at-scale-aka-the-too-many-bodies-problem.

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Using an Individual Reflective Journal Based on the Belbin Team Roles Framework to Manage Group Projects in Large Classes

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Abstract
Group-work, while highly valued, can be challenging to manage in large classes. This paper examines how an individual 'Reflective Journal' (learning log), which requires students to reflect on their experiences and personal learning while undertaking a group project, can be used to enhance group-work and reduce the need for lecturer intervention. Central to the individual reflective journal is the application of the Belbin (1993) Team Roles Framework, undertaken online by each group member at the start of the project. Students are required to reflect on their Belbin outcome, through applying a reflective-writing framework in their journal, and to consider its perceived accuracy. They are also encouraged to reflect on all the other Belbin group-work personality types, so they gain a greater appreciation of others' working styles, both their strengths and weaknesses. Students have frequently commented on how valuable they find this Belbin analysis, not only in terms of gaining a better understanding of their own group-working strengths and weaknesses, but also in giving them a greater appreciation of how to better manage their project groups, through a better understanding of others' group-work roles. The need for lecturer intervention in group-project disputes has reduced significantly, making it feasible to continue to run group projects in large classes (60 project groups in one semester). A proposal for further research to test the efficacy of the Belbin Framework, as a project group management tool in a large-class context, is discussed.
Keywords: *Belbin Framework; Group-work; Individual reflective journal; Self-directed learning; Large-classes*

1. Introduction

In the context of growing class sizes and reduced administrative / tutorial support, there can be a tendency to forgo, or remove, learning elements that might be considered administratively demanding, such as group projects. At the same time, there is significant research to suggest the value of group-work (see literature review below). The author has been actively researching different methods to support group-work of a high standard in large-class settings, while also ensuring that they do not require substantial lecturer / tutor support. In this he is very keen to identify how technology and self-directed learning can reduce the administrative burden, while at the same time maintaining a high standard of group-work. He has previously researched the effectiveness of a group project diary to reduce group conflict and the

need for lecturer / tutor intervention (Murphy & Winkler, 2023). He now describes how an individual reflective journal (learning log), based on the Belbin Team Roles Framework, can be used to assist students to manage their group-work more effectively, by enhancing their understanding of their own and their teammates' behaviour in the course of undertaking group-work. References are made to the use of Canvas throughout this paper. For those unfamiliar with Canvas, it is the online teaching resource used by the author's university, having previously used Blackboard.

2. Description of the Teaching / Learning Context

The author is a lecturer who uses group-projects in two different 'large-class' modules, with a combined student registration of around 320 students (varying slightly each year due to elective student registrations). Both modules require students to undertake extensive applied research for their group projects, which are central to the module learning and assessment. In recent years module numbers have increased at the same time that tutor and other administrative support has decreased. Therefore the lecturer is having to oversee around 60 group projects in one semester. The lecturer had also seen an increase in the number of group-project issues arising, some years ago, requiring more of his time to manage group disputes, particularly around the 'free-rider' problem (Murphy & Winkler, 2023). A group project diary, introduced some years ago has reduced many of these issues arising. He is also keen to understand how students can better manage their own group-work in a large-class setting through more self-directed learning. This learning also contributes to greater personal development and preparation for 'real-world' group work during placement and later on in the workforce. The project for both modules is undertaken in groups of five, pre-selected by the lecturer to achieve a balanced mix of students by gender and nationality. There is limited tutor support on both modules, greatly reduced from previous years. As post-graduate / PhD students increasingly secure funding which restricts the time they are permitted to spend providing teaching support, this has resulted in fewer resources for tutorial support.

2.1. Description of the Individual Reflective Journal

At the beginning of the semester students are given the template for the reflective journal on Canvas. They are required to make two submissions, via Canvas: the first a month after they begin their project; the second just after they complete their project. This has been reduced from more frequent journal entries in the two previous years of this journal being implemented. This is due to the added time involved in overseeing and grading contributions, and the limited value observed of having additional journal entries. All of this activity is now conducted online, with no paperwork or email submissions. Students are required to undertake the Belbin Framework analysis online and to then reflect on their Belbin result. They are also asked to reflect on other learning they have developed in the course of undertaking the group project, using a choice of selected reflective-writing frameworks, Gibbs (1988), Kolb (2014), Schon (1991), which are all provided on Canvas. The individual reflective journal represents 10% of the final module grade, enough marks to ensure students undertake it, but not so much that it will take up considerable time and effort, given the other elements required to be completed on the module.

The learning logs are graded on a 'fail / pass / honours' basis (0%, 40% and 100%, respectively), to allow students to be honest in their self-assessment, as they are only marked on whether they applied the requisite frameworks, met the word-count and demonstrated adequate reflection. Therefore students do not feel under pressure to give an 'acceptable' answer or reflection (this grading strategy has allowed students to admit to having done very little on the group project, to being 'too bossy' etc., but still get full marks for their journal entry). This also makes grading easier for the lecturer, given the reduction in assistant examiner support in recent years. Almost all students get the top grade. This can also be motivating for their wider module engagement. Only about 1% of the students fail to submit the journal at all.

2.2. Description of how the Belbin Framework is Applied

Traditionally, the Belbin Framework is used as a tool to create more 'balanced' teams, in terms of getting the best mix of group-work personality types in each team (often with mixed results, see the literature review below). However, it is used here as an awareness-raising and personal-learning tool, to assist students reflect on their working styles and behaviour while engaged in team-work, and also to give them greater awareness of the other group-work personalities that exist. Students are advised, at the beginning of the semester, both in-class and online, that the main purpose of this exercise is to increase awareness, and that they do not have to subscribe to the accuracy of this personality test. Indeed, over the years, some students have stated they do not agree with the Belbin test's overall premise or accuracy, but it did make them think about their own, and others', behaviour when working in groups. This is the objective of this exercise. However, the majority of students who commented, have stated that they have found their Belbin result to be very accurate for the most part, and even more so by the end of the project, when they reflected on it again. A proposal for more detailed research to investigate this observation is presented below.

2.3. Focus on Self-directed Learning and Technology

Underlying the mechanism to run the reflective journal is the need to ensure it does not significantly contribute to the existing administrative work-load of the lecturer of a large-class, with many group projects. Apart from some explanation of the self-reflection process and the Belbin self-assessment, as part of the introductory lecture for the module, students are directed to Canvas where all the instruction is given. The Belbin self-assessment test is posted on Canvas. Results, as part of the first reflective journal entry, are also posted on Canvas. The lecturer can see, in one page on Canvas, if students have submitted their first journal entry, without having to open any of them. The various reflective-writing tools are given in the journal template on Canvas, along with a series of videos explaining the reflective-writing process and how to apply these tools. Again, this does not require lecturer input or lecture time, and constitutes part of the 'self-directed learning' element of the module. For this reason, it is ideal for a 'large-class teaching' scenario, as it effectively 'runs itself' along with also giving students important skills in managing their own learning through technology. Students are then required to re-submit their first journal entry, along with their final journal entry, into the reflective journal template, so the lecturer only has to review the final document. As the grade is on a 'fail / pass / honours' basis, above, and is based on whether the appropriate frameworks are applied, that the word-count is met and that there is adequate evidence of sufficient reflection, the grading is not onerous.

3. Literature Review

Group-work has been widely recommended as an effective means of experiential learning and professional development, Fearon et al. (2012), while employers are increasingly looking for learning methods that enhance student employability (Knight & Yorke, 2003). However, maintaining a satisfactory standard of experiential learning in a large-class setting can come with many challenges (Donovan & Hood, 2021). In spite of this there has been limited research into identifying mechanisms that mitigate the challenges of using experiential learning in large classes (Black *et al*., 2021). According to Page *et al*. (2021), effective management of experiential learning does not mean that 'big' is always 'bad'. One mechanism being proposed here is to use the 'Belbin Framework', (Belbin, 1993), as a means to give students a greater awareness of both their own working styles in a group-setting, along with a deeper appreciation of the working styles of others. This is done with the intention that they can then better manage their own team work without seeking external (lecturer) intervention.

The standard application of the Belbin Framework is to try to ensure more 'balanced' work teams, at the team creation stage, by identifying the different team roles that various team members might more effectively assume. The research on the effectiveness of the Belbin Framework is 'scant' and mixed, in terms of whether it leads to more effective teams, in a controlled experiment. Henry and Stevens (1999), found that team effectiveness increased where leadership roles, based on using the Belbin Framework, were intentionally assigned. Pritchard and Stanton (1999) state that there has not been enough empirical evidence to support the validity of the Belbin approach, in spite of it being used frequently by organisations and management consultancies. In a test they conducted they found that 'mixed teams', according to the Belbin Framework, performed better than randomly formed teams where roles were duplicated. However, in a controlled experiment, where some teams were created according to the Belbin Framework and others were not, amongst one cohort of students undertaking the same group-work, Batenburg *et al.* (2013) state that *"no relationship was found between team role diversity and team performance"* overall. Fisher *et al.* (1996) found the Belbin self-perception inventory data to be weaker than other frameworks in terms of reliability in a 'test-retest' study. However, the purpose of the current application of the Belbin Framework, is to create awareness of students of their own possible strengths and weaknesses when working in a team, and also of those of other team-working personality types. In that context it is not relevant whether the teams are mixed or not. However, when first applied to the module, some students assumed they had to perform a certain team role, based on their Belbin self-assessment, so it had to be explained clearly, in subsequent years, that the framework is being used here purely as an awareness-raising and self-reflective tool, and not to identify roles for students to perform as part of their team-work.

4. Suggestions for Further Research

While, a priori, based on student commentary over the last three years, the individual reflective journal has been well received by students, and the Belbin framework considered to be helpful, there is a significant opportunity to undertake more structured research using data from student journals and also surveys of students who engage in this process. The author is currently preparing to undertake such research.

It is also intended to undertake research into the different learnings that students have gained from the self-reflection and from using the Belbin framework. By far, the most repeated comment by students to date is that they wish they had not been afraid to voice their opinions at the beginning of the project. In terms of the greater awareness of others' working styles, some of the most noticeable comments were from students who identified as having strong / confident personality types and, prior to undertaking the Belbin analysis, just assumed that those who do not speak up are lazy or uninterested. This suggests much scope for a detailed study into the benefits of the reflective process for students engaging in group work, often for the first time. Students have also commented that the Belbin self-assessment should be done at the programme level, before they first undertake any group projects, rather than being only module-specific in the later years of their studies.

The other key benefit of such research is to identify how the Belbin framework can be used as an awareness-raising tool, particularly for students not accustomed to working in groups, without the need to use it to balance team formation. However there is also scope to use the Belbin framework, as originally devised, to assist create the project teams. In this case students would undertake the Belbin self-assessment and post their result to the lecturer, who would then structure the project teams for the semester based on this information. A study could then be undertaken across the two modules, where this is done for one module but not for the other, to see if there is any significant difference in team performance and outcomes, and when also compared to previous years for both modules.

5. Analysis of / Reflection on / Implications for Practice

The Belbin Framework can be used to assist students enhance their awareness of both their own strengths and weaknesses while undertaking group work, while also enabling them to gain a better understanding of the working styles of other team members. When this is undertaken online, via a teaching platform like Canvas, it can be a part of 'self-directed' learning and it virtually eliminates the need for academic administrative support. It is presented here as one tool that can be easily administered within a large-class setting, to enhance the group-work experience and also to reduce the likelihood of the need for lecturer intervention in any group disputes. Since introducing various tools, such as the reflective journal and the group project diary, the author has experienced a very significant reduction in the number of project group disputes requiring his attention. Apart from these benefits, the opportunity to reflect on one's behaviour and thinking, while engaged in a challenging project, is an important part of students' deeper personal growth, and their development of valuable 'soft' skills.

The experience to date demonstrates that the Belbin framework analysis, as part of a wider self-reflection process, can be successfully conducted in large classes, online, without lecturer or tutor support, once it is set up carefully. The a priori evidence to date suggests students find this exercise very beneficial. Further research should be undertaken to confirm this and to also identify more effective ways to use such frameworks online in large classes as part of student self-directed learning.

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