University College Dublin
University for All

Learning from UDL Leaders: UCD University for All Faculty Partner Case Studies

Edited by: Lisa Padden, Daniel Elliott, Julie Tonge & Sheena Hyland

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Professor Barbara Dooley

I am delighted to present this publication: 'Learning from UDL Leaders: UCD University for All Faculty Partners', which is a most valuable resource and a timely addition to the bank of educational assets.

In UCD, over one third of undergraduate students are drawn from under-represented groups. Our diverse student population illustrates UCD's commitment to being an inclusive university for all that embraces all students equitably, and where the learning experience is universally designed and configured to meet the needs and aspirations of all. UCD's University for All is a whole-institution approach to inclusion, that moves access and widening participation from being considered an 'add on', to being integral. This central tenet is our core belief, and is a value practised and demonstrated by the entire university community (Kelly & Padden, 2018). This University for All initiative is a unique response to the HEA's National Access Plan, 2022-2028, which envisions the student population as reflecting Ireland's diversity and social mix, and our universities as inclusive, universally designed environments that support and foster student success, equity, and diversity (HEA, 2022, p. 28).

'Learning from UDL Leaders: UCD University for All Faculty Partners', offers a timely, practical and a much-needed resource to support this vision and create a university for all. Written by 26 members of academic staff, appointed as UCD University for All Faculty Partners, this publication comprises easily transferable discipline-specific case studies that offer valuable insights and practical strategies to apply Universal Design across a wide range of subjects. The authors are academic specialists across all Colleges, Arts and Humanities, Business, Engineering and Architecture, Health and Agricultural Sciences, Science, and Social Sciences and Law.

The Faculty Partnership Programme is a key strand of UCD's University for All initiative. I believe that universities are committed to ensuring that all students, regardless of background or circumstance, can participate fully in the educational experience. As the University for All initiative began in 2017, we found evidence of such commitment. However, we also observed an absence of practical knowledge, confidence and understanding necessary to capitalise on this goodwill and commitment. Hence, building this capacity and knowledge is a key theme of the UCD Strategy for Education and Student Success 2020-2024, which undertakes to 'support our faculty and staff to develop teaching, learning and assessment approaches that are research-informed, inclusive, [and] intercultural' and to 'equip all our educators with the tools and resources required to embed Universal Design for Learning on an institution-wide basis' (UCD, 2021, p. 10).

Hence, the HEA-funded Faculty Partnership Programme was designed to accelerate the acquisition of Universal Design competencies.

The UCD University for All Faculty Partner programme, is led by UCD Access & Lifelong Learning, in collaboration with the UCD Widening Participation Committee, UCD Teaching & Learning, and UCD Equality, Diversity & Inclusion. This publication of 'Learning from UDL Leaders: UCD University for All Faculty Partners', is a testimony to their leadership, creativity and foresight, and marks yet another milestone in our inclusion journey.

I am delighted to share this publication with you and hope that it will inspire your practice and offer novel inclusive educational approaches.

Bibliography

HEA. (2022). *National Access Plan. A Strategic Action Plan for Equity of Access, Participation and Success in Higher Education 2022-2028*. Higher Education Authority/Department of Further & Higher Education, Research, Innovation & Science.

Kelly, A., & Padden, L. (2018). *Toolkit for Inclusive Higher Institutions - From Vision to Practice*. UCD Access & Lifelong Learning.

UCD. (2021). *Education and Student Success Strategy*. University College Dublin.

Introduction

The UCD Faculty Partnership Programme

 Julie Tonge

The UCD Faculty Partnership Programme is a strategic project designed by UCD Access & Lifelong Learning (ALL) in collaboration with our colleagues in UCD Teaching & Learning and UCD Equality, Diversity and Inclusion and with oversight from the University's Widening Participation Committee. The Faculty Partnership Programme is designed to support and accelerate the implementation of Universal Design for Learning (UDL) throughout the University. It offers a structured opportunity to undertake UDL training, to qualify as a UDL facilitator, and become a role model who will persuade and influence others as to the merits of inclusion for all students. The Faculty Partners are recognised as inclusion leaders within their local Colleges & Schools and their work is supported and recognised by senior leaders throughout the University. They are working to persuade and influence their colleagues as to the benefits of UDL and the need to upskill, with a view to embedding UDL in all teaching and assessment practices.

UDL provides an effective framework to improve the learning experience of all students within the higher education teaching environment. It is a set of principles for curriculum development that gives all students equal opportunities to learn. UDL is a central component of UCD's University for All initiative, which ensures that all students have equitable opportunities to access, participate and succeed in learning. The principles of Universal Design for Learning (CAST, 2018) are to provide for all students:

— Multiple means of engagement
— Multiple means of representation
— Multiple means of action and expression

The Faculty Partnership Programme was developed in response to a call from the Higher Education Authority in 2021 for strategic initiative proposals to benefit students with disabilities with short-term funding available for successful proposals. Despite the short-term nature of the funding, UCD ALL were keen to develop a proposal that would have lasting impact and would benefit all students, including those with disabilities. We wanted to build on our already well established University for All initiative, a whole institution, evidence-based approach to mainstreaming inclusion in UCD, with the goal of creating an inclusive educational experience for all. As part of the National Forum for the Enhancement of Teaching & Learning Professional Development Framework, UCD had already developed the Digital Badge in Universal Design for Teaching & Learning with our colleagues in AHEAD. This is a free introductory course on UDL for all those working in Higher Education (HE) and Further Education (FET) in Ireland. Over 2,000 educators in FET and HE had been awarded the badge but uptake amongst our colleagues in UCD had been limited. Our goal for the strategic initiative was to significantly increase the number of faculty members undertaking this training and we consulted with a range of colleagues across the University to seek advice on how we might achieve this.

Inclusive practices such as UDL have already been adopted by educators who see the benefits and positive impact these practices have on student learning. These practices are not always given the recognition they deserve and some are discouraged from adopting these practices due to a lack of time and knowledge. We recognised that this initiative had to provide time and space for faculty to reflect on their teaching practices, and to learn more about UDL and how it could be applied successfully to their teaching, learning and assessment practices. We were aware of the additional pressures on academic staff arising from the pandemic and that any programme would need to focus on achievable outcomes with an appropriate financial incentive to assist with providing time and space to undertake the requirements. We also recognised the need for the programme to be competitive, rewarding the efforts already made by faculty while helping them to develop further.

The UCD Faculty Partnership Programme was awarded strategic funding from the HEA in 2022. Faculty members were recruited on a competitive basis and had to commit to fulfill the following requirements:

— The completion of the Digital Badge for Universal Design in Teaching & Learning and the accompanying Facilitator Badge. Participation in this training is facilitated by UCD Access & Lifelong Learning.

— The facilitation of the UDL badge for their colleagues, with the support of their Head of School, College Principal, and UCD Access & Lifelong Learning. A minimum of one roll out per School per academic year is required for each of 3 academic years (2021/22, 2022/23, and 2023/24).

— The preparation of a minimum of one case study for publication, in partnership with UCD Access & Lifelong Learning: this case study will report the achievements, outputs and potential implications of their implementation of Universal Design in their modules.

— The promotion of University for All and Universal Design for Learning through relevant social media channels and at conferences and other fora.

Each Faculty Partner would receive a financial contribution of up to €10,000 to assist them to undertake these activities, for example by buying out some time for them to undertake the activities, to undertake additional training in UDL, attend relevant conferences, and buy teaching materials or equipment that would enhance their UDL practices. The funding proposal also included a budget for a staff member to support the project and for promotion and dissemination of the Faculty Partner outputs. This has allowed us to provide administrative support to the Faculty Partners and has funded a symposium and a publication to showcase the work that they have undertaken. The funding of these activities has been crucial in showcasing the work of the Faculty Partners, raising their profile across the University and encouraging faculty across the institution to undertake UDL training.

The Faculty Partner Programme is designed to support and accelerate the implementation of UDL throughout the University. Therefore, university-wide participation of Faculty Partners was sought and appointments were made to be representative of the Colleges and their associated Schools and Programmes. Applications were submitted to the relevant Head of School and College Principal for approval in advance of submission to ensure that the applicant had the support of the senior leaders in their area.The applications were assessed according to the following criteria:

1. Commitment to and/or advocacy for student access and inclusion.
2. Experience of leadership and/or facilitation of development or training for colleagues.
3. Evidence of Teaching & Learning Professional Development and Scholarship.

Approved applications were submitted to UCD ALL and assessed by an awarding panel with representatives from:

— The Chair of the Widening Participation Committee
— Current Access students
— UCD Access & Lifelong Learning
— UCD Teaching & Learning
— UCD Equality, Diversity & Inclusion

17 Faculty Partners were appointed as a result of this initial call. As the spread of Faculty Partners was not evenly spread across the University, a second call was issued and we were successful in increasing representation across all disciplines and appointing 26 Faculty Partners in total.

An important aspect of the programme is to give Faculty members recognition for their work in Universal Design and provide a platform for them to lead and influence others. The programme was formally launched at a celebration event where Faculty Partners were officially appointed. The successful Faculty Partners were also announced by the University President in his regular email to all staff. Faculty partners were provided with communication materials to use in their local areas to allow others to recognise their position and to promote the programme. A web page is hosted by UCD Access & Lifelong Learning explaining the programme and profiling the Faculty Partners across our six Colleges.

Dr Anna Kelly, Dr Bairbre Fleming, Professor Mark Rogers, Acting President of UCD, Dr Thomas Tobin and Julie Tonge pictured at the University for All Symposium 2022.

Support for this programme has been provided by UCD Access & Lifelong Learning. Providing support for the Faculty Partners is essential as some are working alone in Schools and Colleges, trying to influence change. The project team facilitates meetings with the Faculty Partners on a regular basis to track their progress and to offer advice and encouragement. Early on we agreed on a series of milestones designed to assist Faculty Partners to achieve the outcomes of the programme. We provided a suggested communication plan to assist the Faculty Partners to raise their profile within their College and to recruit colleagues to undertake the UDL Digital Badge. Guest speakers have also been invited to speak to the Faculty Partners on relevant topics including Intercultural Learning, Change Management and similar projects taking place in other Higher Education Institutions in Ireland. These meetings have been invaluable in facilitating conversations and collaborations between Faculty Partners. The Faculty Partners use these meetings to share ideas and to seek advice from others who may have encountered similar challenges.

Frequent Faculty Partner meetings have helped to develop a strong community of practice. Some of the Faculty Partners have formed partnerships and are working together on delivering local rollouts of the Digital Badge in UDL within UCD. The Partners often share their resources and ideas for spreading the UDL message throughout their departments and many of these ideas have been implemented by others from different disciplines. The meetings are complemented by the use of Google Chat which is a space for Faculty Partners to ask questions of the project team but also to share ideas and to ask advice from each other. This space is also used to recommend readings, conferences and events about UDL. There have been discussions on inclusive teaching equipment, ideas for using the funding award, and how to deal with challenges from colleagues in relation to inclusive practices, such as providing lecture recordings. The formation of a Community of Practice has offered essential peer support to the Faculty Partners, helped them to undertake the work associated with the programme, and to see the relevance and application of UDL across a range of disciplines. There is a great sense of collegiality amongst the Faculty Partners and they provide essential encouragement for each other. The development of a Community of Practice has been a key driver for the success of the programme.

The Faculty Partnership Programme has been designed to support and accelerate the implementation of Universal Design for Learning (UDL) throughout the University. One key performance indicator has been the increase in the number of participants from UCD undertaking the Digital Badge for Universal Design in Teaching & Learning. Since the programme started there have been an additional 150 recipients of the UDL Badge within UCD and over 100 are currently enrolled in the National Rollout. These are the highest number of participants for any HEI or ETB. Some Faculty Partners have joined forces and are collaborating with colleagues to deliver local rollouts of the Digital Badge, others are acting as facilitators for the National Rollout of the Digital Badge. The Faculty Partners who had acted as facilitators prior to their engagement with this programme provided important reassurance to those facilitating for the first time. A benefit of the multidisciplinary nature of the programme has been a healthy competition amongst the Faculty Partners to recruit colleagues from their own disciplines to participate in the training. Facilitation of the Digital Badge is fully supported with clear guidance, templates and timelines to ensure quality and consistency across the programme. This helps to ensure that the process is achievable and enjoyable for those undertaking a facilitation role, particularly given the considerable demands on their time.

The Faculty Partnership Programme is still in its early stages but is already demonstrating positive outcomes. This is evidenced not just by the uptake of faculty undertaking the Digital Badge for Universal Design in Teaching & Learning, but also the increased awareness of UDL across the institution. UCD Access & Lifelong Learning's annual symposium in May aimed to showcase the work of the Faculty Partners to colleagues in UCD and across the higher education sector. This event had a greater attendance than any symposium we have delivered to date. The Faculty Partners are not only delivering on the requirements of the programme but are going far beyond this. Some are introducing challenges within their disciplines to encourage others to adopt simple but effective UDL practices, others are producing inclusive assessment guides and videos explaining the benefits of UDL and how to apply it, and some are applying UDL principles to discipline-specific activities such as studio and lab environments. UCD Access & Lifelong Learning has seen an increased demand in requests for training on access and inclusion, digital accessibility and disability awareness, often as a result of a Faculty Partner suggesting such training would benefit themselves and their colleagues. There has been collaboration between Widening Participation Representatives, representing Colleges on the University's Widening Participation Committee, and Faculty Partners who are working to achieve the same access goals within their Colleges. The Programme has led to an increased interest in Universal Design from professional and support colleagues who want to know more about how they can apply Universal Design principles to their own work. Access & Lifelong Learning have since received funding to design a Digital Badge in Universal Design for student support professionals across the Higher and Further Education sectors and are soon to launch an introductory UDL badge which will be recommended training for all staff and faculty of the University.

The UCD Faculty Partnership programme has already gone far and beyond the goals it has set out to achieve. Our challenge now is to build on this momentum to ensure that UDL becomes part and parcel of how education is delivered across the University. It is hoped that training in Universal Design will become the norm with more staff and faculty in the University than not having participated in some level of training. The Faculty Partners have designed these case studies to demonstrate the practical application of UDL in teaching, learning and assessment practices across the full range of disciplines taught in UCD. The case studies demonstrate the relevance of UDL for everyone and will hopefully inspire many others to consider how they can begin to adopt UDL practices in their own work.

The University for All Symposium 2022.

Embedding Universal Design Strategically

Dr Thomas J Tobin - Summarised by Daniel Elliott

The information below is a summary of the University for All Symposium Keynote May 2022: "Universal Design for Learning is the Key to Campus Equity, Diversity, and Inclusion" given by Dr Thomas J Tobin, University of Wisconsin-Madison with permission.

This interactive keynote aimed to construct ways to advocate for systemic accessibility changes that pay everyone back in terms of reduced learner stress and anxiety, reduced instructor grading loads and worry over cheating, and increased institutional metrics like tuition income, student retention, and graduation rates.

Dr Tobin dispelled many of the myths surrounding Universal Design for Learning. Most of us know that universal design for learning (UDL) is a way to lower access barriers to all types of learning interactions for a broad range of learners. Some of our colleagues, though, continue to mistake UDL for a subset of legal accessibility requirements for serving learners with disabilities. Equality, Diversity & Inclusion is typically framed in terms of ethnic, social and economic issues but it often does not consider people with disabilities, parental and caring responsibilities, financial barriers, long commutes, and high rents. Universal Design and EDI have common goals and face shared challenges; university strategies and policies for both should use complementary language and align with each other. Universal Design for Learning can enhance persistence, retention and satisfaction rates for all students. Providing Universal Design solutions to problems to management that address these issues as well as the data showing the impact it has on students will assist with securing buy-in from leadership. When seeking funding, it is important that UDL be connected to these measures of success so that it is considered as an urgent requirement rather than a "nice to have" or a "good thing to do".

Universal Design does not require high tech productions to enable hybrid learning environments. Teaching staff can facilitate a hybrid classroom relatively easily with a Zoom link and chat function, providing the same lecture and the same kind of interactions to students. Rather than trying to juggle everything at once, establish boundaries around what you can accomplish as an individual person. Consider this as an easy Plus 1 Universal Design step that can be implemented tomorrow. Those who are wary of UDL practices, think that it leads to a dumbing down of academic rigour but this is a mistake. Effective UDL practices maintain that rigour and continue to challenge students academically while making it easier for students to access teaching materials and lowering barriers for students to be successful. Consider using alternative assessments or giving students the option to access teaching materials in different formats while ensuring the learning outcomes are met. Consider dividing "assessment of learning" from "assessment as learning" - alternative assessments of learning should use the same criteria, rubric and grading scale. Opportunities for assessments as learning, which do not contribute to the final grade, allow students to get feedback on strengths and areas they need to focus on next.

In order to advocate effectively for adopting inclusive practices across our programmes, instructors, staff members, department chairs, and directors need to be able to change the mindset among our senior-leader colleagues, so that UDL is perceived as a mission-critical set of practices for the entire campus. Commit to core UDL applications that can be implemented institution-wide, along with milestones for measuring success. At Kennesaw State University, Jordan Cameron came up with The Basic Four[1] which are easily implemented and can be the first step in a wider Universal Design strategy:

1. Image alt-text: provide meaningful alternative text for images on websites, presentations, social media, etc. Ensure this is context specific and is not too detailed.
2. Basic document formatting: using semantic structure, list styles, tables, contrast, and descriptive links as in the graphic of a file being composed on a laptop.
3. Video captions & transcripts. Ensure that they are synchronised, equivalent, & accessible.
4. Choosing accessible third-party resources. Perform accessibility testing of existing and new systems with learners from across the ability spectrum (and include mobile-device testing). Don't buy products that don't have VPATs (Virtual Product Accessibility Templates), and test to see if the claims in the VPAT actually reflect the operation of the tool or product.

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1 (https://accessibility.kennesaw.edu/basic_accessibility_solutions/basic_four.php)

How we frame our arguments and language to persuade colleagues and management is important. Arguments for UDL should not only be considered through the lens of benefiting students with a disability. If our campus colleagues perceive us as advocating, though, for a small group of students and in a narrowly applicable sense, of course they will say "it's the right thing to do . . . and it's a low priority." They think about disability accommodations, because our methods and our concepts overlap between UDL and accommodation supports. EDI arguments should be framed to include UDL and other inclusive design principles, without erasing the visibility of groups who have been traditionally marginalised or excluded from strategic conversations. The EDI argument that resonates most strongly with campus leaders is that none of the diversity efforts that they champion now will actually work unless students have access to the information, services, and people who can support them. Access is the "step zero" that makes all of the other EDI principles actually work. We're moving away from "accessibility" (which carries those overtones of individual disability accommodations), and we're starting to use the language of "access"—access in terms of content, interactions, support, and people.

Dr Tobin delivering his keynote at the UfA Symposium in May 2022.

Talk to university leadership about how inclusive design practices like UDL help all of our online and technology-mediated learners to find more time for studying by giving them options for interacting with:

Content: This is what everyone thinks about when we talk about accessibility. This is making captions for videos, doing transcripts for audio podcasts, putting alternative text descriptions on still images.

Each Other: How do learners connect with one another outside of formal course interactions? What spaces does the institution provide for collaboration, studying, and interaction?

The Institution: Our colleges and universities are much more than just instructors. How do students know about and get multiple ways for access to support staff, librarians, mental-health counsellors, the financial aid office, tutoring, academic advising, and extracurricular opportunities?

The Community: It sounds counterintuitive, but the more we can get students away from their computers and devices, the more engaged they are likely to be. Get them connecting with colleagues in your field, people in your community who work with your concepts. Get students working on real projects, real problems, or at least communicating and hearing the stories of those using the skills and knowledge you teach. The less your courses and interactions are a self-contained box, the better.

A Plus 1 approach is always the best starting point when trying to implement UDL, whether this is in teaching, student support or at an institutional level. Change starts small but as this collection of case studies shows us, that change can make a big impact and improve the student experience right across our campus.

Professional Development in Teaching & Learning as an Enabler of Innovation and Inclusion

Dr Sheena Hyland

In recent decades, Widening Participation (WP) has been a core strategic aim of Irish educational policy. The strategy's success can be seen in improved equity of access to higher education for students from traditionally underrepresented groups, such as people from lower income backgrounds, people with disabilities, and those from certain minoritised communities. As diversity increasingly becomes the norm across the sector, removing barriers to access is recognised as only part of the story. To be truly inclusive, fair and equitable, HEIs are tasked with creating learning environments that not only welcome all students but empower them with the tools to achieve their full potential.

As the sector grapples with rapidly changing student demographics, it is also under pressure to equip students with the knowledge and skills to respond to the challenges of an increasingly complex global world. Critical to this endeavour is the enhancement of teaching and learning through professional development which has been driven by a new policy and funding landscape. Organisations such as AHEAD and the National Forum for the Enhancement of Teaching and Learning have been key in promoting and incentivising a culture of professional development that puts inclusive student-centred approaches to learning at the heart of higher education. The Professional Development Framework provides clear structures and development pathways, supports and guidance, as well as reward and recognition schemes that encourage and empower those who teach and support learning to participate in both formal and non-formal professional development.

The Framework defines professional development broadly to include a wide range of activities from engaging in formal accredited programmes of study, attendance at workshops, seminars and summer schools, individually reading articles, resources or keeping a teaching journal, or even engaging in informal conversations with colleagues about teaching and learning. From modest individual changes to wholesale curricular redesign across programmes and institutions, the aim of the Framework is to support educators across all teaching contexts and stages of their career to develop as reflective practitioners and implement evidence-led and inclusive student-centred approaches to learning.

Central to the mission of UCD Teaching and Learning is the continuous enhancement of the educational experience through the accredited, non-accredited, formal and non-formal professional development across the University. Formal offerings include the accredited UCD Level 4 (NFQ 9) University Teaching and Learning (UTL) Programmes (Professional Diploma/Certificate), the UCD Level 4 (NFQ 9) University Teaching and Learning five ECTS module for Tutors, Demonstrators and Teaching Assistants in addition to the UTL Seminar Series for Postdoctoral Researchers and the Lecturer Induction Workshops. The aim is to assist participants to collaborate, share ideas and experiences, engage in reflective practice, and implement evidence-led approaches that foster inclusive, innovative, and meaningful student-centred learning environments.

The roll-out of the National Forum's Universal Design for Learning (UDL) Digital Badge across the University has been spearheaded by UCD's Access and Lifelong Learning. Developed in collaboration with the Professional Development Framework, a core focus of UCD's University for All initiative has been the promotion of UDL at institutional and sectoral levels. Universal Design for Learning has been a key to supporting inclusion for all students, particularly during the rapid shift to online and blended learning as a consequence of the pandemic. The Digital Badge is delivered by UCD for All at institutional and sectoral levels in partnership with AHEAD, and is also integrated into the Designing Curricula module on the University Teaching and Learning (UTL) programmes. There has been a significant uptake of the Digital Badge across Schools and Colleges in UCD, directly contributing to the development of a strong UDL community among those who teach and support learning in the University.

Creating opportunities for colleagues to come together and share ideas and experiences is a powerful way to help lift the lid on an often private, and sometimes isolating, aspect of one's professional practice as educators. In UCD this is supported through various events such as the annual UCD Teaching and Learning Symposium and the UCD for ALL Symposium, which bring together international experts and colleagues to share expertise and experiences on current topics and themes. Such events serve to open up a vital space to meet and learn from and with colleagues who teach and support learning in UCD. Case studies, such as those published in this volume, shed a crucial light on some of the complex challenges faced by staff and students, highlighting creative and innovative ways that colleagues have sought to address difficult issues related to inclusion, equity and fairness through embedding Universal Design for Learning in their teaching practice. The diverse contexts and range of challenges documented in this publication will undoubtedly resonate with those across the University and further afield, revealing possibilities for practice that might otherwise remain hidden.

Case Studies Overview, Themes and Advice for Implementation

Dr Lisa Padden

This collection of case studies from our University for All Faculty Partners is the fourth such collection published by UCD Access & Lifelong Learning as part of our University for All initiative. These case studies are an important resource for capacity building and professional development for those exploring and embedding Universal Design for Learning.

Case Study Overview

Each case study offered in this publication offers insight into local context and discipline but focuses on applicability of approach and sharing replicable practice which readers can take away and implement. The case studies are grouped by College as these teams of Faculty Partners have been working together to embed UDL in their disciplines and have forged leadership teams to bring UDL to all within their discipline. Each section includes a foreword from the College Principals whose support of the University for All initiative, and the Faculty Partners specifically, has been instrumental in their success, allowing for their impact to be amplified in their discipline. Below you will find an overview of each section of case studies.

UCD College of Arts and Humanities

The four case studies from UCD College of Arts and Humanities cover a breadth of UDL implementation and leadership strategies. Dr Mary Farrelly outlines an approach to embedding UDL in a structured, meaningful, but importantly, easily achievable manner. Dr Naomi McAreavey addresses the need to train colleagues at all levels demonstrating her success in bringing tutors on their UDL journey through the Digital Badge programme. Dr Annette Clancy takes a close look at assessment for graduate taught students, offering choice and flexibility increasing student engagement and autonomy. Finally, Dr Fionnuala Walsh identifies UDL solutions to engaging mature students which in turn improve engagement for all students in the classroom.

UCD College of Business

The three case studies from UCD College of Business cover all aspects of UDL implementation: review of existing modules, leadership in UDL development, and using the UDL framework in the development of new modules. Dr Linda Dowling Hetherington gives advice to those seeking to lead UDL in their discipline, providing guidance on how this was done in the College of Business through a multi-pronged approach to creating a ripple effect. Allen Higgins offers an extremely useful tool for educators to review their modules and teaching interactions with a view to identifying opportunities for UDL interventions. Joe Houghton offers practical insight into the development of a new graduate level module with a UDL lens providing multiple resources for readers to use in their own practice.

UCD College of Engineering and Architecture

The four case studies from UCD College of Engineering and Architecture demonstrate the breadth of work happening in embed inclusion in these disciplines. Dr Jennifer Keenahan offers insight into how the faculty partners worked together to harness the enthusiasm and commitment of their colleagues, with specific advice on how to encourage colleagues to increase accessibility of materials using the Brightspace Ally tool. Dr John Healy also focuses on accessibility of materials demonstrating how he designed and delivered a project to create alternative text for hundreds of circuits used in undergraduate Engineering modules, creating a tool for others in the process. Alice Clancy outlines her work in embedding UDL in the Architecture studio environment, noting the value of combining a UDL lens with other timely projects to progress inclusion. Finally, Associate Professor Vikram Pakrashi outlines his work as a University for All Faculty Partner and some of the interventions and capacity building opportunities he feels moved the dial for inclusion in his context.

UCD College of Health and Agricultural Sciences

Our Faculty Partners in UCD College of Health and Agricultural Sciences work in a variety of disciplines and their case studies are similarly diverse. The three case studies from the School of Nursing, Midwifery and Health Systems focus on implementation in three different specific contexts. Dr Freda Browne shares a scaffolded approach to integrating multiple means of action and expression, enabling students to be autonomous learners. Dr John Gilmore outlines the development of a module which empowers healthcare students to challenge injustice using a UDL focused enquiry based learning approach. Dr Phil Halligan outlines her work in engaging students studying leadership and management through implementation of UDL to provide choice and flexibility. From Medicine, Dr Tom Flanagan, outlines an innovative approach to adding flexibility and choice to assessment. From Veterinary Medicine, Professor Deirdre Campion demonstrates how UDL implementation can make a content-heavy professional curriculum more accessible. Associate Professor Caitriona Cunningham outlines an approach to UDL implementation to assist students with understanding and delivering on assessment criteria. From the School of Agriculture and Food Science Dr Karen Keaveney and Dr Deirdre O'Connor outline implementing UDL in large undergraduate modules: to assist students with recognising the why of learning and as an approach to socially engaging students through study groups respectively.

UCD College of Science

From UCD's College of Science we have three quite different case studies which offer useful and practical advice on how UDL can be embedded in the varied disciplines under the Science umbrella. Dr Anthonly Cronin outlines an approach to peer assessment and feedback with clear positive impact on student engagement. Dr Jennifer Mitchell shares her response to high volumes of assessment anxiety and resulting communications from students - the introduction of simple live tutorials to an online module is shown again to have a very positive impact on students. Finally, Dr Gavin Steward focuses on the principle of representation as linked to accessibility of learning materials, specifically slides.

UCD College of Social Science and Law

Our case studies from Social Sciences and Law offer a number of creative approaches to UDL implementation. Dr Ernesto Vasquez del Aguila provides a detailed insight into his use of Padlet, an online collaboration tool, to create an evocative visual journey for students in a graduate module. Dr Kevin Costello, also discusses the use of Padlet, along with a number of other interventions to increase engagement and student experience in a module with a diverse learner cohort. Associate Professor Muireann Ní Raghallaigh discusses an approach to inclusive teaching of content about race and racism which keeps the student at the centre, providing guidance on sensitivities and advice on tools and methods which align with UDL. Dr Rachel Farrell provides an overview of the approach taken by UCD School of Education to provide an alternative means of assessment through the use of digital storytelling.

Themes

UDL Leadership

Many of our University for All Faculty Partners had begun their UDL journey before applying to be part of this structured and funded programme. However, their work was elevated and fast-tracked as a result of being awarded this leadership role. One of the key lessons we have learned from this programme is the necessity to empower colleagues in their local discipline in order to see real and sustainable progress with UDL.

Capacity Building

Harnessing commitment is only possible through the provision of scaled and accessible capacity building opportunities. In many of the case studies presented here you'll read about the power of the Digital Badge in Universal Design for Teaching & Learning in increasing buy-in and progressing individual, disciplinary and institution goals for inclusion.

Diversity in Assessment

Assessment, as always, is top of the agenda both for students and for our academic colleagues. Many of the case studies within this publication provide templates for how choice and flexibility can be built in ranging from simple additions to whole-curriculum review and change.

New Module Development

Quite often we discuss UDL as a tool to re-design and evaluate current practice, with the ultimate goal of changing existing teaching & learning practices. It's refreshing then to begin to see the impact of UDL in the design of new modules. Building UDL practice from this stage allows for strategic interventions - ensuring barriers are never erected to have to be later eliminated. The process of this new module design using the UDL framework provides us with an impetus to ensure that UDL is built into these processes and not just embedded by those already invested and embedded in UDL practice.

UDL for Large Classes

One of the questions frequently asked by those learning about UDL is its applicability to large group settings. There is a misconception that UDL interventions all require a large time investment and one-to-one supports. The case studies in this publication show this isn't the case and in fact strategic UDL implementation can free up time both for students and their lecturers.

Student Empowerment

At its core UDL is a student-centred approach which encourages student co-creation. The UDL interventions outlined here offer some innovative ideas on how this might be achieved in a meaningful and impactful way. All UDL implementation should start with consideration for the student and their learning experience, and this is demonstrated throughout the case studies.

Tools and Resources

UCD has invested in a number of accessibility-focused tools and resources in recent years including Sensus Access, Ally and Silktide. The importance of institutional investment in inclusion is demonstrated in the power of these tools which are featured in a number of the case studies in this publication. Ally, most notably has facilitated a number of Faculty Partners to lead a coordinated effort across disciplines to make large-scale accessibility improvements of teaching materials. A number of our Faculty Partners have also created their own tools and resources which are shared in this publication, e.g. Allen Higgins UDL evaluation tool. The development and sharing of resources has been one of the most impressive outcomes of the University for All Faculty Partnership and again demonstrates the power of creating a collaborative and supportive Community of Practice.

UCD College of Arts and Humanities

Foreword

Professor Regina Uí Chollatáin
Principal and Dean, UCD College of Arts and Humanities

Spreagadh agus Solas don Fhoghlaim Fhadsaoil
Inspiration and Light for Lifelong Learning

Is mór an t-údar spreagtha é domsa obair mo chomhghleacaithe i gColáiste na nEalaíon agus na nDaonnachtaí a chur os bhur gcomhair sa bhailiúchán speisialta seo de chás-staidéir ar Dhearadh Uilíoch don Fhoghlaim. Is léargas iad ar fheabhas agus ar chaighdeán an teagaisc agus na foghlama in ainneoin dhúshláin na paindéime. Le modhanna agus le teoiricí nuálaíocha uilíocha á n-oiriúnú acu, le cinntiú go mbaintear na caighdeáin is fiúntaí foghlama amach i gcónaí, chuir na scoláirí seo le léann na ndisciplín agus le foghlaim fadsaoil i mbealaí a léiríonn tuiscint agus saineolas gaoismhear. Tréaslaím an obair leo agus is teist iad na cás-staidéir ar dhúthracht agus ar fhís cheannairí Rochtain agus Foghlaim ar feadh an tSaoil i gCOBÁC.

It is my great honour to introduce this ground-breaking yet empathetic, reflective and meaningful body of Universal Design for Learning work and corresponding case studies, from my colleagues in the College of Arts and Humanities. An inclusive, equal and diverse society is central to our teaching content and methodology, and will remain evident in the subsequent imprint and impact of our students. These case studies remind us that 'at its core, implementing Universal Design for Learning is about fostering these good habits and productive attitudes' (Mary Farrelly).

As the Arts and Humanities case studies testify, our faculty are leading advocates in the field of creating and executing well-researched UDL strategies and practices and in bringing the benefits to the heart of our teaching ethos for each other and for our students. The many benefits of applying UDL to both planning and practice are apparent in the case studies you will read. These studies shine an important spotlight on the tireless work, passion and leadership of our faculty in making the classroom and the university a more engaging, open and inclusive university for all:

Associate Professor Naomi McAreavey's case study 'Universal Design for the Professional Development of Graduate Tutors in Arts and Humanities', focused on the diverse and accessible presentation of information alongside active learning practices to enliven delivery, coinciding with the pandemic and post-pandemic eras.

With a focus on mature-age students actively welcoming all ages, backgrounds, and motivations, Dr Fionnuala Walsh's case study 'Enhancing Mature Student Engagement and Empowering Learning for All Students with UDL', looks at ways to improve student engagement with the aid of focused UDL guidelines and thinking.

Dr Mary Farrelly's case study 'Prioritising "Plus Ones": A UDL Teaching Planner Cheat Sheet', was created to help teachers think deeply and effectively about how to break through barriers by bringing UDL principles and approach to the core of their planning.

Dr Annette Clancy's case study 'Multiple Means of Engagement and Expression: Choice of Assessment formats for MA Students', introduced multiple means of engagement and expression allowing students to choose assessment formats, providing them with alternatives for demonstrating their learning with very positive effects.

Comhghairdeachas leo ar fad. Bainigí barr suilt as na féidearthachtaí seo a léamh agus a ríomh.

Case Study Title:

Multiple Means of Engagement and Expression: Choice of Assessment Formats for MA Students

Dr Annette Clancy

| Author | Dr Annette Clancy |

Abstract

The purpose of this change was to introduce multiple means of engagement and expression, offering students a choice of assessment formats: a written reflective journal; a video; or a podcast, providing them with alternatives to demonstrate their learning. 50% of the class submitted videos and podcasts – a much higher number than anticipated. Student feedback was very positive about (a) the choice of assessment formats and (b) different opportunities to demonstrate their learning.

Module/Course/Programme/School

'Cultural Policy 3 Arts Lives'
MA Cultural Policy and Arts Management
School of Art History and Cultural Policy

Discipline

Arts and Humanities

Level and Credits

4 Masters | 5 Credits

Student numbers

30 Students
(2021/2022 19 Students)

Introduction and Context

The MA in Cultural Policy and Arts Management in the School of Art History and Cultural Policy attracts a diverse group of students; from recent undergraduates, to mid-career arts professionals returning to education, to improve their management skills. I teach a number of management modules on the programme.

Approximately, 50% of the student cohort are international, with the mix ranging, from those with recent academic experience, to those with very little; combined with students who have extensive professional experience in the arts sector. Students also have a range of art form experience across the disciplines, from visual arts, to music, architecture, theatre, and museums. Students are attracted to this degree because they want a career in arts and cultural management in Ireland or internationally.

I have noticed, since I became director of this programme, that there are very few creative opportunities for students to demonstrate their learning. This came to the fore for me whilst undertaking the Digital Badge, when I began to understand the value of multiple means of engagement. As part of my assessment for the badge, I polled students, asking them if they would be interested in a choice of assessment formats. From this, 68% of students replied that they would, with podcasting and video the most popular formats suggested.

On the basis of student feedback (below) and drawing on UDL principles (CAST, 2018), I decided to introduce a change to the assessment strategy for a spring trimester module: 'Cultural Policy 3: Arts Lives'

| **'Adding new formats...really works for visual learners like myself'**

And

| **'I'd love to do a podcast...it's such a great way to include introverts...'**

Objectives

My main objective for undertaking this change is to introduce multiple means of engagement and expression, whereby students could choose from three different types of assessment formats: a written journal, a video, or a podcast, providing them with alternatives for demonstrating their learning. Much management literature assumes that the traditional workplace should be orientated towards extraverts and group work (Cain, 2013), eschewing the needs of introverts and neurodiversity. In introducing this change, I want my students to recognise that there are multiple ways of reflecting on their learning, just as there are multiple ways of being a manager in the cultural workplace.

Introduction to the learning context

'Cultural Policy 3: Arts Lives' takes place in the spring trimester. This module has two objectives:

— firstly, to give students an insight into policy and practice in cultural sector management

— secondly, to encourage students to reflect upon the particular qualities that make for a successful career as a manager and leader in the cultural sector.

Each week, a cultural manager speaks to the class about their career, to date. Speakers are encouraged to go 'off the record' and to reflect on the realities of working in the cultural sector. Students are encouraged to ask questions and to link their academic learning, plans for the future, and ideas about practice. The assessment for the module is a reflective journal. Students are asked to identify a learning goal, to document weekly entries, identify themes from the talks, and to summarise with a review detailing their overall learning from the module. The assignment comprises 100% of the 5 credit module.

Design and Implementation

The module outcomes to be assessed using these methods are:

— Understand the strategic and practical management challenges facing managers in the cultural field

— Possess an insight into the kind of personal qualities needed to be a successful manager in the cultural sector

— Have a sense of one's personal strengths and weaknesses and opportunities for growth and development as a manager

— Identify the qualities that make for effective leadership in a cultural organisation.

Drawing on the work of O'Boyle (2011) and O'Neill (2011), I began by creating an Equity Table, to ensure a fair distribution of work across the three assessment types. Students were given a choice of submitting a 3,500 word (+/- 10%) written assignment or an 8 - 10 minute podcast or video. Students are not required to include academic literature in their journal. The table also allowed me to set out the distinctive aspects of each method whilst also affirming the assessment strategy, feedback, and student workload expectations. In addition, students were advised that video and podcasts would be assessed on content/quality, as distinct from technical expertise. The Equity Table is outlined in Table 1.

Results and Impact

50% of the class submitted videos and podcasts, which was a much higher number than I had anticipated.

Image 1: Slightly Embarrassed, Podcast submitted by Student A

Details of assessment Reflective Journal		Written assignment	
Differences	Why this might suit you	Emphasis on **written** expression for reflective journal. Enhance your reflective writing skills.	
	Word count/duration	3,500 words +/- 10%	
Same	Learning outcomes to be assessed	Understand the strategic and practical management challenges facing managers in the cultural field. Possess an insight into the kind of personal qualities needed to be a successful manager in the cultural sector. Have a sense of one's personal strengths and weaknesses and opportunities for growth and development as a manager. Identify the qualities that make for effective leadership in a cultural organisation.	
	Assessment criteria used	Same across all formats	
	Feedback mechanism	Individual written feedback from Lecturer	
	Student workload expectations	Research: 15 Writing/redrafting: 15 Total: 30 hrs	

Table 1: Equity Table. Adapted from (O'Boyle, 2011: 30)

Video assignment	Podcast assignment
Emphasis on **visual** expression for reflective journal.	Emphasis on **audio/aural** expression for reflective journal.
Enhance your capacity to present reflective thinking in video format.	Enhance your capacity to present reflective thinking in audio format.
8 - 10 minutes	8 - 10 minutes
Understand the strategic and practical management challenges facing managers in the cultural field.	Understand the strategic and practical management challenges facing managers in the cultural field.
Possess an insight into the kind of personal qualities needed to be a successful manager in the cultural sector.	Possess an insight into the kind of personal qualities needed to be a successful manager in the cultural sector.
Have a sense of one's personal strengths and weaknesses and opportunities for growth and development as a manager.	Have a sense of one's personal strengths and weaknesses and opportunities for growth and development as a manager.
Identify the qualities that make for effective leadership in a cultural organisation.	Identify the qualities that make for effective leadership in a cultural organisation.
Same across all formats	Same across all formats
Please note: You will be assessed on content/quality not your technical expertise!	**Please note:** You will be assessed on content/quality not your technical expertise!
Individual written feedback from Lecturer	Individual written feedback from Lecturer
Research: 15	Research: 15
Editing/recording: 15	Editing/recording: 15
Total: 30 hrs	Total: 30 hrs

In addition, the depth of reflection across all of the assignments was deeper than in previous years' assignments. Students made significant connections between speakers' talks and their own personal goals and career plans. Student feedback was very positive about (a) the choice of assessment formats and (b) different opportunities to demonstrate their learning. Research on videos (Kay, 2012) and podcasts (Sutton-Brady et al., 2009) on supporting learning and assessment suggests that students find these approaches helpful for guiding and retaining learning. Feedback from my students support these assertions (see quotes below).

> As a musician, I've spent many hours...in studios with professional engineers and rooms full of equipment... I [thought] it would be too involved...forgetting that I have hours of journal-like voice memos on my phone created while walking home after Arts Lives discussions. [Creating a podcast] helped me to better express opinions given the nature of the assignment. The [time boundary] was an extremely valuable tool for noticing when my focus would derail!
> — Student A who submitted a podcast

> I really enjoyed the freedom to write in a different way, the personal journal style of writing freed me up to be much more creative. Thank you for giving us the choice of how we submit our journals... it would be great to have more of this in other modules!
> — Student B who submitted a written journal

> It enhanced my ability to demonstrate my learning as it felt more conversational to me than a written paper, and allowed me to think about my learning as if I was conversing with someone. Thinking about my learning in this way allowed me to recall more from the Arts Lives sessions and how I felt about them. This took the pressure off of focusing on writing well or more formally
> — Student C who submitted a podcast

My intention in introducing this change was to offer multiple means of engagement and expression, whereby students could choose from a menu of assignments. My hypothesis was that some of the creative students might opt for a video/podcast assignment and the more academically inclined students might stay with the written assignments. What surprised me was how some students used the variety to challenge themselves. For example, Student D, who I expected to submit a written assignment, stated:

> I thought it would give me much more freedom...I did not want to choose the written version because I was worried I would be stuck in the framework of writing a traditional essay which was not something I believe to be relevant in light of the guidelines you gave us. I also thought it would be a new challenge for me being used to traditional papers with similar formats.
> — Student D who submitted a video

Therefore, one important learning from this project is how I was confronted with my assumptions about my students and their abilities. My students taught me to see them differently. My complacency about which students might choose which type of assignment was continuously challenged and overturned. I met my students in new ways through their assignments. The variety made grading a much more interesting and fulfilling task than the usual one of grading the same type of assignment over and over again.

Advice for others

My advice to others who might be considering introducing new assessment formats are as follows:

— Involve students in the discussion from the outset. Student engagement began before I started to think about the changes I wanted to make. Polling students in the autumn trimester was a very important aspect of introducing these multiple formats because it allowed for class discussion on the merits and reasons behind the change

— Be clear about the equity of work required in each type of assessment and, the student workload expectations you anticipate. Assuring students that work will be assessed on the basis of content not technical expertise is critical, as some students will, inevitably, be more proficient in this arena than others

— Grading will be a different experience. Refer back to the module outcomes and stay focused on content rather than technical expertise. Enjoy meeting your students in new and creative ways

— Consider creating some basic 'tech' resources for students if you think this is warranted. Vimeo Video School has a great series of videos on the basics, from 'how to make a gif', to 'how to capture sound with your iPhone'[1]

— Be willing to reflexively engage with your own assumptions and prejudices about what you expect from students (and yourself).

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1   See https://vimeo.com/videoschoolvideos

References

Cain, S. (2013). *Quiet: The Power of Introverts in a World That Can't Stop Talking,* London, Penguin Books.

Cast. (2018). *Universal Design for Learning Guidelines 2.2* [Online]. Available at: https://udlguidelines.cast.org/ [Accessed 19 June 2022].

Kay, R. H. (2012). Exploring the use of video podcasts in education: A comprehensive review of the literature. *Computers in human behavior,* 28**,** 820-831.

O'Boyle, K. (2011). Assessing Scientific Presentations, in O'NEILL, G. (ed.) *A Practitioner's Guide to Choice of Assessment Methods Within a Module.* Dublin: UCD Teaching and Learning.

O'Neill, G. (ed.) (2011). *A Practitioner's Guide to Choice of Assessment Methods Within a Module.* Dublin: UCD Teaching and Learning.

Sutton-Brady, C., Scott, K. M., Taylor, L., Carabetta, G. & Clark, S. (2009). The value of using short-format podcasts to enhance learning and teaching. *ALT-J,* 17**,** 219-232.

Prioritising 'Plus-ones': A UDL Teaching Planner Cheat Sheet

Dr Mary Farrelly

Author	Dr Mary Farrelly

Abstract	One of the challenges of implementing UDL is knowing where to start. The 'UDL Teaching Planner Cheat Sheet' is designed to help teachers think efficiently and strategically about how best to implement UDL. By working out which 'plus-ones' to prioritize for maximum impact, teachers can focus precious time and resources to remove barriers to learning where it is needed most. Moreover, with repeated use the 'cheat sheet' doubles as a brain training exercise that helps teachers internalize the UDL principles and approach so that identifying learning goals, barriers, and 'plus-ones' becomes effortless.

Module/Course/ Programme/School	SPAN30230 Historical Memory in Spain, School of Languages, Cultures and Linguistics
Discipline	Spanish Studies, Film Studies
Level and Credits	Level 3 | 5 Credits
Student numbers	Approx. 50

Introduction

While the benefits of UDL for students is clear, its implementation is often perceived as extra work for already swamped teachers. Even the boundless enthusiasm of confirmed UDL enthusiasts must be somehow channelled into the narrow constraints of time. As such, it is easy to feel overwhelmed by the work and unsure of where to start. The 'plus-one' approach (Tobin, 2021) addresses these concerns by taking what otherwise might look like an impossible goal and breaking it down into manageable, achievable chunks. More importantly, 'plus-ones' foster a productive mindset that values progress, however small, over perfection. Nevertheless, it can be difficult to know which 'plus-ones' to prioritize.

Luckily, UDL also offers teachers flexible frameworks to approach the design of classes and resources, helping to prioritize 'plus-ones' for maximum efficiency and impact. To facilitate this strategic planning in my own teaching, I have adapted CAST's 'Step-by-step planner for UDL Lesson Design' (Posey, nd) to help me more effectively engage the resources at my disposal and to plan my inclusive teaching actively, rather than reactively. Condensing the Step-by-step Planner down to one page, with key questions and checklists for ease of reference, I created a UDL Planner 'Cheatsheet', designed to help me quickly identify the most impactful 'plus-ones' to implement and to train my brain to imbed the UDL approach into every learning experience I design.

Context

Below is an example of how the UDL Teaching Planner Cheatsheet supported me in redesigning one of the most challenging classes I teach on my final-year module, SPAN30230 Historical Memory in Spain.

This module usually attracts a large cohort of students (approx. 50) from a variety of academic backgrounds. Most students are final-year BA, BA Commerce International, and BA International Modern Languages students who are also studying Spanish Language to degree level. Each of the last four cohorts have included a number of mature students and students availing of disability supports including academic and exam accommodations (averaging around 10% of the group). There are also a significant number of international students on study-abroad programmes such as Erasmus. The primary texts are all in the original Spanish, while the recommended secondary sources are in both Spanish and English. Classes are held in a mix of English and Spanish, and students are encouraged to bring in helpful terms from any other languages they know. As a result, this is a thoroughly plurilingual class, whereby inclusive approaches to teaching must support this diversity of language use.

The example session planner below takes place in Week 2 of the module and follows up on the introduction of the theoretical framework the class will be using for most of the module – the modes of memory framework defined by Anna Cento Bull and Hans Lauge Hansen in their 2016 article, 'On Agonistic Memory', as well the 5 Key Questions we will be asking to kickstart our analysis of each primary text on the module. In the previous class, students have encountered antagonistic memory practices in the context of propaganda films produced under the Francoist regime. In this class, we move on to discuss cosmopolitan memory in the context of the *2007 Ley de Memoria Histórica* using a short film made in response to the ensuing historical memory debates (*Contra la impunidad del franquismo*, 2010). Cosmopolitan memory is a challenging but essential threshold concept within the module that we will come back to in the following weeks.

I initially approached the redesign of this session, with a plan to integrate new resources created with the H5P online tool. H5P is an open-source content creation tool that makes it easy to create, share and reuse interactive HTML5 content. The tool allows users to design and embed interactive videos, interactive presentations, quizzes, interactive timelines and more. I was delighted to have access to this tool but the immense range of choices offered became overwhelming. In addition, H5P is fun and easy to use, so I often found myself spending hours making fun and slick-looking learning resources without really thinking about what they should achieve in terms of inclusivity for students. To counter this, and ensure my planning and design was rooted in a student-centred approach, I went back to the drawing board and adapted CAST's 'Step-by-step planner for UDL Lesson Design'.

UDL Teaching Planner Cheat Sheet

Module: _____ Session: _____

Step 1: Define Goal
By the end of this session, students will_____
_____
_____

- ❑ Does this goal separate the means from the ends?
- ❑ Does this goal consider all 3 learning networks (affective, recognition, strategic)?
- ❑ Does this goal challenge all learners?
- ❑ Does this goal actively involve learners?
- ❑ Is this goal clear and specific?
- ❑ Is this goal communicated to students in multiple ways?

Step 2: Anticipate barriers
<u>Engagement:</u> What are the barriers to interest, sustained effort, and self-regulation?_____
_____
_____

<u>Representation:</u> What are the barriers to perception and comprehension?
_____
_____

<u>Action and Expression:</u> What are the barriers to physically engaging with the session, expressing and communicating their knowledge and opinion?
_____
_____

- ❑ Have you framed these barriers to relocate the 'barrier' from within the student to within the design of the learning opportunity?

Step 3. Infuse Flexibility
What are the most pressing barriers to address today?
_____
_____

What 'plus-ones' can you implement today to tackle these barriers?
_____
_____

What 'plus-ones' could you implement in the future to tackle these barriers?
_____
_____

- ❑ Do these design strategies support the learning goal?
- ❑ Are these realistic 'plus-ones' for today?

Figure 1: UDL Teaching Planner Cheat Sheet

A Guide to Using the UDL Teaching Planner Cheat Sheet

Step 1: Define goals

Clear goals are key not only to providing focus for the design of the learning experience, but also to supporting students in developing into expert learners who track their own progress and set their own goals. My initial goal for this session was:

On completing this session, you will be able (1) to identify cosmopolitan memory practices and (2) critically evaluate these practices in the context of the 2007 *Ley de Memoria Histórica* during a class discussion.

I then used my Step 1 Checklist questions to reflect on that goal and bring it further in line with UDL principles:

— **Does this goal separate the means from the ends?**
   Not yet. Students must be able to choose how they work towards the goal, so it is important to avoid being overly prescriptive in how the goal is met. Insisting that students demonstrate the second part of the goal through a class discussion shuts down different options, so that should be removed

— **Does this goal consider all three learning networks?**
   Nearly. This checkpoint is not as complex as it sounds once each learning network is considered individually:
   - The affective network does the emotional work of managing internal motivation and engagement. This network is engaged through the positive framing of the goal and by introducing a novel new context that builds on knowledge gained in the previous session
   - The recognition network takes in information and organizes it into meaningful categories. This network will be engaged in identifying cosmopolitan memory practices and recognising them in context

- The strategic network manages executive functions such as planning and performing tasks. This network will be engaged in critically evaluating cosmopolitan memory practices in context. However, I also want to indicate to students that they are embarking on a longer-term exploration of these memory practices so that they can plan for future discussions. I will add the words '*begin to* critically evaluate' in order to orient the students towards longer term thinking.

— **Does this goal challenge all learners?**
Yes

— **Does this goal actively involve learners?**
Yes. All students will participate in evaluating these practices in the way that suits them best

— **Is this goal clear and specific?**
Yes

— **Is this goal communicated to students in multiple ways?**
Yes. This goal will be in the descriptor at the top of the session page on the Brightspace VLE and also stated verbally at the beginning and end of class.

After considering the checklist, I edited the session goal as follows: On completing this session, you will be able (1) to identify cosmopolitan memory practices and (2) begin to critically evaluate these practices in the context of the 2007 *Ley de Memoria Histórica* during a class discussion.

More can still be done to hone the goal, but we won't let perfection be the enemy of progress!
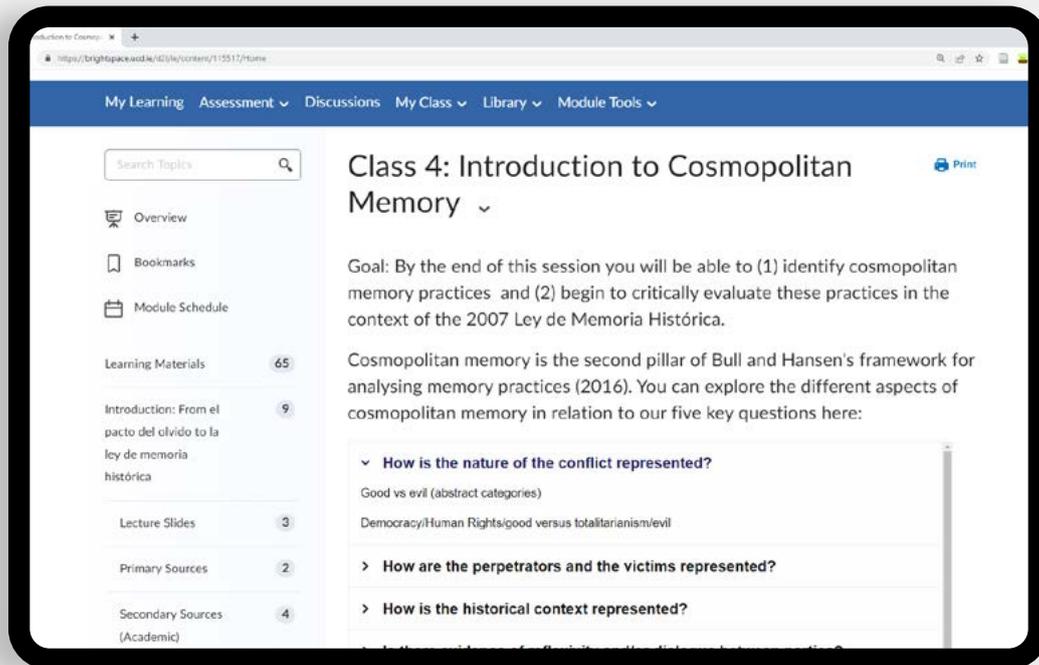
Figure 2: Session Goal on Brightspace VLE

Step 2: Anticipate barriers

This is often the most challenging part of UDL lesson design, as it can be hard to predict the infinite variability of learners. Software such as Blackboard Ally can help teachers identify barriers to learning in online resources. AHEAD, an organisation working to create inclusive environments in education and employment for people with disabilities, also has online resources that support teachers in predicting where barriers might crop up (*Inclusive Teaching Strategies*, nd). Student feedback and end of class/week/ semester self-reflection exercises are also important tools that can help us better anticipate barriers that hinder student progress. Based on student feedback and past experiences teaching this session, I drafted this list of barriers organised around the three principles of UDL:

Engagement: What are the potential barriers to interest, sustained effort, and self-regulation?

— Potentially triggering content regarding violence

— Lack of cultural relevance/academic interest

— Cognitive overload

— Time pressure.

Representation: What are the potential barriers to perception and comprehension?

— Difficulty seeing the video

— Difficulty hearing the video

— Unfamiliar, specialized second language vocabulary.

Action and Expression: What are the potential barriers to physically engage with the learning experience or to express and communicate their knowledge, opinions, and ideas?

— Social anxiety around group discussion.

Checklist: Have you framed these barriers to relocate the 'barrier' from within the student to within the design of the learning opportunity?

Relocating the 'barrier' from within the student to within the design of the materials or activity, emphasizes that it is the design rather than the learner that needs to change. For example:

Social anxiety around group discussion' frames anxiety in the students as the problem. We can move the barrier from the student to the design by reframing the barrier as 'social pressure during group discussion.

Step 3: Infuse flexibility

What are the most pressing barriers to address today?

The list of barriers can seem overwhelming so prioritizing one or two based on student need can help focus your thinking. I choose two based on issues that had arisen when I taught this session previously:

— Unfamiliar specialized second language vocabulary

— Social pressure during group discussion.

What 'plus-ones' can you implement today to tackle these barriers and provide varied, flexible, and supported pathways to success?

— I can remove a barrier to comprehension by adding interactive elements to the short film under discussion ie., closed-captioning, an interactive glossary, explanatory links

— I can remove a barrier to action and expression by providing more options for students to demonstrate that they have begun to critically evaluate cosmopolitan memory practices. Instead of the group discussion, students can choose instead to publish their ideas in class using Mentimeter or collect them privately through a Notes Organizer on Brightspace.

Figure 3: Interactive Glossary embedded in video

Reflection

CAST's 'Step-by-step planner for UDL Lesson Design' has been extremely useful to me in keeping my work student-focused and helping me use my time and resources wisely. By thinking through the goals of the class and the barriers to learning, I was able to return to H5P and use the tool to design an interactive video and a Notes Organiser that effectively removed barriers and gave students more flexibility in how they met the session goal.

Working through this process has also had a positive effect on my thinking, deepening my understanding of UDL principles, and strengthening my will and ability to apply them. At its core, implementing UDL is about fostering good habits and productive attitudes, the cheat sheet helps to achieve this by establishing a pattern of thought that with repetition becomes easier to remember and carry out automatically.

By sharing the cheat sheet on Twitter and setting it as one of the UCD 30 Day Access Challenge goals, I hope to continue developing the cheat sheet by sharing it with colleagues and gathering feedback on how it can be further improved. Contact me if you have any ideas to share!

Advice for using the UDL Teaching Planner Cheat Sheet

— Adapt it according to your needs: I added key words and phrases that inspired and focused me on the task – you may want to add sections or change definitions of terms depending on how you work

— Keep it handy: For some sessions, you may want to print the planner out and jot down your ideas to help you think. Sometimes, it may be enough to have a copy pinned up next to your desk, to glance at for a quick reminder of where your focus should go.

References

CAST (2020). *UDL Tips for Designing Learning Experiences*. Wakefield, MA: Author. Available at: https://www.cast.org/products-services/resources/2020/udl-tips-designing-learning-experiences

Contra la impunidad del franquismo | RTVE Play (2010). Available at: https://www.rtve.es/play/videos/programa/contra-la-impunidad-del-franquismo/799241/

Inclusive Teaching Strategies (no date) *AHEAD*. AHEAD. Available at: https://ahead.ie/inclusiveteaching

Meyer, A., Rose, D.H. and Gordon, D. (2014). *Universal Design for Learning: Theory and Practice*. CAST, Incorporated.

Posey, Alison (no date). *UDL Lesson Planning* Available at: https://www.understood.org/en/articles/lesson-planning-with-universal-design-for-learning-udl

Tobin, T. (2021). *UDL plus-one - Thomas Tobin*. Available at: https://www.youtube.com/watch?v=FDt1r3FcCQU

Zealand, M. of E., New (2018). *Create barrier-free goals and objectives*, *Inclusive Education*. Available at: https://inclusive.tki.org.nz/guides/universal-design-for-learning/create-barrier-free-goals-and-objectives

Case Study Title:

Universal Design for the Professional Development of Graduate Tutors in Arts and Humanities

Associate Professor Naomi McAreavey

Author	**Associate Professor Naomi McAreavey**

Abstract	This case study describes my work in supporting the professional development of graduate tutors, which has led to a new role as Tutor Support Officer in my school. It explains how as a University for All Faculty Partner for Arts and Humanities I was successful in encouraging tutors from across the college to take the Digital Badge in Universal Design for Learning (UDL). The case study summarizes what the tutors learned from the course, how they are applying UDL to their teaching practice, and how we might further increase tutor engagement with UDL through the course.

Module/Course/ Programme/School	College of Arts and Humanities
Discipline	A range of Arts and Humanities disciplines
Level and Credits	National Forum Digital Badge
Student numbers	20 badge awardees out of 100+ hourly paid tutors and occasional lecturers in the college

Introduction and Context

During my tenure as Vice Principal for Teaching and Learning for UCD College of Arts and Humanities (2017-20), I developed a College Strategy for the Support and Professional Development of Hourly Paid Teaching Support Staff (tutors). I first gathered preliminary information from each school about the number of tutors they had; existing support structures; and training opportunities. I then facilitated workshops with tutors and faculty to define the role, duties, and responsibilities of tutors; their training needs; recognition; and payment. I also consulted with school administrators and Heads of School, as well as other members of the College leadership team.

Among the recommendations of the strategy was the need for college-level tutor training and, in larger schools like my own, the appointment of a member of faculty with responsibility for tutors. I received National Forum Learning Enhancement Project funding to work with a team of experienced tutors and the Associate Dean for Graduate Studies to co-create a new Level 5 module, Tutor Training for Arts and Humanities (McAreavey, 2021). Launched in September 2021, the module is offered in both autumn and spring trimesters, where sixteen graduate tutors across Arts and Humanities completed the module in its first year.

| OVERVIEW | BACKGROUND | GOALS | THE INNOVATIVE APPROACH | RESULTS |

This Learning Enhancement project has been funded through the HEA and the National Forum for the Enhancement of Teaching and Learning.

PROJECT TITLE:	Co-Creating a Tutor Training Module for Arts and Humanities
PROJECT COORDINATOR:	Dr Naomi McAreavey
COLLABORATORS:	Associate Professor Lucy Collins & Tutors: Ms Charlotte Berkery, Ms Jenna Byers, Ms Anna Graham, Ms Rachel Healy, Ms Laura Loftus, Ms Fiona Lyons, Ms Kelly Michels, Ms Chiara Tedaldi and Ms Zhengfeng Wang
MODULE NAME:	Tutor Training for Arts and Humanities/Structured PhD
MODULE CODE:	HUM50010
STUDENT COHORT:	The module is offered to current PhD students who are also employed as tutors in the College of Arts and Humanities.

Figure 1: UCD Teaching and Learning Case Study: Co-Creating a Tutor Training Module for Arts and Humanities

As well as coordinating the tutor training module, in September 2021 I took up a new role as Tutor Support Officer in my school. In UCD School of English, Drama and Film, we have more than sixty hourly-paid tutors and occasional lecturers, and, although they have always had excellent administrative support, they had no dedicated academic support. The new role provided an opportunity to implement some of the recommendations of the tutor strategy and ensure universal access to support and professional development opportunities for all tutors in English, Drama, Film, and Creative Writing.

Since I was also a University for All Faculty Partner for Arts and Humanities, I wanted to ensure that all aspects of my work with tutors were informed by UDL principles. My priorities with the Tutor Handbook were to make it shorter, clearer, easier to navigate, and relevant. I consulted with experienced tutors to ensure that the handbook covered what they needed most to perform their work in our school and reflect on their teaching in the context of their future career development plan. Feedback from the Tutor Representative was incorporated in the final draft.

Priorities for Tutor Support Officer, UCD School of English, Drama and Film, 2021-22

— Rewrite Tutor Handbook
— Reimagine annual Tutor Induction Day
— Provide teaching and learning workshops throughout the year
— Offer weekly drop-in consultation sessions ('Tutor Hour') in person and on Zoom
— Liaise with the Tutor Representative to address issues and concerns

Rewriting the Tutor Handbook

Engaging design
— Headings
— Less text
— Infographics
— Checklists

Relevant content
— Information about the school and its programmes
— Guidance on becoming a critically reflective teacher
— Key readings in the scholarship of teaching and learning
— Training and development opportunities, including the UDL Digital Badge

PART E: BECOMING A BETTER UNIVERSITY TEACHER

1. Small group teaching strategies
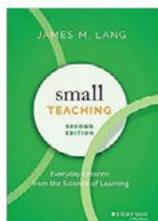
UCD Teaching and Learning provides some great advice on Small Group Teaching Strategies, which is really relevant to the work of tutors.

The UCD OER describes a range of Methods and Techniques for Use in Small and Large Group Teaching.

And for a wealth of research-based teaching ideas that are quick and easy to implement in class, see James Lang's *Small Teaching*. The second edition will be published imminently but the first edition is available as an e-book through the UCD Library.

2. Becoming a critically reflective teacher
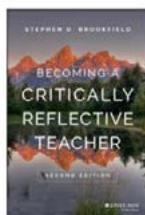
If you'd like to refine and develop your teaching practice, please consider reading Stephen Brookfield's *Becoming a Critically Reflective Teacher*, which is available as an e-book through the UCD Library.

In this book Brookfield describes four lenses of critically reflective practice:

1. Seeing ourselves through students' eyes
2. Learning from colleagues' perceptions
3. Using personal experience
4. Learning from theory

REMEMBER AND REFLECT
Think about your own experiences as a student. What worked for you? What didn't?

SOLICIT FEEDBACK
What do your students tell you about how they are getting on in your classes?

Self
Our autobiographics as learners

Students
Our student's eyes

Peers
Our colleagues' experiences

Scholarship
Theoretical literature

TALK TO YOUR TEACHING TEAM AND OTHER TUTORS
How have your colleagues addressed similar challenges?

RESEARCH AND READ
What answers does the scholarship offer to your particular T&L question?

3. Soliciting feedback from students

Students provide feedback at a modular level through UCD's student feedback system. Tutors can obtain a copy of the report from the module coordinator when it becomes available but unfortunately the system does not facilitate feedback on a specific class or tutor.

However, there are a range of simple methods for gathering mid-trimester feedback from your students, such as Start, Stop, Continue or the Minute Paper.

i.   Start, Stop, Continue

More detailed instructions can be found here but to summarize: allow five minutes at the end of a class; give students the instructions below and perhaps colour-coded paper or post-it notes; ask a student volunteer to collect the feedback and bring it to you at the end of class; then leave the room.

Figure 2: Excerpt from the Tutor Handbook, 2021-22

The Handbook was distributed by email to tutors a week before the Tutor Induction. The Induction itself addressed topics like lesson planning, engaging students, and assessment, and included short presentations, open discussion, individual reflection, and group work. I introduced some basic educational technologies like Google Forms and Poll Everywhere to give tutors first-hand experience of how technology can support inclusive engagement. We were not technologically equipped to offer the Induction in hybrid form, but I offered a session on Zoom for those unable to attend in person.

Changes for 2022-23 and beyond

— Change the Tutor Handbook from a PDF to a more dynamic format
— Invite experienced tutors to lead/design sessions in the annual Tutor Induction
— Increase engagement with the Tutor Hour by more clearly explaining how it might be used by tutors

Through my role as Tutor Support Officer, I have gained a better understanding of areas of the school's teaching, learning and assessment practices that might be strengthened and developed in light of our tutors' experiences. These have shaped guidelines I prepared for module coordinators on how to create more tutor-inclusive modules (McAreavey, 2021). These draw upon Pillar 1 of the *Toolkit for Inclusive Higher Education Institutions* (UCD ALL, 2018) because what is good for students is also good for graduate tutors.

How can Module Coordinators support tutors on their modules?

Update Brightspace

Create your new module on Brightspace as soon as possible and at least two weeks before the start of the semester. Prioritize the reading list, schedule, and assessment information. Make up-to-date reading lists available on module descriptors so that tutors have the opportunity to complete the reading before the semester starts if they choose.

Send a welcome email

Email your tutors to welcome them to the module at least two weeks before the start of the semester. Provide comprehensive module information and key dates. Make detailed assessment information available. Clarify expectations. Tell them how you will maintain contact. Set a date for the first module meeting.

Make books available

Equip tutors with the books and materials they need to teach the module at low or no cost. Make copies available to your tutors to borrow or keep. Order books from the publisher. Buy books on behalf of the school. Make digital copies available on Brightspace. Order e-books or request multiple hard copies for the library.

Create a module folder

Create a module folder on GoogleDrive to share teaching, learning and assessment resources. Make sure it's well-organized, easily navigable, and up to date.

Figure 3: Excerpt from How can Module Coordinators support tutors on their modules?

I also worked with colleagues to develop a rubric for use in all essay assignments in the school, along with guidelines for their use (McAreavey, 2022), and they have become an important tool for supporting tutors' assessment practice, by facilitating the production of consistent, reliable, and efficient grading and feedback. These interventions are helping to promote a more consistent in-module experience for tutors.

Criteria	Advanced	Proficient	
Knowledge and Understanding	Excellent and precise knowledge, and breadth and depth of understanding is amply demonstrated	Accurate knowledge and very good level of understanding, but some evidence of limited range or depth	
Analysis	Comprehensive and incisive analytical skills	Very good analytical skills demonstrated, but could be further developed	
Argument and Structure	Superb organizational skills evident, with strong thesis statement and coherent ordering and arrangement of points	Focused and efficient structure, with a clear thesis statement, but could be more polished	
Research	Arguments are built upon extensive and wide ranging secondary research	Arguments utilize some well-chosen secondary materials	
Writing and Presentation	Excellent command of written and presentation skills, with evidence of sophisticated understanding of style, voice, and tone	Strong command of written and presentation skills, with only minor technical errors	
Referencing and Citation	Accurate and consistent use of scholarly conventions	Good use of scholarly conventions, but with a small number of inaccuracies	

Figure 4: Rubric for Essays in UCD School of English, Drama and Film

	Competent	Developing	Lacking Proficiency
	Reasonable demonstration of knowledge and understanding, but at a basic level	Limited knowledge and understanding, with factual errors, vague assertions, or lack of evidence	Struggles to show evidence of knowledge and understanding of topic
	Analysis is evident, but lacking in depth; more emphasis on description	Lacking analysis, and relying on description and assertion	Absence of analysis, and weak descriptions or summaries
	Structure is mostly sound, but occasional problems with sequence and order, and some imbalances or digressions	Limited control of arrangement or points or argument, with digressions, repetition, and lacking transitions	Lacking in structure, organization, and focus; little or no control of points or sequence of argument in evidence
	Secondary materials are mentioned but not strongly integrated in the arguments	Secondary materials are cited but used inappropriately	No evidence of secondary research
	Good written and presentation skills, but some technical errors with grammar, spelling, sentence structure etc.	Adequate written and presentation skills, but significant extent of errors	Abundant errors in writing and presentation, with clear need for attention and support
	Scholarly conventions are used, but not always accurately or consistently	Scholarly conventions are used, but poorly and inconsistently	Absence of scholarly conventions, or marred with errors

All aspects of my work as Tutor Support Officer have been shaped by UDL principles. I have tried to model UDL practices by offering graduate tutors multiple ways of engaging with resources and developing their own teaching practice. Our tutors already think about inclusion. Indeed, in a recent survey, more than 80% of them said they considered inclusivity in their teaching to a significant degree (3-5 on a scale of 0-5). Therefore, I wanted to build on this interest by encouraging them to take the UDL course, which I thought would be an excellent opportunity to strengthen their professional practice and enhance their CV.

Design and Implementation

As a Faculty Partner, I was responsible for promoting and then facilitating the UDL Digital Badge (AHEAD, 2017) in my college, and this allowed me to tailor the message for Arts and Humanities. Email communications raised questions of importance in our college, emphasized EDI issues as they affect Arts and Humanities subjects in particular, and cited testimonials from colleagues who had already completed the badge. I then offered an information webinar where colleagues in college leadership positions shared their experiences of the course.

> 'If you are looking for ways to make your modules and classes more inclusive, have wondered how to better support students from underrepresented groups, have struggled with how to teach sensitive material, or have been grappling with the challenges of decolonizing the curriculum, then you should consider taking the Digital Badge in Universal Design for Learning.'
> — Email to College of Arts and Humanities, December 2021

Since there is no way to reach tutors through UCD Targeted Communications, I had to find new approaches for getting the message to tutors.

Getting the message to tutors

— Tailored emails sent via Heads of School and school administrators
— Presentations to the College's Teaching and Learning and Equality, Diversity and Inclusion committees
— Faculty asked to encourage tutors to take the course
— Personal emails sent to tutors I had worked with

The Faculty Partnership funding allowed me to offer €50 book tokens to tutors who successfully completed the badge, and I mentioned this in correspondence.

I otherwise tried not to make any distinction between tutors and faculty when I facilitated the badge locally. I created peer groups with a mix of tutors and faculty to ensure that everyone felt part of the learning community and could learn from each other. It was important for the tutors to appreciate that they had as much to offer the conversation as faculty, and that their different experiences and perspectives would be valued.

Tutors are more likely than faculty to teach in a variety of contexts – in different universities; leading outreach activities with secondary schools, communities, and cultural institutions; university access programmes; and academic support units like the Writing Centre. Therefore, tutors are particularly aware of who is not present in their classes at UCD and, in some respects, are more attuned to diversity in the classroom than faculty who teach only in UCD.

The peer groups were an important source of feedback throughout the course but I also wrote a short response on their final reports to recognise and validate the excellent UDL work. This was particularly important for tutors who get no formal feedback on their teaching.

Results and Impact

In the national rollout in autumn 2021, seven tutors in the college completed the badge (including one in my own school); in the local Arts and Humanities rollout in spring 2022, thirteen tutors completed the badge (including nine in my own school). This was a significant uptake. However, there is clearly more work to be done. Indeed, in a recent survey of tutors in English, Drama, and Film, 55% were not aware of the course and a further 27% were aware of the badge but not their eligibility.
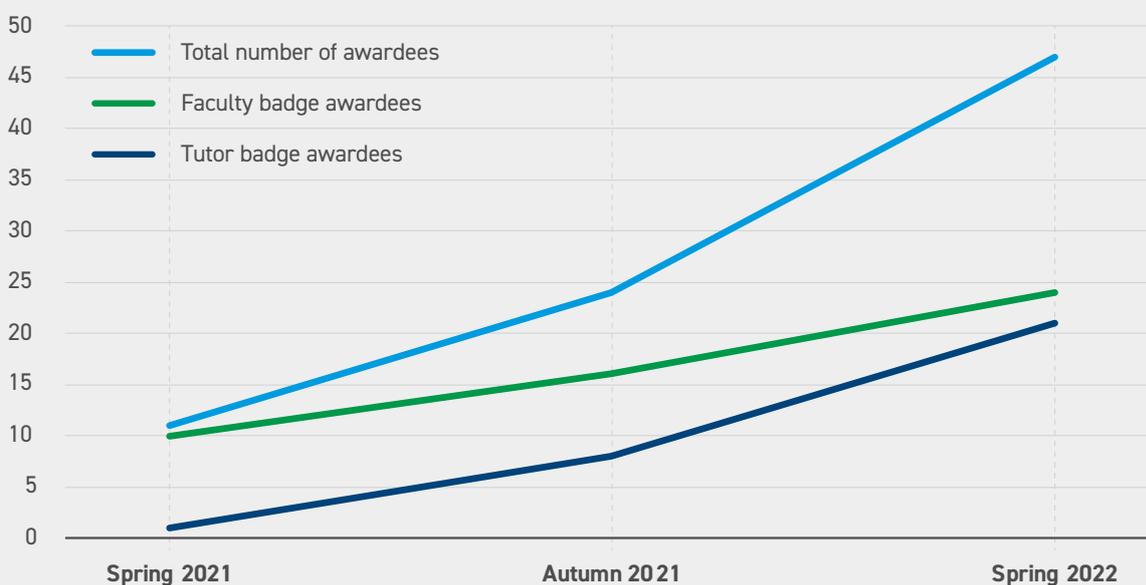
Figure 5: Digital Badge Awardees College of Arts & Humanities

Tutors engaged with a wide range of redesign activities during the UDL course, reflecting the different contexts in which they worked and their different levels of responsibility and expertise. Some tutors were relatively new to teaching but others had several years of experience. Some had overall responsibility for a course while others tutored on a module overseen by a member of faculty. Some tutors made lots of small adjustments to their teaching, in light of what they had learned about UDL, while others focused on one more substantial intervention.

Overall, their redesign activities were remarkably wide-ranging. Tutors developed more accessible lecture slides, presented information in multiple ways, introduced Padlet for collaborative learning, developed active learning practices like poetry walks and a mock trial, introduced "speed dating' to help students get to know each other, created external spaces for social learning, and supported students through the drafting process. Occasional lecturers had more control over module design so they introduced new options for assessment including podcasts, blogging, Instagram-style assignments, and self and peer assessment. Their reports reflected on the impact of these changes and what they might do differently in the future.

Figure 6: Tutor redesign activities in College of Arts & Humanities

The course made a substantial difference to the tutors' teaching practice. Most of the tutors said that they knew little or nothing about UDL before beginning the course; though a few had a vague sense of it being about accessibility, diversity, and inclusion. Explaining why they took the course, the majority mentioned their desire to improve their teaching skills and make their classes more engaging for students. A few tutors specifically emphasized the importance of accommodating the diverse needs of students through inclusive teaching practices.

Learnings from the course were rich and varied, but clustered around ideas about recognising diversity and disadvantage among the student population; the benefits of giving students multiple ways of engaging with content and demonstrating their learning in assessment; the advantages of a 'plus-one approach' (Tobin and Behling, 2018) for making impactful change; and the way inclusive teaching benefits everyone in the classroom as well as the tutor themselves. There was a real sense of empowerment among the tutors. All tutors said that the course made a significant difference to their practice and 100% said they would recommend the course to other tutors and occasional lecturers.
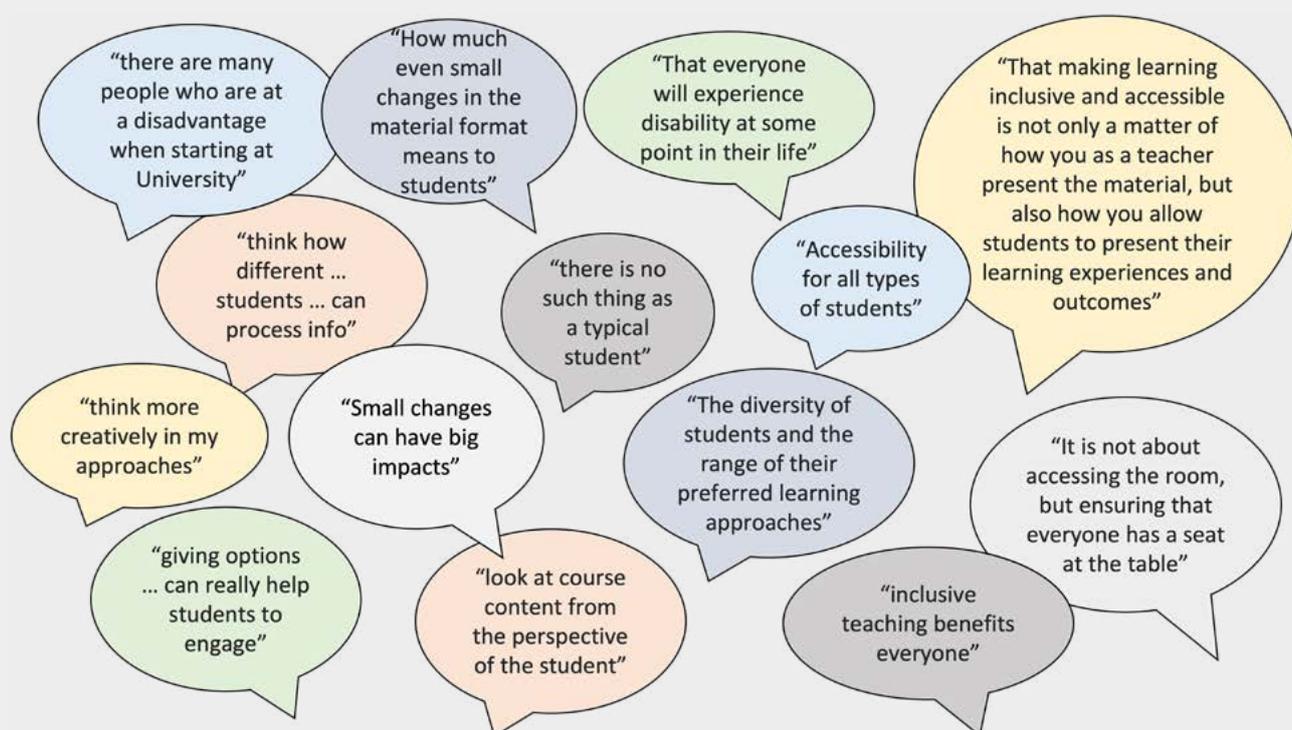
Figure 7: Tutor Learnings from the Digital Badge

When asked what they thought might encourage other tutors to take the course, some suggested school support and recognition; payment; and academic credit. Others made some valuable suggestions about messaging, urging us to emphasize that the course offers practical tips for better teaching; highlight the value of the peer groups in providing support for working through new ideas; and showing how tutors have changed their practice after taking the course.

> "The peer meetings were incredibly helpful, and this (albeit digital) space - to bounce ideas off each other, to have focused teaching-chats - was invaluable and the first I encountered of the sort in my 3 years of teaching, beyond occasional chats in the staff kitchen."
> — Tutor, UCD School of English, Drama and Film)

Indeed, tutors who completed the badge spoke of the course primarily in terms of the development of their teaching. Given that graduate tutors have limited opportunities for formal training, the UDL badge is a great way to make space for their professional development while gaining a micro-credential for their CV.

> "When I first signed up for the module, I believed it would be about receiving information on inclusiveness, diversity, etc. But really, it was a module that further developed my teaching practice as a whole and encouraged me to try new things in the classroom. Perhaps some tutors might think, well, I already know about inclusiveness. But the module is really about developing and extending the practice and art of teaching in the contemporary classroom. It is more about using inclusiveness as an approach that informs pedagogical practice (rather than just information on inclusiveness)"
> — Tutor, UCD School of English, Drama and Film

It was clear from their work on their course as well as their appreciative messages at the end that their teaching practice had been transformed in big and small ways through learning about UDL.

When asked if their UDL work had been adequately recognised by their schools or college, 53.8% said yes and 38.5% said maybe. Some tutors offered suggestions for better recognising their work, which involved showcasing their UDL practices on a website, in a workshop, or through peer observation. I asked if the tutors would be interested in disseminating their work in particular ways (such as pre-recorded video or in-person presentation) and there was broad interest across all categories. Clearly, they are keen to make a contribution to the development of teaching, learning, and assessment in their schools and are extremely well equipped to do so.

Recommendations and Advice for Implementation

The UDL course clearly benefited the tutors themselves, the schools in which they teach, and their current and future practice in a range of academic and professional careers. Therefore, it is really important to maximize tutor engagement with the course.

We need to do a better job of getting the message out to tutors. We need a multi-pronged communication strategy that employs word of mouth, school-based advocacy, email, and social media to reach as many tutors as possible. We should be explicit about their eligibility, saying that tutors can take the course even if they only have one hour of teaching. We should emphasize that the primary benefit of the course is in helping them improve their teaching. We should speak of the support structure provided by the peer groups. We should use the testimonials of tutors who have completed the badge to promote the course to other tutors.

We also need to better showcase the UDL work that is being done by tutors in the college to inspire and motivate others. We now have a team of twenty-one tutors who can advocate for UDL, if we give them the platform and support to do so. This must be mutually beneficial so that tutors can use this work as part of their own career development plan. As a first step, I will invite tutors who have completed the badge to lead sessions in the Tutor Induction. I will also commission some new videos for the Tutor Training module.

There should be some reward for tutors who complete the course in recognition of the benefits their training brings to their schools. They appreciated the book tokens that I was able to offer this year. However, schools could consider making some payment towards the completion of the badge. One tutor mentioned that in their school they could claim up to five hours of professional development and this sounds like a model that could be rolled out across the college. The development of a credit-bearing UDL module that could be offered at Level 5 as part of the structured PhD could also be considered at college or even university level. For now, though, we have a sustainable model for the provision of UDL training to graduate tutors and our priority should be about maximizing engagement with it.

References

AHEAD (2017). *Digital Badge in UDL*. Available at: https://www.ahead.ie/udl-digital-badge

McAreavey, N. (2021). *Co-creating a Tutor Training Module for Arts and Humanities*. Available at: https://www.ucd.ie/teaching/showcase/co-creatingatutortrainingmoduleforartsandhumanities/

McAreavey, N. (2021). *How can Module Coordinators Support Tutors on their Modules?* Available at: https://tinyurl.com/m55mcyp2 (Accessed 4 August 2022).

McAreavey, N. (2022). *Guidelines for Using Rubrics*. Available at: https://tinyurl.com/5xmz7ta2

Tobin, T. & Behling, K. (2018). *Reach Everyone, Teach Everyone: Universal Design for Learning in Higher Education*. Morgantown, WV: West Virginia University Press.

UCD Access and Lifelong Learning, (2018). *Toolkit for Inclusive Higher Education Institutions*. Available at: https://www.ucd.ie/universityforall/resourcehub/toolkit/

Case Study Title:

Enhancing Mature Student Engagement and Empowering Learning for All Students with UDL

 Dr Fionnuala Walsh

Author	**Dr Fionnuala Walsh**
Abstract	This case study discusses efforts to follow a UDL inspired approach to teaching an Access course for mature-age students. It examines methods for improving student engagement and the development of a community and sense of belonging in third-level, along with efforts to follow UDL guidelines in the provision of course materials. It offers insight into the benefits of such an approach along with the challenges and key issues for consideration.
Module/Course/ Programme/School	Making History, Access Diploma (School of History)
Discipline	History
Level and Credits	Level 0 | 5 Credits
Student numbers	25 in 2021/2022

Introduction and Context

The National Access Plan published by the Department of Higher and Further Education in 2021 identified mature-age learners (those over 23 who never enrolled in higher education before) as a priority cohort for participation in the higher education sector (Buggy et al., 2022). Sufficient supports are required for these students throughout their academic journey, with acknowledgement of their specific needs. Teaching mature-age students involves actively welcoming all ages, backgrounds, and motivations, avoiding assumptions of prior knowledge but recognising lived experience, and being mindful of creating a sense of belonging in the institution (Mallman and Lee, 2016). Intersectionality is also important when considering student needs and perspectives and avoiding assuming an homogenous mature student identity. The Access Programme for Arts, Humanities, Social Sciences and Law (AHSSL) is an important part of the support system. This is a Level 6 NFQ Special Purpose Award, which offers direct entry into a number of degree programmes on successful completion.

The Access Programme students are a diverse cohort of non-traditional learners. There is a greater mix of ages, nationalities, and socio-economic backgrounds than is typical in an undergraduate class, and there is a higher-than-average proportion of students with a registered disability or for whom English is not their first language. Many of the students had a prior negative experience of education, or were several decades removed from formal education. Others were recently arrived immigrants and asylum seekers. It is common for the students to be juggling work and caring responsibilities alongside their studies. In a sense, they are a microcosm of the UCD student population and serve as a reminder of the changing profile of what we might consider a typical or traditional UCD student.

Since 2018, I have taught the Making History option module on the Programme, with the numbers varying from 20 to 45 each trimester. The module serves as an introduction to the study of history including historiography and primary sources, doing so through a focus on the history of Ireland, from the Great Famine, to the establishment of the Irish Free State in 1922. The emphasis is on key skills and, even more importantly, on building confidence and fostering a sense of belonging in third-level. My experience of teaching on this course has led to a greater awareness of the value of a UDL approach, prompting me to take the Digital Badge in UDL in autumn 2021. One of the most important principles I learned was the focus on changing the design of the environment; not targeting students with specific disabilities but creating accessible inclusive spaces that support all students to become expert learners (CAST, 2018). Flexibility in methods of teaching and learning are at the heart of it, and designing courses that are "meaningful, relevant and accessible to all" (Hockings, 2010). The principles apply across all our undergraduate and postgraduate teaching. Financial and time constraints are not limited to this specific cohort. The UCD student population is increasingly diverse: 34.6% of UCD students are from Access backgrounds (Fleming, Padden and Kelly, 2022). Many are juggling caring and/or work responsibilities alongside their studies and will benefit from a UDL approach to course design.

Design and Implementation

My approach to teaching this course was influenced by ideas drawn from UDL and theories of "compassionate pedagogy" (Hao, 2011), centred around creating a sense of belonging and community to foster the development of autonomous learning. A key aspect is an effort to follow the UDL Principle Multiple Means of Representation in providing lecture materials in a mix of media, other course materials in a variety of formats, and striving to provide materials that were accessible and inclusive to all. Efforts to enhance student engagement included traditional methods, including the use of group work and Brightspace discussion forums, and also a music playlist and movie style trailer for the module.

Figure 1: Spotify Playlist for Making History module

The playlist is created on Spotify and consists of songs which are from the period of history covered by the module or cultural responses to it. It demonstrates that history is not something that solely exists in texts but is part of Irish culture and something students have likely engaged with in the past. The immersive experience in a topic can help students relate to the material. I began making the module movie style trailers in September 2020, when I was concerned with class engagement in a remote teaching context. The trailers became a fun way of introducing myself and the course to students and giving a welcoming and approachable first impression. They helped to build a rapport with students, which has been identified as important in improving attendance and completion rates (Buggy et al., 2022).

Figure 2: Still images from Making History Module Trailer

The pandemic and move to remote teaching forced a complete rethink of how I teach the course. While there were many challenges associated with remote teaching, I found there were benefits to the flipped classroom approach, where the students watched the recorded lecture at the start of the week and the live classroom time was used for discussion and skill-based learning activities. When we returned to campus in September 2021, I took a blended approach to teaching. I released silent slides in advance of the class and the recorded lecture immediately afterwards. Providing the recording meant there was less pressure to make sure I had included all the necessary content and it made for a more relaxed classroom environment. I also produced several detailed handouts of key terms and contextual information. This was material included in the lecture but provided in a mix of formats to suit different learning needs.

Released silent lecture slides each Monday

Taught 2-hour class on Friday (short lecture, Q&A, group work, activity)

Released narrated PowerPoints on Friday after the in-person class
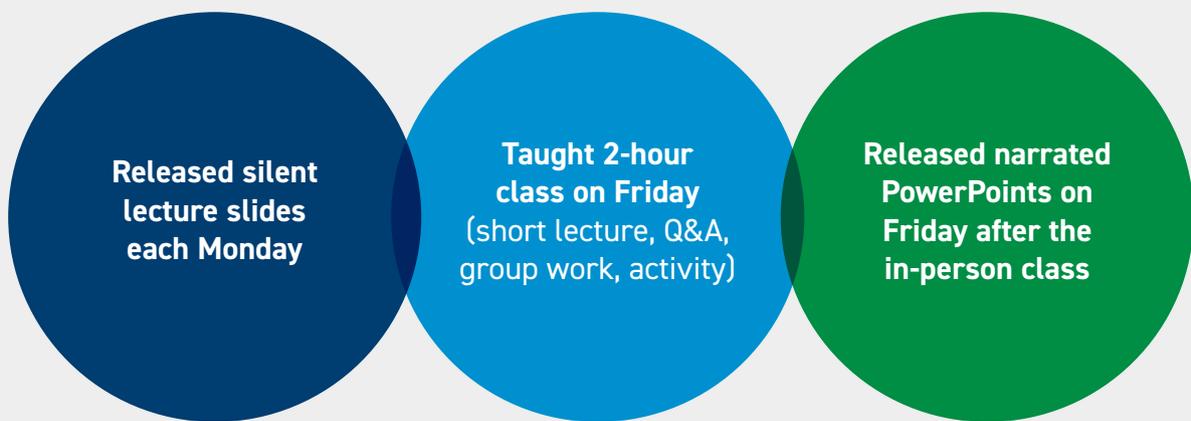
Figure 3: Weekly schedule for lecture content

My approach to course materials was influenced by UDL principles, specifically Multiple Means of Representation (Provide options for perception). I made use of the Ally tool to improve the accessibility of my lecture slides and other course materials, using alt-text for images, and document formatting that supports the use of screen readers. I replaced old scans with original digital copies where possible, using Sensus Access and ALLY tools to improve the quality. UCD students are increasingly commuting long distances to campus, and experiencing anxiety and stress about their more limited time for coursework. I created a section on Brightspace of audio-visual materials specifically for use during commuting time in an effort to acknowledge this reality. Providing audio-visual or audio alternatives to standard texts also adheres to the UDL Principle Multiple Means of Expression which encourages more discretion and autonomy among students by offering different ways for students to interact with the course content. This section comprises recordings of the texts, and podcasts of lectures and interviews with academics.
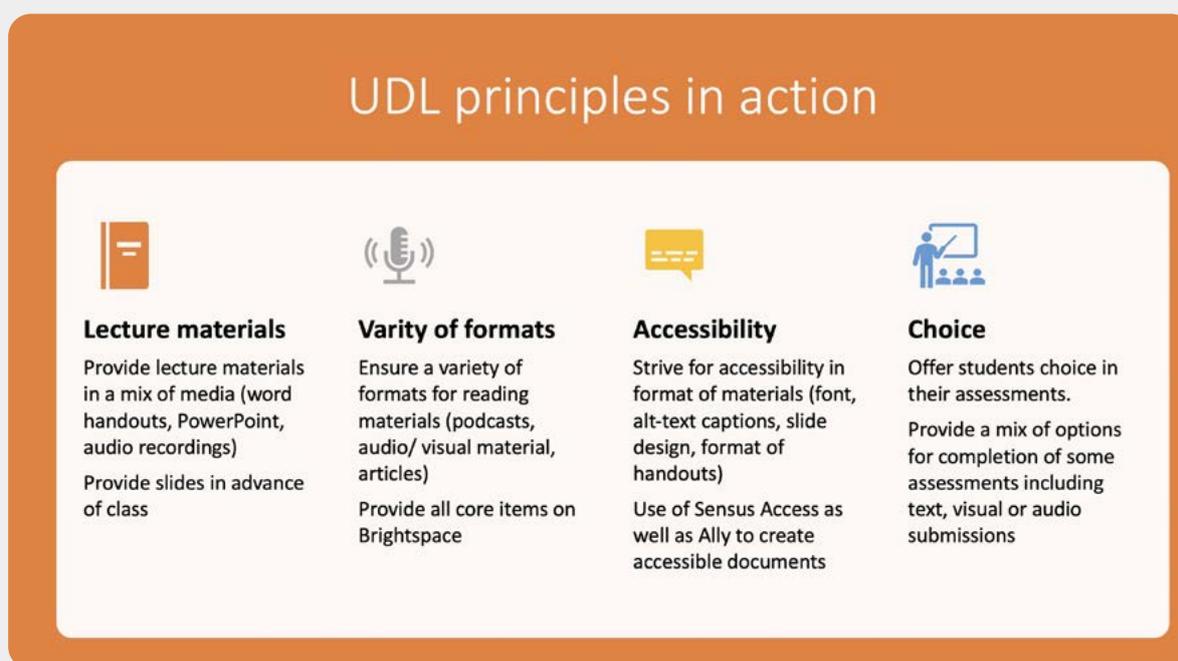
Figure 4: UDL principles in action

Referencing is an essential skill for history students to learn but many of our undergraduates struggle with grasping the key concepts and methodology. Drawing upon the UDL Principle Multiple Means of Engagement, I experimented with a variety of methods for teaching citation. I included links to library tutorials on citation and plagiarism to complete online, provided handouts with sample footnotes, and recorded a video of myself on Zoom demonstrating footnotes which I then uploaded to Brightspace. Providing a mix of methods for students to engage with this task had led to an improved response and greater completion of this key learning outcome.

Influenced by the Multiple Means of Engagement on recruiting interest and Multiple Means of Action and Expression on executive function, I reflected on the importance of providing options for self-regulation and for sustaining effort and for helping students understand the relevance and authenticity of the coursework. For students to become motivated, resourceful and knowledgeable, strategic and goal-directed, they require clarity on the overarching purpose of the assignments and class tasks. Providing clear learning outcomes tied to specific tasks helps students understand the purpose of their learning and by supplying this in advance, it allows them to "build their learning into their lives efficiently" (Buggy et al., 2022). I developed a checklist for students with the learning outcomes matched with the tasks to help the students to follow their own roadmap through the module and to understand what skills they are gaining.

Learning outcome	Task or activity
Develop familiarity with the discipline of history	— Lectures — Weekly readings
Understand the role of Special Collections / Archive and the types of material available in them	— Special Collections class visit
Be able to critically analyse documents and place them in context using secondary sources	— Mitchel and Annie O'Donnell primary source class discussion — Essay assignment
Become familiar with academic scholarship and with reading academic articles and chapters	— Weekly secondary source readings
Locate sources in the library	— Library handout using catalogue and visiting the library
Conduct primary research and present findings to classmates	— 1911 census research
Develop understanding of citation and its importance	— Class activities and materials on Brightspace including library tutorials
Practice using footnotes and a bibliography	— Essay assignment
Be able to prepare effective study notes for an exam, using the assigned readings and guidance in class	— Exam preparation class — Final exam
Become familiar with exam environment at university	— Final exam

Figure 5: Learning outcomes checklist

Results and Impact

The re-design outlined above had a significant positive impact on student engagement and achievement of the learning outcomes. Attendance at the in-person class remained very high throughout the semester despite the ongoing issues with Covid having a severe impact on attendance and retention across the university in 2021/22. There was an exceptionally high completion and pass rate for this module. Students responded positively and were particularly enthusiastic about the availability of course materials. They felt that the recorded lectures removed some of the stress in the classroom about taking sufficient notes.

In another module where there was more flexibility with the assessment requirements, I experimented with the Multiple Means of Expression and Action principle by offering students more choice, allowing them to complete their weekly learning journal task in textual, visual or audio format. The students responded positively, commenting that: it 'allowed more creative thinking and better organization', and 'made the task feel fresh'. I hope to expand this to a wider range of courses while managing choice overload – ensuring students have some choice in their method of achieving the learning outcomes without the range of options becoming overwhelming or an additional source of anxiety.

"

Very informative slides as part of excellent contextual lecturer narrative.

"

The slides provide peace of mind, if you did not take many notes during class, knowing you have access to these slides is a great aid to learning.

"

I enjoyed this module far more than I expected. The classroom setting was good, the lecturer was always open to dialogue from the class. The structure and approach to each week's class was easy to follow and delivered in a timely manner. This allowed me to be prepared for each class."

Figure 6: Extracts from Student Feedback on Making History, Autumn 2021

Recommendations and Advice for Implementation

It is worth reflecting on the sustainability of providing recorded materials alongside in-person classes in the post-pandemic context. Preparing recorded materials is a substantial amount of work, and staff workload and student expectations have to be managed to avoid over-promising or staff burnout. Preparing bespoke short audio recordings designed to accompany rather than replace in-person classes might be a more achievable alternative for new courses in the future. The impact of lecture capture and recordings in the Irish higher education system is also difficult to discern as this practice generally began in the Covid era when there were many other issues affecting student attendance. There is a longer tradition of lecture capture use in British higher education however, and the practice has been usefully evaluated by several scholars. There is evidence that recordings can enhance student achievement (Nordmann et al., 2019) and that those who benefit most from the recordings are students with learning disabilities or for whom English is not their first language. For these students, the recordings are not an alternative to attending the in-person class but a useful study tool to help them better understand the lecture (Leadbeater et al., 2013).

My own experience on the module outlined above reveals the positive impact of lecture recordings on student completion and experience. Student attendance maintained high levels throughout the trimester and compared favourably to undergraduate modules in the School and to previous iterations of the module. It is important to create and sustain a class community to ensure that students understand the value and purpose of the in-person session. Having clear learning outcomes conveyed to the students and specific classroom-based learning activity associated with each scheduled session aided this. Monitoring attendance and following up on absences is another important element in improving student engagement.

Providing materials in a mix of formats on Brightspace risks confusion in the organization of the module content. Taking time early in the trimester to guide students through the Brightspace materials and helping them to understand the underlying UDL principles can ensure that the students understand they are not expected to interact with each different version of the content. Taking a UDL inspired approach to a course can save time in the long-term. In previous years, I found I was making adaptations to materials as required for students with registered disabilities but designing the course from the outset in a more inclusive manner benefits all students and results in less additional work each semester to adapt to the new cohort. These are just some examples of the positive benefit of UDL as an approach to teaching practice and course design.

References

Buggy, C. *et al.* (2022). *Toolkit for impactful lifelong learning in the 21st century: a support guide for the academic advising of mature and part-time students*. Dublin: UCD College of Health and Agricultural Sciences.

Fleming, B., Padden, L., and Kelly, A. M. (2022). *Who Counts? University for All Data, Metrics, and Evidence 2020-2021.* Dublin: UCD Access and Lifelong Learning.

Hockings, C. (2010). *Inclusive learning and teaching in higher education: A synthesis of research,* Higher Education Academy Evidence Net. Available at: https://www.advance-he.ac.uk/knowledge-hub/inclusive-learning-and-teaching-higher-education-synthesis-research

Leadbeater, W. *et al.* (2013). Evaluating the use and impact of lecture recording in undergraduates: Evidence for distinct approaches by different groups of students. *Computers and Education*, 61, 185-192.

Mallman, M. and Lee, H. (2016). Stigmatised learners: mature -age students negotiating student culture. *British Journal of Sociology of Education*, 37(5), 685-686.

Nordmann, E. *et al.* (2019). Turn up, tune in, don't drop out: the relationship between lecture attendance, use of lecture recordings, and achievement at different levels of study. *High Education,* 77, 1065–1084.

Hao, R.N. (2011). Critical compassionate pedagogy and teacher's role in first-generation student success. *New Directions for Teaching and Learning*, 127, 91-98.

UCD College of Business

Foreword

Associate Professor Paul Ryan
Vice Principal, Teaching and Learning
UCD College of Business

At UCD College of Business, students learn, and work side-by-side, with leading researchers and faculty who offer world-class business programmes that equip students to become impactful global business leaders. Core to our strategy is transformational learning (the idea that learning changes how we think, act and our way of being). Across our programme portfolio, we strive to develop skilled, engaged, reflective graduates who have an understanding of their capacity and responsibility in a complex, globalised world. We work to challenge and enable leaders of today and tomorrow to develop the insight, expertise and impetus they need to make an impact in their fields.

Our teaching and learning priorities include research-driven education; high standards and expectations relating to academic excellence; recruiting and supporting faculty who are experts in their subjects; a diverse and engaged classroom, infused, where appropriate, by collaborative learning; dynamic, rigorous and diverse learning and assessment processes; ongoing curriculum renewal, and responsive, outcome-driven academic programmes; and a focus on professional and personal development within and beyond the classroom.

With our increasingly diverse student cohort in mind, we champion diverse perspectives and variety of teaching, learning and assessment approaches. The work undertaken by our three University for ALL Faculty Partners has, not only helped to progress our vision with respect to transformational learning, but has helped to embed the principles of equality, diversity and inclusion in the context of our diverse teaching, learning and assessment approaches, thus creating a learning environment that is respectful to all.

The first case study, written by Dr Linda Dowling-Hetherington, provides an overview of the broad approach taken to raise awareness of the Universal Design for Learning (UDL) principles among faculty across the College. This case speaks to an important element of our College strategy – the recognition that continuing educator development is an essential enabling factor in helping to deliver a transformational learning experience for our students. The second case study, written by Allen Higgins, provides a very good example of how a graduate module assessment strategy can be re-designed to incorporate a greater level of variety and choice. Co-creation of learning was also an important feature in this module assessment re-design and the approach taken to co-creation is detailed in the case. The third case study, written by Joe Houghton, provides an overview of how the design of a new module on the MSc Project Management programme was informed by the UDL principles, particularly with respect to the module assessments (the charity project and the sustainability project).

Case Study Title:

Creating Awareness of Universal Design for Learning Principles – Creating a Ripple Effect in the UCD College of Business

Dr Linda Dowling-Hetherington

Author	Dr Linda Dowling-Hetherington

Abstract	This case study provides an overview of the approach taken by the UCD College of Business to raise awareness of the Universal Design for Learning (UDL) principles among faculty. Work on implementing UDL began in 2021/22 where a multi-pronged approach, comprising three key elements: professional development, curated resources, and the Plus One approach. This is Phase 1 of a longer term UDL implementation project. The overall aim was to create 'a ripple effect' throughout the College, whereby faculty would begin to make small, incremental, and continuous changes to their teaching and assessment practices.

Module/Course/Programme/School	UCD College of Business
Discipline	Business
Level and Credits	N/A
Student numbers	N/A

Introduction and Context

The University College Dublin (UCD) 2020-2024 Strategy, 'Rising to the Future', aims to "ensure that every member of our community is enabled to achieve their full potential" and to "embrace the principles of equality, diversity and inclusion so that no one is excluded". This case study focuses on the UCD College of Business, which is comprised of four constituent parts: the UCD Lochlann Quinn School of Business (undergraduate), the UCD Michael Smurfit Graduate Business School, UCD Smurfit Executive Development, and the UCD Business International Campus. Core to our strategy is transformational learning – the idea that learning changes how we think, act and our way of being. We aim to provide transformational and varied learning and research for our students and for society by cultivating informed, agile, and critical thinkers and doers by creating opportunities to learn from diverse perspectives and in diverse settings.

The diversity of our student cohort is a particular strength of the College. At undergraduate level, for example, widening the participation of underrepresented groups of students has been the focus of much attention in recent years, with approximately 14% of first year students in 2021/22 from a range of entry pathways including HEAR, DARE, and Mature Years Entry. Our programmes have also been increasingly attracting a more culturally diverse cohort of students. At graduate level, 50% of students are international, with over 60 countries currently represented. The College plans to further enhance the scale, quality, and diversity of its international student recruitment in the next five years.

The aim of Universal Design for Learning (UDL) is to "give all individuals equal opportunities to learn" (AHEAD, 2017) and to provide variety and choice in engagement, representation, action and expression (CAST, 2018). This case study illustrates how, in my role as Director of Assurance of Learning and a member of the College's Teaching and Learning Committee, I set about creating greater awareness of the UDL principles among faculty and teaching staff. Through my work in the area of educator development within the College, I intentionally set out to incorporate UDL into all aspects of my work with colleagues, particularly with those responsible for designing and delivering modules and assessing students. I aimed to create 'a ripple effect' throughout the College, whereby faculty would begin to make small, incremental and continuous changes to their teaching and assessment practices by adopting the Plus-One approach (Tobin and Behling, 2018). The ultimate aim was to make our collective teaching and assessment practices more inclusive, thereby, enhancing the overall student learning experience and, ultimately, improving student engagement and learning outcomes.

Design and Implementation

Our overall aim was to take a College-wide approach to creating greater awareness among faculty of the principles of UDL. We began this work at the start of the 2021/22 academic year and we saw this as Phase 1 of a longer term UDL implementation project. Our intention during Phase 1 (2021/22) was to start by creating a broad awareness of the UDL principles and then, in Phase 2 (2022/23), we will build on this by working more directly with individual faculty (and potentially Programme Directors) who wish to more systematically embed UDL in their teaching and assessment practices going forward. Figure 1 below captures the three elements in Phase 1: professional development, curated resources, and the Plus One approach.

Professional development

The 'professional development' element of our approach focused, firstly, on ensuring that all faculty were aware of the October 2021 national rollout of the UDL Digital Badge and, secondly, that UDL was incorporated into the materials discussed during the teaching and learning orientation workshop that new faculty in the College attend.

Professional Development

— UDL Digital Badge
— New Faculty Teaching & Learning Orientation Workshop

Curated Resources

— Brightspace Learning Management System
— Tips in Inclusive Assessment

The Plus One Approach

— UDL Tip of the Week
— Videos Featuring Faculty & Staff
— Inclusivity Statement
— Accessibility of Teaching Materials (SensusAccess/Ally)

Figure 1: Phase 1 (2021/22) Creating Awareness of UDL Principles in the UCD College of Business

UDL Digital Badge

The national rollout of the UDL Digital Badge was promoted in the weekly Friday memo that is distributed via email to approximately one hundred and fifty faculty and staff across the College. This memo was used to ensure that all faculty were, not only aware of the opportunity to complete the Digital Badge, but that they also had sufficient information on how to register to complete the badge (see Figure 2).

Figure 2: Using the College's Friday Memo to Promote the UDL Digital Badge

Teaching and Learning Orientation for New Faculty

In September and January each year, a teaching and learning orientation workshop is scheduled for new full-time and part-time faculty. The purpose of this workshop is to introduce newly appointed faculty to the College's teaching, learning and assessment practices. This year, reference to UDL and the Digital Badge was added to the workshop materials (see Figure 3).

Figure 3: Reference to UDL During Teaching and Learning Orientation for New Faculty

Curated resources

The 'curated resources' element of our approach focused on ensuring that faculty had easy access to resources that would provide them with information and guidance on the different UDL principles and how to embed them in their teaching and assessment practices. The resources created are detailed below.

Brightspace Learning Management System:

In September 2021, the College launched a new Teaching and Learning 'module' for faculty and staff on Brightspace, the university's learning management system. Currently, forty-seven faculty and staff have enrolled to this 'module' and it is hoped to increase this enrolment in the next academic year. This module is a 'one-stop-shop' for faculty seeking resources on a variety of teaching, learning and assessment-related topics. Figure 4, below, provides faculty with an overview of the content of this module and how to gain access to it. A section on UDL features in this module (see Figure 5). This provides an introduction to UDL and includes a variety of resources, for example, on designing learning experiences, guidance on planning classes, inclusive assessment, decolonising the curriculum, and creating accessible documents, presentations, and videos.

Figure 4: Teaching and Learning Module on Brightspace: Overview and How to Enrol

Figure 5: Teaching and Learning Module on Brightspace: Overview of UDL Section

Inclusive Assessment

A one-page poster containing key tips on designing inclusive assessments was created and circulated in January 2021 to all faculty via email as part of the 'Start of Spring Trimester Teaching & Learning Update'. The aim of this poster was to highlight the importance of taking account of the diversity of assessment types within a module and across a programme; the need to provide students with a choice of assessment method and clear instructions for each method; the importance of clarity around assessment strategies and goals; the need to consider assessment load at module and programme level; the importance of scaffolding learning and taking a programmatic approach to developing students' competencies; and the need to provide students with opportunities to reflect on their own learning.

Figure 6: Poster: Tips for Inclusive Assessment

The plus one approach

By adopting the Plus-One approach (Tobin and Behling, 2018), we set out to encourage faculty to take small steps initially to embed the UDL principles into their teaching and assessment practices. This element of our approach focused on the below channels that were used to provide faculty with information that might lead to small steps being taken to embed UDL in their modules.

College Friday Memo

Throughout the Autumn 2021 and Spring 2022 trimesters, a UDL Tip of the Week was included in the memo (these tips were developed in collaboration with Allen Higgins, a University for All faculty partner in the UCD College of Business).

Figure 7: UDL Tip of the Week: some examples

Videos

Three videos were professionally produced, featuring four colleagues who had completed the UDL Digital Badge (Dr Linda Dowling-Hetherington, Allen Higgins, Joe Houghton, and Dr Kate Collins). In these videos, colleagues shared their thoughts on what UDL meant to them, their reasons for undertaking the UDL Digital Badge, and the changes they had made to their teaching and assessment practices as a result of completing the badge. A fourth video, featuring Niall Flaherty from the Business eLearning team, provides practical advice on creating accessible teaching materials. All four videos will be used to promote the UDL Digital Badge among faculty.

The College also launched a new 'Teaching Conversations' video series in November 2022 where faculty from across the College were interviewed on various aspects of their teaching and assessment practices. In one of these videos, Dr Virginia Stewart, addresses issues around inclusion in the context of module re-design. This video was circulated to faculty via the College email distribution list and it also featured in the Friday memo. So far, this video has been viewed 47 times.
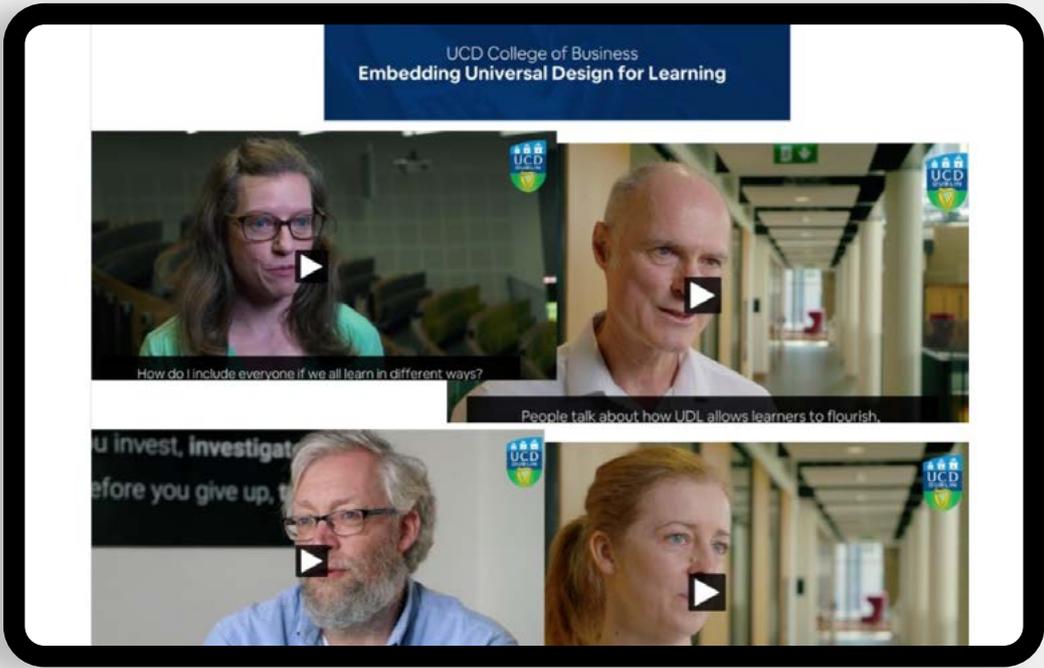
Figure 8: Videos: Sharing Perspectives on the UDL Digital Badge (UCD Quinn School of Business (2022a; 2022b; 2022c)
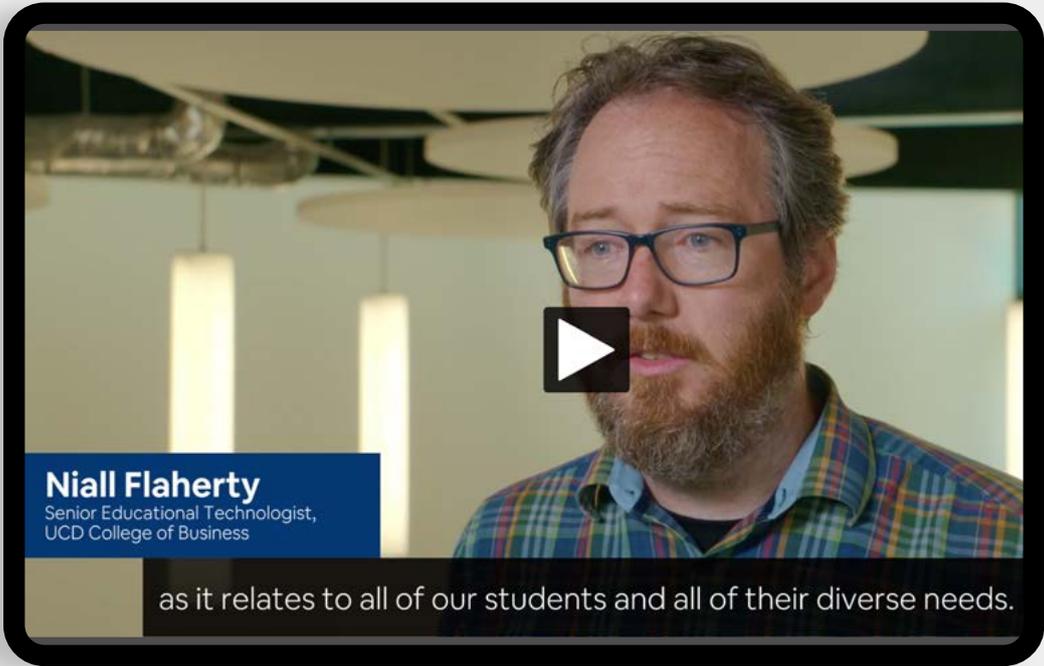
(UCD Quinn School of Business, 2022d)

Figure 9: Video: Tips on Creating Accessible Teaching Materials

Figure 10: Teaching Conversations Video: Re-Designing a Module with UDL in mind (UCD Quinn School of Business, 2022e).

Inclusivity Statement:

The College's module outline template was updated to include a sample inclusivity statement (UCD, 2022) and this was also included in the 'Start of Spring Trimester Teaching & Learning Update' in January 2022.

Figure 11: Sample Inclusivity Statement

Creating Accessible Teaching Materials:

Information on SensusAccess (a file conversion tool) and Ally (a content accessibility checker) were included in the 'Start of Spring Trimester Teaching & Learning Update' in January 2022 (see Figure 12 and Figure 13). New digital accessibility resources from AHEAD (Accessibility Resources and Know-how – ARK) were also circulated to faculty during the Spring 2022 trimester (AHEAD, 2022) (see Figure 14).

Figure 12: Information on SensusAccess (UCD ALL, 2022)

Figure 13: Information on Ally (UCD IT Services, 2022)

UCD COLLEGE OF BUSINESS
Friday Memo

New Digital Accessibility Resources AHEAD

ARK

New Digital Accessibility Resources AHEAD have launched new training and resources on digital accessibility. A short introductory video can be found here.

If you are interested in developing introductory accessibility skills, raising awareness about digital inclusion, and reflecting on how to embed good digital accessibility practices in your teaching, you can avail of three free courses with AHEAD. When each course is completed you will automatically receive a Digital Badge and if you wish to complete all three then you receive a Digital Accessibility Master Badge for your dedication to accessibility. For more information, click here.

Figure 14: Information on AHEAD ARK Resources

Results and Impact

Having adopted a multi-pronged, 'ripple effect' methodology, a strong UDL foundation for Phase 2 (2022/23) has now been laid across the UCD College of Business. It is believed that there is now a greater awareness among faculty of the principles of UDL with some faculty, for example, adding inclusivity statements to their module outlines and giving students more choice around assessment formats. There is also a strong appreciation of how the student population across the College has become more diverse in recent years and feedback from staff would suggest that this is being taken into account when designing and delivering many of our modules. We will build on this important awareness-raising phase in the coming academic year by working more directly with individual faculty who wish to more systematically embed UDL in their teaching and assessment practices going forward. Consideration will also be given to how Programme Directors and programme teaching teams might be included in this next phase. The 2022/23 work plan includes the next steps to be taken and is summarised in Figure 15 below. In addition to this work plan, steps will be taken to assess the impact of this work going forward and it is envisaged that this will include a survey of faculty and teaching staff, the level of engagement with the different activities mentioned in Figure 15 and completion of the UDL Digital Badge.

Programmes

Call for Programme Directors interested in working with the faculty Partner on a Programme Assessment Schedule

Modules

Call for Module Coordinators interested in working with the Faculty Partner to embed UDL principles in their modules

Special interest Group

Explore the possibility of creating a UDL/inclusive education special interest group who will meet each trimester

Inclusive Assessment

Schedule a workshop for faculty on designing and implementing inclusive assessment approaches

Module Outlines

Internal communications campaign to ensure all module outlines have been checked for accessibility

UDL Checklist

Create a UDL checklist for module coordinators

Figure 15: UDL Work Plan Phase 2 2022/23

Recommendations and Advice for Implementation

1. Reconciling the tension between the need to make progress on the implementation of UDL with the need to manage the potential (or perceived) burden this might place on faculty needs careful consideration. Incremental change in the form of the Plus One approach, where faculty can make simple changes that may not require a significant investment of time on their part, may be a practical way to address this and make progress on embedding UDL

2. Careful consideration is needed when it comes to the channels used to create awareness of UDL principles among faculty. Where an existing internal communications channel exists, e.g. a weekly staff newsletter, it may be best to consider using this channel, rather than separately communicating with faculty and adding to the multiple demands already being placed on them

3. Clearly identifying the steps that Schools and Colleges can take in the short, medium and long-term may help during the UDL implementation planning phase. There may be some 'low-hanging fruit' that can be easily targeted, e.g. incorporating UDL in staff orientation briefings or using existing communication channels to highlight practical tools, such as Ally etc.

References

AHEAD (2017). Universal Design for Learning. Available at: https://www.ahead.ie/udl [03 May 2022]

AHEAD (2022). ARK - Accessibility Resources and Know-How. Available at: https://www.ahead.ie/ARK [03 May 2022]

CAST (2018). Universal Design for Learning Guidelines version 2.2. Available at: http://udlguidelines.cast.org [27 April 2022]

Padden, L. and O'Neill, G. (2021). Embedding equity and inclusion in higher education assessment strategies: creating and sustaining positive change in the post-pandemic era, in *Assessment and Feedback in a Post-Pandemic Era: A Time for Learning and Inclusion*, edited by P. Baughan, Advance HE.

Tobin, T.J. and Behling, K.T. (2018). *Reach everyone, teach everyone: Universal design for learning in higher education*. West Virginia University Press.

UCD (2020). 2020-2024 strategy, 'Rising to the Future', Dublin, UCD. Available at: https://strategy.ucd.ie/wp-content/uploads/2019/12/UCD_2024_Strategy_Document.pdf

UCD (2022). Top 7 Tips for Inclusive Module Design, UCD. Available at: https://www.ucd.ie/teaching/t4media/inclusive_module_design_tips.pdf

UCD ALL (2022). SensusAccess Conversion. Available at: https://www.ucd.ie/all/ucdstudents/support/sensusaccessfileconversion/sensusaccesswebform-convertfiles/

UCD IT Services (2022). Ally for UCD Staff. Available at: https://www.ucd.ie/all/ucdstudents/support/allyforbrightspace/allyforucdstaff/

UCD Quinn School of Business (2022a). Teaching Conversations – Allen Higgins. Available at: https://qsblc.ucd.ie/videos/udl-kate-collins-and-allen-higgins/

UCD Quinn School of Business (2022b). Teaching Conversations – Joe Houghton. Available at: https://qsblc.ucd.ie/videos/udl-joe-houghton/

UCD Quinn School of Business (2022c). Teaching Conversations Linda Dowling Hetherington. Available at: https://qsblc.ucd.ie/videos/udl-linda-dowling-hetherington/

UCD Quinn School of Business (2022d). Teaching Conversations Linda Dowling Hetherington. Available at: https://qsblc.ucd.ie/videos/udl-niall-flaherty/

UCD Quinn School of Business (2022e). Teaching Conversations – Virginia Stewart. Available at: https://qsblc.ucd.ie/videos/virginia-stewart/

Case Study Title:

A Simple Tool for UDL Module Review

Allen Higgins

Author	Allen Higgins

Abstract	This case study describes a simple UDL module review tool applied to the module MIS20090 Design Thinking. The tool supported instructional design decisions driving variety and choice of assessment, enabling students to self-define the focus of micro-assessments (homework) and the scope of an individual research project (report, poster and presentation). In addition, a new (ungraded) engagement activity was introduced, in which student volunteers create podcast recordings of interviews with guests – designers, practitioners, entrepreneurs, and educators. The podcasts were published as an open learning resource.

Module/Course/ Programme/School	Impact on taught modules: MIS20090 Design Thinking
Discipline	College of Business
Level and Credits	Level 2 | 5 Credits
Student numbers	30+

Introduction and Context

Motivation

Universal Design for Learning (UDL) is a teaching movement started in 1984 by Ruth Meyer and David Rose. The approach aims to enable engagement and reduce the barriers encountered by learners with diverse needs and abilities.

> The UDL is a framework to think about how different tools and resources can be leveraged to reduce barriers and support all learners to engage in challenging ways of thinking'
> — CAST, 2018

This case study describes changes made to the teaching, learning, and assessment structure for a new undergraduate module, MIS20090 Design Thinking. First offered in 2019, it was developed by the Management Information Systems Subject Area in the UCD College of Business as an option/elective for undergraduate students. In 2021, the teaching structure was reviewed after completing the Digital Badge in Universal Design in Teaching and Learning (Huntley-Moore & Panter, 2016; Heelan, et al., 2019).

The module context

The curriculum for the Design Thinking course is based on a Human-Centred Design Process approach (IDEO, 2015), in which students create a design brief for a design project. A brief distils descriptions and data gathered by applying research methods and is used as a starting point for creating innovative solutions.

The empathy-centric approach mandates learning directly from the people it is designed for (Battarbee, et al., 2014). This enables the analyst/design team to create meaningful solutions, meeting the demands of a broad spectrum of users.

> **Design empathy emphasises learning on the fly, opening yourself up to creative possibilities, and trusting that as long as you remain grounded in desires of the communities you're engaging, your ideas will evolve into the right solutions — IDEO, 2015, p. 29.**

The impact of changes to teaching arrangements due to COVID 19 restrictions since 2020 meant that teaching and learning structure for the module had to change. The classroom experience was re-designed to allow participation via both in-person and virtual technologies. As such, we sought to offer opportunities for more authentic student engagement with the classroom experience (Figure 1).
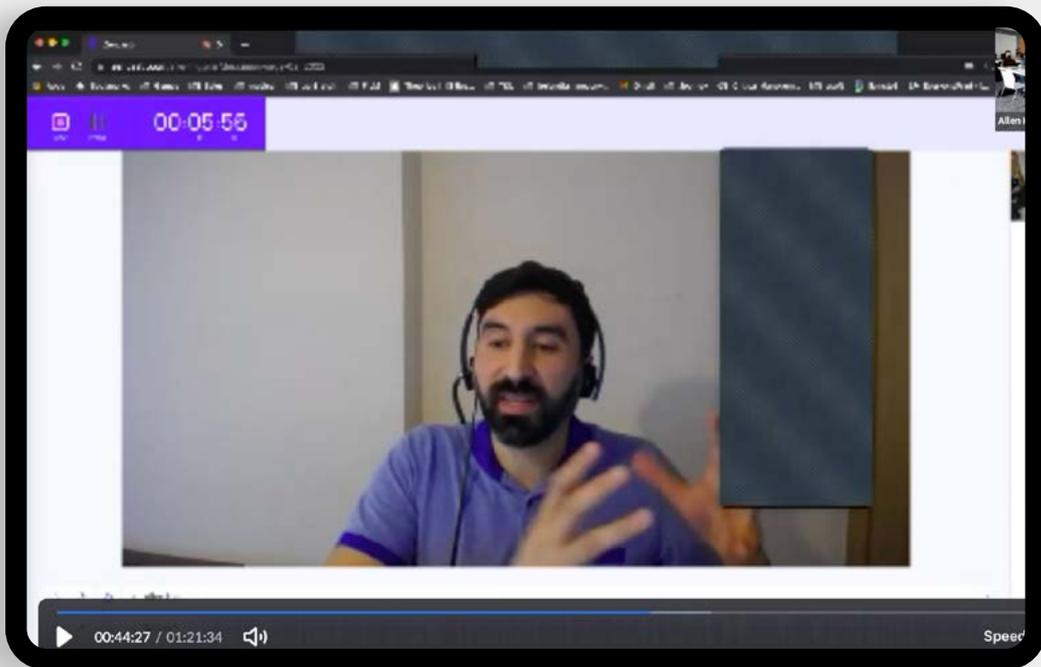
Figure 1: (Top) Student hosts, Otto and Ruairi, interviewing guest speaker, Maurice Knightly. (Bottom) Student hosts, Calayjia and Zain, interviewing guest speaker, Rohan Perera. Images used with permission.

What did we hope to accomplish?

Our aim was to encourage "high levels of student engagement", for our students to develop their knowledge of, and a deep appreciation for, design thinking processes and empathy-centric design methods (Knapp, et al., 2016). We hoped that greater student engagement would translate into greater enrolments in the years that follow, and that interest in the subject would grow by word-of-mouth recommendation and reputation effects (La, et al., 2018).

Design and Implementation Description

The UDL map (conceptual) identifies three areas of instructional design:

1. **Engagement** – interactions, the in-class experience, experiential aspects of instructional design. The 'why' of learning

2. **Representation** – Course materials, content, media, and formats. The 'what' of learning

3. **Action & Expression** – Opportunities for the learner to produce, to enact, to perform, to create, and deliver learnt outputs and outcomes. The 'how' of learning.

How does this utilise Universal Design for Learning?

We developed a simple UDL tool to self-audit instructional design. A three-step process is used to identify success areas and areas to improve, as well as gaps in the structure of module design.

Step 1. Expression
Step 2. Representation
Step 3. Engagement

The first step is to review the course outputs – Action/Expression. These are the 'how', the outputs and happenings of student action. We summarise learning outputs generated by students (Figure 2), their learning deliverables, and activities.

Action & Expression

	Text	Graphic	Audio	Video	Ally accessible	Experiential-present
Participation						
Class attendance						✓
Guest Interview						
Host interviews	✓		✓	✓	*1.	✓
Homework tasks						
1. Photograph of a design "failure"		✓				
2. Reflection/notes on a reading	✓					
3. A short (<30 seconds) video				✓		
4. Conduct a cultural probe	✓	✓	✓			✓
5. Post URL to screen capture video				✓		
6. Find a research method paper	✓					✓
7. Test your research protocol	✓	✓	✓	✓		✓
8. Post mp3 of personal reflection			✓			
Research project paper						
Conference style research paper	✓	✓			✓	
Project presentation						
Design Brief Video (4-minutes long)				✓		✓
Reflection						
Learning Reflection	✓				✓	

*1. Requires transcript generation

Figure 2: Review of Action & Expression – learning outputs

The second step reviews the course materials for Representations, the 'what' of learning (Figure 3). These are the tangible inputs of instructional design, including things like the Learning Management System (LMS) – documentation, slides, rubrics, and syllabus – in addition to performative or expressive inputs like workshop activities.

Representation

	Text	Graphic	Audio	Video	Ally accessible	Experiential-present
Classroom						
Lectures, in-person class						✓
Video stream, synchronous virtual				✓	✓	
Video recording				✓	✓	
LMS						
Brightspace	✓	✓	✓	✓	✓	
Public website						
ucddt2.blogspot.com	✓	✓			✓	
Slides						
Slides for each lecture	✓	✓			✓	
Podcast						
Audio of each episode			✓		*1.	
Exp						
Visual simulation kit						✓
Wheelchairs						✓
ViaOpta simulator						✓
Accessibility technologies and Apps					✓	✓

*1. Requires transcript generation

Figure 3: Review of Representation – learning inputs

Finally, there is Engagement, the 'why' of learning. We proceed by combining the categories identified previously under Representation and Action/Expression (the vertical and horizontal axes, respectively, in Figure 4).

Engagement is intangible and difficult to instrumentalise, particularly for instructional design. This approach locates sites of interaction, the in-class experience, and experiential aspects of instructional design. We argue that many, if not most, Engagement happenings arise at the intersection of Representation *and* Action/Expression activities.

Figure 4: Review of Engagement opportunities – synthesis of the learning experience

The outcome of this review identified the following new or enhanced instructional design elements informed by the UDL framework:

1. **Participation:** addressed by recorded guest interviews, skills development, and workshops/tutorials

2. **Expression:** addressed by having most assessments include a self-defined aspect and employ variety of media/formats

3. **Persistence:** formative learning enabled via the accumulation of credit for low-stakes homework assessments

4. **Processing:** addressed by the research project, acting as a synthesis of many instructional elements in the class

5. **Reflection:** addressed by the 1-page Personal Learning Reflection.

Bringing the learning to life.

The most visible change to the teaching and learning materials for the Design Thinking class was the creation of audio recordings of guest interviews hosted by our students. These recordings are edited and published on a teaching podcast (Higgins, 2020). The Design Thinking series is currently 16 episodes and growing. The Design Talk podcast[1] is an open, public teaching resource and available for subsequent classes (Figure 5, illustration of 6 episodes).

In addition to recorded guest interviews, students are given a degree of autonomy in designing their own learning deliverables. Scaffolding and templates are provided including: step-wise instructions for research activities; published rubrics for assessing written precises; a rubric for self-evaluating written reports; formative feedback; a workshop on writing for research; a tutorial on finding and evaluating research literature; poster preparation, etc.

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1   The "Design Talk (dot IE)" teaching podcast – https://www.designtalk.ie
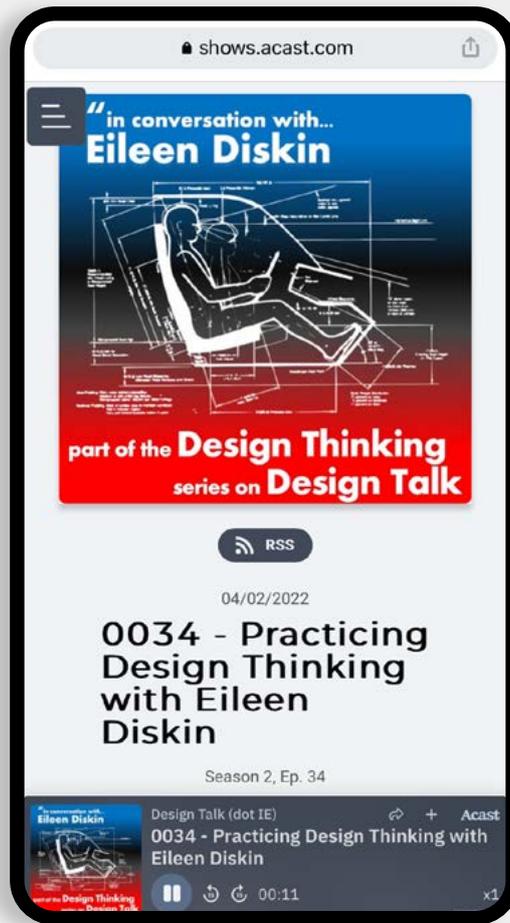
Figure 5: Selected episodes from Design Thinking on the Design Talk podcast

Results and Impact

The results and impact of employing the UDL tool for Design Thinking are evident in 'student voice', as expressed in written reflections on the learning experience. The following excerpts from the class of 2022 are organised under three headings: Impact, Difficulties, and Understanding of the Course Structure and Goals.

Impact

In relation to the module's learning outcomes, it is evident that students have processed and internalised the learning goals. When talking about a new perspective on the design process, students use the words 'empathy' and 'empathising' to describe user interactions:

> Using empathy when interviewing someone forced me to concentrate on the minor details of problem resolution, such as talking to people and listening to what they had to say.

They also acknowledge a greater awareness of the presence and impact of designs encountered in their lives. They also link these insights with statements of empathic understanding of users with different needs and abilities:

> I have become more vigilant and familiar with the concept of design failures, which are essentially poorly thought-out designs, which flummox and confuse a consumer when they encounter them.

Difficulties

Many of the difficulties recounted by students related to module content, rather than issues of instructional design:

> Collecting the data myself and experimenting with the chosen research tools was both exciting as it was terrifying at the same time as I did not know where to go from there and how to make sense of the results that I have gathered.

While freedom of expression is desirable, some find it difficult to define their own learning actions:

> I believe a challenge for me from the course was trying to understand which research method would work best for me when carrying out my research essay. Having a large range of options available can often make it difficult to narrow down to the most suitable option and I found it a challenge to determine this.

Understanding of the course structure and goals

And, finally, how do students perceive the relevance and suitability of instructional interventions employed as a consequence of conducting the review? It is clear that students are acutely aware of aspects of instructional design, of how the different teaching elements come together in the overarching design of a course:

> I believe that the simplicity of the assignments is intentional, but also, in reality they all had deeper meanings which build up and helped me when completing my research project.

There is also evidence that we achieved our engagement goals of processing, participation, persistence, processing, and reflection. Engagement from hosting guest interviews was frequently cited. For example:

> Getting the chance to practice podcasting was very enjoyable and productive. My podcast was the final one of the semester and it has definitely helped to develop my interviewing skills. I'll look to participate in podcasting opportunities in the future.

Although acknowledgement and reward for persistence was intended to occur via the accumulation of credit for smaller low risk homework assessments, students themselves identified the value of persistence within the learning content of Design Thinking itself:

> A phrase I like from lecture 1 is 'Fail often to succeed sooner'. It shows that failure is inevitable and that it contains valuable lessons. I, therefore, had a change in understanding involving the intensity of Design Thinking. It is not just a mode of thinking, but a series of problem-solving procedures.

And, finally, unrelated to the UDL, students readily described new knowledge and appreciation for design thinking processes and empathy-centric design methods:

> This module involved 'deep dives' into the design thinking process and really challenged me to think differently about how I interact with the world, it radically changed my perception of the world around me, so much so that I now get interested in simple banal design decisions such as the positioning of light switches in a room and the functionality of a door!

Work to be done?

The self-review tools described here offer a simple structured approach for assessing how well a module meets the goals of the UDL. An example of how the tools are applied to drive further improvement is illustrated below. In this example, the Engagement Opportunity tool was used to identify engagement loci (and absences) in an AS-IS analysis of the current course. For example: 1) highlighting Action/Expression activities that are assessed/not-assessed, and 2) identifying sets of low-engagement Representations (learning resources) (Figure 6).
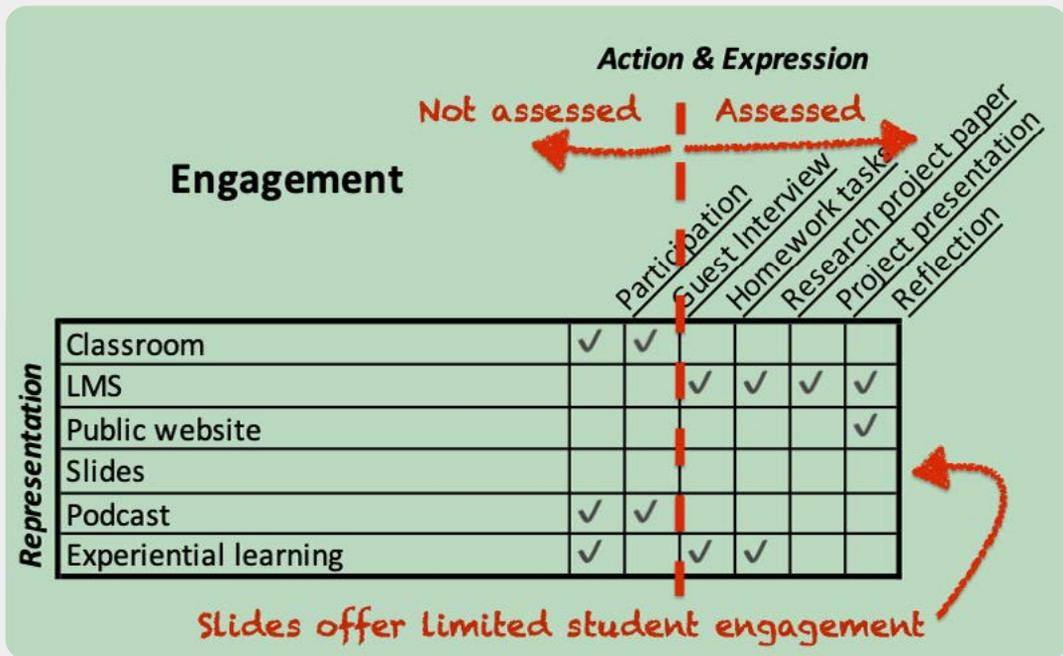
Figure 6: Critique of Engagement

This kind of analysis helps to raise questions and prompt future improvement (not the subject of this report) such as: whether not-for-credit activities like hosting 'guest interviews' should be graded or not? And, is it possible to increase the engagement potential of passive learning material like the slides, documentation, and website, or are these elements bottom-line requirements of education? Evidence based questions posed by the review tool will inform further changes to the module.

Recommendations and Advice for Others

While the UDL is not new, its reach and impact has grown in recent years as many of its goals are increasingly enabled by new A11y technologies[2]. However, educators can feel overwhelmed by the burden of applying learning design frameworks like the UDL to existing modules. Part of the confusion surrounds the question of educational content versus educational structure for learning. Our view is that the UDL informs the structure of instructional design rather than discipline specific educational content. The approach described in this case study eases the process of identifying and improving educational structures. A simple two stage AS-IS/TO-BE evaluation is applied.

Step 1. Expression
Step 2. Representation
Step 3. Engagement

Step 1. Capture existing student outputs (means of expression). Step 2. Capture existing course materials and inputs (means of representation), then characterise both inputs and outputs as: Text, Graphic, Audio, Video, A11y accessible, or Experiential. And, finally, Step 3. Identify existing interactions (engagement). The TO-BE plan is simply a response to the AS-IS analysis (Figure 6).

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2   A11y is a numeronym for Accessibility.

Conclusions

In reviewing the instructional design for Design Thinking, did we succeed in the goal of stimulating 'high levels of student engagement'? While this remains an open question, we do have evidence of increased engagement aligning with the teaching outcomes and of students' appreciation for having additional means of representation and expression open to them.

To conclude, giving students the opportunity to learn, perform, and demonstrate learning through multiple means, means nurturing expressive learners, helping them to discover and develop new modes of expressing themselves: as researchers, creators, entrepreneurs, and more.

References

Battarbee, K., Suri, J. F. & Howard, S. G., (2014). *Empathy on the edge: scaling and sustaining a human-centered approach in the evolving practice of design.* IDEO.

CAST, (2018). *Universal Design for Learning Guidelines version 2.2,* s.l.: Available at: http://udlguidelines.cast.org.

Heelan, A., Ryder, D. & Padden, L., (2019). *Digital Badge in UDL.* [Online] Available at: https://opencourses.ie/opencourse/universal-design-in-teaching-and-learning/

Higgins, A., (2020). *Design Talk (dot IE).* [Online] Available at: https://www.designtalk.ie

Huntley-Moore, S. & Panter, J., (2016). *An Introduction to Module Design.* AISHE Academic.

IDEO, (2015). *The Field Guide to Human-Centered Design.* IDEO Canada.

Knapp, J., Zeratsky, J. & Kowitz, B., (2016). *Sprint : How to Solve Big Problems and Test New Ideas in Just Five Days.* Simon and Schuster.

La, H., Dyjur, P. & Bair, H., (2018). *Universal Design for Learning in Higher Education.* Taylor Institute for Teaching and Learning.

Designing a New Masters Module with UDL in Mind

Joe Houghton

Author	Joe Houghton
Abstract	Creating a new Masters module on sustainability, Design Thinking and performance measurement using Objectives & Key Results (OKRs) with a UDL awareness.
Module/Course/ Programme/School	Hot Topics in Project Management
Discipline	Business
Level and Credits	Level 4 | 10 Credits
Student numbers	50 Students

Introduction and Context

The following case study is a reflection on a new module development I've undertaken during the first half of 2022, informed by my UDL learnings from the Digital Badge and my inclusion in the Faculty Partner rollout across UCD. The Digital Badge was a country-wide UDL upskilling programme run by AHEAD and UCD during 2021. I wanted to see if I could build on my new knowledge of UDL principles and really make a significant difference in my teaching and the student experience on the Masters programme I direct at Smurfit Graduate School of Business. Not so much a Plus 1 incremental change here (Behling and Tobin, 2018), but a full new level nine, 10 ECTS module, designed from the ground up to build in UDL thinking.

Following a programme review in 2021, it was decided to retire one module from the MSc in Project Management and replace it with a brand new module, titled 'Hot Topics in Project Management'. A general title, with lots of space for creativity! Or perhaps a wide-open slate, with too many options to make figuring out what to include easy!

This module runs towards the end of the programme, in the summer semester and is the last taught element of a 1 or 2 year programme for the full or part time cohorts.

Design and Implementation

The UDL Design process follows three key steps:

1. Set clear goals

2. Anticipate barriers

3. Design options to reduce the barriers.

UDL Design - Goal setting

There are two key assessments in this module, so each has separate but linked goals for the students:

1. The Charity Project

Unwilling to cast away all of the materials from the old module, I decided to retain an assignment which has, over the 12 years we've run it, become one of the jewels in the crown of the programme. This is the Charity Project. This module sees me ask each student team of four or five to choose a charity, engage with them, and run some fundraising or awareness raising. I set them a target of €5,000 to raise (if they opt to fundraise). Their assessment (worth 45% of the module grade) is on how they document and run their project (it is a Masters in Project Management after all), NOT on the amount raised, but they do have to measure impact – either through money or some other metric.

Goals here are, amongst others:

— Engagement with the charity sector (which is new for many of my students)
— The application of project management techniques to a real project
— Planning & achieving a time limited brief with measurable outcomes
— Production of a documented process analysis and reflection.

Student choice, experiential learning, messy problem solving, application of theory learned throughout the programme – so much learning goes on in this module. The teams can document their projects in whatever way they like, but there must be a 10-minute summary video as part of the final submission.

On the last day of the semester, we play all these videos in class as a celebration of their achievements, with invited guests from the charities in attendance to be presented with cheques and to say lovely things about the student.

2. The Sustainability project – MAD117

I've also become aware of the issue of overloading students with too much material, so I decided that I'd cut the taught hours from 36 down to 20 for the remainder of the module, as feedback from previous years was that the charity project took a LOT of time in planning and executing.

These hours were divided up into four days of delivery over two weeks in early June. Day 1 was an introduction to the module and the other 55% assignment – an individual or pairs piece titled MAD117:

— Make A Difference
— 100 hours of effort
— 17 UN Sustainable Development Goals.

The assignment brief and learning outcomes can be found below in Appendix 1.

UDL Design - Anticipating Barriers

Design Thinking and the 17 UN Sustainable Development Goals (SDG's) were 'new' elements we'd not covered previously during the programme, so I wanted to give the students a grounding in both, before they had to really engage for an assessed piece.

| FRAME A QUESTION | GATHER INSPIRATION | GENERATE IDEAS | MAKE IDEAS TANGIBLE | TEST TO LEARN | SHARE THE STORY |

Figure 1: Design Thinking stages from IDEO (IDEO, Unknown Year)

Design Thinking is a powerful methodology used by many of the world's top innovative companies. There's a fabulous online Design Sprint workshop, 'The d.school starter kit', created by Stanford (Stanford, unknown year). This workshop is free to use in the classroom that I had co-facilitated at another college previously with their facilitator, Jen Lynch (winner of the national 2020 John Kelly award for UDL in Ireland).

Now, you might not think that Dental Nursing has a lot to do with Project Management, but the application of the design thinking framework is equally applicable, so I contacted Jen Lynch who kindly agreed to come in and help run this for my students.

Figure 2: Jen Lynch delivering the Design Sprint to the Smurfit students
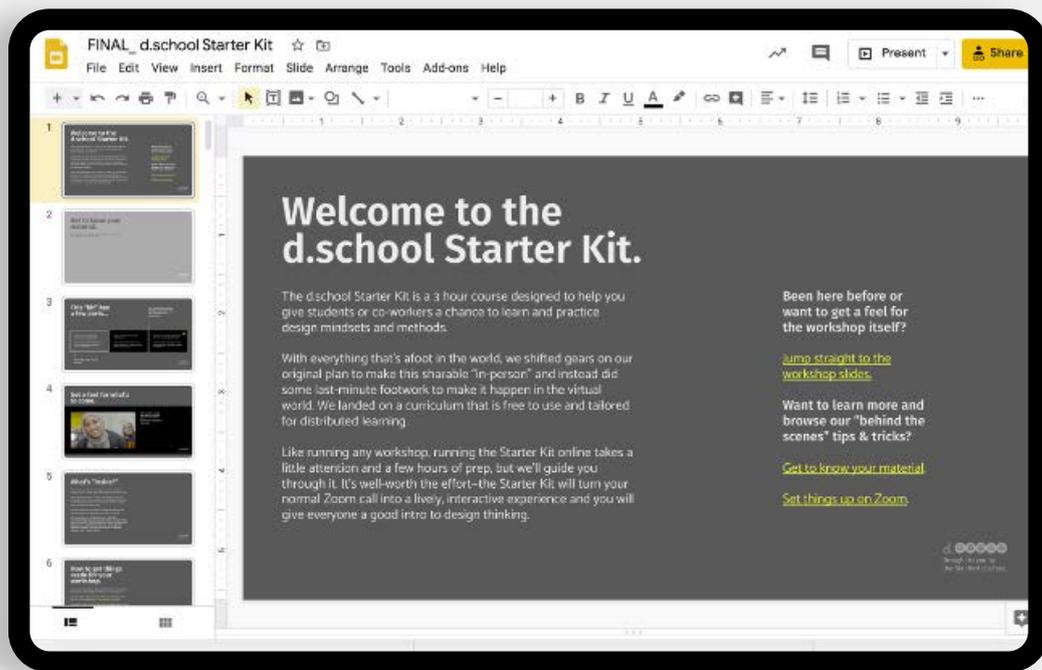
Figure 3: Screenshot of the Stanford d.school starter kit welcome slide

It was a very interactive and FUN few hours, which had everyone in the room fully engaged, having experienced the full cycle through competing all the stages of the workshop. I followed up with a set of slide-based sessions the following day, where we looked at each of the key stages of Design Thinking, specifically in the context of project management.

I did an hour introducing the SDG's – a session of a number of videos and slides, with lots of voices speaking about various aspects of the SDG's. Then, I really took a leap and tried something I've never done with a class before. I created in CANVA.COM a report template and set it up with a title page for each of the 17 SGD's. I shared the link to an editable copy of this document with all the students in the class and tasked them to – in the 17 teams I'd assigned them into –research useful links and resources for the SDG their team had been allocated. This was NOT a graded assignment, but a task they had one week to complete.
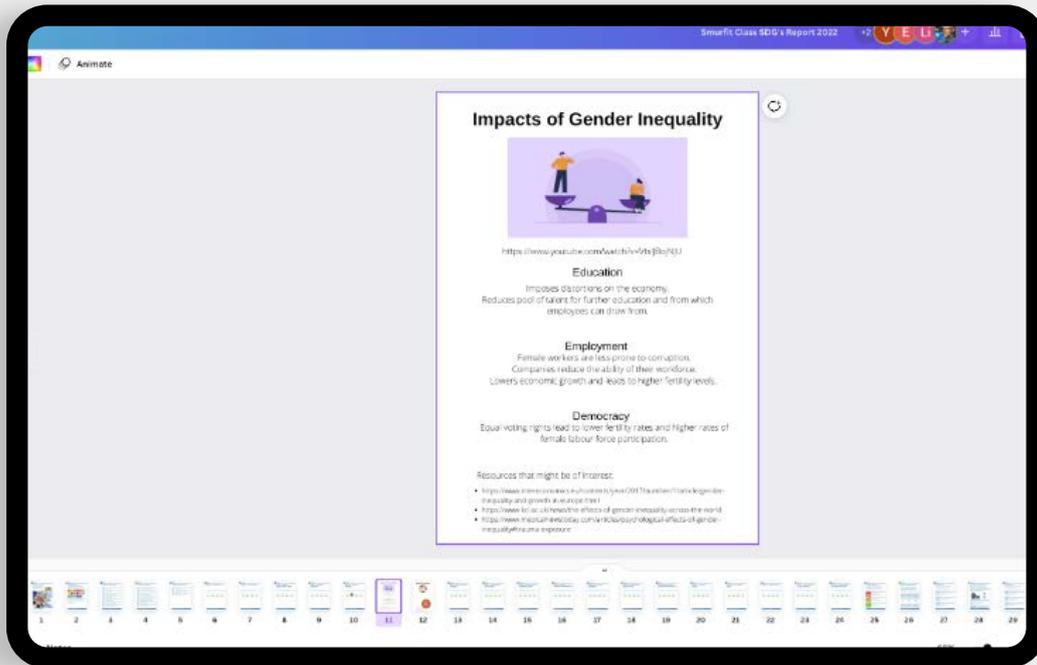
Figure 4: The SDG Canva collaborative document showing students hard at work adding into their team sections...[1]

I also set up the first session of Week 2 as a Zoom only class, and each team did a 15-minute recorded presentation to the rest of the class on their SDG research and found resources. These presentations were recorded and published – with the students' consent – on a closed YouTube channel and then incorporated into the SDG Resources report via clickable links, to provide another means for students to represent their work but also to be seen presenting it in person on screen.

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[1] This template is available online and can be copied/edited - https://www.canva.com/design/DAFEEdgkLbA/NBiVs1uuIJcYuBdpSjU2yQ/edit
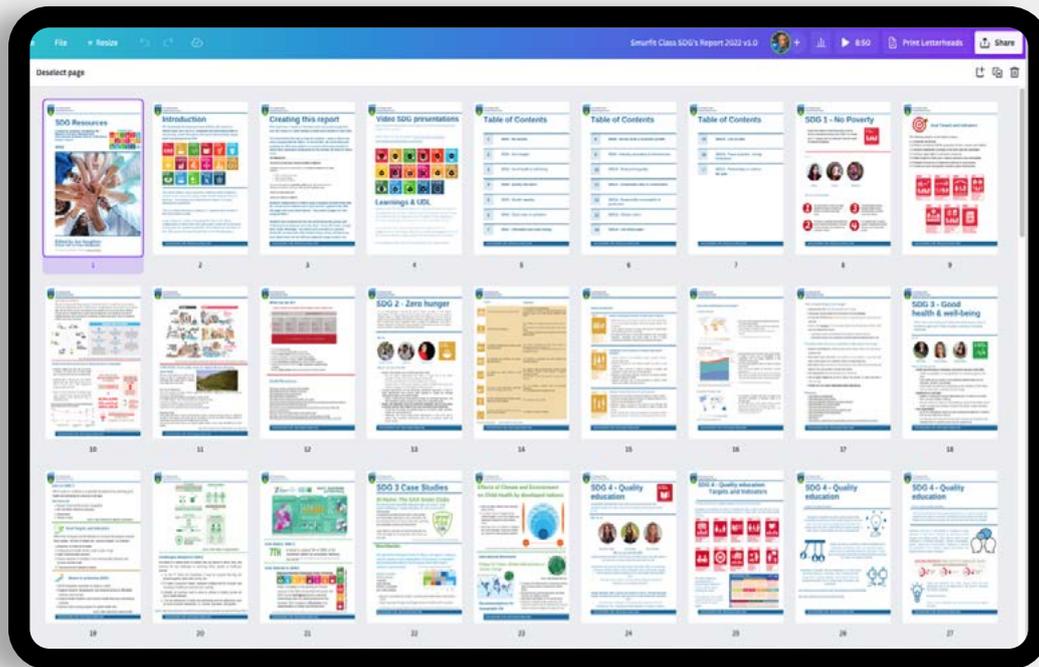
Figure 5: Report

The end result of this was a report of curated resource links for all the 17 SDG's which is presented in a professional format, co-created by the class as a whole. This report, which includes the student videos as clickable links which open up in YouTube, is accessible online.[2]

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2   https://www.canva.com/design/DAFECtLd-80/yHSGJ04vja-hN9yvxbcphw/view?utm_content=DAFECtLd-80&utm_campaign=designshare&utm_medium=link2&utm_source=sharebutton

This report fulfilled several functions:

— Provided all class members with a resource guide to ALL the SDG's, which they could each use when completing their SDG based individual/pairs assessed assignment

— Created a high quality artefact of 106 pages which I have published as an e-book and a PDF, distributed to the students, that they will be able to include in their work portfolios and also in their LinkedIn profiles as an example of professional quality work they have collaborated on

— Engaged the students in co-creating a document to a professional standard, being cognisant of the need to maintain a common style, look, and presentation in a collaborative piece.

UDL – Design options to reduce barriers

As outlined above, I tried to employ numerous means of delivery and options for student expression, to allow for many ways to interact with and express learnings. The module draws on problem-based learning, experiential learning, problem solving, creativity, and many strands of pedagogical expression, to hopefully weave an engaging and compelling student learning experience.

Approach and Implementation

Let's see how this module answers some of the UDL imperatives of engagement, representation, and action and expression:

Representation, action & expression - choice

— The students are given a wide, open brief with a few constraints

— They can submit their assignment in any electronic format – document, audio, video, or a mixture of any/all of these

— They can choose the topic that really engages and interests them from the 17 UN SDG's – each of which encompasses a wide area of human opportunity

— They can opt to work alone or with a partner

— Facilitators are available via email/phone/Zoom any time during the period of the assignment to answer questions or clarify issues.

Engagement – multiple modes of delivery & consumption

— Delivery of the module was in-person or via Zoom for those students who were not able to be on campus for whatever reason. Our college has a big 84" DTEN screen which has a wide angle camera and superb microphones which pick up anyone in a large room, and we can use this to log into a Zoom session for the remote learners and have the Zoom grid view up so they can see the class and also be seen by those physically present. I then make sure that my laptop screen is shared to Zoom and include the remote participants in conversations and activities. Takes some getting used to splitting attention between physical and screen based students, but it becomes easier with practice!

— I also recorded the sessions and made these available to the cohort on the college LMS so they could review the sessions again – this seems particularly helpful for some students for whom English is not their first language

— I now always enable the automatic voice transcription for all sessions, so this is another way for the material to be accessed[3]

— The session materials included:

- An interactive facilitated workshop which myself and Jen Lynch (a colleague from another institution) ran with the students in class (and via Zoom) which included writing, drawing, discussion, and personal reflection

- An ungraded, low-stakes mid-module team assignment to help everyone engage with a wider set of resources around the 17 SDG's and co-create a collaborative SDG Resources report

- PowerPoint slides (checked using Ally for accessibility such as alt-text, good contrast, use of full-stops on bullet points etc.)

- PDF's of relevant articles

- Videos (provided both downloaded into the LMS, embedded in the slide decks, and also linked to on YouTube etc.)

- Online web-page links to relevant materials.

3   Link to how to do this at https://support.microsoft.com/en-us/office/present-with-real-time-automatic-captions-or-subtitles-in-powerpoint-68d20e49-aec3-456a-939d-34a79e8ddd5f#:~:text=To%20have%20subtitles%20always%20start,words%20will%20appear%20on%2Dscreen.

Results and Impact

Impact is too early to have been formally measured, as this module is still in progress as this case study is being written. Student feedback will be formally requested via a survey post-delivery, and the normal college feedback mechanisms will also be checked for any references to this module.

I did analyse some data during the grading process, however. Here is part of my grading spreadsheet showing the different assignments mapped against the SDGs they impacted:

This data was then plotted into the following chart:

SDG columns: 1 - No poverty · 2 - Zero hunger · 3 - Good health · 4 - Quality education · 5 - Gender equality · 6 - Clean water · 7 - Clean energy · 8 - Decent work · 9 - Industry innovation · 10 - Reduced inequalities · 11 - Sustainable cities · 12 - Responsible consumption · 13 - Climate action · 14 - Life below water · 15 - Life on land · 16 - Peace & justice · 17 - Partnerships

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Assignment title
		1											1	1			Beach cleans in Ballybunion, Co. Kerry
		1					1	1		1		1					AI for good - app for predicting medical inurance costs
		1															Reverb - music for mental health website
		1								1							Improve the air quality in Sarajevo
										1	1	1					Zero waste in 3 households
						1											More effective EV charging method
		1	1														Pregnancy management website
	1																Zero hunger project
			1		1	1	1				1	1		1			Helping a company become more sustainable
						1					1	1					Optimise delivery transport costs using EV
			1	1	1												Happy School Times website
			4														Educating elderly adults with modern technology
							1										Empowering a nanny with employability skills
		1	1	1			1										Impact career counselling course
	1										1						Restaurant food waste reduction
		1	1					1	1	1						1	Accessibility improvements to a café chain
																	Beach cleans in Ballybunion, Co. Kerry
								1		1	1						Food waste reduction in supermarkets
										1	1	1					Reducing plastic usage in 2 hotels
																	Optimising a waste company's routes
		1			1												Personal hygiene kits for church community
		1												1			Rejuvenation of Ranafast woods
																	Rejuvenation of Ranafast woods
																	Happy School Times website
			1														Personal online coaching for child
																	Food waste reduction in supermarkets
																	Zero hunger project
																	Restaurant food waste reduction
																	Educating elderly adults with modern technology
																	Happy School Times website
																	Helping a company become more sustainable
																	Reverb - music for mental health website
										1	1	1					Optimising a waste company's routes
												1					Promoting the use of bio-diesel
			1	1													Period Support Project
																	Pregnancy management website
																	Reducing plastic usage in 2 hotels
										1							Sustainable cities
				1													Period Support Project
				1				1									Blockchain based women's freelance platform
		1								1					1		Everyone could be a first responder
0	2	10	8	5	3	3	4	4	1	9	7	7	1	3	1	1	

Figure 7: Student assignment linkage with the SDGs

Of the 41 students in the class, 14 were individually submitted, 12 pairs and one triad. The assignments touched on every UN SDG apart from #1 – No Poverty. The outcomes were then included in a final report (Houghton, 2022).[4]

Speaking with students during and after classes, over coffee etc. on the delivery days indicated: a high level of satisfaction on the material being shared; enjoyment of the varied modes of delivery and student engagement; and a positive attitude towards the SDG assignment.

In addition, feedback from senior management in the School was very positive after seeing the summary report:

> **The report is inspiring - with the module being a perfect exemplar of an initiative which directly speaks to our mission to make the world a better place! I am sure we will highlight this in our next accreditation report.**

> **The level of student engagement - and the diversity of the project settings (global - and covering nearly all the SDGs) - is remarkable. We probably tend (as do most educators!) to 'over teach' - rather than really look to draw out our student's own capabilities. You've done a great job in designing the module to enable 'co-creation' - and the response of the students is evident.**

> **It is truly inspiring to see our students working on such transformational projects that make the values of our college 'come to life' and make such a positive difference.**

Great also to see initiatives that push the envelope of our teaching activities are paying off such dividends.

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4   The template for this report is available from the author – joe.houghton@ucd.ie

Recommendations and Advice

Just do it! I was fairly anxious in the week leading up to delivery of this course – new material, a different way of engaging with the students to the "normal" PowerPoint based classroom sessions, bringing in another colleague to co-teach, creating a collaborative report, challenging the students with a very broad, open brief. However, there's a lot of new things and a lot that could go wrong!

But it seems to be working. The students engaged well in class and seemed positive to the presentation of materials and assignments. And the final report is inspiring – do have a look and see if you are impressed by the changes the student have made!

References

Behling, K.T. and Tobin, T.J., (2018). Reach everyone, teach everyone: Universal design for learning in higher education. West Virginia University Press.

Houghton, Joe (ed.) (2022) SDG Resources Curated by students completing the Masters in Project management, UCD Smurfit Graduate School of Business Dublin, Ireland. Available at: https://www.canva.com/design/DAFEEdgkLbA/NBiVs1uuIJcYuBdpSjU2yQ/edit

IDEO, Design Thinking Resources. Available at: https://www.ideou.com/pages/design-thinking-resources

Microsoft, Present with real-time, automatic captions or subtitles in PowerPoint. Available at: https://support.microsoft.com/en-us/office/present-with-real-time-automatic-captions-or-subtitles-in-powerpoint-68d20e49-aec3-456a-939d-34a79e8ddd5f#

Stanford University, d.school Starker Kit. Available at: https://dschool.stanford.edu/resources/dschool-starter-kit

Appendix 1

The assignment brief:

You have 100 hours to complete this assignment. Linking your work with one or more of the 17 UN Sustainable Development Goals, make a difference.

— Make the world a better place
— Make a positive change
— Make someone's life better.

Plan, execute & implement a **measurable, positive** change. Doesn't have to be earth-shattering, it can be small, but it has to make a positive, measurable change.

Present your project as you see fit.
You can work in pairs or as individuals.
Assessment (55% - Individual/pairs assignment):

1. **Process** - 15% – you must show how you used the Design Thinking Framework to plan & run your project. Clear voice of the customer / empathy mapping must be evidenced. A top submission will show in detail how you utilised the different stages of Design Thinking to run your project and precisely how this was done

2. **Impact** – 15% – you must show how your project will make achievable, measurable, positive change using OKR's

3. **Creativity** – 15% – Your project must be focussed on one or more of the 17 UN SDG's – which ones you link to should be identified clearly. Your project should demonstrate creativity, originality and practicality

4. **Presentation** – 10% - You must present your work in an engaging, professional and attractive manner. Submissions can be in any combination of electronic media (document, presentation, video, audio). There is no word count for this assignment.

Learning Outcomes from this module & assignment

By the end of the module, you should:

— Know about the 17 UN sustainable development goals

— Understand why the SDGs are critical imperatives for projects in business

— Have utilised the Design Thinking framework in a real project

— Have understood and applied Objectives & Key Results (OKRs) in setting up measurable outcomes for your project.

By completing this assignment, you will:

— Enhance your research skills

— Synthesise your knowledge of:

  - project management

  - sustainability

  - performance measurement.

— Further develop your communications and presentation skills

— Makes positive change to the world around you.

UCD College of Engineering and Architecture

Foreword

Professor Aoife Ahern
Principal, College of Engineering & Architecture

I am delighted as the College Principal of Engineering and Architecture to provide the foreword for these 4 case studies from the College of Engineering and Architecture.

The case studies by my colleagues, Alice Clancy, Dr Vikram Pakrashi, Dr John Healy and Dr Jennifer Keenahan, demonstrate the continued commitment of the College to enabling learning for students of all backgrounds – different ethnic backgrounds, different genders, and different socio-economic backgrounds. The College is also committed to providing a learning environment in which people with different physical challenges and neurodiversity can participate.

We value the diversity of our students, and the richness they bring to the environment and the culture in Engineering and Architecture, and it is important to us that all students feel welcome and enabled to learn. For that reason, I am very supportive of the efforts of my colleagues to embed Universal Design in their own teaching, and their efforts to demonstrate to and train other colleagues in how this might be done effectively.

The projects described in this publication cover architecture, civil engineering, mechanical engineering, and electronic engineering, across stages 1-5 of the engineering and architecture programmes, thereby reaching a large number of students. They also cover a wide range of different types of teaching and interaction – from studios in architecture to lectures and laboratories in engineering.

I would like to commend my colleagues for their efforts to bring Universal Design into the curricula of engineering and architecture and urge others to follow their exemplary example.

Case Study Title:

Universal Design for Learning and the Architectural Design Studio

Alice Clancy

Author	Alice Clancy

Abstract	UCD Architecture is in the process of a major project of developing teaching methodology and module content across the undergraduate programme to equip graduates to better meet the challenges of the climate and housing crises. The architectural design studio modules are creative 15 credit modules that are core to the curriculum each trimester for all architecture students. In this case study, I will — summarise my work in collaborating with educators and learners to co-create a proposal for embedding aspects of Universal Design for Learning methodology in the undergraduate architectural design studios to support their development — outline the key insights gleaned from this process.

Module/Course/ Programme/School	BHARCH007 - Bachelor of Architectural Science School of Architecture, Planning & Environmental Policy (APEP)
Discipline	Architecture
Level and Credits	Stages 1,2,3,4, each 15 credits per trimester, (120 credits in total)
Student numbers	c. 250

Introduction and Context

> Education is not so much the acquisition of set skills but learning how to learn. Once you have done this, you have built an engine for a lifetime of renewal.
> - Niall McLaughlin (McLaughlin, 2015)

I work part-time as Assistant Professor in Architecture at UCD, and have been teaching in and coordinating architectural design studio and elective modules since 2008 across the undergraduate and graduate programmes. In 2022 I became the Director of Teaching & Learning (T&L) for the School of Architecture, Planning & Environmental Policy (APEP).

In my role as a Faculty Partner, I have been working to facilitate and promote Universal Design for Learning (UDL):

— **generally** across Architecture, Landscape Architecture, Planning, Environmental Policy: leveraging my role as director of T&L, facilitating staff workshops and training sessions, and collaborating to co-facilitate the roll out of the UDL Digital Badge

— **specifically** in supporting the development of the curriculum in the architectural design studio modules in the undergraduate programme (Bachelor of Architectural Science),

Architectural education is at a moment of change as it addresses the considerable and connected challenges of decolonisation and decarbonisation (Hughes, Lokko, 2021).

Architectural design studio modules (hereafter referred to as 'studio(s)' or 'design studio(s)') are at the heart of the architectural education curriculum worldwide (Salama, 2015). Studio teaching represents a particular culture of dialogic, project based learning and critical reflection that is closely connected to architectural practice and discourse.

To meaningfully maintain this connection with practice, many of those teaching in the design studios are also practitioners - teaching part-time and ensuring that the architecture studios keep pace with innovations and developments in practice. As renowned architect, educator, UCD graduate and Adjunct Professor, Yvonne Farrell outlined: 'it is really important that schools of architecture are both theoretical and practical' and that students are given the opportunity to be taught by those practicing as well as researching at a high level. (Farrell, 2015)

In UCD, the design studios are 15 credit modules core to the curriculum each trimester for all architecture students. In the studio, students develop design projects in response to increasingly complex briefs and contexts in a scaffolded approach as they progress through Stages 1-4, working on everything from individual houses & housing, to educational and civic buildings. The modules are graded in a summative assessment (portfolio) at the end of term. The overall aim of studio methodology is to support learners to develop a design practice fuelled by critical reflection, in order to enable them to develop creative, innovative design responses to the increasingly complex challenges associated with the design of the built environment.

Studio teaching methodologies ostensibly seem very closely aligned with the core principles of UDL in that they offer a variety and choice in engagement, representation, action and expression. However, in my experience, and from staff and student feedback, it seemed likely that there were aspects of studio methodology that could benefit from being studied from the point of view of UDL .While the content of the studio modules changes every year, keeping pace with developments in practice, the methodology is relatively unchanged, partly due to there being little time for part-time educators to reflect and develop methodology.

Since April 2022, UCD Architecture has been participating in a major project entitled the Resilient Design Curriculum (RCD) in which all six institutions offering architecture courses in Ireland are collaborating with each other from 2022-25. This project involves developing course content and teaching methodology, primarily in the studio modules to equip graduates to better meet the challenges of the climate crisis, and the targets for 2030 & 2050 set out in the Programme for Government and Climate Act 2021. This transformation of the curriculum will require learners to become more self-directed to navigate alternative and expanding modes of practice and inter-disciplinary engagement with the built environment and its effect on complex environmental issues.

The timing of the UDL programme coinciding with this initiative therefore offered a welcome and rare opportunity to reflect on undergraduate studio teaching methodology, engaging with learners and educators across years 1-4.

My objectives for the Faculty Partnership Programme were:

— understanding how/where UDL principles could support studio methodology
— proposing initial amendments - discussing, developing and trialling these with colleagues & learners
— incorporating these amendments into the development of the Resilient Design Curriculum project at UCD Architecture

With the overall aims of:

— addressing issues highlighted in student and staff feedback on studio modules, to enable learners to become more autonomous and self-directed in their studies
— supporting the development of the Resilient Design Curriculum

Design and Implementation

I'm interested in the aspects of UDL methodology that involve co-construction of criteria - where learners contribute to the development of a module - to me this has elements of collaborative design practice (Figure 1) - where each person is enabled to bring their expertise and experience to contribute to the development of a design over stages.

Figure 1: Collaborative design practice: Grafton Architects at work. © Alice Clancy

I wanted to include the diverse expertise of the teaching teams and students on each module, to ensure that the UDL proposals would be meaningfully tailored for the undergraduate studio modules.

Taking into account the requirements of accreditation, the complexity of supporting learners to develop a creative and critical design practice through dialogic project-based learning, and incorporating the expertise and insights of teaching teams of part-time practitioners, any study of studio methodology would require extensive discussion, careful coordination and planning in order to propose and make measured and meaningful changes. With c.30-36 colleagues and 250 students involved in undergraduate studio modules, it is potentially quite a complex and time consuming process. However, I have found that by employing UDL methodology, elements of collaborative design practice, and carefully structuring the work, it has been possible to engage with c.300 staff & students across Stages 1-4 during the year run of the faculty partnership scheme.

Term 1: Spring 2022, I worked with students and staff to develop and articulate a proposal for embedding UDL methodology into the developing studio methodology to help support staff and students at a time of change.

Term 2: Autumn 2022/Spring 23, we will test and develop the methodology further with the aim of co-creating UDL methodology for undergraduate design studio modules.

For clarity, I split the work into 4 stages. These are summarised below and in more detail together with key insights on the following pages.

— **Stage 1:** Explore and Articulate how the principles of UDL are currently met in studio modules across years 1-4
— **Stage 2:** Identify areas that might benefit from introduction or support the adaptation of UDL principles
— **Stage 3:** Adapt and Develop UDL Methodologies for testing in the studio modules in these areas
— **Stage 4:** Test and Develop this methodology over the following academic year

Stage 1: Explore and articulate how the principles of UDL are currently met in studio modules

Student survey

Discussions with key stakeholders

	Term 1	Break	Term 2	
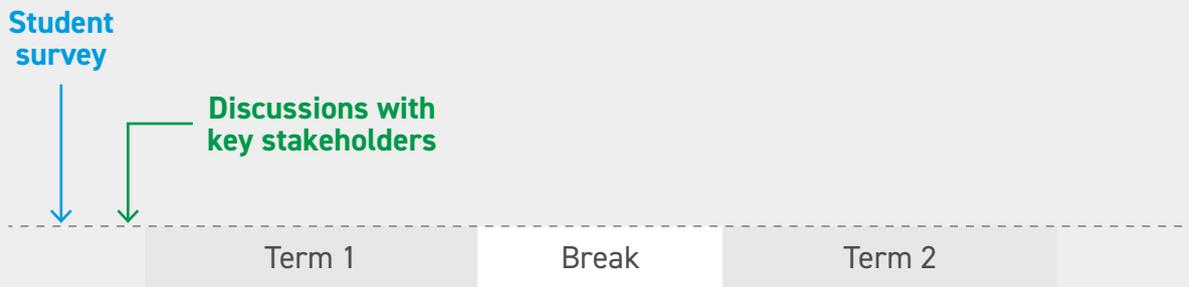
Figure 2: Stage 1

The work on this stage took place in preparation for term 1 and took two forms: A **student survey** and **discussions with key stakeholders.** The aim of both was to enable me to understand in quantitative and qualitative terms how the principles of UDL are currently met in studio modules, and to outline what areas might benefit from their adaptation.

Stage 1.1 Student Survey

The anonymous survey was open to 250 students from December 2021-Jan 2022. In preparing the survey, I consulted with a colleague on the faculty partnership programme to peer review the relevance and salience of the queries, being mindful of survey fatigue. Alongside the queries related to UDL, the survey supported studio coordinators in gauging progress on developments in studio methodology overall. This ensured that from the outset, the work on the faculty partnership programme supported the work of studio teaching teams. The survey had a useful response rate of 48%, offering quantitative data on student feedback and insights

Stage 1.2 Discussions with Key Stakeholders

In parallel with the survey, I held meetings with the Undergraduate studio coordinator, the Student Advisor and colleagues who had led and participated in an inclusive teaching pilot (Padden et al, 2021) and had also taught extensively in the studio. I participated in studio coordination meetings, keeping up to date with the programme developments.

Stage 1 Key Insight:

In introducing UDL to your subject area, programme or module,

— Ask questions and listen first, rather than presenting UDL or proposing changes straight away: It takes more time, but means that you will be able to develop a more effective approach to UDL, tailored to your subject area and particular context.

— Build on existing knowledge and resources: By consulting with key colleagues, it enabled me to build the UDL work on strong foundations, relevant to the subject area

Stage 2: Identify areas that might benefit from introduction or support the adaptation of UDL principles
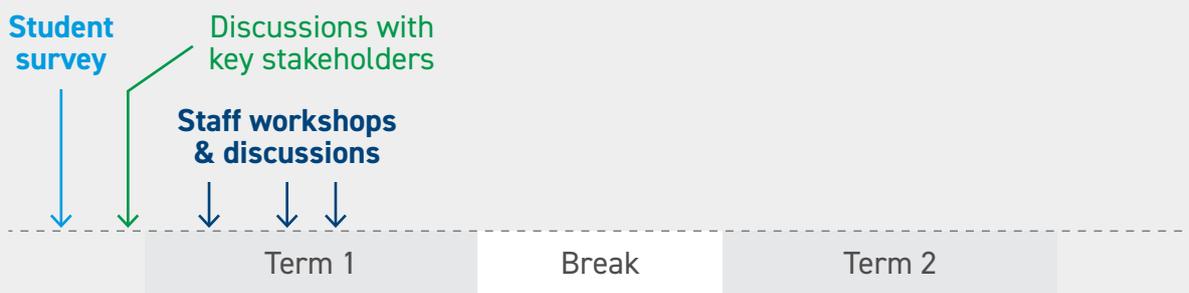
Figure 3: Stage 2

The work on this stage involved **analysis** of the survey and **staff workshops & discussions** related to the survey findings.

Stage 2.1 Survey Analysis

The survey analysis revealed that in relation to UDL, overall the studio modules provided excellent choice in means of representation, action and expression and in authentically recruiting interest - Students felt engaged and interested in the course and motivated to reflect critically on their work.

It revealed a few areas that might benefit from the adaptation of UDL principles mostly related to the UDL principle of providing multiple means of engagement. Key points of interest to this case study reported by students were:

Student Self-Direction & Autonomy:

— feeling overly reliant on staff feedback due to a lack of clear marking criteria

— not understanding the dialogic iterative process of studio teaching methodology

Student time/deadlines/workload management:

— commitments outside of the university that affected their engagement with their studies

— deadlines of core modules affecting each other in each stage

It is important to note that this survey was carried out in late 2021, and issues connected to Covid & online teaching likely influence the results. Partly for this reason, and in order to follow the principles of UDL, I set up a student focus group discussion later in the term (see stage 3) to more fully understand the issues identified in the survey.

Stage 2.2 Staff workshops and Discussions

The survey analysis containing diagrams and summarised responses was circulated to all studio teaching staff, and responses were invited. Alongside this, as part of my role as Director of T&L, I organised a workshop and lunchtime discussion sessions on topics related to T&L, relevant to issues identified in the survey. In all, over 40 colleagues participated in these sessions. These workshops, while providing useful advice and insights on aspects of T&L, also meant that we were able to reflect on the issues raised in the survey analysis and to discuss and draw on colleagues' expertise to start to develop ideas as to how to address them.

Stage 2 Key Insight:

The teaching trimester is very busy. However, in order to meaningfully develop UDL methodologies relevant to your subject area, time is needed for discussion and development with colleagues. It is difficult to find the time to do this, especially when teaching part time. Connecting into the structure of T&L workshops facilitated space for discussion and development with colleagues.

Stage 3: Adapt and Develop UDL Methodologies for testing in the studio modules

In this stage, based on the student survey, **initial adaptations** were proposed to address key issues identified by the survey for studio modules in time for Term 1.
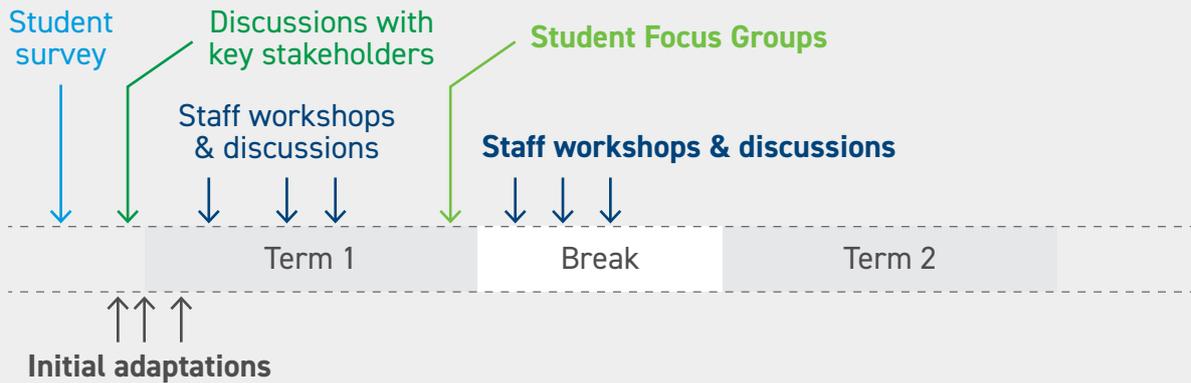
Figure 4: Stage 3

The efficacy of these was then reviewed with students in a **student focus group** and **presented** to teaching colleagues at the end of term 1 with the aim of adapting and developing them in time for Term 2.

I also attended undergraduate final reviews and presented the work to the external examiners who were very supportive of the initiative.

Stage 3.1 Initial Adaptations

The initial adaptations involved clarifying aspects of studio methodology, workload and marking criteria at the start of term and managing deadlines across all core modules across all stages of the undergraduate programme.

Stage 3.2 Student Focus Group

These adaptations were then discussed with students in a focus group at the end of term. 20 students from years 1-4 attended the focus group discussion, in person and online. This ensured that there was a variety of experience and level of student. In discussing the issues raised in the survey, it became clear that simply by making a forum for discussion enabled the students to understand the context of the issues and to propose solutions for how best to address these in ways that would better suit students.

Stage 3.3 Staff Presentation and Discussion

At the end of the term, there was an architecture staff workshop planned to review and reflect on the last few years post Covid. I took this opportunity to present and discuss my UDL work to colleagues and to gather feedback in the ensuing discussions over the two days. I summarised my notes from the student survey, focus group and staff workshops and discussions.

Using the +1 UDL principle, I made one key point: That modules such as studio that are providing extensive choice and variety in modes of representation and expression, would benefit from being underpinned by what I called bookends: anchoring guides or context for students that enables them to navigate the dialogic rich environment of the studio in a way that is more self-directed and autonomous:

— At the start of term, alongside module introductions, studio methodology is discussed and deadlines are planned and communicated in advance: learners are able to plan their work for the term and how they might work

— Marking criteria or holistic rubrics are available, referenced at key points and discussed in relation to examples of student work to enable self and peer reflection: Learners are aware of the quality of work they might aim for in relation to each learning outcome, and can reference this at key points of review and discussion of their and their peers' work.

From the ensuing discussions, it was clear that time spent marking and discussing, coordinating grades was a major issue for part time staff, and that by potentially developing some clear marking criteria that could be adapted as learning outcomes developed, it would address some of the key issues around student autonomy and staff time.

Stage 3 Key Insights:

— It was clear through the survey and forum that the student voice is a key component - they have excellent ideas, and it is worth consulting and engaging with them when adapting UDL principles for your subject area.

— The survey was not enough to adequately understand the nuances of the issues it raised. Following up the survey with focus groups and discussions was an effective approach to understand the issues in both a quantitative and a qualitative way.

— Similarly, the presentation and discussion of the proposals to Architecture staff was very helpful and gave pointers and clarity on further development of the proposal in a way that would better support staff in their work.

Stage 4: Test and develop methodology over the following academic year

In this stage I am working on developing **1 aspect of UDL methodology** (marking criteria), and used the **key principles** learned in my UDL work to contribute to the Resilient Design Curriculum project at UCD (see impact).

There is a plan to develop marking criteria in Autumn 2022 in collaboration with module coordinators. These marking criteria will then be used in Spring 2023, and will invite feedback from students and staff in order to develop these into modifiable rubrics via a workshop with UCD T&L in time for Autumn 2023. There will be another student survey in December 2023 to gauge progress.

Stage 4 Key Insights:

The slow careful work of consultation, analysis and discussion in the faculty partnership project has provided a solid base and some really clear strategies to develop the curriculum in a way that is inclusive, informed and tailored to the subject area.

Key Principles Overall:

The key principles I employed in the work are derived from the key insights for each stage:

— Be curious - ask questions first and listen to the answers in order to develop methodologies that are informed and tailored to your subject area
  - Include the Student voice as a key component
  - Identify & build on existing interest & knowledge

— Develop methodology through consultation, testing, discussion & feedback
  - this means actively building time for for engagement, reflection & discussion, and
  - Connecting into and working within existing timeframes and processes

Results and Impact

The UDL work and the key principles derived from it have been incorporated directly into the set up of the Resilient Design Curriculum project at UCD. It meant that we (the project team) planned the first term as consultative and discursive, focusing on discussing, debating and mapping the curriculum with colleagues and learners, interspersed with talks on Architecture and Climate Action. The project started with a survey of all staff and students followed by talks, workshops, meetings and debates and a charette, themed around key issues raised by the survey. Underpinning this work is a gap analysis mapping of undergraduate modules. We then will use the data, insights, ideas and mapping to develop the project in collaboration with colleagues at UCD Architecture and in discussion with colleagues across the RCD project.

Based on my key learnings from the UDL work, All sessions were carefully planned to leave room around key deadlines and paced to allow room for discussion, and reflection. We set up workshops for students that ran in parallel with staff discussions to enable the crucial participation of part-time staff in each discussion.

Working this way means that colleagues and learners are supported to engage with this complex project, and the project could draw on and benefit from their diverse expertise and insights. This will enable UCD Architecture to develop the Curriculum in a way that is informed, inclusive and adaptable and that is tailored to the strengths and ambitions of the programme, the expertise of teaching staff and the requirements of learners.

Resources and References

Farrell, Y. (2015) 'Yvonne Farrell on Architectural Education'. Interview by Martha Thorne, *Architects Journal*, 12 February. Available at https://www.architectsjournal.co.uk/news/video-yvonne-farrell-on-architectural-education (accessed 24 September 2022)

Hughes, F., Lokko, L.. (2021) 'A School Willing to take Risks', *Architectural Review* Nov 2021 (1486). Available at: https://www.architectural-review.com/essays/pedagogy/francesca-hughes-and-lesley-lokko-on-a-future-for-architectural-education (Accessed 04 September 2022)

McLaughlin, N. (2015) 'A Lifetime of Renewal' in *Architects' Journal* (July 24, 2015), pp.26. Available at: https://www.niallmclaughlin.com/media/a-lifetime-of-renewal/ (Accessed 03 September 2022)

Padden, L., Buggy, C., Shotton, E. (2021) *Inclusive Teaching & Learning Case studies in Engineering, Architecture and Affiliated Disciplines.* Dublin: Access and Lifelong Learning, University College Dublin.

Salama, A (2015). *Spatial Design Education: New Directions for Pedagogy in Architecture and Beyond*. 1st Edition. London: Routledge.

A Circuit Diagram Paints a Thousand Words: Enabling Accessibility in Electronic Engineering

Dr John Healy

Author	**Dr John Healy**

Abstract	Scientific diagrams are a barrier to students with visual impairment studying STEM subjects. This can be mitigated by adding alt text to the images, though it can be laborious and challenging to capture the key information for every image. In electronic engineering education, circuit diagrams are a particularly common kind of image that contain quite structured information. We developed software to translate digital representations of circuits into human-friendly text. We used this software to add alt text to over 1,200 circuit diagrams used in undergraduate teaching at University College Dublin. We also developed 3D printed tactile solutions.

Module/Course/ Programme/School	School of Electrical and Electronic Engineering
Discipline	Electrical and Electronic Engineering
Level and Credits	Levels 1-3, several 5 credit modules
Student numbers	Varies, 70-300

Introduction and Context

When I first engaged with a UDL pilot study (Antonakopoulou et al., 2022), I tried to get to grips with the basic concepts by using checklists of UDL fixes one might apply to a set of teaching materials. A common element in these checklists was alt text. I despaired: how could one possibly describe a circuit diagram such as Figure 1 in alt text? The problem seemed intractable. I am not the first to find the task of accessibility on this front daunting, e.g. "…in the STEM subjects (Science, Technology, Engineering and Maths) complex content like formulas, tables and diagrams are nearly impossible to make fully accessible in PDF format" (Sorge et al., 2020).
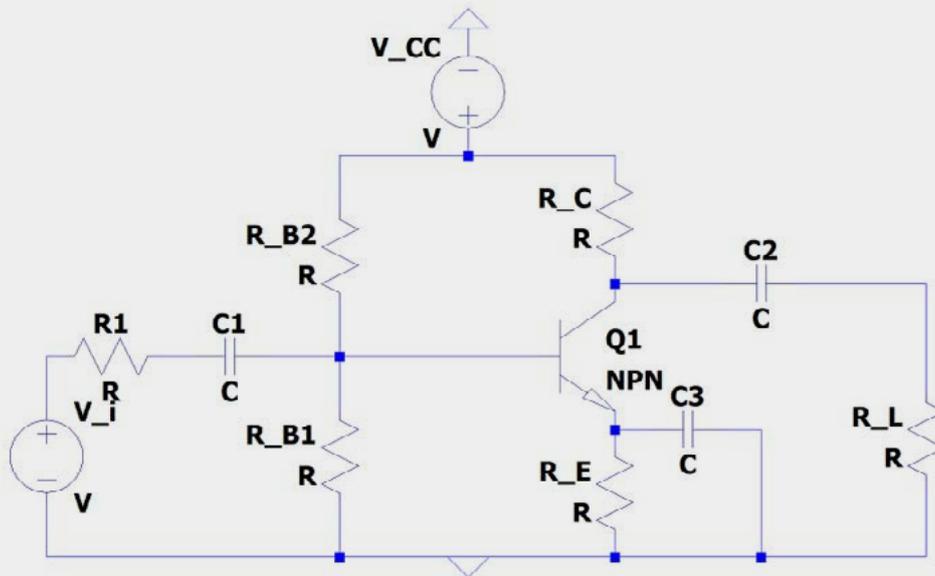
Figure 1: An amplifier circuit from a UCD electronics module. Helpfully, Microsoft Word automatically proposes alt text of "A picture containing sky". The machines aren't ready to take over yet.

And yet, there are a staggering number of people globally with a visual impairment[1]. To simply accept that they are all but excluded from even considering a career in electronic engineering seemed a bitter pill to swallow. The problem is not utterly intractable; it simply requires the right tools to automate it. In discussions with UCD Access & Lifelong Learning, we learned that the number of STEM students with visual impairments can be counted on one hand. Far more choose the humanities. It seems likely that the barriers thrown up by scientific diagrams (indispensable as they are) are discouraging potential students from STEM education pathways. Later, a student interviewing visually impaired people to assess the success of our work in this area reported repeated queries about the motivation for this project. "Do you have a blind relative?" was a common question. That was difficult to hear, with this question suggesting a long experience of people not caring about the problems of those with disabilities unless they have personal experience as a source of empathy. That doesn't sit well with me.

How then do we solve the problem? The state-of-the-art in automatically interpreting natural images has advanced rapidly over the past decade, driven by improvements in machine learning. Nevertheless, I rejected machine learning approaches as overkill. The task of collecting a big and diverse enough image set and hand labelling them to train a neural network would have been too resource intensive. Diagrams, in general, offer some advantages over natural images, in that their structured nature simplifies the problem of extracting meaningful information, but the problems are necessarily more niche and hence understudied (Kembhavi et al., 2016). There are also authors developing techniques for extracting meaningful alt text automatically from formulae and tables (Antonakopoulou et al., 2022; Sorge et al., 2020). An advantage of circuit diagrams is that a compact machine-readable description already exists, called a netlist. The netlist could, therefore, be interpreted by an algorithm that outputs human-readable text that represents the circuit. The details of that text are not trivial to determine:

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1   It is a little difficult to find a suitable figure for this. The World Health Organization claims 2.2 billion people, 1 billion of which are unaddressed or could have been prevented, citing [Vision]. However, these numbers conflate problems such a shortsightedness, cataracts, diabetic retinopathy, and trachoma, some of which are more relevant to this discussion than others.

> **"The quality of alt text is much more critical for university STEM textbooks as image descriptions must be accurate and detailed but not tire out the reader"**
> **—Antonakopoulou et al., 2022**

Some authors have considered that the problem may fundamentally be the limitations of alt text itself and proposed how it might evolve into a more potent tool (McCall & Chagnon, 2022). However, we worked within the limitations of alt text as it exists.

The concrete goals of the project were as follows:

— To develop a tool to convert a netlist to text. With this, an instructor could generate alt text to add to their circuit diagrams with far more ease than previously

— To apply this tool across as many modules as possible. Module coordinators would be recruited to volunteer their notes. The relevant circuit diagrams would be extracted. This corpus would be analysed to determine the requirements of the netlist to text software. Each circuit diagram would be recreated in a circuit simulation tool capable of spitting out the netlist. The completed netlist-to-text software would be used to create alt text for every circuit in the notes, which would be inserted into the notes. The notes would be assessed by means of ALLY score

— Later, we added a goal of designing and constructing a prototype of a tactile circuit representation that would allow a person with visual impairments to work with something tangible.

The project was conducted across the School of Electrical and Electronic Engineering, which graduates more than 100 students per year in programmes in electrical, electronic, or biomedical engineering degrees (the latter jointly with Mechanical and Materials Engineering). I am the Vice Principal for Equality, Diversity and Inclusion in the College of Engineering and Architecture. Consequently, it's a natural fit for me to take a leadership role in an initiative with a focus of this kind. The stakeholders here included the blind and visually impaired community, students, and module coordinators.

The more abstract goal of the project was to make it routine and to include alt text for circuit diagrams. There are already nudges to encourage alt text embedded in the university's virtual learning environment, Brightspace, and in some common software used to prepare teaching materials such as Microsoft PowerPoint. The key to achieving this goal is, therefore, to make it easy to comply with those nudges.

Design and Implementation

While people have been at pains to tell me that UDL goes beyond disability access, the two go hand-in-hand. This project is centred on accessibility of teaching materials.
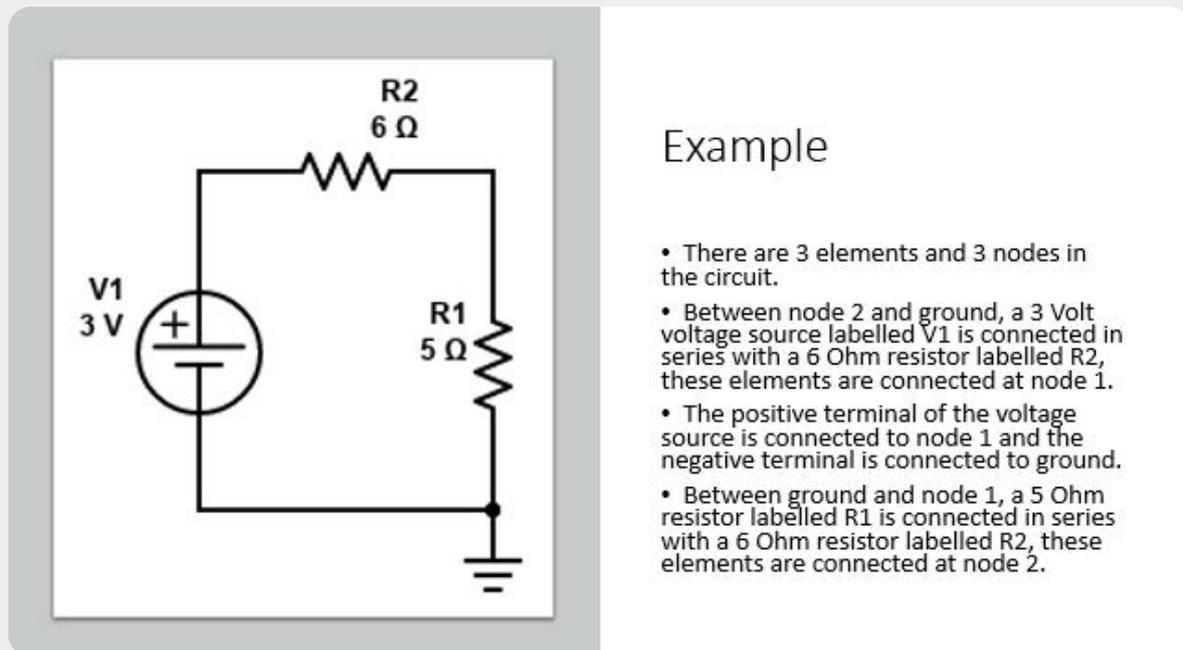
Figure 2: (left) An example of a simple circuit diagram. (right) The corresponding alt text.

We created software to generate the associated alt text. We've refined this software based on input first from sighted students, but then from people with various visual impairments from around the world (Research Ethics Reference Number: LS-E-22-26-Pender-Healy.).

There's a reasonable question here about scalability: what is the most complex circuit for which this is useful? This is fundamentally related to discussions of how we represent the information. Within the boundaries of our curriculum, however, we have succeeded in creating alt text for every single digital or analogue circuit diagram in stage 1-3 modules in our programmes.
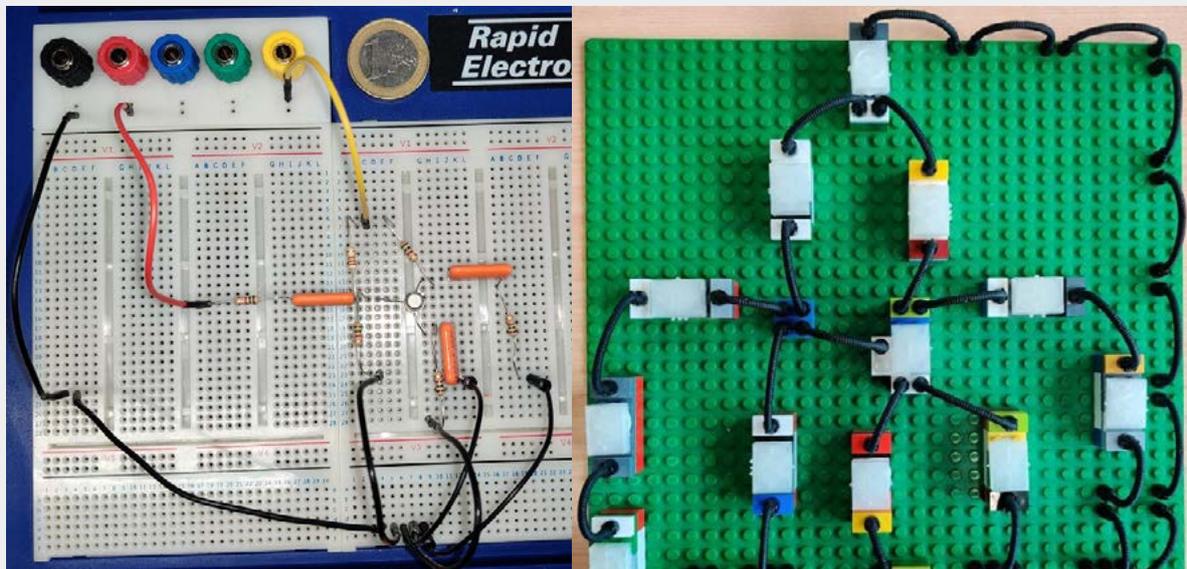
Figure 3: (left) An amplifier circuit constructed in an undergraduate laboratory. (right) Our legoized tactile implementation makes this constructed circuit legible to a student with visual impairment.

Engineers are practical people, and our education philosophy emphasises labs. On the left of Figure 3, we have a simple amplifier circuit: the kind of thing we use to make audio signals louder and faint 4G signals stronger. Our undergraduates build and test these in labs. There's a euro coin there for scale. Figure 1 is the graphical user interface of this circuit in a standard circuit simulation tool. It lacks any accessibility features, but it does save a compact digital representation of the circuit which we process to make the alt text. On the right of Figure 3 is a different approach we took, 3D printing circuit components with tactile features to prototype a kit to allow a person with visual impairment to experience or even construct a circuit themselves. This version isn't a working circuit, but it can bring the intangible circuit to life for students who would otherwise only ever hear of them and could help them to visualise more complex circuits than text alone.

Module coordinators were recruited based on their subject matter: all relevant modules were included in the project. Buy-in was incentivised by means of one-on-one recruitment, and assurances that the workload for the already stretched module coordinators would be modest. The visibility of the Ally tool made the story of UDL, its impact and relevance an easy one to tell. Every module coordinator has seen this score on their modules and, having clicked through, learned something of the deficiencies of their teaching materials from an academic perspective. The scale of the problems identified by Ally is daunting for most, so a project like this that promised to improve Ally scores for them was pushing on an open door.

Results and Impact

We created and tested (and iterated) custom netlist-to-description software. We designed, 3D-printed, and legoized standard symbolic representations of circuit elements to create prototype tactile circuit representations. We conducted focus groups with people with visual impairments to test and iterate the software and hardware designs. We are currently working with the university's technology transfer office to explore the commercial potential of this software and of the tactile circuit representations. We added alt text to every circuit diagram students of electronic engineering will meet in stages 1-3 of the undergraduate programme.

It was important to involve a broad team of academics to spread awareness that alt text for circuit diagrams could be a tractable problem. In addition to myself, Prof Simon Kelly (School Head of EDI), Prof Peter Kennedy (outgoing Head of School), Prof Anding Zhu (School Head of Research, Impact and Innovation), and Dr Teerachot Siriburanon. This strong buy-in from the School's leadership was just a coincidental benefit; these academics were chosen primarily for the content of their modules: they teach circuits.

Additionally, students and research staff included Emma Pender, Katie Noonan, Ren Zeyu, Zhang Xinyan, and Zhao Yuxin.

Across the six modules included in the project there were 1,230 circuit diagrams. Alt text was created for each of these, and notes with alt text returned to the module coordinators.

Module Code	Module Title	Co-ordinator	Stage	Number of Images
EEEN 10010	**Electronic and Electrical Engineering I**	Simon Kelly	1	81
EEEN 1002J	**Introduction to Electronic Systems**	John Healy	1	43
EEEN 20020	**Electrical and Electronic Circuits**	Peter Kennedy	2	376
EEEN 20040	**Electronic Circuits**	Teeachot Siriburanon	2	458
EEEN 20050	**Digital Electronics**	Anding Zhu	2	116
EEEN 30020	**Circuit Theory**	Teeachot Siriburanon	3	156

Table 1: Participating modules contained over 1200 images.

I was awarded the UDL Digital Badge in December 2021, based on elements of this project. Specifically, I developed some teaching materials which use image-free procedure for circuit analysis.

By way of example, we consider the effect of the changes we made by adding this alt-text to the lecture notes in EEEN1002J, as shown in Figure 4. We see that the individual slide decks turn green in Ally, meaning that the accessibility score has exceeded 65%; issues remain, but clearly alt text is considered an important aspect of accessibility by the Ally developers. While the effect on the overall module accessibility score is diluted by the many unchanged files, the module score also increased from a medium to a high accessibility score.
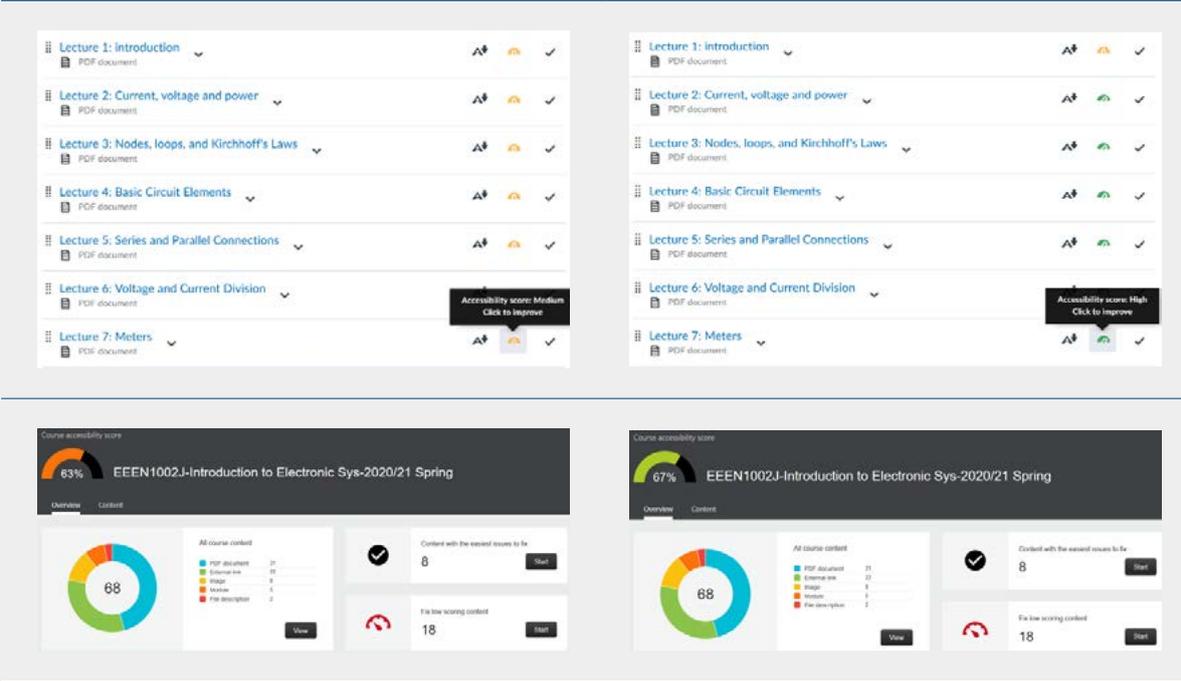
Figure 4: Ally scores for individual files and module summary for one example of the modules involved in the project. (Left) Before the project. (Right) After the addition of alt text to all slides.

We aimed to make the changes painless for the module coordinators, to enhance buy-in. Most of the changes were performed by project staff, leaving just uploading and recording of Ally scores to the coordinators. Even so, some coordinators reported more difficulty than others. For example, some pdf conversion approaches seemed to delete accessibility features. Raising awareness of that fact alone is a worthwhile step.

The project was not self-selecting; rather, every module coordinator of a circuits-heavy module in our undergraduate course participated. Each of these individuals discussed the motivation of the project and considered the effects of the changes from a student perspective. Each of them now possesses a set of notes with enhanced accessibility. These changes are low-maintenance, and it may be hoped that accessibility is on the agenda of these module coordinators.

I believe that this project has been broadly successful, a success driven by appropriate resourcing of the work. The energy and focus of the masters student and the research engineer have taken the project far further than I or my busy colleagues could do with the best will in the world. We started with concrete goals, achieved them, and then took further steps.

Further information about this project may be found in the following locations:

— Our conference paper, presented at the Irish Systems and Signals Conference 2022(Pender & Healy, 2022)
— The ME project thesis (Pender, 2022)
— Our Software Disclosure Form
— Our Invention Disclosure Form.

References

Antonakopoulou, T., Riga, P., & Kouroupetroglou, G. (2022). Developing a Corpus of Hierarchically Classified STEM Images for Accessibility Purposes. In International Conference on Computers Helping People with Special Needs (pp. 56-62). Springer, Cham.

Healy, J. J. (2021). Diversifying assessment: project based learning in a module, in *Inclusive Teaching & Learning Case Studies in Engineering, Architecture & Affiliated Disciplines* (2021), L. Padden, C. Buggy, and E. Shotten (eds.), UCD: Access and Lifelong Learning.

Kembhavi, A., Salvato, M., Kolve, E., Seo, M., Hajishirzi, H., & Farhadi, A. (2016, October). A diagram is worth a dozen images. In European conference on computer vision (pp. 235-251). Springer, Cham.

McCall, K., & Chagnon, B. (2022). Rethinking Alt text to improve its effectiveness. In International Conference on Computers Helping People with Special Needs (pp. 26-33). Springer, Cham.

Pender, E. C. (2022). "Accessible Circuit Diagrams," ME thesis, University College Dublin.

Pender, E.C. and J.J. Healy (2022). "Accessible Circuit Diagrams," *2022 33rd Irish Signals and Systems Conference (ISSC)*, 2022, pp. 1-6, Available at: 10.1109/ISSC55427.2022.9826152.

Sorge, V., Bansal, A., Jadhav, N. M., Garg, H., Verma, A., & Balakrishnan, M. (2020, April). Towards generating web-accessible STEM documents from PDF. In Proceedings of the 17th International Web for All Conference (pp. 1-5).

Vision Loss Expert Group of the Global Burden of Disease Study. Causes of blindness and vision impairment in 2020 and trends over 30 years: evaluating the prevalence of avoidable blindness in relation to "VISION 2020: the Right to Sight". Lancet Global Health 2020. Available at: doi.org/10.1016/S2214-109X(20)30489-7#

Leading Change: Promoting, Supporting and Accelerating the Adoption of Inclusive Teaching Principles in the School of Civil Engineering

Dr Jennifer Keenahan

Author	**Dr Jennifer Keenahan**
Abstract	This project was a school-level initiative to promote, enhance, support, and accelerate the adoption of inclusive teaching principles in the School of Civil Engineering (2021-2022). It focused on enrollments to the National Forum Digital Badge in UDL and uptake in the use of 'Ally' software for accessible learning content. A variety of activities sought to raise the profile of inclusive teaching and to entice faculty to engage in the change process. Results show a much greater engagement with inclusive teaching practices and indicate that the project has had a transformative impact.
Module/Course/ Programme/School	School of Civil Engineering
Discipline	Engineering
Level and Credits	NA
Student numbers	School: 800+ College: 2,500+
Type of Case Study	Implementation and Leadership of UDL across a stage, programme, discipline, School or College.

Introduction and Context

Educational policy is driving widening participation, with greater proportions of students having a disability or specific educational need, coming from socio-economic groups classed as 'unskilled', joining as mature students, or coming from ethnic groups other than 'Irish' (Fleming, Padden & Kelly, 2022). As a result, it is imperative that teaching and learning practices develop in line with this modern-day student population. Universal Design for Learning (UDL) offers a teaching and learning framework for embracing diversity in classrooms. My project was a school-level initiative to promote, enhance, support, and accelerate the adoption of UDL and inclusive teaching principles in the School of Civil Engineering (2021-2022). To support this, I had two goals in mind (Figure 1):

1. Encourage high uptake in the number of staff in the school enrolling on and being awarded the National Forum Digital Badge in UDL

2. Promote a high uptake in the use of 'Ally' software in the school and support staff in improving their Ally scores.

These goals are closely aligned with the goals of inclusive teaching practices, the goals of the University for All initiative at UCD, and the educational policy of driving widening participation. Students will directly benefit from having more accessible learning content available to them, and from their educators having received formal training in UDL. Teaching faculty could benefit through the necessity of fewer Reasonable Accommodations for students with additional needs. Furthermore, these goals are Specific, Measurable, Achievable, Realistic, and Time-bound (SMART).

This initiative will affect an average of 730 undergraduate students and 90 graduate students per year who are registered to Civil Engineering programmes. It also has the potential to affect over 1,650 undergraduate students and 770 graduate students across the College of Engineering and Architecture, where our modules are available as options or electives on other programmes.

The change process of this project is depicted in Figure 1. Before the start of this project, a total of two (13%) teaching faculty in the School of Civil Engineering and a total of 12 (6%) teaching faculty in the College of Engineering and Architecture had completed the Digital Badge in UDL. Our average 'Ally Score' for the school was 55.7. Ally is a software that integrates into the virtual learning environment (VLE) and focuses on making digital course content more accessible. Ally's accessibility checklist is based on WCAG 2.1 AA (Web Content Accessibility Guidelines). This is an international accessibility standard. It automatically provides a range of alternative accessibility formats for files uploaded to the VLE. This gives students the flexibility to use a format that suits their needs.

Figure 1: Inclusive Teaching Change Process

Raising the profile of Inclusive Teaching

At the beginning of the project, I thought it best to start by raising the profile of inclusive teaching in the school and college. In collaboration with the other Faculty Partners in the college, we organised a lunchtime outdoor 'welcome back to campus after the pandemic' event in September 2021 (Figure 2). Our idea was to bring people together, having been apart for so long, to introduce ourselves as Faculty Partners (Figure 3), to briefly talk about the Digital Badge in UDL. In preparation, we implemented a booking system, collected RSVPs, ordered catering, and produced a 1-page flyer to share with colleagues at the event (Figure 4).

Figure 2: 'Welcome Back to Campus after the pandemic' event

Figure 3: College of Engineering and Architecture Faculty Partners at 'Welcome Back' event in UCD in September 2021 (Right: Dr Jennifer Keenahan, middle: Dr Vikram Pakrashi, left: Dr John Healy).

Figure 4: One-page flyer on Faculty Partners, Inclusive Teaching and Digital Badge in UDL distributed to colleagues at 'welcome back' event.

To further raise the profile of inclusive teaching practices, I leveraged my role as Head of Teaching and Learning for the School of Civil Engineering to:

— Add 'inclusive teaching' as a standing item to the College of Engineering and Architecture Teaching and Learning Committee meetings, of which I am a member. I used this as an opportunity to highlight the progress made in the School of Civil Engineering on inclusive teaching practices, to promote the College Inclusive Teaching Pilot Project, the showcase and the publication, and other inclusive teaching activities from across the university

— To promote the rollout of the Digital Badge in UDL, and to promote uptake in the use of Ally at School Meetings under the agenda item 'Teaching and Learning'. Throughout the year, I shared an update on the school average Ally score with colleagues to raise the profile of Ally and encourage staff to further improve their scores.

I also raised the profile of inclusive teaching at a school level by:

— Inviting colleagues from UCD Access and Lifelong Learning (Julie Tonge and Lisa Padden) to host a disability awareness and accessibility workshop for colleagues in the school. This covered the distinction between the term 'disability' and those with special educational needs, recent statistics in terms of students with additional needs, as well as a comprehensive demonstration of the Ally tool, from a staff perspective and a student perspective

— Enrolling and participating in the 'Ally Early Adopter' Group in June 2021. This gave me the opportunity to learn how Ally works, improve the scores in my own modules as much as possible, gave me access to resources that I could share with colleagues, and put me in the best position possible to lead colleagues through a similar change process with their modules

— Organising a "Teaching and Learning" showcase in the School of Civil Engineering. I invited seven colleagues to share five-minute presentations each on aspects of their teaching that were inclusive in January 2022 to highlight the good work already being done, and to further encourage and inspire others to get involved. Recording available to view (see list of resources)

— Sitting on the "Widening Participation" in Engineering: Marketing, Recruitment and Programme-level Supports Working Group.

Design and Implementation

At the outset, it was important to identify the key stakeholders involved/ affected by my initiative:

— The students: who stand to benefit from having more accessible learning content (through the use of Ally), as well as learning from teaching faculty who have had formal training in UDL

— The teaching faculty: their commitment to using Ally, and undertaking the Digital Badge in UDL is central to the success of this initiative

— School and College Leadership (Head of School and College Principal): their promotion of the Digital Badge in UDL and use of Ally to staff would greatly support my initiative, and as leaders, they stand to benefit from teaching faculty better informed on UDL.

— The University's Widening Participation Committee and University for All initiative: this project implements their goals.

Effective communication was also identified as key to the success of this initiative. Given the fatigue and low engagement that sometimes surrounds 'mass emails', I decided to focus on other modes of communication:

— I engaged in individual one-to-one conversations with colleagues to tell them about the Digital Badge in UDL, and encourage them to enrol, as well as to tell them about Ally and encourage them to improve their scores. These individual conversations enabled me to highlight unique benefits specific to the individual, based on their values and what I knew might motivate them. For example, in a case where a faculty member had colour blindness – highlighting the feature of Ally that raised issues of colour contrast in learning materials was a key selling point for them

— I engaged in small-group conversations in informal settings (such as in the staff common room). This was particularly effective where someone who had previously taken the Digital Badge in UDL was present as sharing their positive experience had a powerful impact on encouraging uptake from other colleagues

— I regularly referred to the UDL motto of 'change one-small-thing'.

To specifically target and influence colleagues to enrol on the Digital Badge in UDL, I:

— Engaged with the school administrator to prepare a list of all faculty, post-docs, post-grads, occasional lecturers and hourly-paid tutors affiliated with the school

— Identified colleagues who might be 'easy targets' where they had participated on College Inclusive Teaching pilot or were currently enrolled on a Teaching and Learning module and thus would have an interest in pedagogy

— Highlighted that there was a National Rollout of the Digital Badge in the Autumn of 2021, through the National Forum, but that I would also be facilitating a local rollout of the Badge in the Spring of 2022 – giving choice to colleagues.

In facilitating the local rollout of the Digital Badge in UDL (Figure 5), I teamed up with a colleague in the School of Architecture, Planning and Environmental Policy (Alice Clancy) to co-facilitate to our respective schools. We deliberately opened the rollout just to our schools as there are synergies and cross-collaborations present that we wanted to focus on and support. There was also a geographical consideration in that the two schools are next to each other on the Clonskeagh-side of campus, whereas the rest of the College of Engineering and Architecture are located on the other side of campus. Our rollout of the Digital Badge was widely marketed, as described earlier, as well as being publicized on the UCD University for All Resource Hub (UCD, 2022). We invited participants to vote for their preferred method of peer-engagement (peer-triads or workshop), and, as a result, the workshop method was chosen. We used a Google-space (an informal chat platform) for all communications, rather than email, and this worked really well.

Figure 5: Facilitating the workshop as part of the Digital Badge in UDL

Results and Impact

The evidence of individual and organisational change is apparent in the number of people who have now completed the Digital Badge in UDL and the improvements in Ally Scores (Figure 6). Before the start of this project (Sept 2021), a total of two (out of 16) full-time teaching faculty in the School of Civil Engineering and total of 12 (out of 197) in the College of Engineering and Architecture had completed the Digital Badge in UDL. At the end of this initiative (May 2022), a further 10 full-time teaching faculty in the School of Civil Engineering had been awarded the badge, representing 75% of full-time teaching faculty in the school. This is in the context of a college increase from 8% to 15%.

School of Civil Engineering
College of Engineering and Architecture
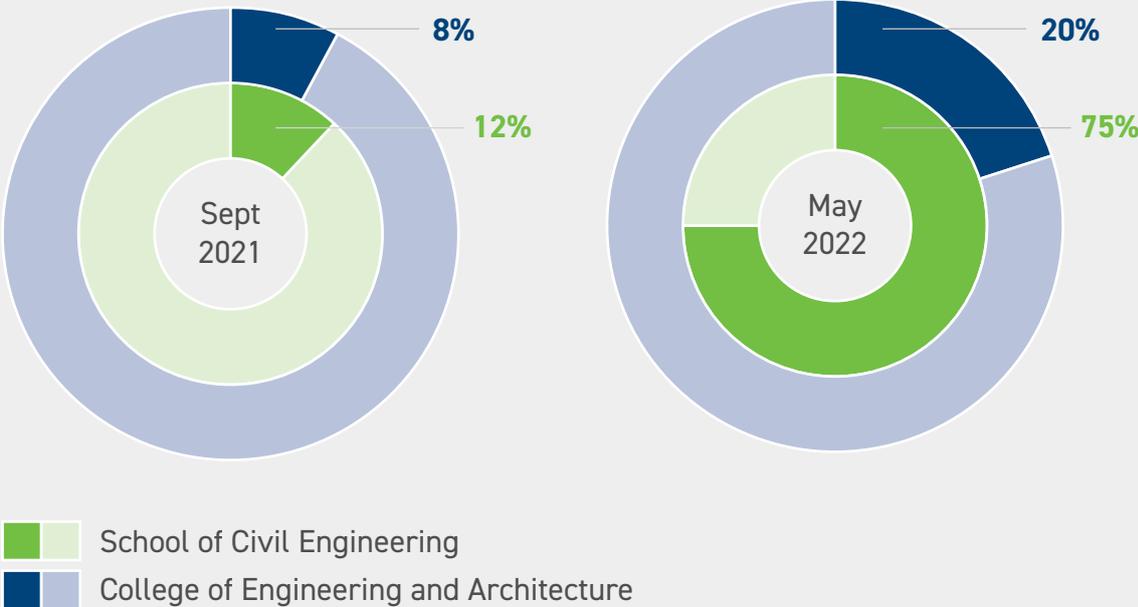
Figure 6: Number of Full-time teaching colleagues in the School of Civil Engineering and College of Engineering and Architecture who had completed the Digital Badge before the start of this initiative (left) and number who had completed by the end of the initiative (right), in context of the total number of full-time teaching faculty in the school/college.

School	Completed prior 2020	Completed Autumn 2021	Completed Spring 2022	Total	# Faculty	%
Architecture, Planning and Environmental Policy	4	1	5	10	93	11%
Chemical and Bioprocess Engineering	0	1	0	1	17	6%
Biosystems and Food Engineering	1	0	0	1	15	7%
Civil Engineering	2	4	6	12	16	75%
Electrical and Electronic Engineering	1	1	0	2	25	8%
Mechanical and Materials Engineering	4	0	0	4	31	13%
College Total	**12**	**7**	**11**	**30**	**197**	**15%**

Table 1: Number of full-time teaching faculty who have complete the Digital Badge in UDL

Between the 1 September 2021 and the 1 May 2022, there was significant engagement by staff in the School of Civil Engineering, with feedback from Ally (Figure 7). On 324 occasions, a staff member launched the course accessibility report. On 649 occasions, a staff member launched the instructor feedback, and this led to over 304 'fixes' in content items. It is important to note, here, that Ally only counts the 'fixes' uploaded through the Ally interface in Brightspace (UCD's VLE). As such, it does not count where someone has made their fixes offline and uploads directly to Brightspace, and so the following statistics likely represent an undercount.
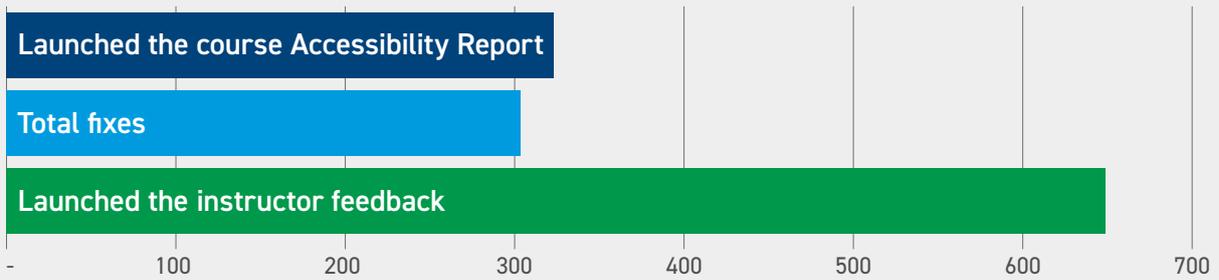
Figure 7: Staff engagement with Ally Feedback

Before the start of this project (snapshot from 24 August 2021), the school average 'Ally Score' for content in modules relating to the calendar year Sept 2020-Aug 2021 was 55.7%, which took into account 5,504 items of content across 79 modules (Figure 8). On the 1 May 2022, the school average 'Ally score' for content in modules relating to the calendar year Sept 2021 - Aug 2022 was 65.2% (an increase of 9.5 percentage points), which took into account 6,142 items of content across 71 modules.
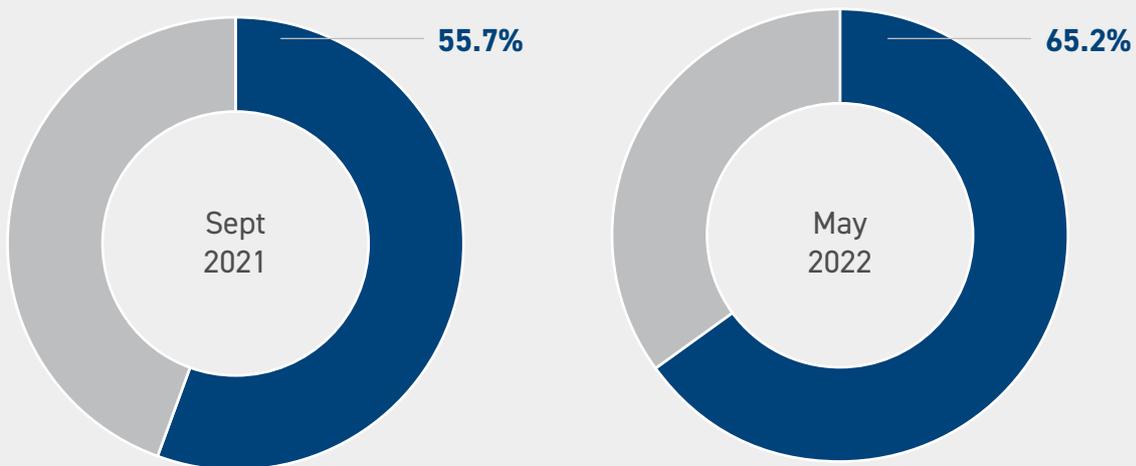
Figure 8: School average 'Ally' accessibility score on (a) 24 Aug 2021 and (b) 1 May 2022 for the school of civil engineering
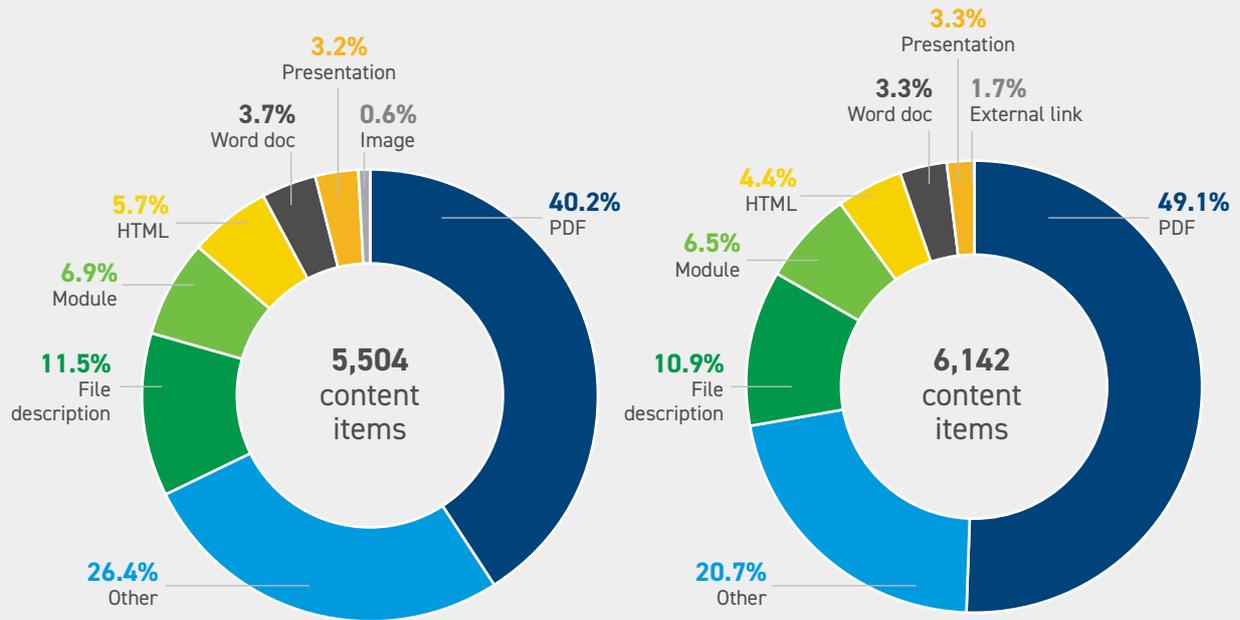
Figure 9: Number and breakdown of content items and types in school of civil engineering on (a) 24 Aug 2021 and (b) 1 May 2022

For context, on the 1 May 2022, the University average 'Ally score' for content in modules relating to the calendar year Sept 2021-Aug 2022 was 55.8%, which took into account 278,634 items of content across 5,105 modules (Figure 10). Comparing Figures 9 and 10 demonstrates that the school of civil engineering currently compares well with the university average for 'Ally Scores'.
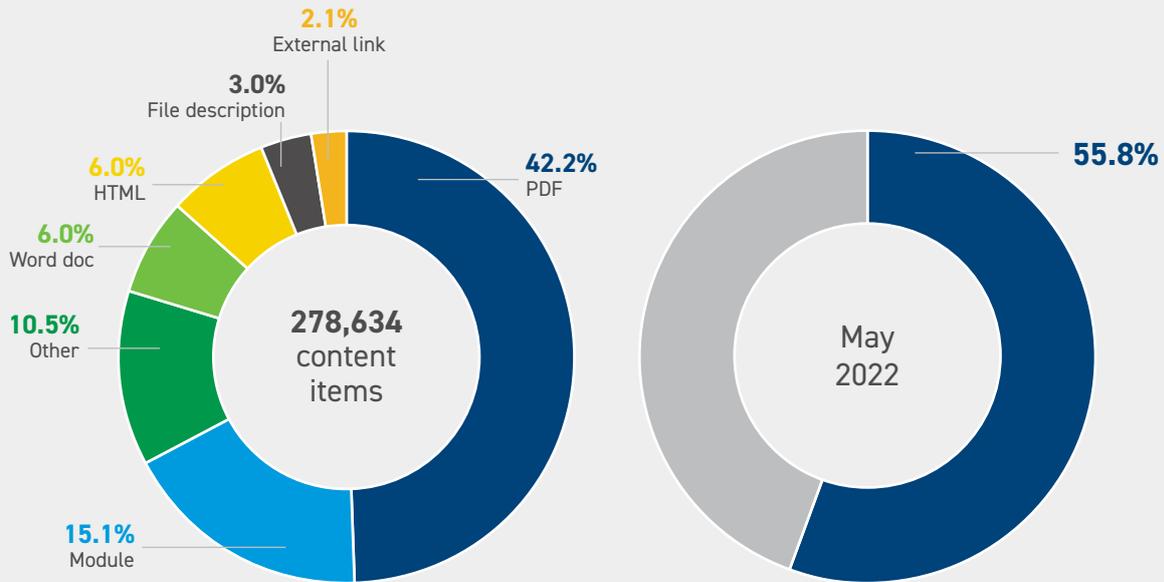
Figure 10: Number and breakdown of content items and types in school of civil engineering on (a) 24 Aug 2021 and (b) 1 May 2022

Data was collected locally in the school of civil engineering to capture progress in ally scores on a module-by-module basis. The improvements in these scores are anonymously represented in Figure 11. Each individual row represents a module in the school. The x-axis ranges from 0 to 100, with each dot representing one percentage point. In each row, the leftmost dot represents the starting ally score for a module, and the rightmost dot represents the new ally scores after 'fixes' had been made. Where there is only one dot in a row, no changes have been made to date. The red, amber and green colour scheme was chosen to map to the 'ally scores' colour scheme: low (0-36% = red), medium (34-66% = amber), high (67-99% = green), and perfect (100%).

Figure 11: Illustration of progress at an individual module level of Ally Scores for the school of civil engineering

It is particularly interesting to note the student usage of Ally and alternative formats during this time, as evidence of the impact of the intervention. Between the 1 September 2021 and the 1 May 2022, on 783 occasions, a student launched the alternative formats window, which resulted in 371 downloads of content in accessible formats, as per Table 2.

Alternative Format Type	Number of downloads
BeeLine	3
Braille	1
ePub	18
HTML	245
OCRed PDF	7
Tagged PDF	89
Translated Version	0
Audio	8
Total	**371**

Table 2: Number of downloads by format type

Recommendations and Advice

During this initiative, there were a number of challenges encountered, unintended benefits discovered, and lessons learned that may benefit others seeking to replicate this project:

— Given workloads, and the time available to faculty is limited and precious, recruitment to the Digital Badge, and buy-in to the adoption of Ally was a challenge

— Furthermore, there were some challenges in overcoming resistance to change and convincing faculty of the benefits of change

— The Covid-19 pandemic probably limited the number of in-person encounters that were possible in terms of information sessions and recruitment drives, and individual one-to-one 'door-stops'

— I believe a key-enabler for my initiative was that the fact that the Digital Badge in UDL has been specifically designed as a self-paced course that can be delivered fully online. It facilitated greater uptake than might have been possible with an alternative design and was key to the success of this project

— Another key-enabler were the resources that had been created and shared with me for the Ally Tool as part of the Ally Early Adopter group. This supported me upskilling myself and then being able to act as a mentor to other colleagues looking to improve their scores

— At the end of the project, it became apparent to me that the greatest success was in the individual one-to-one conversations with colleagues. If I were doing this again, I would have started those earlier and aimed to have them more frequently

— Another key-enabler of my initiative was the fact that there was a whole team of Faculty Partners across the University implementing similar change processes, and that I wasn't alone in my efforts. The regular support in the google-space community was particularly good.

References

UCD IT Services, (2022). Ally. Available at: https://www.ucd.ie/itservices/ourservices/educationaltechnologies/virtuallearning-brightspace/brightspaceinstructors/content/ally/

Keenahan, J. (2022). Blended Learning Showcase – Civil Engineering, UCD. Engineering. Available at: https://www.youtube.com/watch?v=BWYutxCugss&t=244s&ab_channel=JenniferKeenahan

McCrum, D. & Keenahan, J. (2021). Recognising stereotypes and the shared habitus of Engineers and Architects: Developing interdisciplinary teamwork and communication skills for first year students in an inclusive environment, in Padden, Lisa, Buggy, Conor and Shotton, Elizabeth (Eds) Inclusive Teaching & Learning Case Studies in Engineering, Architecture & Affiliated Disciplines. Dublin: UCD Access and Lifelong Learning. Available at: https://www.ucd.ie/universityforall/resourcehub/inclusiveteachingcasestudies/

Keenahan, J. (2019). 'Outside their Comfort Zone': Diverse and Engaging Approaches for Students Learning through a Different Discipline, in Padden, Lisa, Tonge, Julie, Moylan, Therese and O'Neill, Geraldine (Eds) Inclusive Assessment and Feedback: Universal Design Case Studies from IADT and UCD. Dublin: UCD Access and Lifelong Learning. Available at: https://researchrepository.ucd.ie/handle/10197/10818

Case Study Title:

Low Fidelity Models for High Fidelity Mechanics

Associate Professor Vikram Pakrashi

Author	**Associate Professor Vikram Pakrashi**

Abstract	While there have been many advancements in the digital space, there is a need for developing physical models that bridge the gap between digital space and physical phenomena. The teaching of mechanics covers a wide range of schools connecting engineering, science and mathematics and this fundamental topic requires a hands-on understanding of several concepts and phenomena. This project set out to address this for various mechanics examples by linking digital simulations with physical design and demonstrations and including sensors, data and case studies to the process. Examples chosen were often linked to United Nations Sustainable Development Goals challenges. Adaptation and implementation of UDL played a key role in the process.

Module/Course/ Programme/School	School of Mechanical and Materials Engineering UCD Centre for Mechanics Dynamical Systems and Risk Laboratory MEEN20030, MEEN41040, MEEN30120

Discipline	Mechanics

Level and Credits	Impact on: MEEN20030 (5 credits), MEEN41040 (5 credits), MEEN30120 (15 credits)

Student numbers	MEEN20030 ~180-200, MEEN41040 ~10-20, MEEN30120 ~1-3 (directly with me)

Introduction and Context

I am a champion of evolving and forward-thinking pedagogic methods which establish and consider diverse approaches in teaching, learning, expression and assessment to be fundamental in removing barriers in education. I had already received a UDL badge in this regard and was one of the early adapters to the process in UCD. It was thus a natural choice for me to support this approach further and enrich my own teaching and learning experience. I wanted to link the physical and digital spaces through phenomena of mechanics. The expectation was to better contextualise and assimilate students' ownership of learning.

This UDL initiative was created to impact on specific courses and also to appeal to a wider audience beyond these specific courses and programmes. Some of the concepts developed were implemented in an Advanced Vibrations module, which had a small but niche cohort of around 10 students. However, it also allowed for direct implementation of ideas and experimentation with pedagogical techniques. It became obvious through this process that students in a module can also be co-creators of T&L tools for future use and even for that year. This subsequently led to the decision of running final year projects each year led by myself and Asst. Prof. Kevin Nolan in the School of Mechanical and Materials Engineering (MME) which continued to contribute to pedagogic tools and designs for experiments and their development. There was a clear enthusiasm around it and the contributors often published and received awards. This has now become an expected topic in MME establishing a culture of co-creation. These efforts subsequently led to changes and impact in an Applied Dynamics module which typically has a large cohort (170-200 students) for T&L.

Design and Implementation

The overarching goal of this project stemmed from the need to closely involve students in co-creation of T&L tools in teaching of Mechanics. In terms of **Representation**, the idea was to create several hands-on tools and examples to move away from a numerically heavy format with prescribed experiments. This co-creation allowed for an evolution of the examples and topics over time, representing the dynamism of the topic. In Action and Expression, it allowed for students to interact with the material through assimilation of creativity, design, development and implementation. In **Engagement**, the project allowed the teachers and students to be motivated via ownership of knowledge through creating new ideas and implementing them as T&L tools, and subsequent discussion, feedback and self-reflection. This allowed for deviation from examination based courses for small modules like Advanced Vibration, where full continuous assessment, peer feedback and creation of new experiments provided evidence of how the course works.

On the other hand, this learning could be integrated to a more formal setting of Applied Dynamics in presenting new ideas and examples reflective of this change over time. Such an approach allows for a course to be evolving over time and leads to further changes in a more engaged direction. For example, the Applied Dynamics course is now going through another evolution where I am introducing a range of table-top experiments from next year to demonstrate fundamental kinematics and kinetics concepts. This project was thus chosen to demonstrate this deviation from a traditional numerical setting and closed questions to a more hands-on, co-created, idea-driven engagement allowing multiple means of (re)presentation. While the course focuses on Mechanics, it is applicable for adaptation to any other course where there is a need to move to hands-on, open-ended aspects. This is particularly helpful for classical subjects where the fundamentals do not change but their interpretation, application and relevance is continuously changing based on the needs of the times.

My approach was as follows:

a. Design of physical models with student involvement

b. Assessment of physical phenomena with low-fidelity open-source modelling

c. Building of physical models and testing physical phenomena

d. Implementation of aspects of these approaches in different courses

e. Assimilation with contemporary challenges like UN Sustainable Development Goals

f. Dissemination within and without UCD through various events and activities

g. Promoting UDL in general in UCD (e.g. 2 events in Engineering & Architecture, presenting the collective experience of the E&A group in College, demonstration of developed models)

h. Personal training to extend the ability of UDL in UCD

A number of models were co-created with students, designed, refined, tested and orders have been placed for the final models. These physical examples can now not only be used for the initial courses that they were designed for, but also for other courses. These examples also create an interest and culture around further development of these topics. One of the examples (Figure 1) created is currently in the UCD Engineering Coffee Room attracting a lot of interest from the faculty members. There is not just a genuine curiosity around the mechanics of this seemingly 'floating' structure, but also how similarly interesting ideas can be integrated into other courses. On a finer note, as an integration with liberal arts - the colour combination of the exhibit was picked up by many. **Can you guess which artist it was inspired by?**

Figure 1. A tensegrity physical model demonstrated at University for All Symposium May 2022

Eventually, I expect to create a 'zoo' of these ideas and not just demonstrate it in class but as exhibits in UCD for everyone to be inspired by and be curious about these ideas. We are adding QR codes to the exhibits and consequently anyone, at any point of time will be able to know more about such concepts - making the UCD a dynamic space for learning. This also allows for developing interest outside the boundaries of the classroom and prescribed syllabi.

An example of the co-creation of design is the consideration of the Brachistochrone Problem (Figure 2). This was a direct result of undergraduate activity and demonstrates the amazing possibilities in teaching and learning when multiple means of expressions are encouraged. This demonstration is being built and the observers will find it exciting to see that there exists a unique curve (cycloid) along which a ball will roll down the fastest. These ideas are counter-intuitive and make a person reflect and rethink their approaches. This is one of the core ways in UDL to take ownership of knowledge and assimilate it. This approach is also fundamental to the **Logic of Scientific Thinking.**
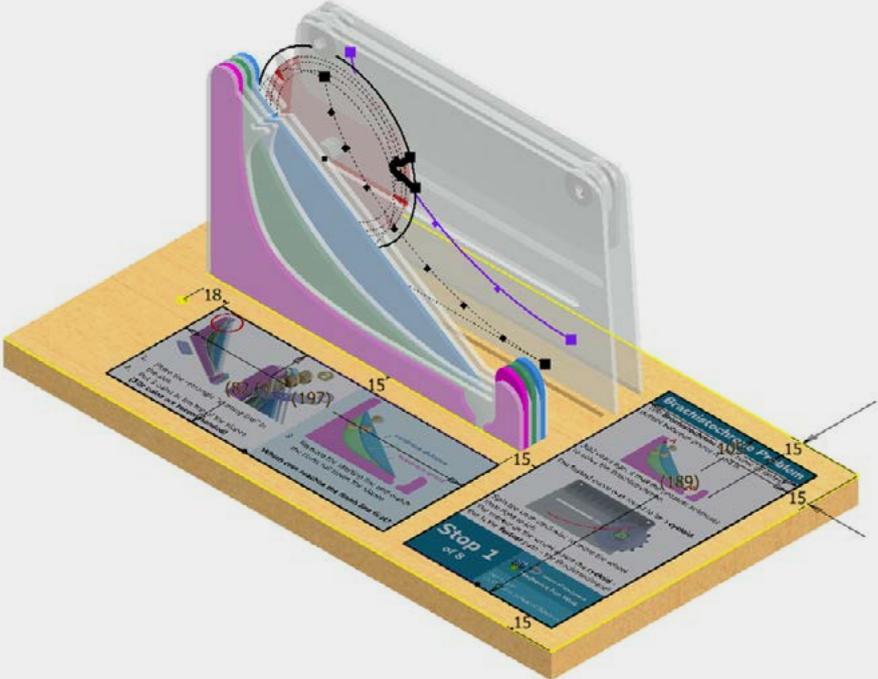
Figure 2. Design of the Brachistochrone problem with Aidan Lee (undergraduate student) and Kevin Nolan (Asst. Prof. MME).

A third example pertains to the co-creation of new results through methods of multiple expressions. Figure 3 demonstrates the trajectory of the double pendulum when left to oscillate freely. This was used to teach advanced vibrations and Lagrangian Approaches. After deriving the equations from this approach, the students had the possibility to a) simulate it numerically (traditional approach, but extremely difficult in this case) or b) make an actual model and test it to demonstrate how it will behave (alternative means to resolve it but not prescribed, and easier than numerics) or c) come up with their own approach through discussion with the module coordinator (allowing for open ended possibilities). The students came up with amazing models and to validate it, they suggested the use of long exposure photos in darkness with an LED light connected to the end of each pendulum. An example of the final result obtained from such trajectories is presented in Figure 3. It not only validated very complex concepts, but also provided the student with a complete understanding, interpretation and repeatability of such concepts, which is very difficult to impart otherwise. The result also created new tools for them to learn and for the next years. It can also be used in other courses.
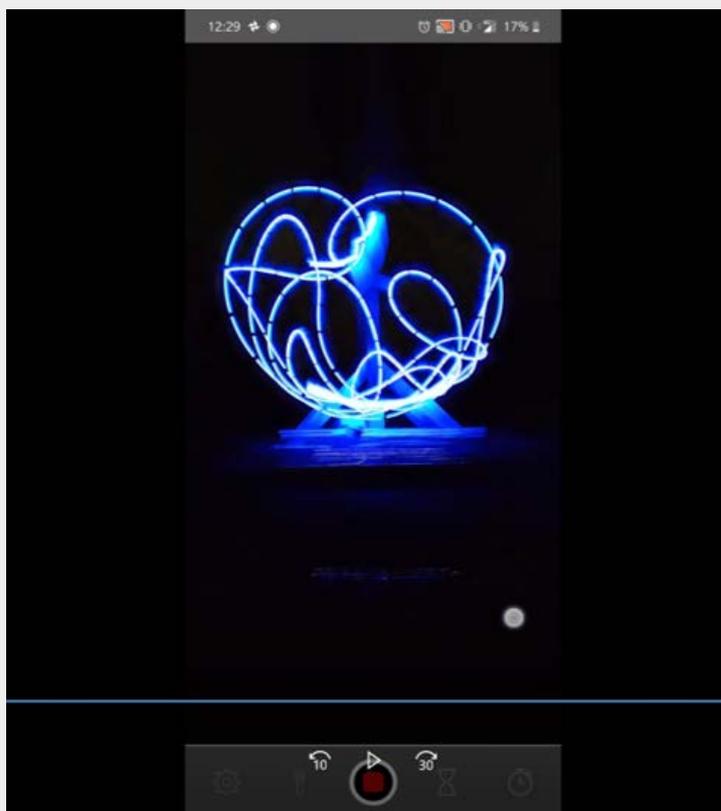
Figure 3. Demonstration of a double-pendulum trajectory

I subsequently trained for a badge in Community Enhanced Learning during this time. Engineers Ireland new accreditation criteria values such aspects in learning and it provides for better engagement and means of expression, linked to UDL closely. I can assist others to include these in other curricula as well.

To disseminate the ideas developed and implemented and explore further possibilities, I organised and participated in two workshops in Dublin and Poland, respectively on advanced teaching and learning of Mechanics, focusing on multiple means of expression and representation. Introducing advanced aspects, especially nonlinearity, came out as a core advantage from such discussions. These workshops were supported also by the Polish Government's EH Dialog programme on outreach and collaboration. A meeting on communicating such nonlinear concepts and ideas was also held through a collaborative visit to the Indian Institute of Technology Madras- applied Mechanics department. Combined, these contribute to the Research Culture in UCD.

Dissemination of one of these developed concepts (rotating billiards board) was carried out in a leading conference: European Nonlinear oscillations conference (ENOC), Lyon 2022, with international collaboration with France and India. To develop such ideas further and engage the internationally leading research community in this direction, an application was also sent to Euromech to host a workshop on such nonlinear dynamics phenomena, in collaboration with Asst. Prof. Aasifa Rounak in MME. These disseminations show how the ideas developed can also impact research, international collaborations and active interest and engagement with a wider range of staff.

For dissemination in UCD, I presented the ideas highlighted here with Alice Clancy (School of Architecture) on behalf of the Engineering and Architecture group with others in the University for All Symposium (Figure 4). The ideas and the models received significant attention and there were several comments on how similar ideas could be adapted to other schools. It became apparent that it was not just the disciplinary objective of these examples, but rather the approach of it - especially the UDL perspectives indicated, that resonated with most. I also participated in a faculty partners event where UDL approaches were presented and explained, with leaflets distributed and one-to-one interaction happening around the implementation and adaptation of UDL concepts with the faculty partners and other faculty members.

I subsequently attended other events, including the University for All roadshow, with Asst. Prof. John Healy and Daniel Elliott in engaging students around this concept. The approach of UDL and its adaptation to UN Sustainable Development Goals was discussed via a practice exchange with Penn State online, and a similar exchange was with the University of Sheffield.

Figure 4: Vikram Pakrashi presenting at the University for All Symposium

I continue to co-create such T&L materials even now. For example, this year I am trying, with Asst. Prof. Kevin Nolan to create better understanding of acoustics by analysing whistling water jars. These artefacts have a long history, especially in the context of Latin American culture and thus help curate the STEM+Arts=Steam activities.

As Ireland's representative to the International Union of Theoretical and Applied Mechanics (IUTAM) I can continue to engage with the idea in future. I delivered a keynote on pedagogy in their last conference (happens every 4 years) and will continue to focus on the T&L agenda around the topic. I also intend to engage with UDL in T&L through the Interdisciplinary Committee of the Royal Irish Academy.

Results and Impact

The result of this case study is felt by the central role that this approach has allowed to take in some of the core and traditional modules, where the fundamentals remain unchanged but their application, relevance and interpretation keep constantly changing based on the evolving needs of the time. Co-creation of T&L materials by students through multiple means of expression and engagement in different modules have had a major impact here, which continues to propel further activities. The MEEN41040 course was a demonstration, with a small number of students, on how the approach towards assessment can be radically transformed. In this continuous module, students co-created, had options of presenting in different formats - including swapping numerical solutions with hand-made experiments and it resulted in a robust ownership of knowledge. This linked to final year projects where the students continued to create more examples and the approach and examples through how larger classes like MEEN20030 were taught.

The demonstration models showed how teaching can communicate with a wider audience beyond specific syllabi and generate significant interest, attracting further activities and approaches towards giving relatively traditional courses a new inertia. The project demonstrated how such co-creation can be linked to research culture and to international collaborations. The personal encouragement that it provides for the partner is also very important. I would not have thought of doing a Digital Badge in Community Engaged Learning if I was not a part of this. The design of the Mechanics models created a UDL culture underpinned by research led teaching and such projects have become a regular in MME, with participation of more faculty members. With further practice exchanges and continued co-creation of these T&L materials with clear documentation, we can expect MME and Engineering & Architecture to benefit significantly across the board.

A major impact was the long-term collaboration on this topic with Asst. Prof. Kevin Nolan – his enthusiasm and innovation around several of these digital models made the process extremely enriching. These sparks of enthusiasm cannot be designed and have to be spontaneous and I am extremely happy that this support has been able to be a vehicle for this enthusiasm. We have since been looking into how low fidelity, simple models and gaming physics engines can replicate many of the complex concepts and to what level.

The approach was particularly useful to provide flexibility in Covid 19 related situations. The main problem was in trying to get physical models done and manage face to face activities in the middle of Covid 19. However, student initiatives and personal resilience, combined with support from UCD led to this success. This is where the link of digital and physical was handy, especially in teaching. Without Covid 19 restrictions I would have envisaged a much more impactful and extensive implementation and uptake of the advanced vibrations module where the main pedagogical changes were being made.

Recommendations and Advice for Implementation

While my activities and approach straddled significant disciplinary boundaries in the wide topic of Mechanics, this is applicable for other courses as well. In particular, I think that this approach is useful for classical courses where the core content remains overall unchanged. Here, multiple means of representation and engagement, along with co-creation and interpretation of the ideas in contemporary settings becomes a key to keep these core concepts relevant to the learner and make them assimilate it, providing complete ownership, curiosity, flexibility of ideas and creativity is fostered through the co-creation framework and keeps the feedback loop going. It also allows engagement with a wider population in the University allowing for more avenues of engagement in future. With large class sizes, this approach can bring resourcing challenges and pandemic-like situations can also bring major challenges towards hands-on co-creation. However, I realised that good documentation and archiving of the materials led to smaller courses informing T&L in larger courses with a UDL outlook, which was possible in this case - and it can also continue to organically develop over time in different directions. What is interesting here is that this diversity was underpinned by the disciplinary aspects for this classical course and I think that any course, even non-STEM ones will benefit from such an approach. A movement away from traditional assessments is thus possible through these approaches, we need to be aware of resources to be able to deliver them clearly for larger class sizes. Even with these limitations, several avenues can be created by simply allowing for evolution of the course over time, and engaging with the UDL approach.

To replicate this approach, the following is recommended:

1. Get the Digital Badge - the redesign activity gives vital experience in making small incremental changes in a course/programme.

2. Embed some of these practices to enhance an existing course and monitor how things improve (or otherwise) - this will lead to course specific changes and improvement as well.

3. Include students in the co-creation of some of the tools and be a part of this ownership of knowledge - and also a student-led legacy. In our case this was possible through the creation of the materials and models discussed.

4. Have a long-term approach of continuing to create new materials over time to keep it as a dynamic process with continuous student engagement.

Resources

To access the developed models, please visit: https://github.com/a-zy-lee/ Blender-NonlinearChaosDynamics

UCD College of Health and Agricultural Sciences

Foreword

Professor Cecily Kelleher
Principal, College of Health & Agricultural Sciences

This publication captures a series of case studies authored by the University for All Faculty Partners from the College of Health and Agricultural Sciences. While also recognised in the UCD Strategy 2020-2024: Rising to the Future, the EDI Strategy and Action Plan 2018 - 2020 - 2025, and the Education and Student Success Strategy 2020 - 2024, the UCD Values of Excellence, Engagement, Diversity, creativity, and Collegiality are mirrored within the Vision, Mission, and Strategic Objectives of the College. The case studies which follow in this publication all capture aspects of these values and have been developed and implemented to make aspects of teaching, learning, and assessment within our programmes more inclusive across disciplinary or subject areas including: agriculture and food science, human anatomy, nursing and midwifery, physiotherapy, and veterinary medicine.

Collectively the Schools within the College provide a holistic educational experience that challenges students across areas including agriculture, clinical nutrition, food science, medicine, midwifery, nursing, radiography, veterinary medicine, and veterinary nursing to learn, enquire, create, reason, and innovate so they can gain knowledge and attitudes to be personally successful and to shape local and global society. In doing this we aim to be at the forefront of providing the best education to all of our students and to prepare them for challenging careers and to be lifelong learners. Universal Design for Learning is a key aspect of our efforts to continually enhance this educational experience.

This series of case studies focus on understanding assessment requirements, diversification and choice in assessment, co-operative learning, supporting engagement in a content-heavy module, social justice in health professions education through enquiry-based learning, understanding the 'why' and 'how' in university learning, and supporting student engagement with leadership and management principles. While each focused on a specific module, the topics addressed, and Universal Design for Learning principles employed, are relevant of programmes across the College and thus there are significant opportunities for these case studies to influence further enhancement more broadly across our modules and programmes at undergraduate and postgraduate levels.

The work that our University for All Faculty Partners, Dr Freda Browne (SNMHS), Professor Deirdre Campion (SVM), Associate Professor Caitriona Cunningham (SPHPSS), Dr Tom Flanagan (SoM), Dr John Gilmore (SNMHS), Dr Phil Halligan (SNMHS), Dr Karen Keaveney (SAFS), and Dr Deirdre O'Connor (SAFS), have undertaken to enhance their own modules has been showcased at a College Teaching and Learning event earlier this year. These College champions of Universal Design for Learning have also led the rollout of the national Digital Badge in Universal Design for Teaching & Learning across our College. This has facilitated large numbers of faculty and staff to develop their own knowledge and skills linked to Universal Design which can only benefit all our programmes.

The Design and Implementation of a Scaffolded Approach to Support Multiple Means of Action and Expression

Dr Freda Browne

Author	Dr Freda Browne

Abstract	This case study describes the design, implementation, and evaluation of a scaffolded approach to support a diversified assessment. It describes how knowledge was represented in multiple ways and how a diversified assessment strategy was supported. Student feedback was very positive on the embedding of the UDL principles in the module design. By providing students with control of their education and choice of activities, they become empowered and engaged. The design also accommodated the learning of our diverse student population.

Module/Course/ Programme/School	General Nursing 3, School of Nursing, Midwifery & Health Systems
Discipline	General Nursing
Level and Credits	Level 3 | 5 Credits
Student numbers	186 - 191 Students

Introduction and Context

This case study presents the Universal Design for Learning (UDL) features applied in the design of a diverse assessment in a large under-graduate module. The module was a Stage 3 module on the BSc in General Nursing in UCD School of Nursing Midwifery and Health Systems (SNMHS), with a registered student cohort of 186-191 students. The case study describes the design, implementation, and evaluation over two academic years (2020/21 and 2021/22). The module consisted of three units of learning, and this case study refers to the design features of Unit 1, the Integumentary system (skin). The assessment was set as 30% of the overall module award which provided for student choice in multiple aspects of action and expression.

The UCD SNMHS has a diverse student cohort, with 30% of undergraduate students identified as coming from Widening Participation categories. To address the diverse needs of this group and of all the students registered to the module, the UDL framework was applied. By proactively planning for flexibility using the UDL framework, pedagogical knowledge, and instructional technology, I ensured that learning and teaching was accessible for all students (Capp, 2017).

This unit has been delivered in two consecutive academic years. In 2020/21, due to Covid 19 restrictions, the module was delivered online via live synchronous sessions and some pre-recorded asynchronous sessions. In 2021/22, the university had returned to face-to-face teaching and all lectures were offered via face-to-face lecture sessions. However, class attendance was challenging for some students, thus maintaining an environment of inclusivity was essential. Therefore, all the design features were maintained over both academic years.

Design and Implementation

The original aim was to design a diverse assessment where students would be provided with a choice of topic areas and alternative formats of assessment submission. However, in practice, the careful design and consideration of several elements associated with all three principles of UDL was required. By providing students with control of their education and choice of activities, they become more engaged (Coffman and Draper, 2022). The design is presented graphically in Figure 1.

Multiple means of representation		Multiple means of action and expression
Consistent application of module structure, content location and format	**Diversified Assessment**	Choice of topic
		Choice of assessment format
Discussion forum		Grading rubric
Multiple formats		Discussion forum
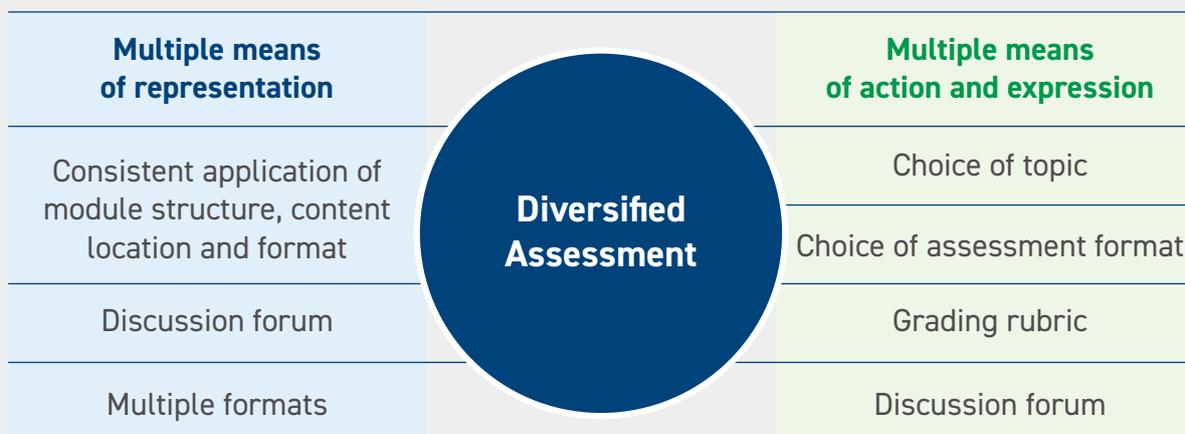
Figure 1: Diversified Assessment and UDL Principles

Multiple means of representation

During the module, knowledge was represented in multiple ways, which aimed to reduce the barriers to create a learning environment that was accessible to all students (Capp, 2017).

— **Consistent application of module structure, content location and format:** all learning materials in the virtual learning environment 'Brightspace' were presented consistently, labelled meaningfully and clearly structured. All module materials were also accessible, and an Ally score of above 80% was achieved for all resources

- **Multiple formats:** information was presented in multiple formats representing the belief that there are multiple ways of representing knowledge during the learning process (Capp, 2018). Lecture presentations were available at least 24 hours before the lecture. Voiced over recordings of lectures were available for students who were unable to attend or who wished to revise topics afterwards. Short clips from YouTube were included, as were links for selected readings and best practice guidelines. The video clips and recorded lectures allowed students to engage in information as either auditory or visual. The recommended textbook to support this unit was available as an eBook through the university library as were recommended readings. Resources provided were appropriate for the level of the students and the engagement required to support the module learning outcomes. Representing information in multiple ways such as this, is referred to as scaffolding, which facilitates both deeper engagement and broader access to the concept (Capp, 2018)

- **Discussion forum:** Students were actively encouraged to post questions related to their assignment in the discussion forum. Articulation of their assignment topic on the forum allowed students to get feedback on their topic choice and receive guidance on how to develop it to achieve the assignment objectives. The discussion forum provided an alternative means of engagement, fostered collaboration and community among students and allowed students to identify their goals for their assessment task. When the forum was set up, anonymous posting was enabled, to permit students to ask questions without fear of loss of face amongst their peers. Students were clearly advised as to the frequency of when questions would be answered.

Multiple means of action and expression

The assessment strategy was designed to assess the achievement of the relevant learning outcomes. As there is no one means of action and expression that will be optimal for all students, providing options for action and expression is essential. Students were provided choice in both the topic and the format of the assessment. This design had the advantage of allowing students to choose what suited them best (O'Neill and Padden, 2021) and permitted the retention of the familiar written assessment approach.

— **Choice of topic:** Explicit guidelines (Table 1) were provided for students, with a choice of topic where students could select a key learning. By selecting a key learning, students could provide a detailed focus on one area of interest on their selected topic. Some sample topic/key learning titles were provided to students in the guidelines

— **Choice of assessment format:** Students were also provided with options on how to present their key learning, either as a 600-word written piece or as a voiced over PowerPoint presentation

— **Grading rubric**: The grading rubric (Table 2) was provided to students with the guidelines. The rubric was also presented during class time to allow students to engage with it, ask questions, and seek clarification as required. Providing the grading rubric at this time prompted self-assessment and allowed for self-regulation and motivation

— **Scaffolding for assessment:** The design features incorporated in the module scaffolded the assessment. For example, the students were required to support their work with an evidence base and national and international best practice guidelines. These materials were signposted or included for students on Brightspace. The discussion forum also provided students with the opportunity to present their key learning to the Lecturer for feedback and suggestions for development. Feedback was provided to students within twenty working days of the submission date as group and individual feedback. The feedback was an essential design feature as this was continuous assessment and the feedback could be used for the final module assessment.

Aim

The aim of this assessment is to develop the students' knowledge and understanding of best, evidence-based nursing care of persons experiencing changes in health status related to integumentary function.

Key learning

Select and discuss one key learning in relation to providing nursing care for the patient with a disorder of the integumentary system. This must relate specifically to content covered in this module and be based on one of the following: 6 topic areas identified which were included in module content.

Essential Content

1. You must clearly identify the title of your key learning

2. Identify the appropriate nursing diagnosis associated with your key learning

3. Identify and discuss the appropriate nursing intervention(s)

4. Critically evaluate your key learning

5. Images may be used to assist you in demonstrating your learning, but you must ensure you acknowledge the source of the image. Please do not use any images which you have taken yourself

6. The answer should reflect current peer reviewed literature and international guidelines relevant to clinical practice in Ireland. Please note you should use the resources given to you during the module

7. You should include a minimum of 4 references

8. Referencing in text and in reference list as per UCD Harvard Referencing guidelines

9. This assignment or elements of this assignment must have not presented for assessment in a previous module.

This can be presented by a) voiced over pre-recorded presentation or b) as a written document.

Option A:

Pre-recorded presentation:

— This must contain a written element as a PowerPoint/Google Slide

— It must also contain audio of you providing detail beyond that provided in written format

— Be between 3- 5 minutes duration

— It must contain no more than 7 slides (including title and reference slide)

— When referring to evidence/guidelines during the presentation. ensure you include the reference details on the slide

— Please submit as MP4 file

— To create a video, your device/PC/ laptop may have video recording/editing software installed, if you wish you may use this to create a presentation

— See how to record in PowerPoint 365 here. Please export as MP4 file.

Option B:

The following aspects should be taken into account:

1. Provide a title for your written piece clearly identifying the subject (not included in word count)

2. No longer than 600 words

3. This should be presented in Arial size 12 text with 1.5-line space

4. Written in a manner reflective of best practice for academic writing

5. Include a reference list utilising the UCD Harvard Referencing Guidelines

6. Submit as PDF or Word document.

Table 1: Assessment Brief

Results and Impact

For students who were registered to the module with declared disabilities and requiring reasonable accommodations, no further supports were requested. The unit design incorporated all advised reasonable accommodations which were recommended for all students.

The discussion forum provided for multiple means of engagement and allowed for different opportunities for student engagement. In 2020/21, when the module was delivered entirely online students were very active on the discussion forum posting 64 different threads, with a total of 161 posts. The questions were in relation to the students' selection of their key learning, with only a few related to assessment guidelines. Teaching had resumed face to face in 2021/22, but the forum continued to be utilised by students, with 80 threads and 176 posts. The engagement on the discussion board in both years demonstrates students who are fully engaged in learning and were enthusiastic about applying their knowledge (La et al., 2018).

While one of the main aims of this UDL design was to provide for alternative means of assessment, in 20/21, of 185 students who submitted assessments, only seven students opted for the presentation format. Likewise in 21/22, of 191 students who submitted assessment, only 11 students selected to submit via presentation format. Students would have completed some group presentations previously in core modules but would not have been exposed to individual presentation submission. When more alternative modes of assessment are offered to students, I anticipate that the students selecting to submit their assessment via presentation will increase. However, in both years, a wide variety of key learnings were identified.

Student feedback was obtained through end of module feedback which was consistently positive across the two years:

> The first half of the module was fantastic; I found the articles provided by the lecturer beneficial to my learning/assessment and found them to be relevant to nursing. I found the lectures engaging and well delivered. I thought the assessment was fair and well delivered and found the lecturer to be supportive and helpful, answering many queries for the students in Q&A sessions and was extremely active in the discussion boards
> — Student 20/21

> I found the ability to access lectures online at any time extremely helpful
> — Student 21/22

> I thought that the discussion boards were great as I could read through the queries and see that a question I had was already answered previously
> — Student 20/21

> I am happy with how xxxxxx delivered this module, she was very engaging with our learning, always answering any emails, questions in the discussion board about assessments or learning topics within 24 hours. She always had extra reading and resources available for us to better our understanding of the topics in this module
> — Student 21/22

While most students provided positive feedback on the continuous assessment, some alternative views were also expressed:

> 2 separate assignments helped ease any worries because I wasn't banking on one exam
> — Student 21/22

> The assessment should include a mix of MCQ's and essay's to reduce the pressure on one style of learning or delivery
> — Student 20/21

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Recommendations and Advice

UDL should be applied, where possible, when designing modules, as all elements of module design are intrinsically linked. By proactively planning for diverse student learning at the design phase, it allowed me to build in supports and scaffold along the way (Capp, 2017).

When providing a new form of assessment for students, ensure the guidelines provided are explicit. The use of explicit guidelines ensured that questions on the discussion forum were focused on content of learning and did not relate to areas such as font required for submission, or the referencing style required. If you are providing scaffolding, such as a discussion forum, provide students with the opportunity to post anonymously. Anonymous posting allows students to engage freely, without the fear of showing a lack of understanding in front of their peers. Be clear with students when you will be able to answer questions and, when doing so, ensure your commitment is in line with your workload. In this design, I made myself available to answer questions daily (Monday - Friday). Students appreciate the rapid and detailed response, and this can be seen in the student feedback.

When using continuous assessment, be aware of the academic regulations or school policy for providing student feedback. In UCD, the academic regulations require that feedback is provided within 20 working days of submission date. Grading and providing feedback on a significant number of written assignments and presentations is a task which requires significant time and is challenging, particularly during teaching term. Ensure you have planned adequately for this in your schedule. A well-designed rubric will speed up the feedback process and will assist in ensuring students are fairly graded (La et al., 2018).

The time-consuming nature of design and implementation of UDL has been found elsewhere (Coffman and Draper, 2022). While the initial design and implementation in this case study was time consuming, the repeat offering did not require as significant a time investment. As in good teaching practice, lectures and resources were updated but the original templates were reusable. Likewise, as recordings of presentations were made outside of the classroom, these recordings were updated, where necessary, but did not require repeat recording. While the initial time investment was significant, based on my experiences of delivery, student engagement, and feedback over two years, it has been worth the effort.

Conclusion

Utilising UDL as the framework for the design of this unit embraced flexibility and allowed students to develop their own learning strategies as well as overcome barriers to learning (Coffman and Draper, 2022). The evidence of impact of the diverse assessment in this case study is supported by the previous benefits identified by O'Neill and Padden (2021) as student engagement, student empowerment, and accommodating the learning of diverse students. As educators, we need to continue to design and implement UDL into our teaching and learning strategies and curricula.

Criteria	Excellent	Very Good
Knowledge/understanding: Knowledge and understanding of key topics/concepts/ideas and of modular readings. Knowledge, understanding and engagement with a topic relevant to the integumentary system from this module.	Key learning identified is specific to the subject and comprehensively expressed and clearly supported by modular readings; demonstrates a deep and systematic engagement with a topic relevant to the integumentary system.	Key learning identified refers to the subject and is clearly stated; includes major points, includes some support by modular readings; demonstrates a substantial engagement with a topic relevant to the integumentary system.
Application/Linking practice to theory: Contains information on how key learning is applied to nursing profession/practice. Evidence-based (referenced) rationales (explanations) for interventions provided.	A highly developed ability to apply knowledge including best evidence based practice to patient care. Key learning is applied to nursing pratice, fully explained and supported with comprehensive evidence-based rationales.	Considerable strength in applying knowledge including best evidence based practice to patient care. Key learning is well explained and supported with substantial evidence-based rationales.
Analysis and Critical Thinking: Deep and broad knowledge of nursing practice & theory; critical thinking skills are discussed and demonstrated.	Key learning that applies to nursing profession/practice is thoroughly discussed and critical thinking skills and analysis are clearly demonstrated.	Key learning that applies to nursing profession/practice is broadly discussed and there is very good evidence of critical thinking skills and analysis.
Quality of argument/expression: articulation and organisation of ideas and perspectives; structure and flow.	Writing/Presentation is exceptionally well-focused; arguments or perspectives are precisely defined and exceptionally well explained; coherent flow in developing an insightful idea demonstrated.	Writing/Presentation is well-focused; arguments or perspectives are precisely defined and explained; coherent flow in developing an insightful idea demonstrated.
Presentation/Academic writing and referencing: The assisgnment is correctly referenced according to SNMHS Referencing guidelines. The written work/presentation uses standard English and correct grammar throughout the reflection.	The reference citation is correct both in text/ presentation and in the reference list. No errors exist in the citation or in grammar and spelling. Adheres to UCD Harvard academic writing guidelines. Excellent presentation skills.	The reference citation has only one error in the text/ presentation and one on the reference list. Adheres to UCD Harvard academic writing guidelines. Very good presentation skills.

Table 2: Grading Rubric

	Good Satisfactory	Marginal/Unacceptable	Lacking Proficiency
	Key learning identified refers to the subject; includes major points, includes some support by modular readings; demonstrates a competent engagement with a topic relevant to the integumentary system.	Key learning is unspecific, lacks clarity, and relationship to subject includes few supporting comments or awareness of modular readings; demonstrates a satisfactory engagement with a topic relevant to the integumentary system.	Does not identify key learning; not much thought or detail; no clear understanding of concepts. Little or no evidence of modular readings or engagement with with a topic relevant to the integumentary system.
	Demonstrates a capacity to apply knowledge including best evidence based practice to patient care albeit with some minor errors. Key learning is adequately explained with some linkage to evidence-based rationales.	Some effort to apply knowledge but only basic understanding displayed. Key learning is poorly explained with minimal linkage to evidence-based rationales.	A display of some knowledge of material relative to patient care but key learning unclear with very serious omissions/errors and/or major inaccuracies included in the answer. Little or no evidence-based rationales.
	Key learning that applies to nursing profession/practice is stated; good evidence of critical thinking skills and analysis.	Key learning that applies to nursing profession/practice is stated; limited evidence of critical thinking skills and analysis.	The key learning that applies to nursing profession/practice is unclear; little or no evidence of critical thinking skills and analysis.
	Arguments or perspectives are clearly stated/ presented; organised flow in writing/ presentation but not deep enough to be very insightful.	Arguments or perspectives are vaguely mentioned/presented; the writing/presentation lacked an organised flow and the ideas were hard to follow.	Does not show any original thinking or perspectives; chaotic in organisation and presentation of ideas.
	The reference citation has very few errors. There are some spelling and grammar errors throughoutgenerally adheres to UCD Harvard academic writing guidelines. Good presentation skills.	The reference citation has a number of errors as it is written/ presented. There are numerous grammar and spelling errors – little attempt to adhere to UCD Harvard academic writing guidelines. Satisfactory presentation skills.	No attempt is made at referencing according to UCD Harvard Referencing guidelines or adhering to academic writing guidelines. Poor presentation skills.

References

Capp, M. (2017). The effectiveness of universal design for learning: a meta-analysis of literature between 2013 and 2016. International Journal of Inclusive Education, 21(8), 791-807.

Coffman, S. and Draper, C. (2022). Universal design for learning in higher education: A concept analysis. Teaching and Learning in Nursing, 17(1), 36-41.

Meyer, A., Rose, D., and Gordon, D. (2014). Universal design for learning: Theory and practice. Wakefield, MA: CAST Professional Publishing.

O'Neill, G. and Padden, L. (2021) 'Diversifying assessment methods: Barriers, benefits and enablers', Innovations in Education and Teaching International, 17(1),pp. 36-41.

La, H., Dyjur, P., & Bair, H. (2018). Universal design for learning in higher education. Taylor Institute for Teaching and Learning. Calgary: University of Calgary.

Applying UDL Principles to the Continual Adaptation of a Content-Heavy Professional Module- 'There Are Too Many Treatments- What Do I Need to Know'?

Professor Deirdre Campion

Author	**Professor Deirdre Campion**

Abstract	The goal of this case study was to use UDL to improve student engagement with a veterinary medicine undergraduate module. Although some students had found the content accessible, others reported being overwhelmed. Following initial small changes using UDL principles, the module was constructively realigned, and further aspects of universal design applied. Student satisfaction has improved, and this has been largely maintained, despite the impact of Covid restrictions. This paper outlines the changes applied, the impact of these changes over four years, and provides ideas for staff who wish to use UDL principles to make a content-heavy professional curriculum more accessible.

Module/Course/ Programme/School	VET30050, Veterinary Medicine, College of Health and Agricultural Science
Discipline	Veterinary Medicine
Level and Credits	Level 3 | 5 Credits
Student numbers	Veterinary Medicine Students

Introduction and Context

Many pressures are placed on veterinary medicine students, especially in the early years. Students must take on the disparate topics that make up the foundations of the medical sciences from which all subsequent material builds, but scientific advances have led to an explosion of knowledge in these basic sciences (Finnerty et al., 2010). In addition, students must adopt professional skills such as empathy, communication, and the ability to reflect and use self-care techniques.

The module that is the focus of this case study, 'Applied Therapies' (VET30050), is presented mid-way through the five-year undergraduate veterinary medicine programme. It is the students' first introduction to, veterinary legislation relating to the use of veterinary medicines; specific drugs used to treat bacterial, fungal, parasite, and viral infections; and specific anti-inflammatory medicines. The module runs concurrently with two other modules, where students learn about disease processes and causes of microbial, parasitological, and viral infection. The module content for 'Applied therapies' fits into the 'One Health' domain; by the end of the module, ideally, the student should be able to critically evaluate aspects of the veterinarian's use of a range of drugs in light of the veterinarian's responsibility towards their own welfare, the welfare of the patient, the owner, the general human population, and the environment. This student workload and life-balance is graphically represented in Figure 1.

Figure 1: Graphical representation of a veterinary student's workload

The argument is often made that information technology means that all information is available at people's fingertips and that knowledge retention is not necessary. However, in real life, dealing directly with animal owners, it is not possible to walk away from the consulting room to look up the details on how different drugs work. Pet owners and farmers expect their veterinarian to have a good grasp of the drugs they are prescribing and to be confident in their knowledge.

Understanding the student profile

The module is taught to a large class of between 110 and 145 veterinary medicine students. The cohort includes a mix of Irish and EU entrants, including students who have accessed university via Access Admissions pathways e.g. Disability Access Route to Education, Higher Education Route to Education (low-income), all of whom are mid-way through their first university degree. These students study alongside EU, USA, and Canadian students who previously graduated with a scientific degree before entering the veterinary course. As a result, there is a diversity of experience, gender, culture, and expectations in the classroom.

Veterinary student stressors include heavy workload, high expectations of family and friends, student competitiveness, and peer pressure (Collins and Foot, 2005). Usually, 10% of the class are registered to receive extra academic and examination accommodations, but further students choose not to register for accommodations, despite being entitled to do so.

Design and Implementation

In 2017-2018, the veterinary medicine curriculum underwent a process of review and refinement, and this provided an opportunity to re-evaluate the presentation of this core module to create an opportunity for deeper learning and improved student engagement through active learning. On reflecting on the student feedback, it became clear that, although some students found the module material accessible, others did not. Feedback comments mentioned "excess content" and requests for more self-assessment. In addition, students reported being stressed, overwhelmed, and overloaded by the content of the material presented during the linked modules at that stage of the programme.

The use of a reflection tool during completion of the Digital Badge in UDL sparked the initial flame which led to a re-evaluation of the module. Initially, a few 'small changes' aligning to UDL principles were adopted in the first year, Autumn 2018, primarily focusing on principles to improve student engagement. These changes included some reduction in content, improvements in the layout and signposting of educational material, increased in-class interaction using the student response system, Socrative™, and, finally, the introduction of a one-page 'aide-memoire', described later.

Over the following months, using a process of curriculum redevelopment through constructive realignment (Biggs and Tang, 2011), the module was reviewed and redesigned whilst applying Universal Design for Learning principles. The constructive alignment process applies the theory of learning and teaching in a very structured way, requiring considerable reflection on the part of the educator. It was helpful in this context to use a revised version of Bloom's taxonomy (Krathwohl, 2002), to identify the cognitive process and the level of knowledge expected in this group that are appropriate at this mid-term point in their journey to graduation.

The specific goal for the complete redesign was to establish clear learning outcomes for the module, set up assessment strategies to measure achievement of these outcomes, cut overall content coverage to core 'scaffolding' of learning material, and establish sufficient case-based material to engage students in active learning.

The following sections describe all the Universal Design adaptations that have been instigated in the module using the three UDL principles: representation, engagement, and action and expression.

Means of representation

Where content overload creates an environment for superficial learning, it is essential to be selective in the content presented to the students. Therefore, a first step in the redesign to improve comprehension was to significantly reduce and refine the content presented to students, adopting the principle that reducing lecture content will lead to better outcomes (Rose, 2015). Lecture number and content reduction was complemented by improved scaffolding and organisation of content within the lectures and within the VLE, with a focus only on "example drugs" within categories, as opposed to "coverage", and greater use of recurrent themes. In addition, context-related problem-solving assignments were established to support active learning as part of "assessment FOR learning" (Swaffield, 2011).

All slides were made available in advance, and content was released progressively within the VLE, with instructions regarding the material presented in the respective folder. Initially, material was grouped by overall theme. In subsequent years, the material was organised by week of the semester, as shown in Figure 2. Each folder provides instruction on what to expect that week, what material should be covered, and information on assignments becoming available or due for submission.
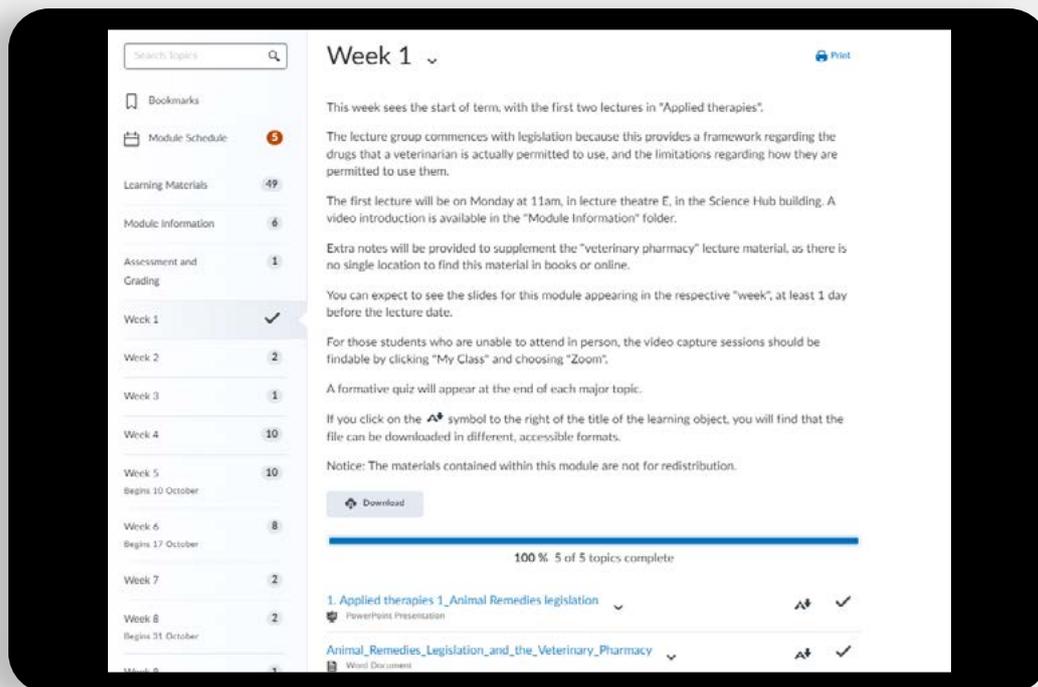
Figure 2: Layout of VLE content for so that material can be easily found. The stylised "A" symbol indicates a clickable link to Ally for alternative formats.

There are a number of complex concepts and a general lack of images and videos specifically relevant to the veterinary drugs covered in the course, as much of the subject material within veterinary pharmacology textbooks is word-based. Lecture slides have been improved over time to include more apt images, sourced from image data bases or hand drawn. In addition, where available, YouTube videos showing the action of drug groups have been linked via the VLE.

In recent years, all materials are now evaluated for accessibility before upload using the 'check accessibility' and 'Alt text' features offered by MS PowerPoint and MS Word, and through the use of 'Ally' (see Figure 2), which has an indicator panel to flag accessibility issues. Ally also allows students to download alternative formats of the provided content, including, but not limited to, structured pdf for use with assistive technology Html for viewing in a browser and on mobile, audio MP3 for listening in podcast form and BeeLine Reader, a reading application which uses custom colour gradients to guide the students' eyes, a useful tool in certain specific Learning difficulties.

Means of engagement

Authentic and clinically relevant assignments were created to reward effort and persistence, each set up to generate targeted, personalised and constructive feedback, through use of both computerised feedback to answers and with use of specific detailed grading rubrics for individualised feedback. The second and final assignments aimed to reward skills developed in the previous assignments. The low-stakes formative MCQs also provided timely feedback and were rewarded by allocating 5% of the module grade for engagement with the MCQs. In Autumn 2020, and 2021, the final assessment was a "take home" open-book online assessment, available for 24 hours and with no time restriction.

In the fourth year following the adoption of UDL principles, 2021, an extra degree of choice was offered in assessments, with students permitted to provide their case report as a recorded presentation, or as written text, with rubrics provided for each style (Figure 3).

	Written answer	**Video presentation**
Clarity	An excellent text should have excellent written expression, including clear grammar, should be sufficient length to convey the answer to the task and use scientific and professional language throughout. (10 marks)	An excellent video presentation would have clear and engaging spoken expression, with appropiate use of scientific and professional language and well-chosen visuals. Should have sufficient content to convey the answer to the task. (10 marks)
Scientific understanding	An excellent text would demostrate understanding of pharmacological content of the drug data sheets and relevant papers and would use accurate citation reflecting Harvard or Vancouver style. (10 marks)	An excellent presentation would demostrate understanding of pharmacological content of the drug data sheets and relevant papers and would use accurate citation reflecting Harvard or Vancouver style. (10 marks)
Clinical insight & professionalism	An excellent text would demostrate a considered clinical decision and show knowledge of professional responsabilities, if relevant to the case. (10 marks)	An excellent presentation would demostrate a considered clinical decision and show knowledge of professional responsabilities, if relevant to the case. (10 marks)

Figure 3: Rubrics provided for video vs written assignment

Means of action and expression

Improved options for self-assessment were provided, using clinically relevant MCQs as formative assessment, which appeared at the end of each topic, i.e. week 3 of the semester for "pharmacy and legislation" and week 5 for "antibacterials". In-class audience response systems Socrative™, and later, Poll Everywhere™, were also used to include students who might otherwise feel unheard. For example, a specific complaint from North American students was that EU legislation was not relevant to them, therefore a greater effort had to be made to include this group during class discussion (Figure 4).
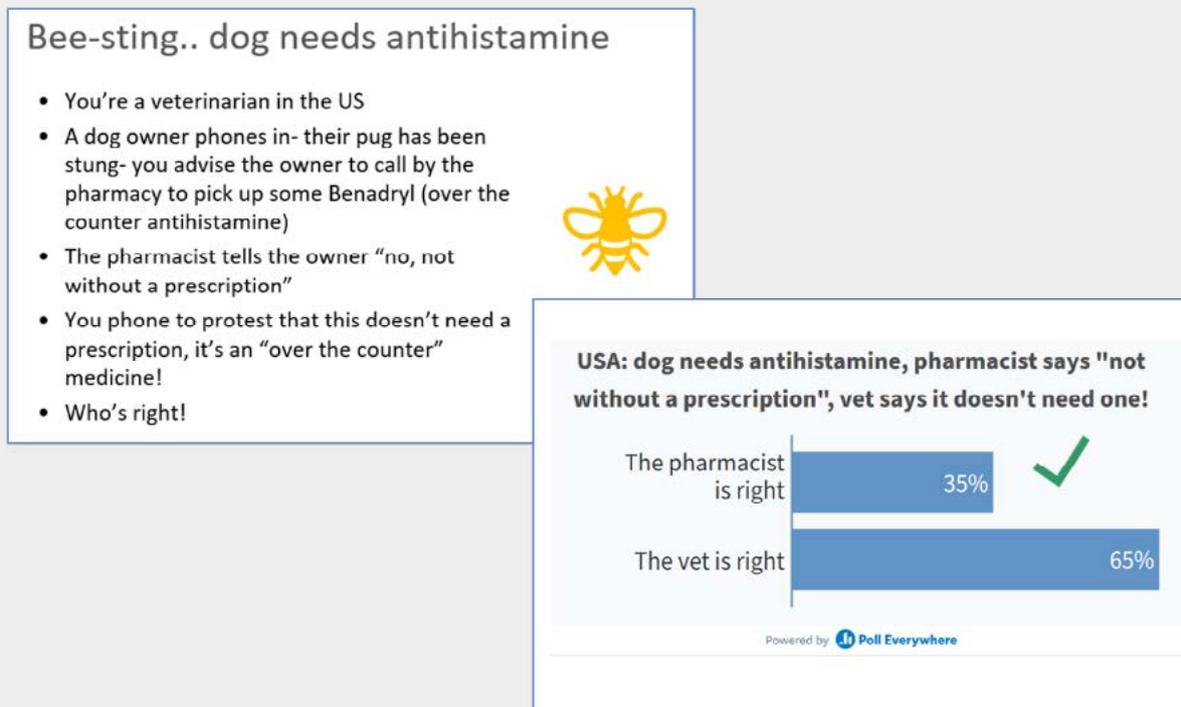
Figure 4: Example of in-class use of an audience response system to engage students and spark discussion.

A one-page 'aide-memoire', listing generic drug names by treatment category and chemical group, was developed for use in class during online MCQs, to facilitate managing information and resources. This aide-memoire was provided in the final examination with the MCQ examination paper (pre-Covid), to eliminate the need for rote memorisation of drug names (Figure 5).

Figure 5: A one page "aide-memoir" to alleviate stress associated with need for rote learning of drug names and spellings.

Results and Impact

Student satisfaction with the module has been evaluated year on year using an institutional anonymous, standardised electronic module survey based on a 5-point Likert scale, where 1= strongly disagree and 5= strongly agree. Figure 6 demonstrates the survey results in the year prior to intervention (academic year 2017-18) and in the years following further interventions.
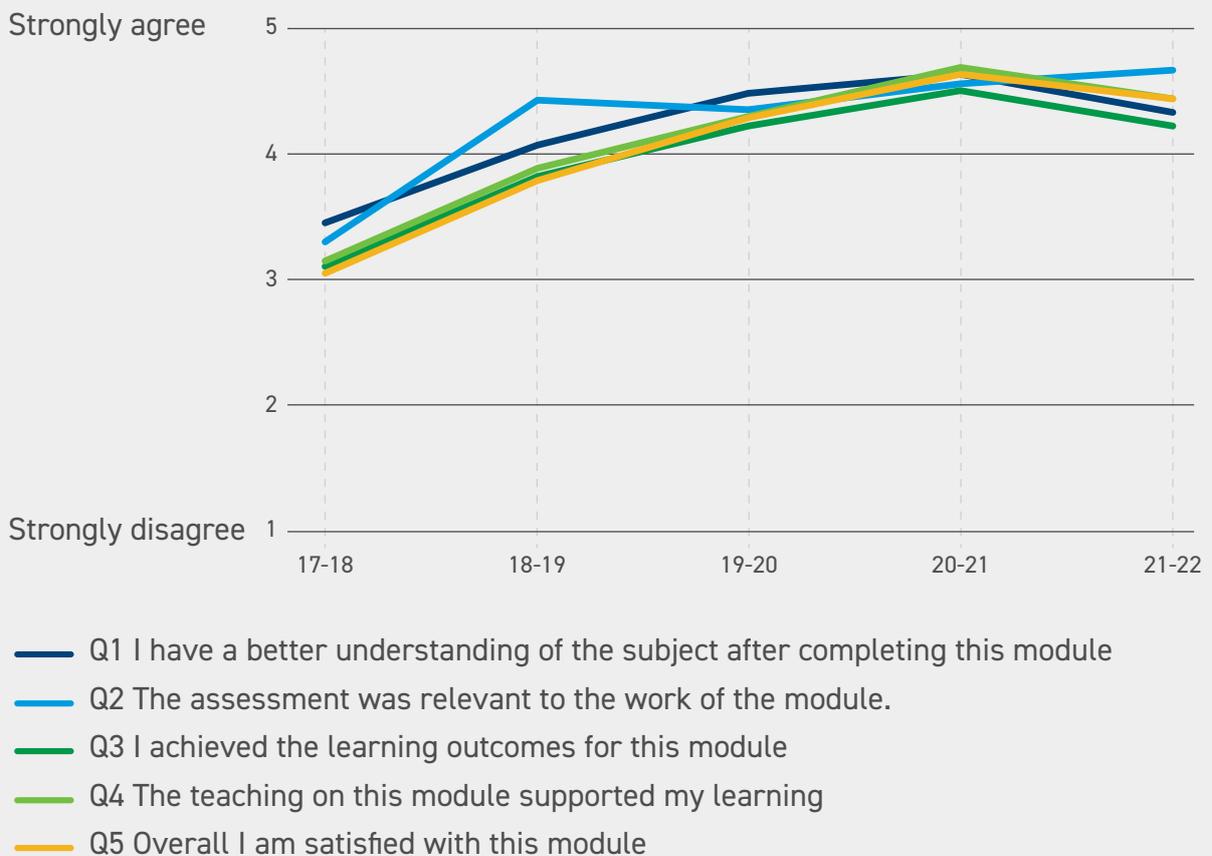
Figure 6: Impact of ongoing application of UDL principles on student satisfaction. UDL was first introduced during the academic year 18-19.

The student feedback has consistently demonstrated increased satisfaction since the first implementation of specific UDL principles as "small changes" in Autumn 2018.

The Autumn of the academic year 19-20 was the first year of the full redesign, with multiple interventions using UDL principles. During Autumn 2020, under Covid-19 restrictions, the module was delivered fully online. By Autumn 2021, in-person teaching was restored, but with certain limitations and restrictions impacting student engagement, although assessment continued in an online form that year.

Student anonymous comments have been primarily positive and constructive. However, what has been noticeable is that student comments have primarily focused on assessment and assignments (see examples in Figure 7).

"

I actually would have enjoyed doing more assignments, especially assignments like the final one where there are a few short questions about a few different topics.

"

I really enjoyed the assignments in this module. They were thought provoking and very real world applicable. I learned a lot from them without feeling overwhelmed.

"

I appreciate the extra quizzes with unlimited attempts, the notes were well organized and brightspace was easy to navigate and find everything.

"

This class was the only class whose assignments and assessments made me think about the material in any meaningful way, and I really appreciated it.

Figure 7: Examples of anonymous student comments.

A benefit of the redesign was that the UDL-based structure and tools were essentially in place when teaching became wholly online under Covid restrictions. Well-considered UDL design allowed for a moderately straightforward transition to online teaching. The increased satisfaction scores continued in academic year '20-21.

A negative impact is the degree of educator workload that some of the changes generated, which are compounded by increasing class size. Over the five years, from Autumn 2017 to Autumn 2021, the class has increased from 110 students to 141. Accurate grading and provision of individualised feedback to such a large number of students is highly challenging, and the sustainability of the style of this provision must be considered going forward. In addition, 'take home' online, open-book final examination is also open to question regarding assessment security and validity of assuring student achievement of module learning outcomes, and external examiners and professional degree accreditors expect invigilated assessments.

Post-Covid, a blended model of take-home assignments with feedback, and a final invigilated examination will be used.

Recommendations and Advice

This case study has outlined substantial changes within a module, resulting from a deep and ongoing process of reflection and action. However, what is notable from the initial student results is that even small changes can significantly impact student engagement and satisfaction.

Embracing change, and growth development as an educator is an essential part of the process of reimagining teaching. The process of completing the Digital Badge for UDL includes the use of self-reflection tools. It can be beneficial to revisit these tools and the CAST website at www.CAST.org to refresh and revaluate teaching practices. Educators should also be aware of how one's teaching can reflect personal biases and teaching preferences and that moving outside your comfort zone may be part of becoming more inclusive.

Small, continuous change and adaption may be more sustainable for most educators than a single significant redevelopment of module content.

References

Biggs, J. B and Tang, C. (2011). *Teaching for quality learning at university*, 4th Edition. Open University Press/Society for Research into Higher Education.

Collins, H. and Foote, D. (2005). Managing Stress in Veterinary Students. *Journal of Veterinary Medical Education,* 32(2), 170-172.

Finnerty, E.P., Chauvin, S., Bonaminio, G., Andrews, M., Carroll, R.G. and Pangaro, L.N., (2010). Flexner revisited: the role and value of the basic sciences in medical education. *Academic Medicine*, 85(2), 349-355.

Krathwohl, D.R. (2002). A Revision of Bloom's Taxonomy: An Overview. *Theory Into Practice*, 41, 212-218.

Rose, D. (2015). *Universal to Personal: Teaching with universal design for learning in heart & mind.* AHEAD [online video]. Available at: https://youtu.be/1b4o-n6f5S8

Swaffield, S. (2011). Getting to the heart of authentic Assessment for Learning. *Assessment in Education: Principles, Policy & Practice*, 18(4), 433-449. doi: 10.1080/0969594X.2011.582838

COLLEGE OF HEALTH &
AGRICULTURAL SCIENCES

Now I Know What They're Looking For: Helping Students Internalise Assessment Requirements

Associate Professor Caitríona Cunningham

Author	**Associate Professor Caitríona Cunningham**

Abstract	Physiotherapy students reported ambiguity in relation to the specific requirements of an assessment task to produce an evidence-based exercise manual for a member of the public. This drove the incorporation of a number of UDL aligned elements into the design and delivery of the Physiotherapy Exercise Programming module in the 21/22 academic year. Introducing the PeerScholar platform for peer review was a key new development. This proved valuable in providing an additional means of engaging with the learning materials, helping students to, both internalise assessment criteria and also learn how to give, accept, and interpret feedback.

Module/Course/ Programme/School	BSc Physiotherapy, School of Public Health, Physiotherapy and Sports Science
Discipline	Physiotherapy
Level and Credits	Level 2
Student numbers	60 Students

Introduction and Context

Profile of Physiotherapy Programme and Students

The four-year professional BSc Physiotherapy programme at UCD has a student intake of sixty students each academic year, 80% of whom are school leavers, with academic grades in the top 10% for Ireland. A current 20% programme quota for students from typically underrepresented cohorts exists, with specified additional access routes for students with a disability, and socially disadvantaged and mature learners. Programme delivery includes a mix of lectures, tutorials, practical workshops, clinical laboratory sessions, and clinical work placements. Overall, a good variety of assessment approaches exists.

Assessment Challenge

In a stage 2, Exercise Programming module, the physiotherapy students work in assigned groups (5 students per group) and are required to design an evidence-based physical activity and exercise manual for a client. Despite stated assessment criteria, previous student in class queries and deliberations indicated ambiguity as to what was expected of the final manual, specifically what constituted key content, how to sensibly limit the evidence review and how best to present materials. In addition, with group work, it is challenging to ensure all contribute to the assessment task , with the potential for some students to disengage or their voice to simply get lost. Development of the manual requires application and synthesis of knowledge , as well as adopting further strategies to enhance student engagement and facilitate students to internalise the assessment requirements.

Design and Implementation

A number of elements, consistent with UDL principles, have been incorporated in this module:

— Students complete the exercise manual assessment task, with supporting lecture content and resource provision, threaded throughout the module. By using the assignment to scaffold learning over the course of the module, effort and persistence with the assessment task are sustained and help retain in-class attention. This approach has been adopted to foster greater learner engagement and aligns with an overarching 'Assessment as Learning' strategy (Earl, 2012; Nat Teach and Learn Forum, 2022)

— The group nature of the assignment, coupled with in-class workshops fosters discussion and collaboration, providing another means of engaging with the learning materials. Emphasis is placed on each group, acting as a community of learning, with sharing of ground rules on being respectful and inclusive and seeking contributions from all in the conduct of the assignment

— Student interest in the exercise booklet assignment is recruited by it being a real world challenge which maps closely to their future career as a physiotherapist and with the option of a class peer being the target for the exercise programme. Being explicit that the target audience is a 'sedentary 20 year old', rather than the University examiner, is a critical factor in helping to guide the student work

— That members of the public are likely to differ in preferences as to how they receive information is also highlighted, with consideration of UDL principles important in the production of health education materials such as the assignment exercise manual

— Conduct of an in-class workshop, where agreement of assessment criteria is reached with the students at the start of the semester, helps students internalise the criteria and brings greater student engagement and transparency to the assessment process

— In striving to build a sense of capability and self-regulation amongst students, they are advised to reflect on prior learning, referring to their Exercise E-portfolio hosted on our institutional Virtual Learning Environment (Brightspace), where students have posted previous, related coursework

— Given the challenges of group work, the need for time bound deliverables, and that the manual could include a variety of text, images, and multimedia (multiple means of representation, action and expression), students are encouraged to try to articulate the specific tasks and skills required for manual development at the outset and to consider the relative strengths of individual group members when planning work and delegating tasks.

Introduction of PeerScholar in 2021/22

Peer learning strategies are aligned with modern cognitive learning theory, which, immerses students in the assessment process, fosters a deep learning approach, and encourages some of the key ideas of intrinsic motivation (Gaynor, 2020), with recent research supporting the concept of peer assessment enhancing engagement in group work (Oluseyi Oluseun Adesina et al., 2022). A key innovation in 2021/22 was the introduction of the PeerScholar Platform (see Figure 1) for conduct of peer review of the student group manuals, giving students the opportunity to easily access and engage with the work of their peers and utilise pre agreed assessment criteria to review each other's work. Student engagement with peer review was encouraged through first viewing and discussing the PeerScholar videos, on how to give and receive feedback and, subsequently, engaging in constructive feedback giving.
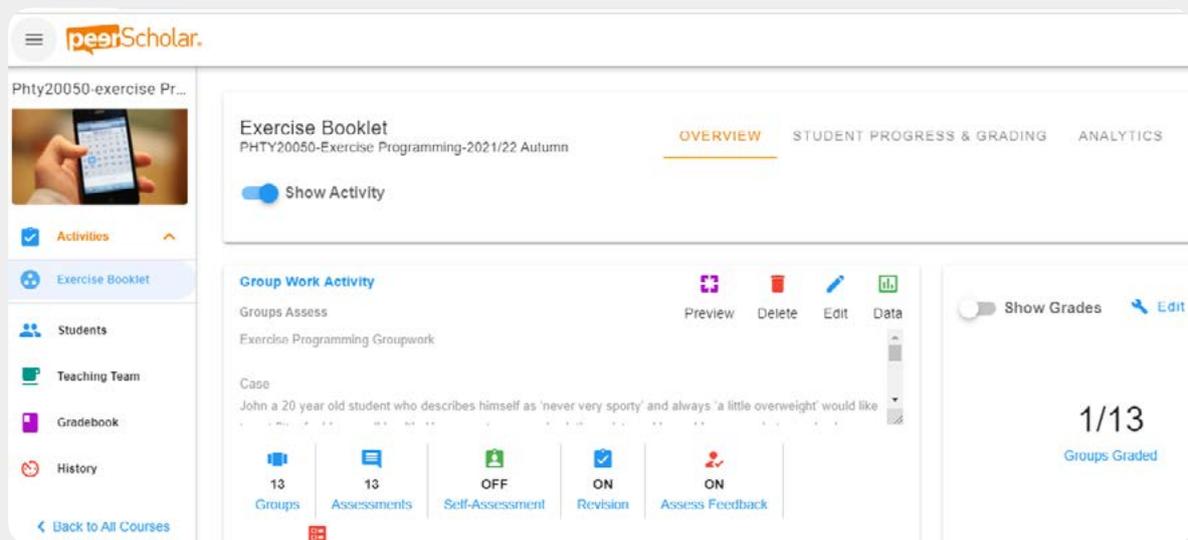
Figure 1: Screenshot of PeerScholar Platform

Results and Impact

Enhanced Student Engagement

All students engaged with PeerScholar and, notably, the students reported that PeerScholar preparatory feedback videos represented the first time they had engaged in formal learning about how to seek, give, and interpret feedback. As a platform, PeerScholar was novel and appealing to students and simplified access to peers' work and the giving and receipt of feedback. Students had access to all their peers' exercise manuals, providing another means of engagement with the module learning materials and one which generated interest, given the students' curiosity in seeing the work of co-students. This process allowed students to view how others address the same assessment task in different ways and helped students internalise the assessment criteria and understand what constitutes a strong student performance.

Evidence of Learning re module content, assessment criteria and how to engage with feedback mechanisms

In general, students produced high quality exercise manuals that met module assessment criteria and demonstrated strong creativity in their presentation of materials. The final work produced, with its well-selected evidence base – and coupled with the feedback students gave each other during the peer review process – demonstrated that students had internalised the assessment criteria and that overall deep learning had occurred. The PeerScholar review process should inform students as to what meaningful feedback looks like, with the goal of empowering them to seek constructive feedback from their teachers and to interpret such feedback in a positive manner over the course of their programme. Student feedback indicated that students recognised and valued the different approaches taken by peers in addressing the same assessment task, illustrating their ability to identify gaps in meeting the assessment criteria in their own and peers' work. Leveraging PeerScholar engagement metrics should help quantify levels of student engagement in subsequent rollouts of this peer assessment task.
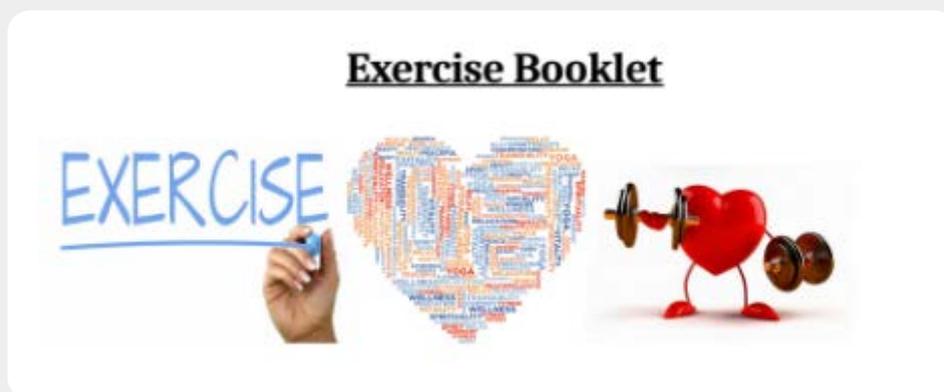
Figure 2: Sample Cover of Exercise Manual submitted via PeerScholar

Lessons learned as a Lecturer/Teacher

Despite having explicit assessment criteria in previous years, alongside in-class discussions, some ambiguity persisted for students regarding assessment requirements, with more to be done to help students learn what was expected. PeerScholar is integrated into University College Dublin's virtual learning environment (Brightspace), and is a valuable platform for facilitating a peer review process in a higher education setting. As a platform, it enables lecturers to set up a range of peer assessment activities for their students. The PeerScholar workflow consists of three steps: Create, Assess, and Reflect. Each step supports the development of critical and creative thought, and expressive and receptive communication, while giving students a very clear sense of the quality of their own work. PeerScholar has a strong research basis, having been developed by faculty from the University of Toronto. The platform also provides a series of videos regarding feedback, which could be utilised for all students, even if not engaging in a PeerScholar review task. The group allocation function in PeerScholar presented some initial challenges, requiring PeerScholar support team input, with staff recommended to become familiar with same.

Recommendations and Advice

As highlighted, for peer review in the classroom to be effective, there is clear evidence that the process needs structure, clear and accessible assessment criteria, and appropriate scaffolding sessions for students (Mangelsdorf, 1992). This was apparent, with the implementation of this peer review process using PeerScholar. Team skills preparatory training for group assignments is also advocated.

Overall, PeerScholar is a relatively straight forward platform to use and is integrated with most learning management systems and virtual learning environments. Ensuring familiarity and competent use of the PeerScholar platform by academic staff members is key to facilitating use of PeerScholar with the students.

Tips for Implementation of PeerScholar

Background Preparation

— Check out your academic institution's Peer Assessment / PeerScholar guidance

— Become familiar with look and feel of PeerScholar

— Liaise with academic colleagues who are familiar with using the platform

— Spend independent time practising use of PeerScholar functions

— If planning a group task, ensure the group allocation PeerScholar function is working efficiently

— Consider ways to objectively measure student engagement and impact of the Peer Review/PeerScholar process.

Implementation

— Introduce PeerScholar platform to students in class at start of module

— Be explicit that assessment submission should occur via PeerScholar

— Agree on peer assessment criteria – Provide rubric

— Demonstrate the use of PeerScholar in class using a 'mock assignment', thus working through a PeerScholar review process

— Allow time to view and discuss feedback videos.

Feedback and Evaluation

— Review and discuss peer feedback with students and how it made them feel

— Seek student feedback on peer review process

— Evaluate overall impact of PeerScholar process on student learning.

References

Assessment of-for- as Learning. National Teaching and Learning Forum. Available at: https://www.teachingandlearning.ie/our-priorities/student-success/assessment-of-for-as-learning/

Collimore, L.M., Paré, D.E, Joordens S., (2015). SWDYT: So What Do You Think? Canadian students' attitudes about *PeerScholar*, an online peer-assessment tool. *Learning Environ Res,* 18**,** 33–45. Available at: https://doi.org/10.1007/s10984-014-9170-1

Earl, L.M. (2012). *Assessment as learning: Using classroom assessment to maximize student learning.* Corwin Press. USA.

Gaynor, J.W. (2020). Peer review in the classroom: student perceptions, peer feedback quality and the role of assessment. *Assessment & Evaluation in Higher Education*, 45(5),758–775. doi: 10.1080/02602938.2019.1697424.

Joordens, S., Pare, DE., Pruesse, K., (2009). PeerScholar: An evidence-based online peer assessment tool supporting critical thinking and clear communication. In *Proceedings of the 2009 International Conference on e-Learning,* 236-240.

Mangelsdorf, K. (1992). Peer reviews in the ESL composition classroom: What do the students think? *ELT journal*, *46*(3), 274-284.

Oluseyi Oluseun, A., Olufunbi Alaba, A,. Ismail Adelopo., Godfred Adjappong A., (2022). Managing group work: the impact of peer assessment on student engagement, Accounting Education, doi: 10.1080/09639284.2022.2034023

UCD Peer Assessment. Available at: https://www.ucd.ie/itservices/ourservices/educationaltechnologies/virtuallearning-brightspace/brightspaceinstructors/assessments/peer/
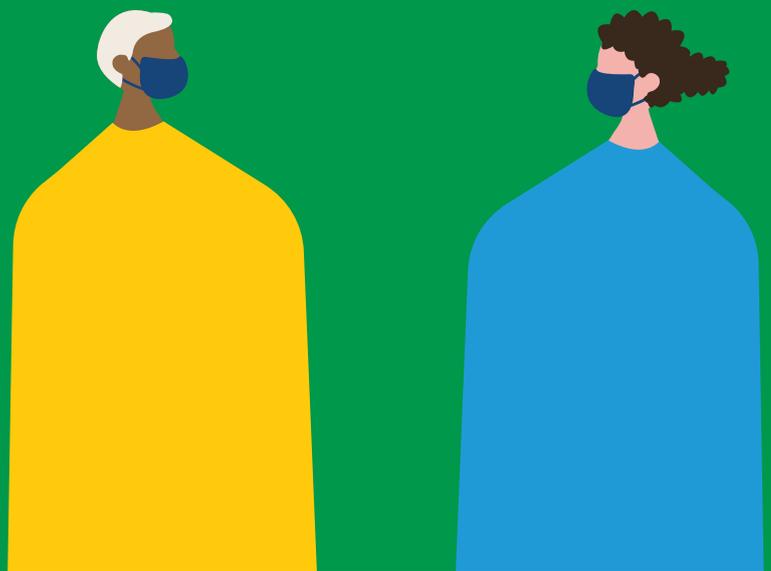
'Build-Your-Own-Assignment': A Subway-Sandwich Approach to Tailored Student-Centred Assessment Strategies

 Dr Tom Flanagan

Author	Dr Tom Flanagan

Abstract	Providing choice in assessment allows students to demonstrate achievement of learning outcomes in a way that works for them, highlighting their strengths, rather than weaknesses, and motivating them to engage with the task, yet the choice offered can generally be quite limited. This case study describes the development of a highly tailored in-term assessment opportunity with the aim of providing significant choice and flexibility for students to demonstrate successful learning outcomes. Students were permitted to customise their assignment by choosing individual versus group submission, assignment topic and submission format – akin to the level of choice associated with the well-known deli-sandwich.

Module/Course/ Programme/School	ANAT20070 - Anatomy of the Thorax Graduate Entry Medicine, Stage 1
Discipline	Human Anatomy
Level and Credits	Level 2 | 5 Credits
Student numbers	119 Students

Introduction and Context

Providing diversity in assessment has been shown to enhance student engagement and empowerment by accommodating the needs of diverse student cohorts (O'Neill & Padden, 2021). A variety of assessment methods is evident within and across programmes at UCD, and provides a degree of accommodation for students with different learning strengths and needs. Despite the variety of assessment methods, however, an individual assessment in any one module may suit some students particularly well, but not others.

A step further in diversifying assessment is to offer students a choice of assessment within the same module (Garside et al., 2011; O'Neill, 2011). There has been significant commitment and effort in UCD to diversify assessment in recent times. Indeed, there has been a strong focus on introducing assessment choice based on evaluations of its merits (O'Neill, 2011). This choice provides multiple means of action and expression for students – one of the core principles of Universal Design for Learning (UDL); it allows students to demonstrate achievement of learning outcomes in a way that works for them, highlighting their strengths rather than weaknesses, and motivating them to engage with the task (CAST, 2018). This can be of great benefit to both the students and their educators, as many elements of student diversity are 'hidden' from the educator - for example, students who learn differently, students with anxiety, students with hidden disabilities, and even those who have employment outside of the course or have caring or other demands on their time and flexibility (O'Neill, 2011).

The Medicine curriculum is one that is particularly rigid and tightly defined, with strict oversight by external bodies, and is central to a particularly demanding and intensive programme. Notably, there appears to be limited choice of assessment within UCD Medicine modules across two parallel programmes (Undergraduate Entry Medicine (UEM) and Graduate Entry Medicine (GEM)). When the 2020/2021 online module descriptors associated with the core pre-clinical modules of the UEM programme (36 modules) and GEM programme (19 modules) were reviewed ahead of this case study, only a single module (PHAR30070) referred to a 'choice' within a single module assignment *("Complete two online British Medical Journal learning modules (from a choice of 10)")*. Although not explicitly stated in the module descriptors, choice likely exists in other limited forms (e.g. choice of questions within end-of-semester exams, choice of assignment format) and while these choices are no doubt of benefit to students, there are clearly opportunities to create more tailored, even 'customised' assessments where students can take control of several assessment factors, thereby further diversifying their opportunities to demonstrate their achievement of learning outcomes. At the same time, maintaining academic rigour is paramount, which can be challenging in terms of all-encompassing assessment rubrics, as well as practicability and efficiency for the educator/grader.

The present case study describes the development of a highly tailored in-term assessment opportunity in a Medicine module – ANAT20070 Anatomy of the Thorax (GEM Stage 1, 2021/2022 session), with the aim of providing significant choice and flexibility for students of this module in order to demonstrate successful learning outcomes.

Design and Implementation

ANAT20070 Anatomy of the Thorax was chosen as the module for intervention, as it was coordinated by the author and there were already plans to introduce some level of in-term assessment to move away from a high-stakes 100% exit examination. A dissection assignment, with a 10% module grade weighting, was introduced, while a further 'tailored' assignment (20% module grade weighting) was proposed.

Focus group

In order to finalise the elements of assessment where choice might be introduced, the module coordinator met with a focus group comprised of 6 Stage 2 GEM students who had completed the ANAT20070 module the previous year. The discussion revealed three variables of assessment where students would find choice to be a significant benefit: (i) individual versus group submission, particularly as many students have a preference for one and may not work as well in the other, (ii) topic of assessment, where a student might have an opportunity to complete an assignment on an area that they were passionate about or more comfortable with, and (iii) submission format, e.g. essay, video, recorded presentation or poster. It was unanimously agreed that providing choice regarding all three factors would be an innovative concept that these students had not been exposed to previously and would likely benefit students significantly, in terms of flexibility and empowerment, in presenting their work.

Assignment guidelines

The details of the assignment were delivered to students in Week 3 of the trimester, whereby they were initially required to decide to engage in the assessment task as an individual, a group member with known peers, or as a randomised group member (by end of Week 4), and subsequently decide on a submission format (essay, video, recorded presentation or poster), as well as an assignment topic from a list of eight topics. We pitched this as a 'Subway sandwich' approach given the customisable nature of the assessment opportunity (Figure 1).

We informed students that those choosing to do a group assignment would be required to complete a further group peer assessment task after the submission deadline, in order to provide the graders with additional information on contribution of individuals to the group task.
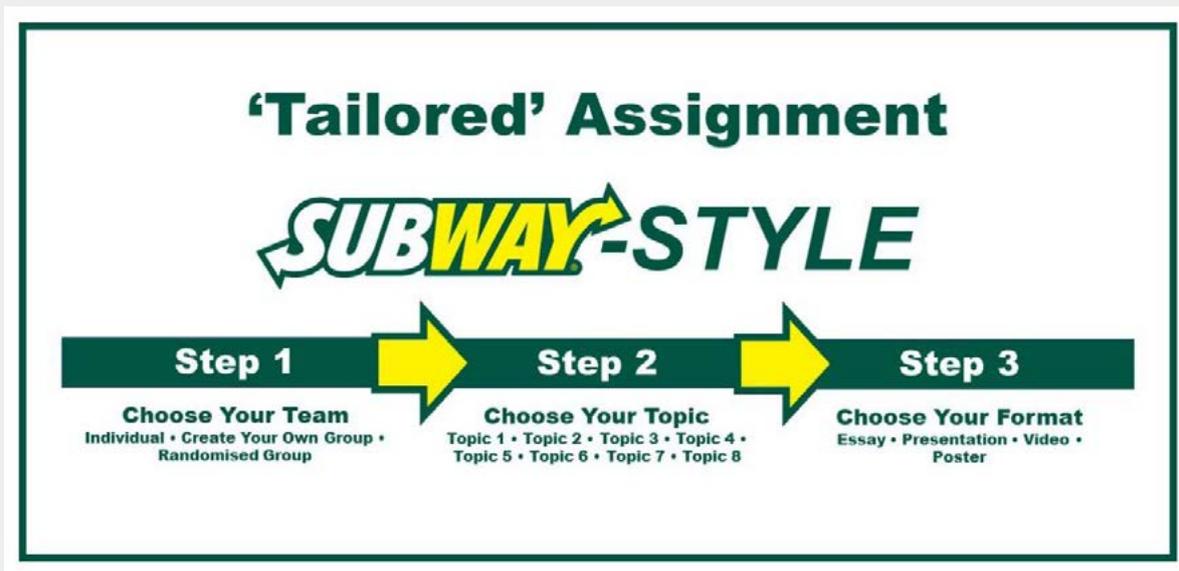
Figure 1: Tailored assignment in the module ANAT20070 – Anatomy of the Thorax.

Using Brightspace to record student preferences – Individual versus Group submission

In order to record the choice made by students relating to Individual versus Group work (4 students per group), and to subsequently establish a submission portal on Brightspace for individual versus group work, we set up a simple Quiz (MCQ format) on Brightspace (under Assessment) to record the choice of each student initially (Figure 2). Student choices were then added to a spreadsheet and two separate assignment submission portals were set up on Brightspace for Individual Assignment submission and Group Assignment submission.

Preview Question

When taking the question, it would appear as:

I wish to complete my assignment as -

- ◯ An individual assignment/submission
- ◯ A group assignment/submission (with selected classmates) (i.e. make your own group)
- ◯ A group assignment submission (with randomly-selected classmates) (i.e. randomly generated by Brightspace)

Close

Figure 2: Using Brightspace Quizzes function to gather choices from students.

Choice of Topic and Submission Format

The students were provided with a choice of eight different topics for their assignment (Table 1). In their assignment, students were required to link the specified clinical topic to the related (underlying) anatomy. In addition, students were presented with a choice of four different assignment submission formats (essay, poster, video, Powerpoint recording with voiceover). Further detailed guidelines on all aspects of the assignment topics, individual versus group work, and assignment format were provided to the students (Appendix 1).

Topic No.	Related Anatomy	Clinical Topic
#1	Arterial circulation of the heart	Coronary bypass grafting
#2	Foetal circulation shunts	Patent ductus arteriosus
#3	Aortic & mitral valve	Percutaneous valve replacement
#4	Pericardial sac	Pericardiocentesis
#5	Superior vena cava & right atrium	Central venous line
#6	Intrinsic muscles of the larynx	Thyroid surgery
#7	Nasal cavity & relations	Ethmoid fracture
#8	Pleura	Pleural effusion

Table 1: Tailored assignment topics

Student Survey

Following completion of the assignment, all 119 students of the module were invited to complete a short anonymous survey via Google Forms, to record their experiences of the assignment activity.

Results and Impact

A total of 34 students completed the student survey (response rate of 28.6%). In relation to providing flexibility for the students in relation to assessment, it was clear that the tailored assignment was "effective at providing multiple means of expression compared with continuous assessment opportunities in (their) other core Medicine modules", with >90% of survey respondents in agreement with this statement (Figure 3).
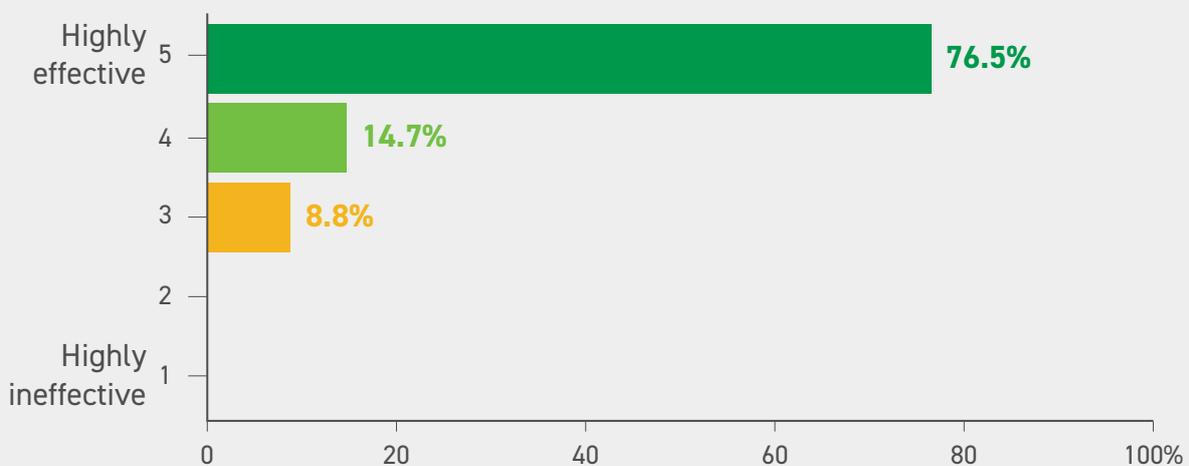
Figure 3: Effectiveness of tailored assignment at providing multiple means of expression compared to continuous assessment opportunities in other core Medicine modules (where 1=Highly ineffective, 5=Highly effective).

Student Choices

(i)   Individual versus group submission

From the class total of 119 students, 87 students (73.1%) opted for an individual assignment, 28 students (23.5%) opted to pre-assemble groups with known peers (n=4 per group), and 4 students (3.4%) opted to be assigned randomly to a group. The survey respondents rated this option highly in terms of which tailoring option they found most helpful or useful (14 students, 41.2% of respondents) (Figure 4).
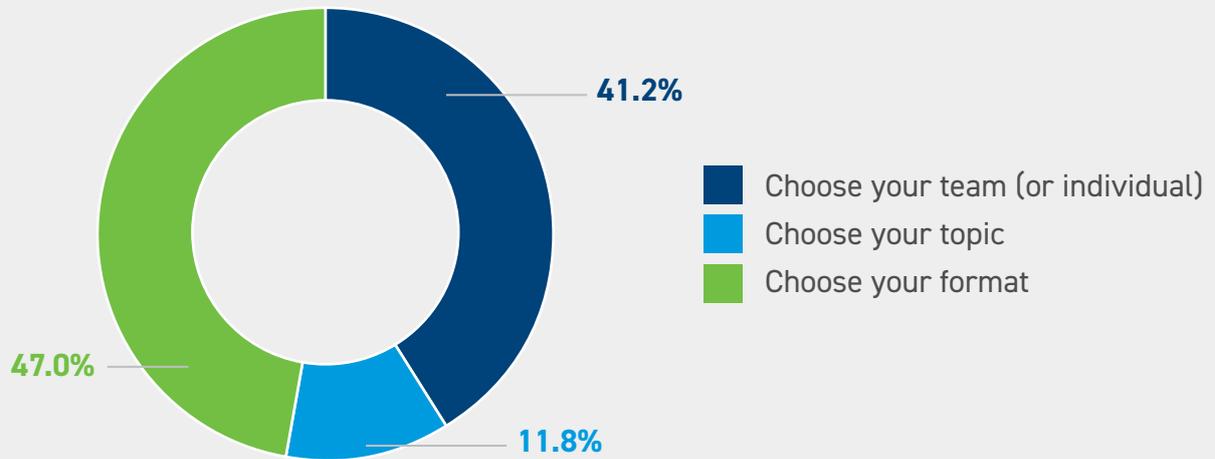
Figure 4: Tailoring option considered to be MOST helpful or useful by survey respondents.

Some of the feedback relating to Individual versus Group submission is highlighted below.

> "Giving students a choice whether to work individually or in a group for a project is something that's rarely done in college, but people generally have pretty strong feelings about which they prefer. So this option felt extra accommodating!"

> "We had a lot of other group projects so being able to do it as an individual was appreciated"

> "I definitely think being forced into teamwork/individual work when it's not your preference really makes an assignment even more difficult so this was a huge benefit for me".

It was clear that a significant number of students preferred an individual submission, where they likely had more ownership and freedom to express themselves. However, it was not an essential option to have for students, as a similar number of students (14 respondents, 41.2%) indicated that it was the least helpful or useful tailored option to have (Figure 5).

41.2%

17.6%

41.2%

- Choose your team (or individual)
- Choose your topic
- Choose your format
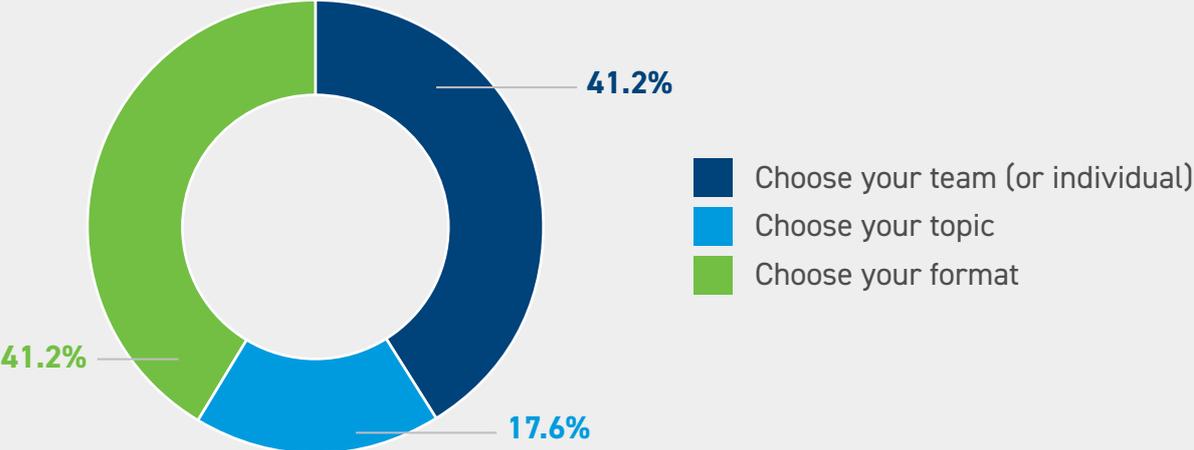
Figure 5: Tailoring options considered to be LEAST helpful or useful by survey respondents.

Of note, this was the option that appeared to generate the most debate amongst students, with several students suggesting that perhaps the individual effort by group members in group submissions was not equitable to that of individual submissions:

> "I completed my assignment as an individual, and although I'd make the same decision again, I definitely noticed that I was putting way more work into the assignment than any of my friends who were completing it as part of a group".

100% of survey respondents felt that there was sufficient choice in the Choose your Team (or Individual) option.

(ii)   Assignment Topic

Of the eight topic choices provided, there was a clear preference for two topics in particular: *#1 Arterial circulation of the heart* (28 students, 23.5%) and *#3 Aortic & mitral valve* (38 students, 31.9%) (Table 2). The reasons for this are unclear, but it is notable that the list of topics #1-8 are generally in order of appearance of the topic in the course, so students may have been more comfortable addressing material that was covered early in the module. It is also notable that all assignment topics were addressed to some degree.

Topic No.	Related Anatomy	No. of students (% of class)
#1	Arterial circulation of the heart	28 (23.5%)
#2	Foetal circulation shunts	19 (16.0%)
#3	Aortic & mitral valve	38 (31.9%)
#4	Pericardial sac	8 (6.7%)
#5	Superior vena cava & right atrium	4 (3.4%)
#6	Intrinsic muscles of the larynx	12 (10.0%)
#7	Nasal cavity & relations	2 (1.7%)
#8	Pleura	8 (6.7%)

Table 2: Choice of assignment topic by the students.

In terms of the importance of having the assignment topic as a choice, only 4 students (11.8% of respondents) considered this option to be most helpful or useful (Figure 4), while 14 students (41.2% of respondents) considered this option to be least helpful or useful (Figure 5).

Some of the feedback relating to choice of topic is highlighted below.

> "Choosing a topic that you identify most with makes the assignment very enjoyable"

> "I would have been happy to do it on any topic"

> "Not a bad thing at all to be able to choose your topic. However, if we were each assigned a topic it wouldn't be the worst thing as we're all learning and it's good to stretch past your comfort levels sometimes".

94.1% of survey respondents felt that there was sufficient choice in the Choose your Topic option.

(iii)   Assignment format

Of the four assignment submission formats available, the students favoured essay format (56 students, 47.1% of the class), followed by recorded presentation (28 students, 23.5% of class), poster (25 students, 21% of class), and, then, video (10 students, 8.4% of the class) (Table 3).

Assignment format	Related Anatomy
Essay	56 (47.1%)
Poster	25 (21.0%)
Video	10 (8.4%)
Recorded presentation	28 (23.5%)

Table 3: Choice of assignment format by the students.

Some of the feedback relating to choice of submission format is documented below.

> "This catered to all individuals. A very nice approach to assignments!"

> "Choosing the format myself has provided me with an opportunity to critically evaluate the different options as well as my delivery skills for each one and make a decision on the most appropriate one which is an important skill for a future medical practitioner"

> "I thought that this general assessment style may be unfair since it self selects for people who have better gadgets and means to make great projects even though they may not understand key concepts".

100% of survey respondents felt that there was sufficient choice in the Choose your Format option.

Overall Impact

76.5% of survey respondents suggested that they would like to see even more choice in assessment / means of expression throughout their core Medicine modules, indicating that it was an overall positive addition to the assessment of this module (Figure 6).

20.6%

2.9%

76.5%

- Yes, I definitely would
- Everything is actually fine in this regard
- Definitely no, I have too much choice already
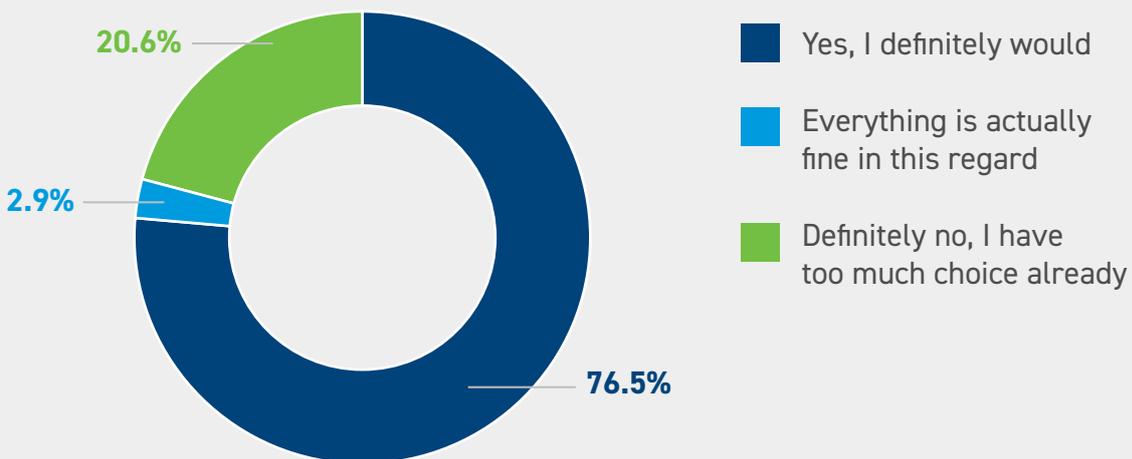
Figure 6: Survey responses to the question – "Would you like to see more choice in assessment / means of expression throughout your core Medicine modules?".

Some general feedback relating to this tailored assignment activity is highlighted below.

"I thought the guidelines were clear and it really helped that they differentiated between the team projects and the individual projects"

"Overall the amount of freedom and choice provided to me with this assignment had a very positive impact on my learning and it was by far the most enjoyable assignment I had done this academic year"

"I really enjoyed doing this assignment and would strongly recommend that it is included next year. It is a great way of becoming integrated with the subject that you choose"

"We all have different personalities, learning styles, and means of expression, so being able to incorporate that into our CA allows us all to maximise what we get out of the course. If other modules were open to this way of assessing, I believe we'd be more engaged in the topic and come out of the course with more understanding"

"I would definitely encourage you to use a similar format next year, the choice of format/question was super helpful! However I would maybe reconsider having the choice of groups/individuals (or maybe make the groups smaller?) just to even out the workload".

While this was generally an overall positive experience for both staff and students, we encountered some difficulties in implementing the task. The main issue from students appeared to relate to the perceived inequity in workload in group assignments compared to individual assignments. While the submission guidelines required additional input in group submission relating to lower- and upper-word limits, video length, etc, there was a perception from students that these limits ought to have been increased further. However, group members had the additional peer assessment task at the end of the module and were also incurring some risk and sacrificing some ownership of the task by joining a team. These factors were considered in setting the workload limits. Moving forward, it would be a valuable addition to prepare an all-encompassing grading rubric to provide further transparency to students in relation to grading of group versus individual assignments.

The main staff issue relating to this task was the significantly enhanced workload taken on by the module coordinator. The choice that exacerbated this workload the most was choice of topic, which required the production of eight representative/model answers, and which protracted the grading process. Going forward, it is likely that the choice available will be reduced or this option will be removed entirely to improve practicability, as it was also the choice deemed least helpful/useful by the survey respondents.

Recommendations and Advice

Overall, this proved to be a very useful and worthwhile exercise in providing multiple means of expression for students in this module, and in allowing them to take some ownership of their learning and assessment through a highly flexible activity.

Based on my own experience of the activity and that of our students, I would make the following recommendations for anyone wishing to implement such an activity in their module:

— The Brightspace Quizzes (MCQ) function is a useful tool to capture final choices by students without having to deal with dozens of emails

— The option of an Individual versus Group submission was one that was welcomed; however, it would be useful to develop a suitable grading rubric that encompasses both individual and group submissions

— A choice in assessment format seemed to provide the most benefits to students, with four different formats allowing for sufficient and enhanced flexibility

— It would seem that the more choice offered in terms of subject matter, the higher the workload for the assessor – this should be considered in designing any tailored assignment activity

— For further reading, I would recommend reading "7 Tips to Implement Choice of Assessment Methods within a Module: A Quick Guide for Lecturers/Faculty" (Appendix 2 in O'Neill, 2011).

References

CAST (2018). Universal Design for Learning Guidelines version 2.2. Available at: http://udlguidelines.cast.org

Garside, J., Nhemachena, J.Z., Williams, J., Topping, A. (2009). Repositioning assessment: giving students the 'choice' of assessment methods. *Nurse Education in Practice*, 9, 141-148.

O'Neill, G. (Ed.) (2011). *A practitioner's guide to choice of assessment methods within a module*. UCD Teaching & Learning.

O'Neill, G., Padden, L. (2021). Diversifying assessment methods: barriers, benefits and enablers. *Innovations in Education and Teaching International*, 59, 398-409.

Integrating Universal Design for Learning with an Enquiry-Based Learning Approach to Social Justice in Healthcare Education

Dr John P Gilmore

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Abstract

Social injustices and inequalities are significant issues within healthcare and are inextricably linked to poorer healthcare outcomes. In developing a module which aims to empower healthcare practitioner students to challenge injustices, within society and healthcare systems, a combined hybrid enquiry-based learning with UDL underpinnings was adopted. In this way, learners were empowered and facilitated to take leadership in their own learning while being supported to engage through multiple means of engagement, representation, action, and expression.

Module/Course/ Programme/School

College of Health and Agricultural Sciences
School of Nursing Midwifery and Health Systems
Challenging Injustices in Healthcare

Discipline

Healthcare professional education

Level and Credits

Level 3 | 5 Credits

Student numbers

16 Students

Introduction and Context

Social injustices and inequalities are inextricably linked to poorer healthcare outcomes, especially in the most marginalised groups (Aldridge et al., 2018); thus, building an awareness and knowledge of social injustice is of paramount importance in the education of healthcare practitioners. In order to support and empower healthcare professional students to take an active role in challenging injustices in healthcare contexts, I developed a module which would specifically look at how students could take an active and informed role in social justice practice. The learning outcomes for this module are as follows:

1. Critically discuss how health and wellbeing are socio-politically situated and the impact this has on the individual, their community, and society

2. Examine various oppressive structures which may impact on the lived experiences of those who encounter healthcare services in an intersectional way

3. Appraise the roles of healthcare workers and communities in health activism

4. Critically examine own beliefs, values, biases, and privilege in order to challenge themselves and others to overcome oppressive practices within healthcare.

Healthcare professional education programmes, such as the ones I teach on, are delivered through a combination of university-based theoretical instruction, as well as clinically-based practice placement; students are expected to continually consolidate their theoretical learning throughout their placement experiences and, concurrently, explore issues experienced on placement within the classroom environment. As pedagogical approaches for healthcare professional students, problem-based and enquiry-based learning are proven methodologies to ensure critical and applied thinking – this approach encourages learners to think in more real-world scenarios; as described by Theobald and Ramsbotham (2019), learners begin to 'think like a nurse' (or other healthcare professionals).

Enquiry-based learning facilitates learners to engage in critical analysis skills to deconstruct complex social issues; in this case, how injustice and oppression can impact on and intersect with health and wellbeing. Khan and O'Rourke (2004) highlight how students bring their own existing knowledge to the process, identifying their own learning needs and deciding on the direct lines of enquiry engaged with and methods used. Enquiry-based learning is built on principles of empowering learners to steer their own learning path. Rather than focusing on content delivery, learning activities are centred on high level questioning, which facilitates students to connect aspects of learning, through their own exploration of varying sources of information and knowledge.

This pedagogical underpinning fits well with a Universal Design for Learning approach, whereby a diversity of learning styles are facilitated through multiple means of engagement, the why of learning; multiple means of representation, the what of learning; and multiple means of action and expression focussed on how learning is then used (CAST, 2018). At its core, UDL is an approach to ensure that all learners have equitable access, participation, and also opportunity for educational success (Atkins, 2021). By explicitly embedding UDL principles within this module, which is delivered through a hybrid enquiry-based learning approach, students learned about how issues of social justice are embedded in healthcare, while simultaneously experiencing a form of pedagogical design justice through UDL. In this way, the educational experience itself is a form of social justice (Gilmore et al., 2022).

The module took place over a 10-week period, with learners attending a two hour class at the beginning and end of each week for six weeks, along with some supplementary assignment preparation and consolidation classes. An enquiry-based learning approach, as outlined by Pedaste (2015), was adopted in a hybrid way; given that EBL is not embedded in other modules taken by the students, there was a flexibility in how EBL was applied, with the option for more taught content in areas in which students found it difficult to develop their own learning. In the module, students take the lead in positioning how they will approach the learning outcomes, and each week they are given a specific concept. However, how they engage with that concept is up to them to negotiate – this facilitates the 'buy-in', which along with sustaining interest, is the aim of multiple means of engagement. It's important as educators to be clear that our lens is just one lens and grounded in our own experience. The enquiry -based learning approach of this module, in welcoming learners to bring their own experience, facilitated the course to be personally relevant, and when students feel that there is a place for them within the course, giving them choice and autonomy can enhance this engagement (Takacs et al., 2020).

The stages of EBL as applied in this module are described below in Figure 1.

Stages of Enquiry-Based Learning:
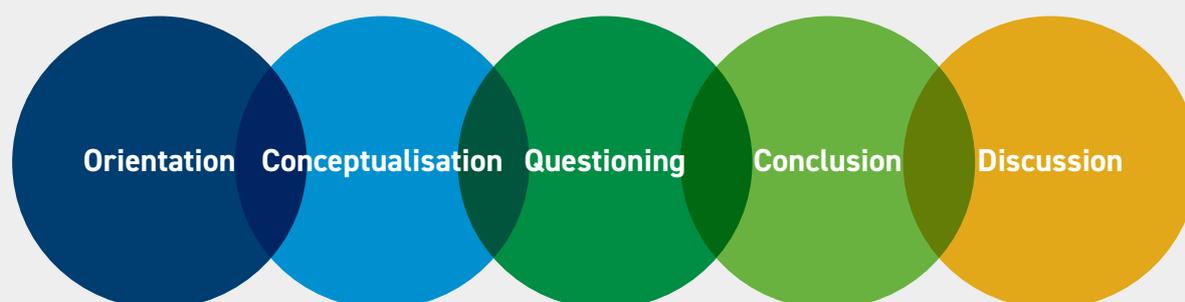
Figure 1: Stages of Enquiry Based Learning

Enquiry-based learning is an approach which centres learning around solving a particular problem or answering a central question; it allows for the complexities of healthcare environments and the human condition to be considered when deciphering what knowledge is needed and how it will be acquired. Some of the key features of this approach include: learner autonomy, active learning and understanding, clinical and critical reasoning, and collaboration in a social context (Cleverly, 2003). Within the Challenging Injustices in Healthcare, learners were facilitated to explore how social injustices intersect with healthcare and devise strategies to challenge this.

There are many ways in which the process of EBL is described in literature. In their attempt to synthesise these various descriptions, Pedaste et al. (2015) summate five distinct phases of EBL. This framework was used to underpin the approach to Challenging Injustices in Healthcare; the phases include Orientation, Conceptualisation, Investigation, Conclusion, and Discussion and are discussed in more detail below.

Orientation

The core function of the orientation phase is to get the learner started with a new topic for exploration (Pedaste et al., 2015). At the beginning of each week of the module, learners were introduced to specific concepts and theoretical underpinnings related to social (in)justice; these included racism, homophobia and transphobia, classism and poverty, ableism, and gender inequality. Learners were presented with key theoretical positions related to these issues in the classroom and encouraged to bring their own previous experience and knowledge of the issues into the classroom discussion. For example, when discussing racism, learners were introduced to concepts such as discrimination, intersectionality, white supremacy, and white fragility as key concepts which they might explore related to experiences of healthcare.

Conceptualisation

The conceptualisation phase also took place within the first class of each week; the key focus on this phase is in questioning, determining what needs to be known, and generating hypotheses for their further enquiry. Within the class, learners were encouraged to engage in activities, including self-reflective enquiry within small groups, an example of this was exploring John Raible's (2009) checklist for antiracist white allies and considering how applicable it is to their own practice environments. Learners engaged in group discussion, activities, and presentations back to the class.

Investigation

The investigation phase of EBL in this module consisted of unstructured and independent learner enquiry through exploration of various forms and sources of information related to the topic in focus for the week. Learners were encouraged to engage with a broad array of source types, including peer reviewed scholarship, and epidemiological data but also literature, film and other multimedia and forms of first-person testimony which might support this. In order to support learner enquiry, a resource-bank was provided for each week, with an array of sources, where learners could use these resources to further investigate the phenomenon or seek out their own sources. Each week, learners added to the resource bank, with sources they had attained themselves.

Conclusion

The conclusion phase of learning took place in the second class of each week. Having explored and engaged with various sources of information, learners were presented with questions in class to work through individually and in small groups. Some examples of questions posed included 'should all healthcare provision be free and universal', 'do all white people benefit from racism', 'what feminist issues are of the greatest importance'. Learners worked through these discussions in various ways, through digital polling, moving debates, and traditional group work with flip charts and sticky notes.

Discussion

The discussion stage of enquiry-based learning comes back to a consolidation of learning and a consideration of the 'so what' of the knowledge attained. Pedaste et al. (2015) describe how this phase is about collaborative and "bidirectional" (p.53) discussion. Given the breadth of sources used and information attained through the EBL process, this phase allows for verification of knowledge, generalisability, and a platform for moving knowledge forward in an applied way.

Assessment of learning

As with any academic module, assessment forms an important aspect of learning. In keeping with the approach of developing knowledge beyond empirical learning, the assignment was framed to address all learning outcomes in a creative and student-led way.

The first part of the assignment is a critical reflection on the students' own values, bias, privilege, and knowledge related to four separate sources they engaged with throughout the course. This patchwork of responses is designed in a way which encourages learners to centre themselves in the learning as a first point, prior to moving forward into action.

The second part of the assignment is an artistic response to the learning experiences through the module. Learners are encouraged to utilise any form of artistic expression to demonstrate how they have met learning outcomes. Learners then present their artwork to assessors and peers and are questioned on their learning.

Design and Implementation

In order to ensure principles of UDL were maintained throughout the module development and delivery, it was specified explicitly within the module proposal form, and subsequent module descriptor. An introduction to UDL was also included in the introductory material for the course, so that learners were clear in how the module was developed and would be delivered.

UDL guidelines were embedded in the following ways:

Multiple means of Engagement

In order to recruit and maintain interest throughout the module, learners were empowered to seek out and find their own learning materials. Unlike traditional health sciences modules, learners were encouraged to engage with learning materials which centred first-person experiences, documentary film, podcast, literature or song.

Learners were given a clear map of topics in advance of beginning the module, knowing that each week a different area would be focused on (Racism, Ableism, Poverty, Gender Inequality, Homo/Transphobia). On the final week, they would select either a new topic, or a topic to re-engage with. Learners were facilitated in the first class of each week; they would be supported to explore conceptual ideas on the topic in focus, and throughout the week to engage with material which dealt with these issues.

Multiple means of Representation

The most fundamental way in which this was addressed through enquiry-based learning in this module was that learners were encouraged and empowered to find their own learning materials. There was no limitation in terms of source of format, and learners were encouraged to seek out what worked for them to address the learning outcomes.

In order to maximise accessibility, recordings of the concept-focused class were made each week, ensuring that the presentation and recordings included closed captioning, as well as image descriptions and consideration to contrast. In addition, an online resource bank, which included various different formats of learning material for each topic, was provided. Learners then added to this on the discussion board as the module progressed with sources they had found.

Multiple means of Action and Expression

The two-part assessment for this module was designed to offer maximum flexibility for the learners to demonstrate how they met the learning outcomes.

Each part of the assessment was explicitly linked in the assessment brief to the appropriate learning outcomes so that learners were clear what they were addressing. Assignment rubrics were also used and shared with learners from the beginning of the module, so expectations were clearly laid out (Appendix 1; Appendix 2).

Learners were facilitated to demonstrate their learning using any format – they were not graded on their choice of presentation, rather on how they demonstrated the learning outcomes. Part 1 was a patchwork of reflective pieces on their own privilege, values, and bias related to four learning sources they engaged with. Most of the students provided this as four short written reflections, some students recorded this patchwork. Part 2 was an artistic response to their learning in the module in any format.

Students presented painting, song, sculpture, poetry, and photography as mediums to demonstrate their learning. They were then invited to present their work and answer questions, based on the rubric provided.

Learners had the opportunity each week to present aspects of their final assessment, in terms of concept, areas of focus or design. This was also supported with a specific formative assignment session, where students could present a single patch and receive peer feedback, as well as a Q&A session on the assignment process.

Results and Impact

As this is a newly developed module, comparison between previous iterations is not possible; however, review of student profiles suggests that many students attained equivalent or higher marks than in other modules.

The most prolific testament to impact was the level of student engagement within the module, absence was a rarity and learners. On average, 10 new resources were identified by students each week and shared with the class, which demonstrated a breadth of enquiry taking place. These included novels, memoir, poetry, films, and visual art.

Recommendations and Advice

One consideration which I thought important was that enquiry/problem-based learning may not be a common approach within programmes that learners were studying, and so the process needed to be scaffolded with adequate lecturer support.

As this may be a new way of learning for students, being explicit about the process, expectations and supports is important in ensuring learners feel empowered to participate fully. In 'traditional' enquiry-based learning approaches, such as the resource bank, a weekly instruction on each new topic might not be standard, but, as this was a new approach to learning for many of the learners, these supports ensured an equity in engagement.

As the principle of 'multiple means' may be new to students, the amount and variety of ways to engage, resources of different resources, and assessment options may be overwhelming. By explaining the principles of UDL from the outset, learners understood that they did not need to engage with or participate in all the resources of activities, but that they could identify which were most suitable for them to achieve the learning outcomes.

References

Aldridge, R. W., Story, A., Hwang, S. W., Nordentoft, M., Luchenski, S. A., Hartwell, G., Tweed, E. J., Lewer, D., Vittal Katikireddi, S., & Hayward, A. C. (2018). Morbidity and mortality in homeless individuals, prisoners, sex workers, and individuals with substance use disorders in high-income countries: a systematic review and meta-analysis. *Lancet* (London, England), 391(10117), 241–250. Available at: https://doi.org/10.1016/S0140-6736(17)31869-X

Atkins, M. (2021). *Increasing Inclusivity and Social Justice in the Post-Secondary System Through Universal Design.* Adler University, Calgary, Alberta

CAST (2018). *Universal design for learning guidelines.* Version 2.2. CAST: Wakefield, MA, USA. Available at: http://udlguidelines.cast.org

Cleverly, D. (2003). *Implementing Inquiry-Based Learning in Nursing* (1st ed.). Routledge.

Gilmore, J. P., Haligan, P., & Browne, F. (2022). Pedagogy as social justice– Universal Design of Learning in nurse education. *Nurse Education Today*, 105498.

Kahn, P., & O'Rourke, K. (2004). Guide to curriculum design: Enquiry-based learning. *Higher Education Academy*, 30(2), 3-30.

Pedaste, M., Mäeots, M., Siiman, L. A., De Jong, T., Van Riesen, S. A., Kamp, E. T., & Tsourlidaki, E. (2015). Phases of inquiry-based learning: Definitions and the inquiry cycle. *Educational research review*, 14, 47-61.

Raible, (2009). 'Checklist for Allies Against Racism'. Available at: http://johnraible.wordpress.com/

Takacs, S., Zhang, J., Lee, H. (2020). Universal Design for Learning: Strategies for Blended and Online Learning. Centre for Teaching, Learning, and Innovation, Justice Institute of British Columbia; Available at: https://ctli.jibc.ca/wp-content/uploads/2020/10/Universal-Designfor-Learning_Strategies-for-Blended-and-Online-Learning.pdf

Theobald, K. A., & Ramsbotham, J. (2019). Inquiry-based learning and clinical reasoning scaffolds: An action research project to support undergraduate students' learning to 'think like a nurse'. *Nurse education in practice*, 38, 59–65. Available at: https://doi.org/10.1016/j.nepr.2019.05.018

Case Study Title:

Transforming Students' Knowledge and Understanding of Leadership & Management Practices in Healthcare Through the Application of UDL Principles

Dr Phil Halligan

Author	Dr Phil Halligan

Abstract

This case study presents the application of UDL principles in a nursing module on Leadership and Management (n=216). Students were offered a variety of strategies based on the three principles of representation, engagement, and expression. Students were provided with different alternatives for assessing information, polls were used to engage students, a concept map was used to teach various elements and their interrelationships, and, finally, students could attend class in person or remotely and the lecture recording were made available on Brightspace. Assignment feedback was in audio and written annotations. Results showed, in comparison to previous years, the use of UDL principles resulted in increased flexibility, reduced stress, and improvement in the students' evaluations and grades.

Module/Course/Programme/School

Module: NMHS 30290 Leadership & Management
Course: BSc Nursing & Midwifery/
School: Nursing, Midwifery and Health Systems

Discipline

Nursing & Midwifery

Level and Credits

Level 4 | Credits 5

Student numbers

216

Introduction & context

Making learning fun and enjoyable is at the core of my teaching philosophy. Students registered to this module are entering the final year of their BSc Hons degree and will have spent fifty per cent of their learning on various practice placements. Therefore, their experiential learning on a variety of practice placements for the past three years must not be ignored but integrated and built upon to enhance their knowledge, skills and attitudes going forward to register as a professional nurse or midwife and prepared them to be life-long learners.

The module outcomes are aligned with the Nursing and Midwifery Board of Ireland (NMBI) (2016) standards and requirements for Higher Educational Institutions (HEIs). These standards are required to be achieved to register as a nurse/midwife and topic areas relevant to Irish healthcare today.

Universal Design for Learning (UDL) is a well-recognised approach to teaching that aims to give all students equal opportunities to succeed, no matter how they learn. As the student profile on this module varies greatly - gender, marital status, family status, sexual orientation, religion, age, disability (8.5%), and race; as an academic, UDL allows me to focus both **what** is taught **and** how. Although I acknowledge each student as an individual and that there is no "typical" student; as a module coordinator, I need to take all these factors into consideration when planning my teaching and learning; but meeting such diverse needs in the classroom can be a challenging task. Furthermore, to add to this challenge this stage of the programme represents 50% of their degree award and thus, students are anxious and very keen to do well and reach their full potential and hopefully progress to graduate study. UDL is ideal for meeting all the student's learning needs.

The School of Nursing, Midwifery & Health Systems is one of five schools located within the College of Health and Agricultural Sciences (CHAS) (see Figure 1).
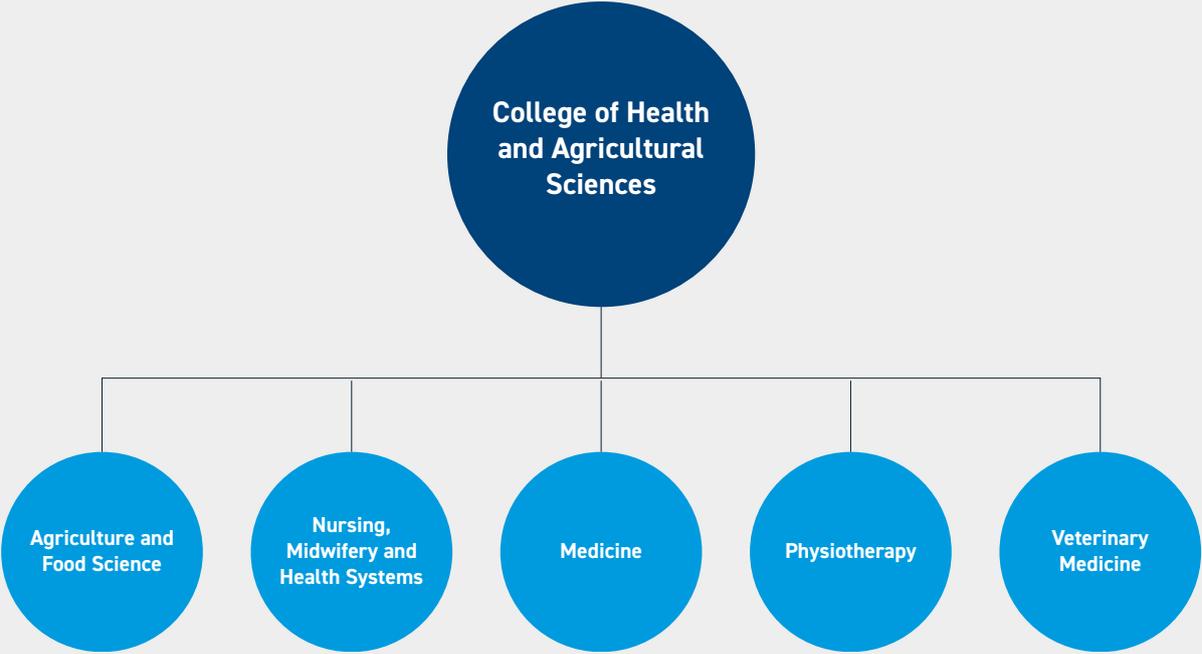
Figure. 1 College of Health and Agricultural Sciences (CHAS) and its five schools

Of interest to this case study, the School of Nursing, Midwifery and Health System's mission is to 'prepare nurses, midwives, and other professionals to promote and protect health, wellbeing and dignity across the lifespan through skilled, ethical and careful practice based on best evidence and sound judgement, and we develop and disseminate disciplinary knowledge through research and scholarship' (UCD 2022a). Four programmes are offered to incoming undergraduate students – General, Children's and General, Mental Health Nursing, and Midwifery degree. This module[1] is a shared module whereby students from all four programmes participate and is one of five modules that they take in stage 4 and has a credit value of 5.

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1   A module is a self-contained unit of teaching and learning, normally delivered over one trimester (12 weeks) and each module has a credit value whereby one credit equals approximately 25 hours (20-30 hours) of student effort (UCD 2022b).

Role in your School

My main role is a member of Faculty (Assistant Professor/Lecture and Module coordinator). I am also Chair of the Disability Liaison Team who supports students transitioning to practice placements and their learning on placements who register with a documented disability and a member of the University Widening Participation Committee. Module coordinators within the university have complete autonomy and are responsible for compliance with Academic Regulations within the module and must ensure that their module is delivered and assessed as laid out in the module descriptor. Each module has a Module Coordinator who is responsible for the day-to-day management of the module. Normally, the Module Co-ordinator does most of the teaching and assessment on the module, promotes and reviews student module feedback and oversees the marking, moderation and timely return to students of all assessments and feedback in line with university policy.

Key stakeholders

Ideally, stakeholders involved in the change should be the students first and foremost. However, this was not possible as module descriptors need to be edited and completed in the previous trimester (usually before the end of June). Nevertheless, on the first morning of class, students were informed that UCD is a 'University for all' and that we aim to be as 'inclusive' in all aspects of their education. The inclusive statement (see Figure 2) was posted on the virtual learning platform (Brightspace) and a welcoming message in advance of the start of term. On the first morning of term, this was read and explained in full detail to what it means, and time was allowed for students to ask any questions about being 'inclusive'.

Statement of Inclusivity

This School strives to be a model of inclusion. We respect and value student diversity in all the modules we offer. Our learning environment is designed inclusively, so that it can be accessed, understood, and used to the greatest extent possible, removing all barriers. Students are provided with equal opportunities to access, participate, and succeed, regardless of background, personal circumstances, age, disability, or pace of study. UCD is a university for all where diversity and inclusion are woven into the fabric of our institution at every level. Students are encouraged to approach staff to discuss their learning needs. Any information disclosed will be treated with confidentiality and respect (UCD 2022c).

Students with documented disabilities can register with the UCD Access office - disability@ucd.ie. Please try to alert me if you need any specific accommodation at the start of the module. Students without documented disabilities who may need accommodations can discuss this with me privately or set a meeting to discuss specific needs (UCD 2022d).

Figure 2. Inclusive Statement

The key stakeholders involved were as follows: *Education Technologist, Librarian, Programme Directors, Associate Dean* of Teaching and Learning, Associate Dean Undergraduate Programme, other Module Coordinators teaching on this stage and IT services. Education technologists, IT services and module coordinators teaching on this stage were considered the key stakeholders.

Education Technologists work collaboratively with module coordinators and students to design and implement a range of educational resources and creative challenges and are instrumental in providing pedagogic advice, guidance and support on the use of appropriate technology in education and support the module as a whole.

IT services provide all central IT applications, support and infrastructure for staff and students throughout the University and are only a telephone call away when a technical issue arises. They provide training on recording of lectures on Lecture capture and on zoom.

Finally, Module Co-ordinators teaching on other modules on this stage were considered a key stakeholder due to the necessity to collaborate re-scheduling of modules times, places and to ensure that students were not overburdened with assignments and examinations at the same time during the trimester.

Design and implementation of the initiative

The design and implementation occurred in a number of steps. Step 1 & 2 informed the design and 3 & 4 the implementation.

Step 1. Assessment:

Pre trimester usually during summer July/Aug of previous academic year, I made note of any changes in regulations (University and professional bodies), review previous students' feedback, noted any changes emerging from within the health service and the affiliated partner training hospitals (e.g. Covid and Cyber crisis), discuss with colleagues from Stage 3 to see what worked and what didn't work during that year with the same cohort of students. In addition, consultation with other colleagues on this regarding the following: timetabling, other strategies, and timing of assessments to be submitted. Module learning outcomes were reviewed and any changes made as necessary.

Step 2. Planning:

Furnished with all the information, the planning stage is considered crucial. Whilst acknowledging that the module is currently fairly inclusive, I listed each concept required to teach and explored how I could make the module more inclusive by examining potential barriers and challenges in the module, rather than in the student and examined ways to teach in that manner was considered carefully. Consideration is also given to the resources needed to ensure students' understanding, build time in for student's reflection on their experience of working in clinical practice, and how they fit with the module learning outcomes. I liaised with the Education Technologist who assisted with the layout of VLE (Brightspace) and incorporated inclusion and equity as overarching principles that guide all education policies, teaching plans, and practices created. The key planning points are listed in Table 1.

Concepts	— Leadership
	— Management
	— Quality Improvement
	— Information Management Systems
UDL principles	— Statement of inclusion
	— Engagement
	— Representation
	— Action/Expression
Practices	— Acknowledge student diversity in the class
	- Number of students registered with a disability
	- English maybe not their primary language
	- Working parents
	- Part of marginalised group (LGBT, Refugee, etc)
	- Members of the lower socioeconomic group
	- Variance in age (20-55) and gender
	- First generation college students
	— Collaborate with students
	— Q & A sessions (anonymous posting)
	— Additional support – drop-in zoom sessions

Table 1. Key Planning Points

Step 3. Implementation:

For each concept required to teach, I decided what were the essential components for students to learn as they can get overburdened in this trimester and they were taking an additional four modules. Overall, Leadership and management can be viewed as an abstract subject to a twenty-year-old, whereas a fifty-year-old student might understand and comprehend it differently. Meeting the middle ground was essential. The principles of UDL incorporated into the module were as outlined in Figure 3.

Engagement	— Opportunities were provided to students to reflect on their experience on placements and supported with research evidence.
	— Diverse groups were included into teaching when discussing issues (e.g. religion, economic status, race, gender, and language) and readings from a wide geographical area.
	— Assignments were made available with associate guidelines, sample of exemplary work, and grading rubric in second week of trimester with the expectation that students would begin working on their assignment. Students were encouraged to break assignment into manageable parts with a timeline for completion.
	— All resources uploaded onto VLE was kept simple, assessable formats using Access Sesus, colour (white on black background), visual diagrams had added descriptions, and transcripts were provided with recordings
	— Students were asked at various points for feedback and to share their experience. Support tools, such as writing centre or grammerly, library help, and online resources.
	— Concrete examples of how past students have coped with challenging learning situations or experiences in this modules and the supports available should they need it e.g. extenuating circumstances, extension, and coping with many deadlines.

Representation

— Core textbooks were provided as eBooks where possible and all relevant articles hyperlinks with important points highlighted.

— Weekly lecture presentations were released 2 days before class and the recordings immediately following class with transcripts. This allowed students the option to simultaneously view the PowerPoint presentations with the lecturer or print handouts to take notes during class.

— All multimedia (video, audio, visual) had closed captioning, a transcript, or alt-text available.

— Class activities using 'Mentimeter' or 'Poll Everywhere' supported the students' understanding of theory. They also allowed for interactive anonymous polls and created fun and engaging presentations. As responses were in real time and possibility of a response from every student online or in class, it allowed.

— Students were encouraged and advised to use 'Read aloud' function on MS Word. Hyperlinks/footnotes were used to explain unfamiliar words. Concept map was used to illustrate and make connections to previous lectures and increase their understanding of how the module content links together.

Action & Expression	—	Students were encouraged to submit questions relating to their assignment through 'Please ask a question' forum.
	—	A checklist was provided for student to complete before submitting their assignment to monitor their progress in completing course tasks.
	—	Previous sample of students' assignments were provided, with annotated comments to familiarise students with the overall assessment approach, to check their progress and above all to help students develop confidence and understanding and realistic expectations.
	—	Opportunities were provided at the end of lecture to link the theory to experience. Problems were posed to highlight the various concepts used previously and in that lecture.
	—	Student guides on leadership and management theories were provided, as well as links to various health websites, to enable students to understand the greater issues in healthcare.

Figure 3. UDL Principles applied within the module

Leadership Theories

| Fiedler Blake & Mouton | Hershey & Blanchard | Transformational |
| Great Man | Trait | Behavioural |

Quality Improvement

| Improvement Methods | Governance | Defining Quality in Healthcare |
| Leadership for Quality | Person & Family Engagement | Staff Engagement |

Management Theories

| Taylor | Fayol | Weber |
| Mayo | Theory X & Y | System Thinking |

Information Management System

| Standardise Nursing Language | Electronic Documentation | Clinical Information Systems |
| Data Protection | Clinical Decision Support Systems | Social Media |

Health System

| Diferent Models of Health Systems | Dept of Health |
| Person & Family Engagement | Health Services Executive |

Patient Safety

| Conflict Management |
| Organisation Culture |
| Teamwork |

Patient Safety for Quality

| Clinical Audit |
| Staffing |
| Lean Systems |

Leadership & Management

Figure 4. Concept Map

Ask a Question ⌄

- Please post any content-related questions in this forum in the relevant weekly topic thread.
- Please do not individually email the module co-ordinator(s) with general content-related or technical questions as such emails will generate an automatic request to post in this forum to receive a reply.
- All students enrolled in the module will benefit from viewing peer questions and the replies posted. This also eliminates duplication of questions and answers.

Figure 5. Screenshot of the forum for 'Please Ask a Question'

Results and Impact

The aim of UDL is to create purposeful and motivated learners, knowledgeable and resourceful learners, strategic and goal-directed learners (CAST 2017). On reflection, UDL has shown to be an effective strategy within this module. The individual verbal feedback from students demonstrated that they felt very well supported due to the consistency of approach in presentations, support via drop-in zoom sessions, resources made available and overall improvement in grades from previous years See Figure 6. Furthermore, high attendance of students attending online and in person speaks for itself.

Grading also showed improvements overall from 2020 to 2021 with more students receiving a higher grade in the A- to C+ categories (see Figure 7).

Any ideas as to how to improve this module and assessment taking into account the large diverse number of students in class?

There's nothing else I would suggest to improve as I was very happy with how the module was run and assessed

No, I really enjoy it.

The presentation was great overall

How did you find the recording of the lectures?

The module coordinator was always consistent with recording lectures and making them accessible

Invaluable - I used them a lot to reinforce my learning

Extremely helpful as I felt I never missed out on class even when I had to

Lectures were almost always recorded and easily accessible on Brightspace

How helpful did you find the 'Ask a Question'?

Very helpful and extremely grateful for communication via lectures during stressful final academic semester

I didn't use this platform as I attended the lectures, and the lecturer addressed any questions during that time

Very important as it allowed me to look through the questions if I had the same one myself

To what extent did you find the sample assignments provided assist in your learning and completing the final assignment?

Sample assignments provided clear direction as to what the learning outcomes on the module were

They helped immensely with the final academic writing element of the assignment as they demostrated the level and structure required

Mature students struggle due to time that has passed since they were required to write academically and leaving cert entries

Figure 6. Sample of anonymous feedback from students registered to the module

NMHS 30290

Legend:
- No. of Students - 2021
- No. of Students - 2020
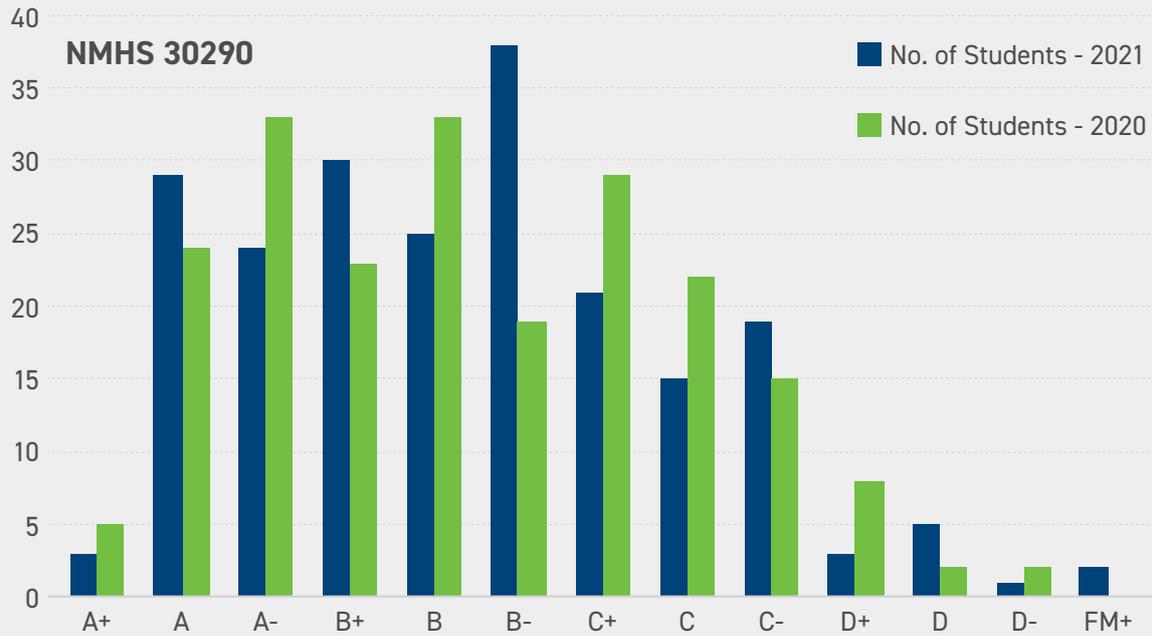
Figure 7. Distribution of grades at the end of Trimester 1 in 2020 and 2021

UCD operates an all-university, anonymous, online survey student feedback system to ensure that students are given a voice in the module enhancement process as part of UCD's evidence-based quality assurance of educational offerings. It is worth noting that feedback is only made available to module coordinators after results have been published to students. Figure 6 summarises the feedback given by students on UCD module feedback. It is evident that the students' comments address the changes made through the principles of *representation*, *engagement* and *action/expression* as outlined previously in Figure 3.

Advice to others for implementation UDL into their module

— Start thinking about just *one* change to implement in the terms of UDL principles once you have finished teaching your module. Explore your feedback and decide what's the one change that can have the greatest effect and over a period you will have many changes incorporated.

— Take the Digital Badge and become a facilitator of UDL. Being a facilitator, helps you to anticipate and plan for *all* the students in your module. More importantly, it can help you make sure that the greatest range of students can access and engage in their learning, not just certain students.

— During term, stop and pause every few weeks during the Trimester and assess how the students are progressing; seek and listen to their views. Students will love to tell you what they need, want and how you can make it more meaningful and engaging bringing more satisfaction, less work to both you and the student cohort.

— If possible, codesign the module with the students through focus groups and if this is not possible, ask what they want to learn in relation to the key concepts at the beginning of the module. This can be achieved in many ways despite the barriers that we all face in managing the teaching in the module and the students' expectations.

— Try to make your teaching sessions interesting, make it worth the students' time coming to class and have fun! UDL reduces the barriers within the learning environment and prepares you to be more flexible in your approach and reinforces to the students that you are there to support them in their learning. On a final note, as Albert Einstein states "*I never teach my pupils, I only attempt to provide the conditions in which they can learn.*"

References & Resources

UCD (2022a) Vision and Mission, Retrieved from https://www.nmhs.ucd.ie/our-school/vision-and-mission (July 2022).

UCD (2022b) Jargon Buster, Retrieved from https://www.ucd.ie/science/t4media/jargon-buster.pdf (July 2022).

UCD (2022b) Teaching and Learning, Retrieved from http://www.ucd.ie/teaching/t4media/inclusive_module_design_tips.pdf (July 2022)
UCD (2022c) Top 7 Tips for Inclusive Module Design. Retrieved from http://www.Ucd.Ie/Teaching/T4media/Inclusive_Module_Design_Tips.Pdf (July 2022)

UCD (2022d) Disability Support/ Access and Lifelong Learning (ALL) retrieved from https://www.ucd.ie/all/ucdstudents/support/disabilitysupport/ (July 2022)

CAST (2017) *UDL Tips for Fostering Expert Learners*. Wakefield, MA: Author. Retrieved from https://www.cast.org/products-services/resources/2017/udl-tips-fostering-expert-learners

Understanding the 'Why': engaging First Year Undergraduates in Academic Writing

Dr Karen Keaveney

Author	Dr Karen Keaveney

Abstract	This case study focuses on a large first year module (c. 350 students) for students enrolled in programmes in the UCD School of Agriculture and Food Science. The purpose of the module is to provide support for first year students to develop key academic skills, as they start University. In the module, students are introduced to concepts of independent learning, time management, academic writing and critical thinking. The challenge for teaching and learning is facilitating students' understanding of why lecturers expect critical thinking, the use of multiple sources, and writing in an academic style. The case study outlines a module intervention to help students understand the 'why' of learning in university.

Module/Course/ Programme/School	RDEV10020 Information Skills Programmes in the School Agriculture and Food Science College of Health and Food Science

Discipline	Agriculture and Food Science

Level and Credits	First Year | 5 Credits

Student numbers	350 Students

Introduction and Context

Starting your first year of third level education can be incredibly daunting. Students are concerned about fitting in, living in a new place, commuting long distances, getting to know new people, learning their chosen study area at a higher level than before, and so on. Sometimes for those of us who have been working and/or studying in a third level setting for a number of years, there are taken for granted practices and norms that to some are everyday, but to a first year, beginning their learning journey can be like speaking another language. In addition, large class sizes, mean that students can feel like one of many faces in a crowd. For lecturers managing large groups, it can certainly feel that way too. One of the biggest issues for lecturers in large group settings is ensuring students get feedback and can interact with others in the class to get a sense of where they are at in their learning, as well as ensuring that students are aware of the change in teaching and learning approaches and methodologies in University.

In this case study, I focus on a large first year module which is required for the majority of students enrolled in programmes in the School of Agriculture and Food Science (SAFS) in University College Dublin (UCD). Each year, there are approximately 350 students registered for the module. The purpose of the module is to provide support for first year students as they start University in developing the required academic and study skills they need. In the module, students are introduced to concepts of independent learning, time management, academic writing and critical thinking.

One of the key issues for the module has been the question 'why'. Why are we doing this; why is University so different to secondary school; why do we have to write differently, why do we have to use multiple sources rather than just one textbook? Since completing the UDL Badge in 2019, I started to assess not so much the content of the module but how I was presenting it to students and how I was explaining the rationale for the module content. For example, the rationale for why we do what we do in university teaching and learning is a major issue for a module that is based on study skills (Rao & Meo, 2016). In repeated feedback from students who had taken the module, one of the 'fears' around this module in particular, and University in general was referencing and plagiarism. Where academics take for granted that we cite from multiple sources, students, particularly those who come straight from post-Primary school, are used to a single text book and learning for a summative exam (i.e. the Leaving Certificate). Suddenly, in university we expect students to be self-directed learners and to write critically with multiple cited sources. For me, this is akin to Hansel and Gretel setting out alone in the forest and trying to navigate the obstacles that come their way without anyone guiding with a helping hand. Students not only need to understand HOW to write for university, they need to know WHY (Jackson and Evans, 2017). This was the starting point for on-going changes I am making in the module 'Information Skills'.

Design and Implementation

The module is taught in large group setting (a one-hour lecture), and a two-hour computer-aided lab (CAL). The lecture sets the context for tasks to be completed in the CAL, which has approximately 40 to 50 students in attendance each week (8 parallel CALs take place each week). For a module such as Information Skills, which aims to support students in their transition to University, the principles of Universal Design for Learning (UDL) are central to how I, as the lecturer and module coordinator, provide a framework for communicating and presenting the requirements of independent learning and critical thinking in their degree (Rao & Meo, 2016; Tobin, 2014).

One of the assignments for the module is to write a brief literature review (400 words). This assignment was previously submitted as the first assignment in the module. Having taught the module for a number of years, I had identified that the literature review assignment was placed too early in the sequence of assessment, and that much of what the students needed to learn in the entire module was bound up in that assignment. As a result, I have been moving the sequence of when that assignment is submitted later and later in the semester. Up to now, the module was more concerned with the mechanics of referencing and citation, rather than why we need to read multiple sources and to show that we have engaged with these sources etc. Hence, I implemented the following sequence of assessment and feedback:

1. Made the Literature Review assignment the last assignment for the module.

2. New sequence of assignments: 1. Setting up Learning Portfolio; 2. Peer Evaluation; 3. Literature Review Plan (as a presentation to plan the literature review); 4. Literature Review (overall, students are asked to create and upload all assignments and computer lab tasks to their eportfolio on Padlet).

3. Rather than seeing each assignment as individuals siloes, I sequenced each assignment as building blocks that would feed into the final Literature Review assignment.

4. I introduced for the first time, two lectures on critical thinking and critical evaluation which were supplemented with computer lab tasks: (i) working in pairs to explore an academic peer reviewed article; (ii) individual assignment answering a series of questions to critically evaluate the article.

Assessment and Feedback in detail:

1. Setting up Learning Portfolio – the computer labs comprise of a series of tasks where student engage in tasks, both individually and in pairs. The aim of these tasks is to summatively build up their confidence and understanding of the expectations of academic writing and self-directed learning in University. The portfolio facilitates students to track their achievements in the module, and to have an on-going record of their learning that they can build upon throughout their degree, and/or return to in future years of their programme when they are required to do further academic writing. Students set up a Padlet account and 'Wall' specifically for the module (https://padlet.com – Padlet is a digital notice board that works well as a student portfolio; students can set up a free account which allows them to have up to five boards, which can be kept private or shared [1]). In Week 1, students paste a link for their portfolio in Brightspace (the UCD Virtual Learning Environment), and there is one 'spot-check' on their Padlet during the semester where each student is given verbal feedback on Brightspace. At the end of the module, students are given feedback using a rubric.

2. Peer Evaluation – starting in Week 3 of the module, students engage in a peer evaluation exercise, which takes place over three weeks. Using 'peerScholar' (https://app.peerscholar.com – peerScholar is an online pedagogical tool that helps develop students' critical- and creative-thinking skills; peerScholar facilitates this through three phases: writing, evaluating, and reflecting[2]), an assignment is set-up to support students to (see Image 1):

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1 https://www.techlearning.com/how-to/what-is-padlet-and-how-does-it-work-for-teachers-and-students; accessed June 20th, 2022

2 http://pearsoned.ca/highered/weir_6ce/learn-about/what-is.html, accessed June 20th, 202

a. Understand the need to search for multiple sources;

b. How to search for multiple documents using reputable sources, for example, students are asked to search academic and non-academic articles using the term 'Challenges for Starting College or University'. Students are directed to search this term, firstly, on a general search engine, such as Google, and then on specific academic databases/browsers such as Google Scholar, the UCD library search engine, and Web of Science;

c. Write a summary of a self-selected academic, peer-reviewed article;

d. Upload that summary to peerScholar – 'create stage';

e. Once the create stage is complete, all students assess their own and five other students' summary, anonymously; and

f. Finally, each student re-submits their summary based on peer evaluation, for the reflect stage.

3. Literature Review – this final assessment in the module requires students to write a brief literature review, applying the learnings from the previous weeks on critical thinking, citing, and referencing, using multiple sources, and writing structure.
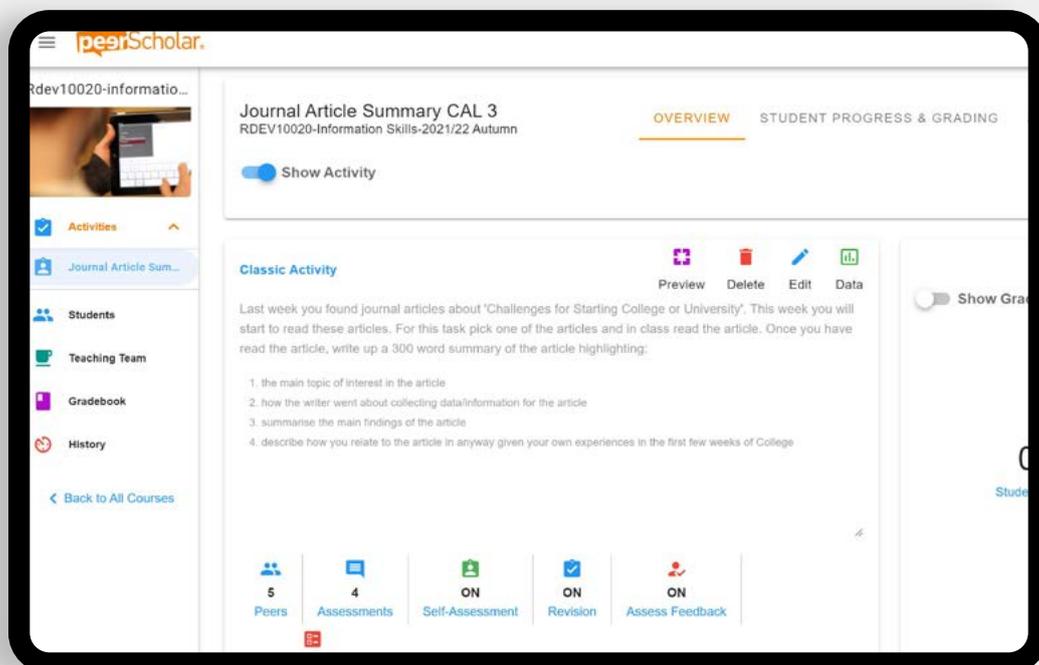
Image 1: PeerScholar Assignment for RDEV10020 Information Skills

Results and Impact

The implementation of the changes outlined above has developed over a period of approximately four years. It is an on-going learning process for me! The implementation of the series of changes that took place in this module, has meant that I have improved how I communicate around the 'Why' of university, i.e. why lecturers expect students to write in an academic' manner; why students struggle and fear referencing, citation, and plagiarism; and why independent and self-directed learning is so important. By implementing the series of assignments (see Image 2), students can take pride in their achievements throughout the module (using Padlet); learn from each other and reflect on their own writing (Peer Evaluation using peerScholar); and complete an academic piece of writing (Literature Review).

Teaching & Learning Tool		Outcome
Padlet	**Learning Portfolio**	Record of work; Building of Confidence
peerScholar	**Peer Evaluation**	Mutual Learning
MS Word & Powerpoint	**Literature Review**	Academic Writing Achievement

Image 2: Series of Assessment, Tools and Outcomes

In a focus group conducted with students in the UCD School of Agriculture and Food Science in May 2022 (n=5), participants highlighted the challenge of starting college:

> "I suppose college life, for nearly every secondary school student, is a whole new beginning ... it's just nice to get to meet new people, different faces every day and [get] your own bit of independence as well" (FG1)

Students in the focus group, identified that continuous assignments were a positive part of assessment, acting to relieve stress by not having everything dependent on one final exam. Specifically, in relation to the Information Skills module, students highlighted that this was the only module in the first semester where they were required to write, with most other assessment being MCQ-based (Multiple Choice Questions). By completing this module, they got a taste of the challenges and expectations of university life, and the academic skills required as they continue in their studies.

The adaptation around Covid-19 and the requirement to teach online, resulted in my exploring web-based tools that were accessible, free, or available to staff and students in UCD. This meant that assisting students in their transition to third level education was even more pertinent. Indeed, since returning to face-to-face teaching, I have continued the use of the web-based tools (Padlet, peerScholar). By having to intensively reflect on my teaching practice during the Covid-19 pandemic, I was forced to put myself in the students' shoes and think of innovative ways to support them at a distance. This has enhanced my practice in-person, in the classroom in engaging in empathetic teaching that has the student at its centre.

Recommendations and Advice

Based on my learning from, and reflection on, changes made to this large, first year module, I would recommend the following:

— 'Work backwards' – break down the elements of a finished assessment, such as a literature review, into steps and a series of processes in order for students to understand why and how they need to complete an assignment;

— Explore web based tools that complement students' in person learning; and

— Finally, put yourself in the students' shoes. Try to remember what it was like to start university at a young age. We all had to start somewhere, and what is everyday practice for us now, had to be learned at some stage!

References and Resources

Jackson, N., & Evans, L. (2017). Self-reflections on differentiation: Understanding how we teach in higher education. *Networks: An Online Journal for Teacher Research*, *19*(1), 5.

Rao, K., & Meo, G. (2016). Using Universal Design for Learning to Design Standards-Based Lessons. *SAGE Open*, 6(4). doi:10.1177/2158244016680688

Tobin, T. J. (2014). Increase online student retention with Universal Design for Learning. *Quarterly Review of Distance Education* 15(3): 13-24. http://www.engl.duq.edu/servus/cv/QRDE.UDL.Article.pdf.

'What is Padlet and How Does It Work? Tips & Tricks' https://www.techlearning.com/how-to/what-is-padlet-and-how-does-it-work-for-teachers-and-students; accessed June 20th, 2022

'What is peerScholar' http://pearsoned.ca/highered/weir_6ce/learn-about/what-is.html, accessed June 20th, 2022

The Good Study Group Guide: Co-operative Learning for First Year Students

Dr Deirdre O'Connor

Author	Dr Deirdre O'Connor

Abstract	Co-operative Learning/Study groups were established and implemented as a UDL-informed initiative to support first-year Agricultural Science students in their transition to university. Such groups help embed the most valued aspects of the first-year college experience (the social aspects) while addressing their most common courses of concern (loneliness, isolation, workload management). In the COVID-19 context, such initiatives are especially valuable. While co-operative learning/study groups are primarily student-led and directed, some scaffolding by the lecturer is essential in order to ensure effective functioning – particular in the earlier stages of formation/establishment. Provision of comprehensive guidelines and resources is essential. A positive experience with such a group in a particular setting has a benefit and potential for transferability which extends into other disciplinary areas and programme stages.

Module/Course/ Programme/School	RDEV10040 Introduction to Food and Agribusiness Management Agricultural Sciences Programme School of Agriculture and Food Science
Discipline	Economics and Rural Development
Level and Credits	Level 1 | 5 Credits
Student numbers	85 Students

Introduction and Context

My specific focus is on one of my undergraduate teaching modules, which is a 5-credit, Level 1, Semester 2 module for 85 Agricultural Science students entitled **Introduction to Food and Agribusiness Management**. The profile of the student group shows a 62%-38% rural-urban divide, a 65%-35% female-male gender split, with 50% of the students living away from home. The group includes a small number of international students. As an introductory module, the key learning outcomes relate to the ability to identify the roles/contributions of the different actors in the agri-food system in Ireland; to identify key areas of policy impacting on it; to understand the importance of key trends within the sector and the ability to identify the key drivers of future change impacting on the system. The student workload is estimated at 120 hours and comprises lectures, field trips to a family farm and a food processing facility, as well as private study. Obviously, the field trip components have been negatively impacted by COVID-19 and have been suspended since 2020. So, for the offering of this module in the academic year 2021-2022 (which is the focus of this study), field trips were replaced by webinars with invited speakers. It is planned to resume field trips for the academic year 2022-2023. As detailed in Table 1 below, the assessment strategy currently comprises a mix of literature review and report writing exercises and incorporates individual and groupwork components.

Component	Timing	Proportion of Final Grade
Individual Literature Review Assignment	Mid Semester	50%
Group Report Based on Attendance at Webinar 1	Late Semester	25%
Group Report Based on Attendance at Webinar 2	End Semester	25%

Table 1. Assessment Strategy for RDEV10040 Introduction to Food and Agribusiness Management

As outlined above, and in keeping with university-wide developments, the student cohort for this module is quite diverse and their different needs require flexibility and adaptability in teaching and learning practice. Research suggests that, as first year students, they face further challenges arising from large class sizes which inhibit active engagement with lecturers and peers; an unfamiliar physical environment which is intimidating and alien; fears about social isolation; a lack of work structure; concerns about time and workload management; doubts about the wisdom of their course choice and the level of difficulty of their degree programmes; financial worries and long commutes (Denny et al., 2015; Noonan and O'Neill; 2012).

Clearly, the COVID-19 pandemic has had a severe impact on first year students' experience of university life. For example, the Irish Survey of Student Engagement National Report (2021) details substantially fewer opportunities for collaborative learning compared to the baseline period (represented by an average of results from 2018, 2019 and 2020) and lower ratings for the quality of their interactions with other students. Of particular interest to me is that Agriculture, Forestry and Veterinary students reported the biggest decline in the quality of their interactions, with 8.5% rating the quality of interactions as "Excellent" in 2021, compared to a baseline figure of 36%. The survey also notes how **"first year undergraduate students tended to mention things that have been missing from their student experience….. such as "people", "events", and "activities".**

Design and Implementation

With these findings in mind, I was curious to conduct research with my own student group in an effort to identify key issues related to their first year experience at UCD. My intention was to then attempt to address some of these issues using my UDL-informed teaching and learning practice. The students enrolled in the module completed an online survey in class time in the early weeks of the semester (which had a response rate of 77%) and I subsequently undertook a focus group with 8 students from the class. Some of the main themes which emerged from both the survey and the focus group are illustrated below.

As Figure 1 shows, the least favourite aspects of their first-year experience related to loneliness and homesickness, concerns about their ability to keep pace with lectures, labs. and assessments, as well as the pressures arising from commuting and the cost of living. Almost 85% were engaged in part-time work and over one third of respondents expressed concern that these commitments impacted negatively on their college experience – either in terms of their academic performance or on their ability to become involved in college life (partaking in clubs, societies, and social events). Participants in the focus group discussion highlighted the negative impact of COVID-19 restrictions in terms of reduced opportunities for meeting and socialising with other students, their dissatisfaction with the prevalence of online lectures (described as hard to watch) and an over-reliance on high-stakes terminal exams.
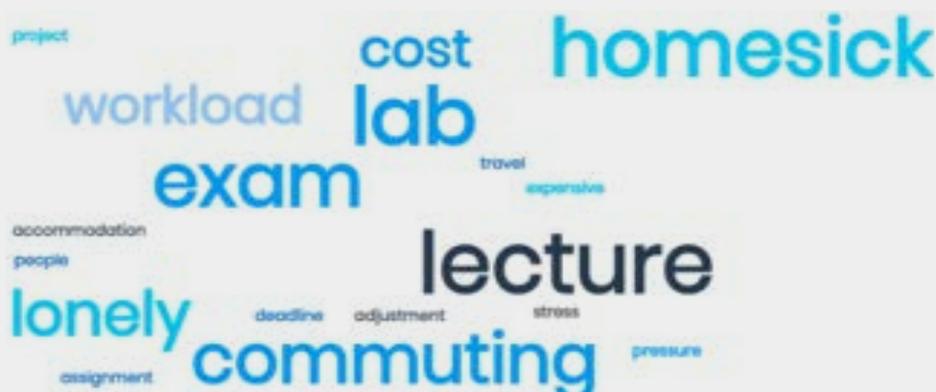
Figure 1: Word Cloud summarising Least Favourite Aspects of the First Year Experience

In terms of the positive aspects of their first year experience, Figure 2 shows that the social aspects of college life – opportunities for forming new friendships and an increased sense of freedom – were highly valued. Regarding their academic experience, students welcomed efforts to include a greater amount of, and variety in, assessment strategies. In the focus group, they discussed the beneficial social and academic aspects of co-operative group work assignments and study groups, but felt they needed more guidance to address some of the potential pitfalls. These included "**feeling responsible for other people not doing well, ...leaving things until the last minute and .... dealing with group members slacking off.** "

Figure 2: Word Cloud summarising Favourite Aspects of the First Year Experience

The UDL Link

My survey results and focus group findings confirmed for me the value of developing and implementing practical tools that would support more social and active forms of learning, while simultaneously addressing some of the negative aspects of their experience addressed above.

There are three major principles associated with the Universal Design for Learning (UDL) framework, namely multiple means of engagement, multiple means of representation and multiple means of action/expression (Meyers, Rose and Gordon, 2014). Novak and Rodriguez (2018) have identified co-operative learning/study groups as a means by which collaboration and community among students can be fostered. In the language of UDL, such groups are consistent with one of its core tenets, namely multiple means of engagement, specifically because it offers students additional ways by which they can sustain their effort and persistence. Co-operative learning refers to activities that take place using small groups, with a focus on co-operation rather than competition to promote learning and can therefore be viewed as a structured form of group work where students pursue common goals (Prince, 2004).

Implementation Issues – Highlighting the Benefits, Avoiding the Pitfalls

Figure 3 summarises the steps undertaken to implement this initiative, beginning with the survey/focus group work identifying those aspects of the first year experience that could be addressed via a UDL-focused intervention, followed by the proposal to form student-led co-operative learning groups. Clearly defining respective roles and responsibilities, while providing resources and guidelines to support the work of the groups, were important milestones in the process. The final step was the opportunity to review and reflect on what worked well with the initiative and to identify what could be improved.

Implementation Guide for Co-operative Learning/Study Groups

Step 1 — Survey/focus group with my students re their 1st year experience

Step 2 — Seek to identify most and least favoured aspects of 1st year experience

Step 3 — Summarised as:
+ive: new friendships and experiences, independence
-ive: isolation, workload, unfamiliar environment

Step 4 — Positive reaction to my proposal to establish student-led co-operative learning/study groups to address these issues

Step 5 — Clarify respective roles and carry out my role: group formation, providing guidelines/resources

Step 6 — Students agree re meeting times, conduct, task allocation, conflict management etc. Groupwork begins

Step 7 — Opportunity for all involved to reflect on and review process

Figure 3: Steps in Implementation of Co-operative Learning Groups

I was mindful of the fact that while these groups were intended to be student-driven in terms of their conduct and the focus of the activities, there is a consensus in the literature that lecturers need to "scaffold" them if they are to function effectively. There is broad agreement that group formation is a key role for the lecturer but that students may need ongoing support with activities such as group task planning, allocation of roles, conduct of meetings and resolution of conflict (Felder and Brent, 2001).

A key element of this process was the development of a resource guide entitled *The Good Groupwork Guide* which I uploaded to the associated module Virtual Learning Environment - Brightspace - the cover page of which is shown in Figure 4 below, while Figures 5and 6 provide examples of its content. The resource guide addressed topics such as the reasons for, and benefits of, establishing or joining a study group; how to ensure that study groups run effectively; pitfalls that arise and how to deal with them. The Guide also contained links to relevant documents, videos, websites and other online resources providing more detailed information, examples of applications and testimonials. It also included links to a range tools that could support their groupwork such as Mind Maps, Crossword Generators, Quiz Generators, Flashcard Generators, as well as information on techniques such as Jigsaw, Fishbowls, One-Minute Papers, Think-Pair-Share and Brainstorming.

In parallel, during class time, I drew the students' attention to these resources, summarised the benefits of engaging in such co-operative study groups and outlined some ground rules for their successful operation. In terms of communicating the benefits of establishing or joining a study group, I drew on the relevant literature which highlights improved understanding of topics arising from sharing different perspectives; burden sharing; the ability to play to one's strengths via specific group roles; the development of team-building skills; inter-personal skills development; diversity awareness; a means of counteracting procrastination and serving as a motivational tool (Rybczynski and Schussler, 2011). Regarding the successful operation of study groups, I drew on the key factors identified in the literature which included a clear, shared understanding of the purpose/focus of the group; an agreed approach to conflict resolution; appropriate allocation of group roles/tasks according to members' strengths; a sense of personal responsibility and reliability; a sense of individual and shared accountability and equal commitment from all members (Brame and Biel, 2015).

At the same time, I underlined the voluntary nature of participating in such groups and stressed that they would in no way be penalised if they did not wish to engage. Furthermore, I reminded them that many of the suggested tools for use in study groups (e.g. mind maps, one-minute papers, quiz tools, flashcard tools) were also valuable as individual study aids and they were free to use them on this basis.

The Good Study Group Guide

- *RDEV10040*
- *Introduction to Food and Agribusiness Management*

- *April 2022*
- *Dr. Deirdre O' Connor*

Figure 4: Cover Page of The Good Groupwork Guide developed for First Year Students

Students were then invited to express their interest in joining a group via an email enquiry to me. Groups of between three and four students were formed as applications were received. In total, 19 study groups were established. Once the study groups were formed, I held a briefing session with them, outlining the resources that were available to them, while reminding them that the groups were intended to be student-driven and encouraging them to proceed on that basis.
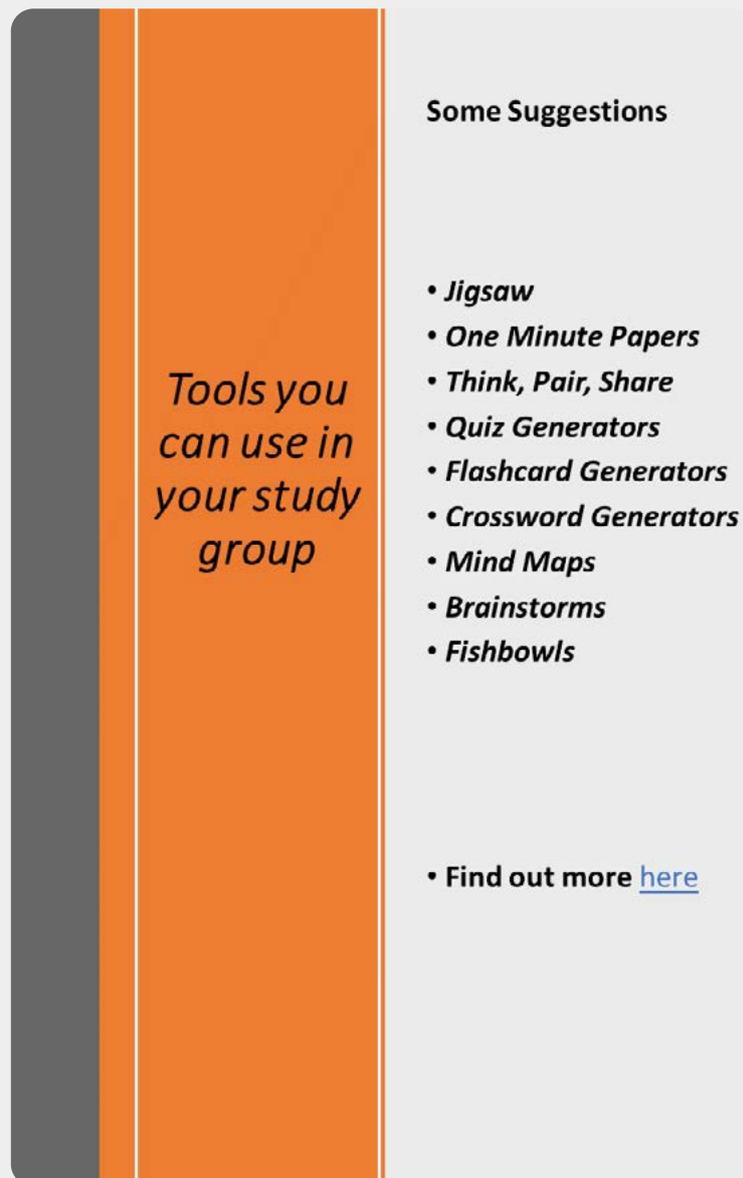
Figure 5: Sample Content of The Good Study Group Guide - Establishing/Running a Successful Study Group

Results and Impact

Feedback from the groups was garnered in a number of ways. I initiated a fortnightly "check-in" email with each group, reminding them of my availability should they have queries or concerns. I received a small number of replies (<10) over the course of the semester, most of which were relatively minor requests for clarification on specific issues. In the final week of the semester, I requested that each group meet to prepare a one-page report, reflecting on their experience of engagement with the process, with particular reference to what worked well, what was problematic and asking them to identify any specific ways in which the initiative could be improved. I received 12 submissions in response to this request and the feedback was extremely positive. They very much appreciated the flexible, informal and "social" way in which the groups functioned, allowing them to meet at times, and in ways, that suited them. They also appreciated having a clear purpose and focus to their activities and were complimentary about the guidance and resources provided to them in this regard. Some groups noted that the skills they had developed, and the resources they were provided with, could easily be transferred to other areas of study on their Programme in future years, and that they would explore opportunities to do so. At the same time, some stated that they felt "overwhelmed" by the amount of information and level of detail contained in the guidebeook and provided useful feedback on how it could be streamlined and simplified. They identified disengagement among some group members as an issue but felt it was not overly problematic, given that group participation was voluntary and not linked in any way to assessment or grading.
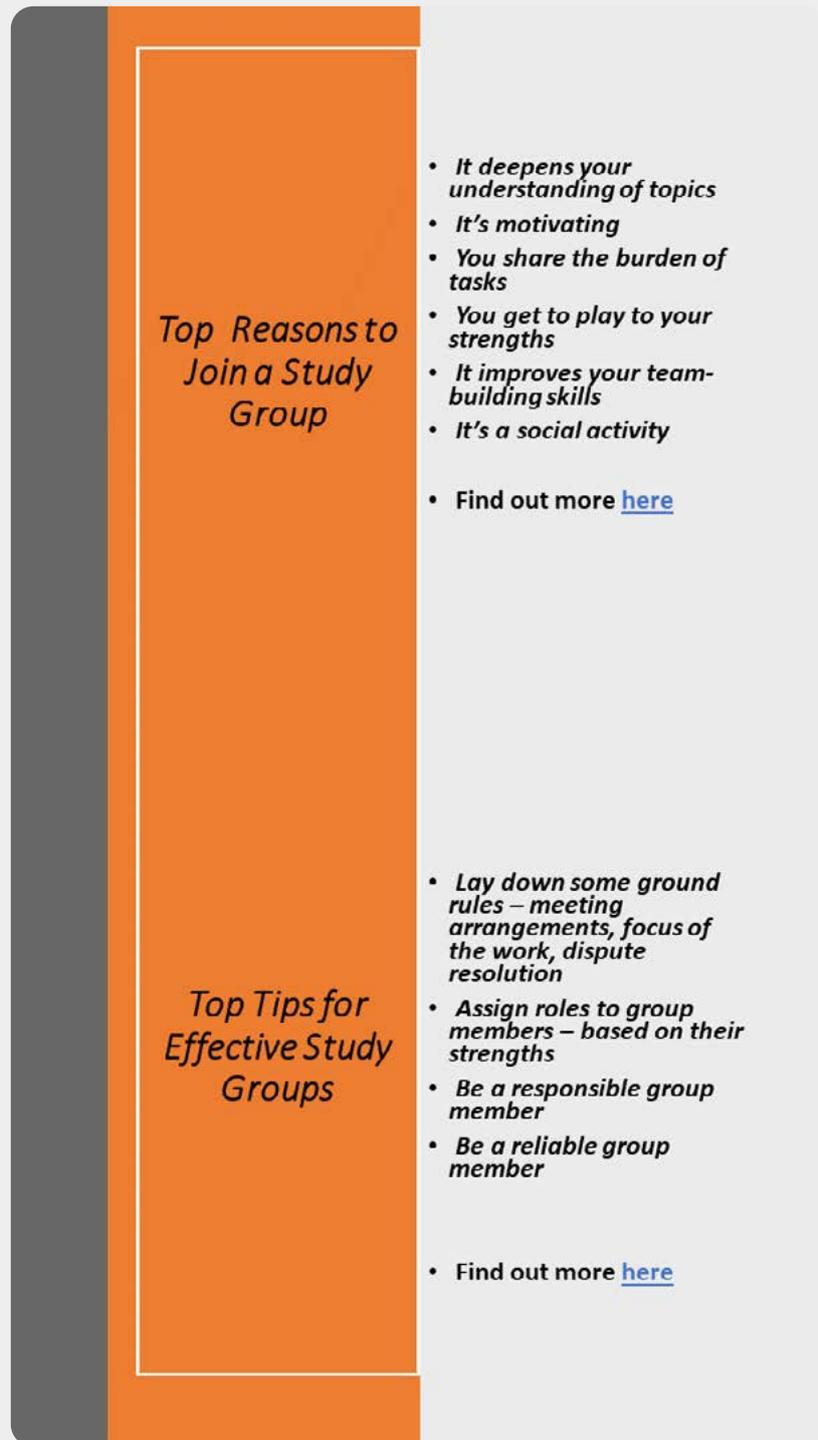
Figure 6: Sample Content of The Good Study Group Guide - Tools Used in Study Groups

Recommendations and Advice

The focus of this initiative has been on the establishment and implementation of co-operative learning/study groups designed to support first year agricultural science students. Research and evidence (including data collected by myself) suggests that this student cohort face substantial challenges in their transition to University but are also enthused by many aspects of the experience. At the same time, for this particular cohort, it is clear that the COVID-19 context has added a profoundly negative dimension to their student experience. Co-operative learning/study groups offer students a mechanism by which to embed the most valued aspects of their college experience into their learning (the social dimension) while providing a means by which the more negative aspects (loneliness, isolation, workload management etc.) can be addressed. While such groups are intended to be student-driven and led, my experience is that they require some level of scaffolding throughout the entire process, while the earlier steps, such as group formation, need to be entirely driven by the lecturer. The provision of clear guidelines on roles, responsibilities and modes of operating is essential, and suggestions about practical tools that can be used by the group are much appreciated - but care must be taken not to overload students with excessive amounts of information or content. Finally, it was gratifying to note that students viewed the skills and resources developed in the course of their participation in these groups as having a wider application - into other disciplinary areas or future studies - and were keen to explore opportunities to do so.

References

Brame, C.J. and Biel, R. (2015). Setting up and facilitating group work: Using co-operative learning groups effectively. Vanderbilt University Center for Teaching. Available from

https://cft.vanderbilt.edu/guides-sub-pages/setting-up-and-facilitating-group-work-using-cooperative-learning-groups-effectively/

Felder, R. and Brent, R. (2001). Effective Strategies for Co-operative Learning. *Journal of Cooperation & Collaboration in College Teaching*, 10 (2): 69-75.

Irish Survey of Student Engagement National Report 2021 (2021). Available from https://studentsurvey.ie/reports/studentsurveyie-national-report-2021

Meyer, A., Rose, D. H. & Gordon, D.T. (2014). *Universal Design for Learning: Theory and Practice*. CAST Professional Publishing.

Rybczynski, S.M. and Schussler, E.E. (2011). Student use of out-of-class study groups in an introductory undergraduate biology course. CBE Life Sciences Education. Spring;10(1):74-82.

Whitaker, T., (2017). A Handbook and Tool Kit for Teaching, Learning and Assessment in Independent Higher Education Institutions in Ireland. HECA. Available from https://hiberniacollege.com/media/2017/07/HECA_Handbook_Final_2_5_2017ISBN.pdf

UCD College of Science

Foreword

Professor Jeremy C. Simpson
Principal & Dean, UCD College of Science

It gives me the greatest pleasure to introduce the UCD University for All Faculty Partners' case studies from the College of Science. One of the challenges in the College of Science is the immense diversity of disciplines that we offer, and within this ensuring that all of our students receive an equitable and inclusive experience throughout their degrees.

One unifying theme that continues to gain importance in our College is that of the development of quantitative skills, which are now increasingly required across all discipline areas in the sciences. To this end, the contribution of the UCD School of Mathematics and Statistics is critical, and the first of our case studies comes from Dr Anthony Cronin in that School. His work is entitled "Inclusive learning for proof writing in a specialist linear algebra course", with his study including students in the rubric, assessment and feedback processes of proof writing in mathematics. Since completing the case study, Anthony's work has been further developed with Higher Education Assessment expert Ben Davies at the University of Southampton, for publication in a special issue "International Perspectives on the Teaching of Linear Algebra" of PRIMUS, a US-based mathematics education journal.

Our second contribution is from Dr Jennifer Mitchell in the UCD School of Biomolecular and Biomedical Science. Jennifer became involved in the UDL project as a way to remove barriers for learning for students who learn differently but are just as smart as every other student. She was personally motivated by a family member with a disability, and does not want that disability to impact on their potential in life. Jennifer's case study improved student engagement with an exclusively online module through the use of a UDL-inspired redesign of tutorial provision. In addition to improving student satisfaction, importantly the revised approach also reduced anxiety levels of the students.

Our final case study is entitled "Considerate Slides: A small step in the right direction", from Dr Gavin Stewart in the UCD School of Biology and Environmental Science. In this case study, Gavin updated the slide format used in 20 early-stage undergraduate lectures during Trimester 2, so that they adhered to modern UDL principles. Student feedback suggested that this new slide format was a significant improvement, which helped improve their learning experience. The success of this pilot has inspired Gavin to refine all his slides used in his Trimester 1 teaching into this format. In his current role as Vice Principal for Teaching and Learning in the College, he also has a unique opportunity to further encourage this approach across all seven Schools in the College.

I hope that you enjoy these case studies, which together showcase some of the innovative and important thinking that is going on in the area of Universal Design for Learning in the College of Science, in order to benefit our student body.

Inclusive Learning for Proof Writing in a Specialist Linear Algebra Course

Dr Anthony Cronin

Author	**Dr Anthony Cronin**

Abstract	This case study describes the use of peer assessment and peer feedback using a technique known as 'Comparative Judgement'. Students, in groups, systematically compare a pair of mathematical proofs produced by their peers, according to a prescribed rubric. Results suggest that students engaged more with the process of proof comprehension and proof writing than previous cohorts, where the process was characterised by recall and little reflection.

Module/Course/ Programme/School	**Linear Algebra 2 for the Mathematical Sciences School of Mathematics & Statistics**

Discipline	**Mathematics**

Level and Credits	**Science - Stage 2 (core for pure maths students), 5 credits**

Student numbers	**70 - 90 Students**

Introduction and Context

MATH20300 Linear Algebra 2 for the Mathematical Sciences (denoted **LA2** from henceforth) is specialist stage 2 mathematics course for students intending to major in mathematics (pure, applied, financial, or statistics) and is most students' first exposure to formal, abstract, and rigorous treatment of mathematics. As such, many students struggle with this formality and begin questioning their mathematical competency and identity, given that their results, to date, have usually been excellent.

Table 1, below, outlines the relevant parameters for the course examined in this case study.

Assessment	40% Weekly quizzes, 20% Group work, 20% Midterm, 20% Final exam
F2F commitment	22 lectures, 10 tutorials

Table 1: Module information for Linear Algebra 2 for the Mathematical Sciences

Proving and argumentation are the key attributes of a mathematician and it is by proving conjectures and ideas that progress in mathematics is made. Previous experience of teaching and assessing LA2 tells us that students do not do well when asked to prove statements that have not been rehearsed in problem sets or previous examination papers. Student feedback suggests that students struggle with the transition to proof formality and knowing just how to start proofs. The rationale for employing the UDL framework was for students to reflect more deeply on how they approach proving, rather than just providing factual recall, with minimal critical reflection. To be more inclusive of all students' mathematical utterances and sensemaking, I incorporated a group element to LA2 involving peer assessment and peer feedback. This was designed for students to leverage each others' thinking and, ultimately, improve their own sense making around the concept of formal proof in mathematics. My students had experienced poor learning outcomes in relation to proof; in particular, 'Prove elementary results involving linear algebra concepts', as evidenced by their submitted homework, midterm, and final examinations over a number of years. I polled students on where their proof difficulties lay, with the two most common refrains from students being: 'how to get started with proofs' and 'too much of a jump from linear algebra 1'.

I realised recommending and uploading resources on how to read and write proofs was not conducive to students achieving this critical learning outcome. Thus, another approach was required. I incorporated UDL principles of "Providing learners with multiple means of engagement" and "Multiple Means of Action & Expression" to LA2 (Heelan et al., 2021). I was interested in the concept of peer assessment and feedback, which sought to utilise individual students' thinking and working to improve learning outcomes for all. To this end, I was adopting UDL ideas of intentionally creating student-to-student interactions in an inclusive atmosphere, in order to raise interest and motivate learners from the outset of LA2. Encouraging learners to engage with their peers under appropriate circumstances meant learners felt that their contributions to the learning process mattered. Thus, the rationale for this inclusive assessment design was twofold: (1) to improve student learning outcomes in relation to proof comprehension and proof writing; (2) to improve student engagement with the process of proof writing.

Design and Implementation

A warm up exercise conducted prior to the first lecture was a formative one which asked students, in pairs, to work on two questions related to their first year learning experience in Linear Algebra, namely:

1. What is Gaussian Elimination?
2. Why does Gaussian Elimination work?

Gaussian Elimination (GA) is a fundamental algorithm students are well versed in computing (either by hand or utilising software) from their first Linear Algebra course. However, these more open-ended questions were new and challenging for them. Twenty student answers to these two questions were copied and pasted and uploaded to a Google Jamboard for all to see. Students were then asked to put a 1, 2, or 3 beside what they thought were the top three answers for both questions. The second exercise asked students to choose one answer from each of the two sets of responses that they felt didn't answer the question very well, and to give at least two reasons why they thought it was lacking. While the students, in general, correctly rated the three answers, their reasoning as to why poorer answers were lacking was not well articulated or accurate.

The next (summative and formative) exercise was "Comparative Judgement of Proofs" (Davies et al., 2020). Here, students, in groups of five, made pairwise comparisons[1] from a minimum of three pairs of proofs (maximum of 10) for the same mathematical statement/theorem – four such statements are included in Table 2.

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[1] A pairwise comparison refers to the comparing of two items relating to the same piece of student work to judge which is preferred, according to some prescribed criteria.

Let V be a vector space and let W_1 and W_2 be subspaces of V. Show that $W_1 \cup W_2$ is a subspace of V if and only if either $W_1 \subseteq W_2$ or $W_2 \subseteq W_1$.	Let V be the real vector space $\mathbb{R}^3$. Let W_1 be the subspace $x+y+2z=0$. Let W_2 be the subspace $3x+y-z=0$. Show that $W1+W2 = \mathbb{R}^3$.
Let S and T be any two finite subsets of a vector space V. Then $\mathrm{span}(S)$ and $\mathrm{span}(T)$ are subspaces of V. Prove that $\mathrm{span}(S \cup T) = \mathrm{span}(S) + \mathrm{span}(T)$.	Prove that in a vector space if x, y, and z are linearly independent vectors, then so also are $x+y$, $y+z$, and $x+z$.

Table 2: Examples of proof statements presented to student groups for comparative judgement

These statements were 'proven' by students in the previous years' class or the current class and groups were asked to choose which sample of work they'd like to see. The students were asked to read these proof pairs, via PeerScholar software (PeerScholar, 2022), and rate each proof on a scale from 0-4 using the rubric in Table 3. The students were also asked to give detailed feedback on these proofs so that a student could improve their proof writing going forward. Words often associated by mathematicians with proof are: precise, rigorous, conciseness, clarity, accuracy, logical structure; however, for beginning mathematicians, these words are almost meaningless unless they can see examples and non-examples of these valued qualities. Using the proof rubric, students were asked to read, re-read (as a mathematician does when refereeing a paper, for example), and then discuss, as a group, these peer-produced pairs of proofs, before assigning the appropriate score with justification.

Score	Criteria
0	The solution/proof is missing, OR, The solution/proof makes no sense or is unrelated/irrelevant to the assigned problem.
1	The proof contains serious logical flaws, lacks adequate justification, or explanation. There may be misuses of notation that significantly hinder communication of reasoning. There are few, if any, complete sentences. Little understanding of mathematical ideas and reasoning is shown. Computations present are significantly flawed. No structure is apparent in the solution/proof. The theorem is not restated and there is no conclusion. The bulk of the assigned solution/proof is not present.
2	The proof has some gaps in reasoning. The argument does not form a coherent whole. There are many flaws in mathematical grammar. The theorem is not restated appropriately. The individual statements of the proof are not connected, or presented out of logical sequence. Computations present are flawed. If present, diagrams are improperly drawn. There is no concluding statement. OR, The proof might be correct, but this is not demonstrated by the presentation of the proof; a good proof may be read, by a generous reader, into what is presented. OR, A significant chunk of the solution/proof is not present.

Score	Criteria
3	The proof is correct or nearly correct and logically coherent. The reader is required to fill in some details that should have been explained or justified. There may be some explanations, arguments, or justifications that are correct but unclear, cumbersome, needlessly complicated, or awkward. Notation is used appropriately, with few errors, and mathematical grammar is substantially correct. Computations present are correct. If appropriate, diagrams are present. There is a concluding statement.
4	The proof is correct and flows logically. The presentation uses correct mathematical grammar and uses notation correctly. The structure of the proof is apparent and the bulk of the details are easy to follow (for a fellow student). Links are made to appropriate definitions and previously known theorems. Computations present are correct. There is a clear conclusion. If appropriate, diagrams are present and clear. No details are missing, and also no details are belabored. The proof may be elegant, and may also contain very minor flaws.

Table 3: Proof scoring rubric for Linear Algebra 2 proofs

Results and Impact

From an instructor's point of view I felt this inclusive design succeeded in terms of involving far more student participation and engagement than ever before and a more valid understanding of the process of proof comprehension and writing. Based on previous years of teaching the same course, I felt that these students had gained more academic independence in mathematics than previous cohorts.

Student feedback on the group peer assessment and feedback exercises was elicited from two sources: 1) via a 300-word reflective piece (to be written as a group) following the proof writing exercises, and 2) from UCD's Student Feedback on Modules survey (SFM). Feedback source 1) was more useful to me, as I could tweak elements of the process which students found wanting. While SFM is useful going forward for the next iteration of the course, it is less helpful for the current course, as it is received two months after instruction has ceased. I include a student-group reflection which was insightful to the learning process:

> We primarily learned that the difficulties students have with proof writing are near universal; all of the proofs were deficient in one way or another, often ways that were common between all of the proofs graded. All proofs struggled to maintain standard notation, switching between notation midway through or otherwise misusing mathematical grammar. Proofs also commonly lacked a coherent logical structure, jumping between statements without relating them or stating why the former implies the latter. Students also lacked a clear understanding of the concepts they used throughout their proof, and often consequently used incorrect definitions of mathematical objects, rendering the entire proof incorrect. Students almost universally knew how to begin a proof, and how to end it, but could not meaningfully or completely connect the two. Knowing this, we can be more cognizant of avoiding these common issues in our own future proof writing.

The SFM survey received a 42% response rate. Student comments included:

— Peer Assessed group proof projects were very helpful, especially when we were able to evaluate other groups, receive feedback, and then re-submit our proofs

— Peer reviewing showed us how to spot our mistakes

— The proof labs were a fun way to supplement our learning and put the linear algebra concepts in context

— Having 20% for group project really helped keep on top of the module, taking most of the stress off the final exam

— Group work was helpful, as we could learn from each other

— Group work proved useful for applying the concepts learned in lectures

— Variation in learning assessment worked well i.e. live tutorials, live lectures, & group project

— Classmate interaction in group project and tutorials was the best part of the module

— Groupwork was amazing, especially during these times where we don't see each other

— Group discussions helped me learn from others.

Negative student feedback relating to group work revolved around the workload and time commitment, with comments such as:

— Group project took too much time in the first two weeks where one had to review others' work, along with homework sheets, meant that Linear Algebra took a considerable amount of time

— Group project added further workload, although it was nice to see some real world applications of linear algebra it meant spending even longer on the module

— Group project that took multiple days

— The group work would have been interesting and fairly manageable if it weren't for struggling to juggle it alongside homework.

Recommendations and Advice for implementation

While this initiative is far from perfect and will require further iteration to be truly inclusive of all students, some lessons I have learned along the way include:

— Allow students to choose their own groups to maximise authentic collaboration and minimise students' perceptions of intimidation and discomfort

— Familiarity with PeerScholar or similar software is not necessary, and instructors can devise other (bespoke) ways to present comparison of student work (e.g. Google Docs, Jamboard, physical handouts)

— Don't overload students with work – they need to see anything novel in terms of engagement and assessment as being aligned with their course work and not an additional add on

— Devote adequate time to getting feedback from student groups after their initial experience with the process, so you can tweak the process in real time

— Provide reflective writing exemplars (available upon request) to students, as most STEM students are not in the habit of performing this essential skill

— Provide "Group Work Roles" videos/exemplars and be explicit about what each role entails

— Student feedback to 'novel' pedagogies will always be mixed in early iterations so expect this and perhaps let your head of school know this in advance

Personally, I would like to see proof evaluation and peer assessment/feedback introduced in stage 1 of students' degree so that it is embedded in the programme from the outset and students can develop this vital skill.

References

Heelan, A., Tobin, T.J., Ryder, D. (2021). UDL for FET Practitioners Guidance for Implementing Universal Design for Learning in Irish Further Education and Training.

Davies, B., Alcock, L., & Jones, I. (2020). Comparative judgement, proof summaries and proof comprehension. *Educational Studies in Mathematics*, 105, 181–197. Available at: https://doi.org/10.1007/s10649-020-09984-x

PeerScholar. (2022). Available at: https://www.peerscholar.com/

Case Study Title:

Live Recorded Tutorials and Lectures for an Exclusively Online Module

Dr Jennifer Mitchell

Author	Dr Jennifer Mitchell

Abstract	The aim of this project was to improve student engagement with an exclusively online module through the use of a UDL inspired redesign of tutorial provision. Live online tutorials that explained the two main assessments in the module, how to approach them and how they are graded were provided. This improved overall student satisfaction with the module, reduced constant student to lecturer emails and levels of anxiety in the module student body were reduced. Following on this success further learning material-based tutorials are being provided with positive reception.

Module/Course/Programme/School	Microbiology, MICR40150: Host Pathogen Interaction, School of Biomolecular & Biomedical Science
Discipline	Microbiology
Level and Credits	Level 4
Student numbers	40 Students

Introduction & context

For the purposes of the UDL badge I focused on providing live recorded tutorials for an online only module; MICR40150, Host Pathogen Interactions. This is an online only module that was originally designed to serve off-campus 4th year project students reach their learning outcomes for semester 1 in 4th year of their Microbiology degree (part of the science degree). The cohort served by this module grew to include MSc students with a negotiated module degree structure that draws from level 4 modules in biological sciences and so don't always fit together to give their complement of credits in the formal timetable. Both student groups need a module that they can access at their own pace and that works with their own timetable. Over the last few years, the feedback has bemoaned the lack of face-to-face tutorials, but this is not something I can provide to such a diverse cohort. Instead, I have opted to provide live recorded tutorials to address many of the questions that have arisen, support the students in their learning and provide an alternative means of engagement to facilitate sustained effort and persistence.

My hope in making these changes was to reduce the associated anxiety for students undertaking this module as it originally had no in person contact time. It was designed to cater for remote learners doing Internships off campus but I ended up receiving multiple emails each week with students anxiously asking questions about the format of the module. Changing the format to provide live recorded remote tutorials has ended the stream of emails and led to a far greater level of student satisfaction. Reducing stress and disconnection is a recognised factor in improving Science education and student learning and UDL principles have been shown to contribute to this (Miller and Lang, 2016).

I am continuing to make small changes to the module to gradually address student concerns and to streamline the time taken to deliver the module from the instructor's end. This involves improving the design of each lecture, the lecture slides and ensuring closed captioning for videos and alternative text for images is included. The former head of discipline was very supportive and now that I am head of discipline it's easier to approve my own changes!

I am also using the module as an example of best practice to encourage other staff in my discipline to adhere to UDL principles, make changes in line with UDL practices and in doing so gain the UDL Digital Badge. I am in a unique position to encourage staff to do so as head of discipline.

Design and Implementation

My initial changes involved providing live recorded tutorials to manage the expectations of the students in how to approach the two different assessments in the module.

The first tutorial that I provided covered how to approach an in-semester assessment in the module. The assessment involves making a figure and associated legend that addresses an important concept in the module that can be answered using one or several key examples covered in the lectures and reading material. In order to do this, I provided grade exemplars and explanations of how each example was graded using a module rubric.

A.

B.

C.

D.

Figure 1. Screenshots of midterm assessment tutorial. A. Specific questions. B, C, D Grade exemplars with descriptions of grade reasoning with respect to grading criteria.
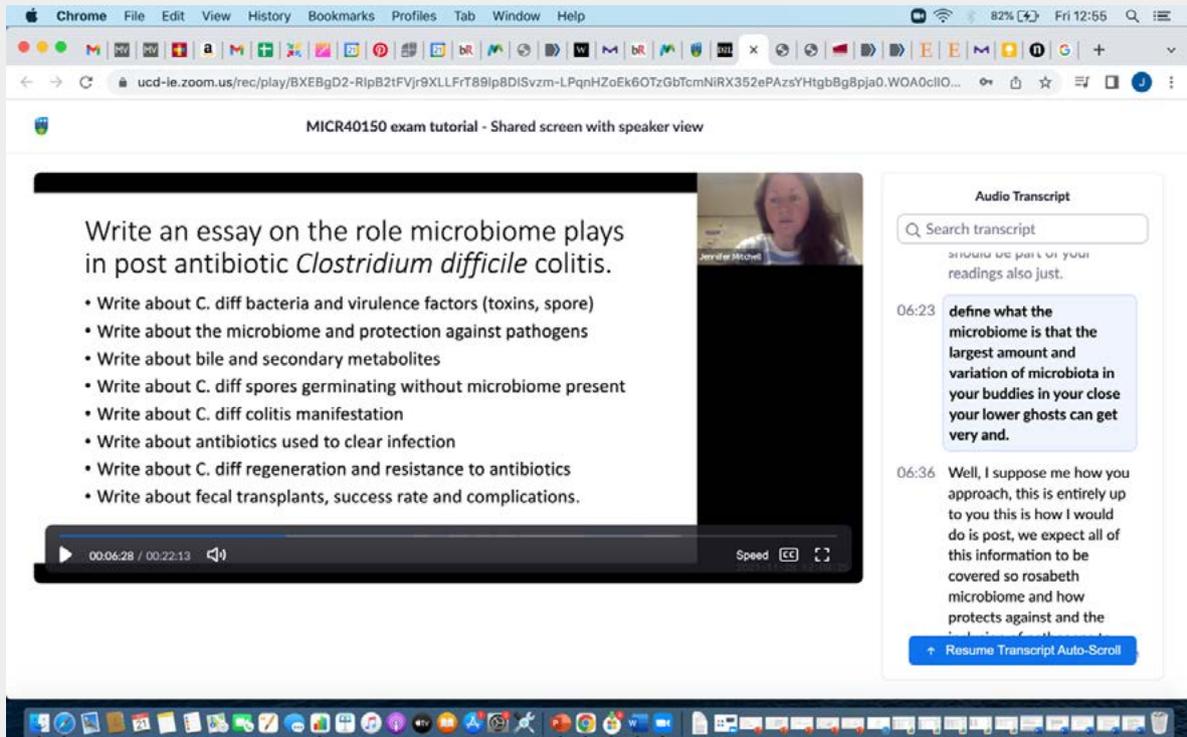
Figure 2. Screenshot of Exam tutorial with model answer and rubric description.

The second tutorial involved going through the end of semester exam, explaining how to complete it, provide the sample question/answer outline that we provide to the external examiner to explain how we grade the exam questions and answer any question that the student had. This allows the student to organize their approach to studying for the end of semester exam and sets their expectations for the workload expected and writing approach needed for each exam question to be completed. It deals with multiple modes of engagement with the material and lets the students know that no one answer is correct or A graded. I go through the logic and rationale of providing information in the exam that showcases their reading, their comprehension of the material and their ability to synthesise this learned information to provide cogent responses to the exam questions.

Since then I have also included tutorials for the four sections of lectures in the module as well as the two tutorials outlined above. It has eliminated the constant stream of emails from students and has opened up more time to address questions from the students about the material they are learning and conversations that enhance their deeper learning of the subject. So the changes are not just helping students with learning issues, its helping all students improve their knowledge of host pathogen interactions.

Results and Impact

The feedback from the students was very positive about the changes made. An example is below:

The tutorial on the lead up to exams was helpful, along with the examples of what is to be expected in the diagram assignment. The lectures themselves are interesting and as they are short, they are very easy to watch.

As a result of this change and the positive impact it has had, I have made more changes to the module to enable students to learn more effectively as it is currently running again. The previous cohort requested more in person lectures and while this is not possible I am now providing live lectures that are recorded to allow students to ask questions if they can attend in real time and running once weekly tutorials to discuss the material online to complement the dominance of self-directed learning in the module.

The changes I have made have not impacted greatly on the grade distribution in the module however there are fewer grades at the lowest levels. Minimising student stress when they are learning and working remotely is a good outcome. I hope that these changes in conjunction with the different assessment modalities that are employed in the module that I will have a greater ability to capture student engagement with the material and support their learning and synthesis of new ideas around microbial pathogenesis by harnessing multiple means of action and expression.

One other colleague teaches on the module and based on the positive feedback from last year is implementing online live recorded tutorials also. They are very positive about the change and the ability to run a tutorial at a time that works for some of the students that does not disadvantage the students that cannot attend at that time. This effectively democratises access to all information regardless of the students' personal situation. The only barrier to access that remains is access to the internet.

As a result of these changes I plan on doing a complete overhaul of all of the modules that I deliver. At a minimum I aim to have redesign my modules using module builder to have a more consistent and logical flow and have as many of my materials supported by alternative formats as possible and make sure all figures have alternative text. I will also record my lectures and provide them for review at the end of the semester for students or earlier for students who may need closed captioning for notes.

I will also provide a module rubric and give assessment preparation tutorials that are recorded so that the grade and performance expectations of all students in the module are effectively managed. The majority of my modules are very large student numbers so a choice of assessment is often not possible but I will endeavour to have different styles of assessment to capture the ability and achievement of students who learn and produce assessment material in different ways.

Recommendations and Advice for Implementation

It is absolutely necessary to have enough time to design and implement any strategies and to gauge the impact once the changes have been made. Ideally this will come about through the collection and analysis of student feedback and comparing grade distributions, getting feedback form colleagues and external examiners.

My approach evolved over time by giving myself two runs of changes and assessing feedback and grade impact before writing this case study. I still plan on fine tuning how the module runs with respect to UDL and access for all students. There's a wealth of resources and tips on how to do this in the education resources in my discipline Society literature (Orchard, 2021). This doesn't have to be done in one go or on all modules at once. It's better to give the changes deep consideration before implementing them.

I am lucky that the Head of Discipline at the time also taught on the module and was very supportive of the changes so I had no challenge to implementation from that end. It's mostly the time taken to design and make the changes that impacted on how well and how quickly the changes were made. However, having support from key stakeholders is absolutely necessary.

References

Miller and Lang. Using the Universal Design for Learning Approach in Science Laboratories To Minimize Student Stress. J. Chem. Educ. 2016, 93, 11, 1823–1828

Orchard, S. Universal Design for Learning (UDL): Tips for Inclusive Teaching. https://asm.org/Articles/2021/May/Universal-Design-for-Learning-UDL-Tips-for-Inclusi

Considerate Slides:
A Small Step in the Right Direction

Dr Gavin Stewart

Author	Dr Gavin Stewart

Abstract	In this case study, I updated the slide format I used in 20 early-stage undergraduate lectures during Trimester 2, so that they adhered to modern Universal Design for Learning principles. Student feedback suggested that this new slide format was a significant improvement, which helped improve their learning experience. These findings will motivate me to change all the remaining slides that I use in Trimester 1 lectures during the 2022-23 academic year.

Module/Course/ Programme/School	BIOL10010 & ZOOL20030/Biology & Environmental Science/College of Science
Discipline	Biology
Level and Credits	Stage 1 and Stage 2 – two 5 credit modules
Student numbers	407 Students

Introduction and Context

In the School of Biology & Environmental Science, we have a very high level of student diversity, with >40% of our stage 4 students coming through alternative routes or with additional requirements. This clearly identifies the local importance to adhere to the principles of Universal Design for Learning when we are trying to improve all aspects of our teaching.

On a personal level, I wanted to make some improvements to the materials I provided to our undergraduate students (i.e. lecture slides) so that they better matched the recommended format. This was something I had been wanting to do for 4-5 years but simply never had the time. Using the same slide format that I started with 14 years ago, when I began teaching at UCD, meant that my slides simply did not adhere to some of the key design principles now recommended to facilitate learning for certain cohorts of students.

I also wanted to get involved in an educational programme that was funded and was flexible, so that staff could decide how to best utilise this funding. This is a concept that I have argued for years should be present here at UCD and, while my workload was very high for the 2021-22 academic year, I decided I simply had to support such a great initiative as the Faculty Partnership programme.

The two undergraduate modules I decided to change the slides in, for this case study, were both early-stage modules, as this would reach the highest number of students possible. The first module was for Stage 1 Agricultural Science Students, namely BIOL10010 Animal Biology & Evolution (322 in this year's class). The second module was for Stage 2 Biological Science students, ZOOL20030 Principles of Zoology module that I have taught for over a decade and which had 85 students in it this year.

Design and Implementation

For this case study, I simply aimed to adhere to the Universal Design for Learning (UDL) principle, that small changes to your teaching in a module can make a significant impact. The key change I wanted to make was to ensure that all my trimester 2 lecture slides conformed with UDL principles – primarily the BIOL10010 and ZOOL20030 modules previously mentioned.

For each set of slides, I followed the recommended guidelines (UCD Access and Lifelong Learning) for helping students understand slides better by:

— changing font to a standard San Serif font (e.g. Calibri, Arial, Helvetica)

— removing italics and underlining, replacing them with bold text

— reducing the amount of text on each slide; no more than 6 lines

— using an off-cream background colour (cf. white, which can make certain colours more difficult to see for some students)

— increasing use of images and improving their layout

— using symbols as well as colour (e.g. green tick versus red cross)

— ensuring contrast between colours was sufficiently good enough.

See Figure 1 for an example of the changes to slide format.
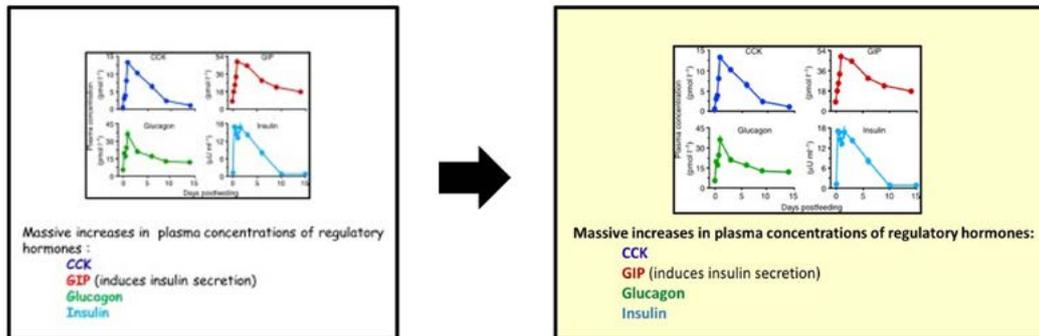
Figure 1: A representative example of the change in format that was undertaken for all ZOOL20030 lecture slides.

After making these changes, I then added descriptions, where necessary, to each image (using Alt-text function) to assist the understanding for any visually impaired students. I next checked the slides using the ALLY tool in Brightspace, which informs you of any issues that exist (e.g. poor colour contrast) and gives you a % score. If no issues are present, then a perfect score of 100% is given. The goal was to achieve a 100% score for EVERY set of slides (compared to the starting scores, which average around 50% for my slides in 2020-21: see Figure 2 for example of the change I achieved). I almost reached this ambitious goal, obtaining 100% for 18 lectures and 99% for the other two (which for some reason ALLY stated the language setting was incorrect, no matter how much I changed it).
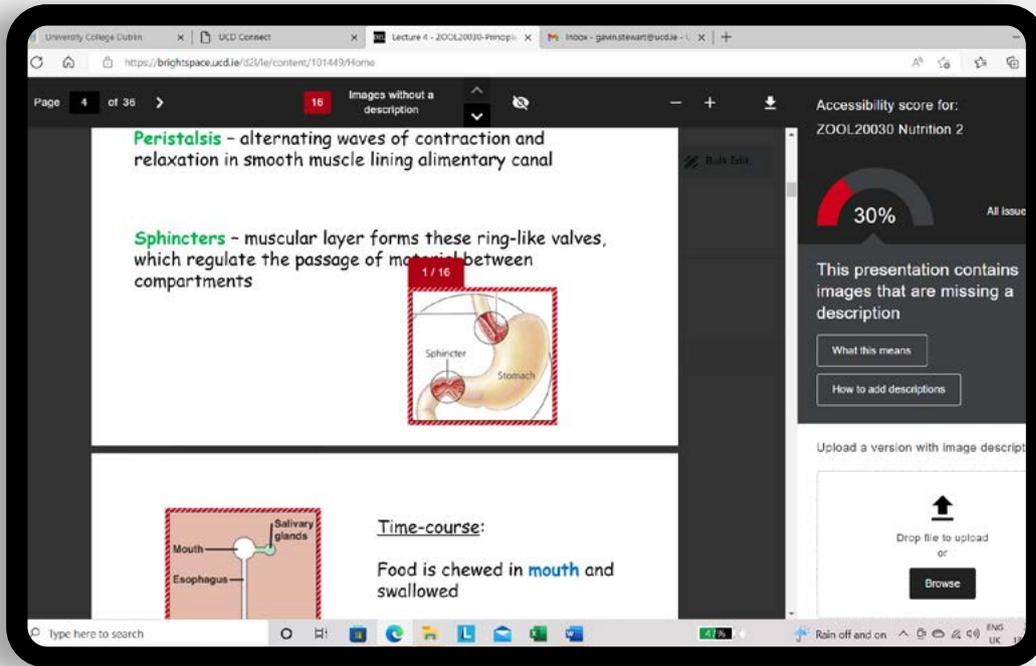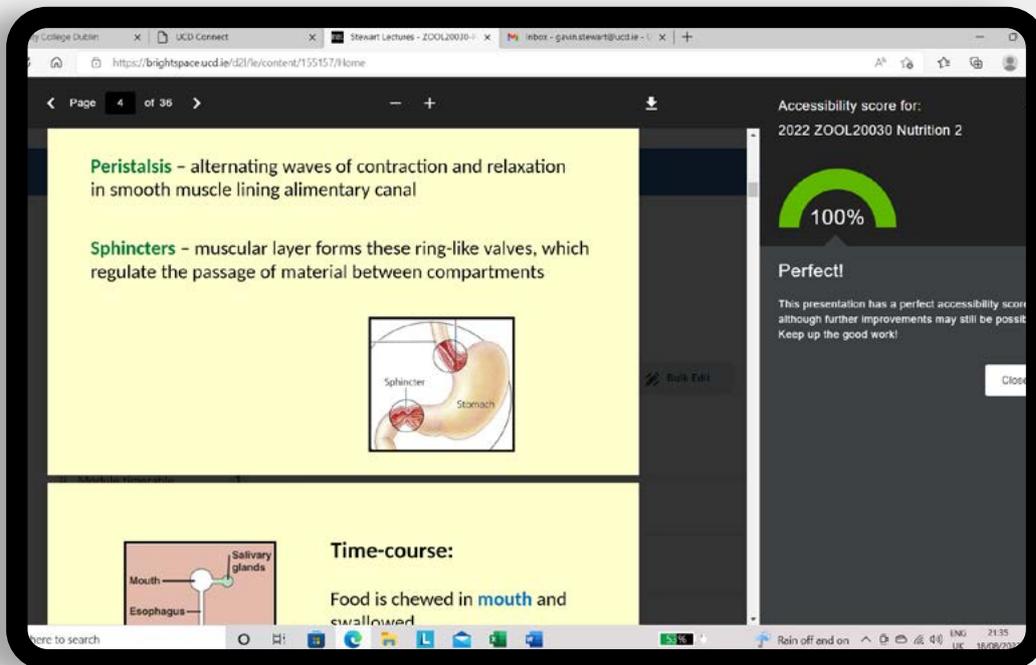
Figure 2: A representative example of the change in ALLY scores from before (A) and after (B) the accessibility guidelines had been adhered to for a ZOOL20030 lecture.

Having lectured at UCD for the last 14 years, the old format of all my slides had never really changed, even if the content had many times, and certainly did not adhere to UDL recommendations. Therefore, for every lecture, there were 30-40 slides that needed substantial alteration. On average, I found that it took between 1 and 1.5 hours for each lecture, which meant the whole process took ~30 hours. This was a considerable amount of time in an already busy work schedule. However, the generous funding provided by the innovative Faculty Partnership scheme meant that I was able to engage personnel to help assist me in other teaching tasks (e.g. teaching laboratory techniques to project students), thus providing me with the time for this extra work. For those without such funding, the first thing to note is that these accessibility guidelines are relatively easy to follow when producing new slides, so there is no barrier to using them when creating material. For existing slides, perhaps updating one module per trimester (or 5-10 lectures) is a realistic target to aim for. If continued, this would ensure the gradual updating of all materials within 2-3 years.

Results and Impact

As mentioned already, I can state that the project obtained its first, basic objective – that is that I successfully managed to improve my slide formats and improve their ALLY score. However, did this actually have any beneficial effects for the undergraduate students who used these slides?

In order to answer this, additional questions were added to the on-line student feedback surveys for both the ZOOL20030 and BIOL10010 modules, inquiring about the quality (or otherwise) of the slides used. Although the response rate was low (i.e. less than 10% of students), we did get feedback responses from ~20 students. The majority of the comments supported the idea that students preferred the new, altered slide format to those used by other lecturers on the same modules. I will, therefore, definitely continue with exactly the same process to convert the rest of my teaching slides (e.g. another 26 lectures in Trimester 1).

Figure 3 shows some quotes from the ZOOL20030 student feedback in response to the question: "Which slide format of the 3 contributors to the lectures did you prefer?" Rewardingly, 4 out of 5 of commentators preferred my new, improved slide format.

The funding that enabled this case study to be performed was used to employ a recent, first-class zoology graduate student (Deirdre McLaughlin) to perform various teaching tasks in my laboratory (e.g. project student training and supervision). Not only did this provide me with additional time, it allowed Deirdre to (i) gain her first paid position at the start of her scientific career, (ii) learn several new research techniques, and (iii) contribute as the first author to at least one, hopefully two, journal articles by the end of 2022. The opportunity for future graduates to gain this type of opportunity is something that I will be actively pursuing in the future.

"
Gavin's: due to simplicity yet effectiveness in getting the message across.

"
Gavin's slides were colourful, clear and straight to the point. They contained all the relevant information and were detailed enough to understand the topics.

"
I really liked Dr Stewart's lectures.... Laid them out really well, which made it really easy to revise.

"
I found the lectures completed by Dr Stewart were the best, and most easily followed, with great explanations and diagrams that aided my learning.

Interestingly, the one student that did not say this still commented that:

"
I thought all slides were easy to follow, but Tom Wilkinson's were the clearest.

Figure 3: Student feedback comments on the updated ZOOL20030 lecture slides (2021-22).

Finally, I can also describe the impact on a personal level, which includes two main aspects. Firstly, I am happy that I have, at last, changed my Trimester 2 lecture slides to a more recommended format. This was a task that I have wanted to complete for the last 4-5 years but simply never managed to find the time to do so. Secondly, as a biologist, it has reminded me of one of the frustrations about performing 'educational research' (which I have been involved with in various projects in the last few years) – the fact that it is very difficult sometimes to accurately determine whether a change you have made to your teaching has had a significant beneficial effect on student learning. This is for various reasons, such as low student response rates, differences in student cohort from one year to the next, potential bias in how you word survey questions, etc. Nevertheless, it has further reinforced my strong personal desire to continue with such educational projects, even though I am also still active in my biological research area as well. I have also generally felt more positive about my work thanks to this flexible, funded Faculty Partnership programme, which has enabled me to make much needed changes to my lecture slides. It means I will continue to push for much more of this type of educational funding, at every level. Indeed, this project helped motivate me to successfully obtain a new, senior Teaching & Learning role within my college!

As already mentioned, the only problem encountered with my case study was the low student response to the additional survey question about the slides. However, although the number of responses were low, the majority were in favour of the new slide format. This is certainly enough to encourage me that it is a worthwhile exercise in continuing to make these changes to my Trimester 1 lectures slides at the start of the 2022-23 academic year. One potential future alternative strategy would be to run a student focus group, getting them engaged in the process, and allowing me to action their feedback in real time during the weeks of a module.

Recommendations and Advice for Implementation

At the start of this case study, which has taken place in Trimester 2 of the 2021-22 academic year, I was unsure of what level of success would be achieved. On completion though, I have to say that this has been one of the most rewarding and beneficial experiences of my entire career over nearly 30 years. I would describe the outcome as a 'win-win-win' situation, in which undergraduate students, the graduate student who was employed, and myself all gained from the process. As a result, for any other faculty considering the need to change their slides to more appropriate formats, I would greatly encourage them to pursue any type of funding that would enable them to 'buy out' their time to do so. Even if such funding is not available from the government, or even UCD, I will be encouraging my colleagues to pursue all possibilities at more local levels – such as at college or even school level.

UCD College of Social Sciences and Law

Foreword

Colin Scott
College Principal
UCD College of Social Sciences and Law
Vice President, Equality, Diversity and Inclusion

I am very proud of the work of both academic and professional colleagues in UCD College of Social Sciences and Law to prioritise the advancing of equality, diversity and inclusion in our teaching, our research and our day to day practices. With respect to our educational programmes a key aspect of this work has been the development of a wide variety of pathways into undergraduate programmes, working closely with Admissions, Student Recruitment and Access and Lifelong Learning teams under the oversight of the of both Governing Boards and the University Widening Participation Committee, and also the development of graduate access scholarships.

The recruitment of a more diverse student population enables opportunity and also ensures that the widest range of students who would benefit from study at UCD can attend. But more diverse recruitment is insufficient by itself and we strive also to ensure that we have in place all the supports at University, College and School level to support all our students to thrive.

In this context I very much welcome the focus of the wide ranging initiatives of the University for All programme in general and the University for All Faculty Partners scheme, reported in this publication, and the focus on Universal Design for Learning. I was delighted to see four colleagues from UCD College of Social Sciences and Law participating as Faculty Partners and now sharing the fruits of their projects and wider collaborations in the University.

Dr Kevin Costello provided a wider range of diverse supports for student learning in an Employment Law undergraduate module. Dr Muireann Ní Raghallaigh's focus was a professional masters module in Social Work and how to address the sensitive topic of racism through advance preparation and the fielding of questions through an online form as a support to classroom discussions. There was a strong element of partnership with students in supporting the initiative. Dr Ernesto Vasquez del Aguila made innovative use of Padlet to provide a customisable roadmap to resources and spaces to support their student learning in modules on masculinities at both undergraduate and graduate level. Dr Rachel Farrell developed a new mode of assessment through digital storytelling in the Professional Masters in Education, supporting students to get the most out of this technique, and drawing the lessons on how to effectively implement such an approach for others.

I wish to congratulate each of my colleagues from my College on the creativity they have brought to developing innovative approaches to supporting student learning, consistent with principles of Universal Design for Learning. Their case studies provide an excellent resource to inspire all involved in developing and delivering teaching and learning, at undergraduate and graduate level, demonstrating the potential and the impact of Universal Design for Learning in supporting more effective learning in the social sciences and cognate disciplines. I wish to thank and congratulate also all those involved in developing and supporting this initiative as a key aspect of University for All and the wider actions of the university to support actions and learning which advance an inclusive learning environment where all our students may thrive.

Applying UDL Techniques in the Context of a Diverse Undergraduate Law Class

Dr Kevin Costello

Author	**Dr Kevin Costello**

Abstract	This case study was carried out in the delivery of a commonly taught law module: Employment Law. It discusses four steps designed to orientate delivery to the more diverse character of the modern classroom: (i) the publication of a glossary of terminology; (ii) the introduction of a dedicated 'Short Introduction to Legal Writing and Research'; (iii) the release of full text notes in advance of class; and (iv) the use of Padlet as a means by which students could respond to in-class problem questions.

Module/Course/ Programme/School	Employment Law: Contracts, School of Law
Discipline	Law
Level and Credits	Level 4 undergraduate
Student numbers	125-135 Students

Introduction and Context

This case study was carried out in the delivery of the module: Employment Law – Contracts. Employment Law is a classic doctrinal legal subject, mixing elements of domestic law and European law. The class size varies between 120 to 130. But it also has an element of diversity, which make it interesting from a UDL point of view.

In addition to the 28% of the class who enter the Law School through one of six access routes,[1] a significant percentage (20% (26 of 127)) of those enrolled are visiting students (mainly Erasmus students), for whom English is their second language.

Those students for whom English is a secondary language have to negotiate a series of barriers: language; legal methodology; a difference in substantive law; and difference in legal writing and assessment. An increasingly high percentage of those visiting students would themselves have entered university through non-traditional routes. Adoption of UDL strategies can also complement the European Union's 'Erasmus for All' programme, (which aims to increase the extent of Higher Education student participation in Erasmus mobility exchange).

This disadvantaged visitor cohort usually begin the academic year in a spirit of anxiety. Apprehension is particularly intense in the case of students for whom performance may affect their receipt of government funding. Every year, a small delegation would approach me and explain their apprehension. I would reassure them in a vague way that they would acclimatise like others had before them – but without taking more positive steps to reduce the barriers to equitable participation.

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1   The six access routes to the Sutherland School of Law are: UCD's 'University Access' Scheme, the 'Open Learning' route, the 'Mature Students' route, the Quality and Qualifications Ireland (QQI) scheme, the Disability Access Route to Education (DARE) and the Higher Education Access Route (HEAR).

Design and Implementation

Most module coordinators structure their module delivery with an imagined ideal learner in mind. That fictional ideal learner then functions as the module's intended audience; it shapes the content, and presentation of the module. Often that ideal learner will be a student who has excelled in negotiating the traditional university entry routes. However, that particular 'ideal' class member does not represent the more diverse character of the modern classroom. UDL principles encourage module coordinators to think of those other constituencies and their conditions. This year, influenced by UDL principles, I made an effort when planning the module to view the learning experience through the eyes of a student who, because of language disadvantage, was only likely to follow seventy per cent of a live lecture and who was also unfamiliar with the terminology of the common law.

The introduction of a dedicated 'Short Introduction to Legal Writing and Research' session for visiting students, taking the Employment Law module class.

The use of Padlet as a means by which students could respond to in-class problem questions.

1.
Introductory Tools

2.
Training

3.
Notes in Advance

4.
Padlet

The publication of an explainer video and a glossary of terminology.

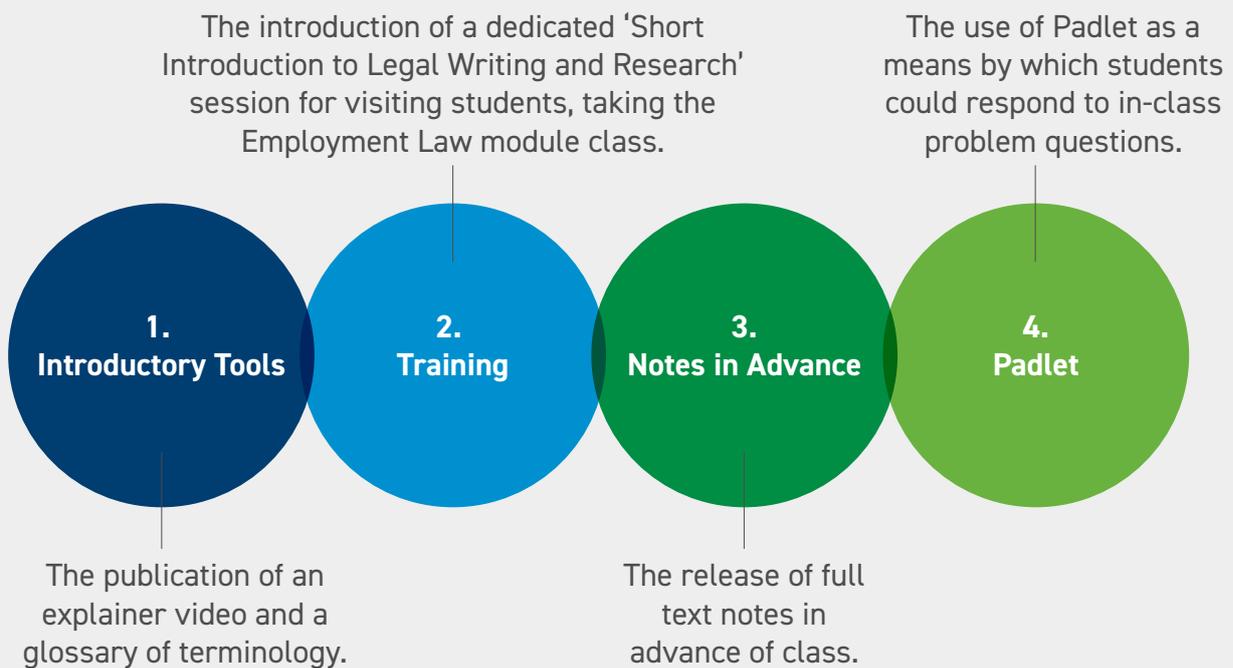The release of full text notes in advance of class.

Figure 1: Four Strategies employed to embed Universal Design for Learning

The four strategies employed in these changes are represented in Figure 1. Taking the vantage point of the visiting learner, I introduced two introductory tools:

— First, I made short explanatory video explaining the content, structure and assessment strategy associated with the module. This video was posted a week in advance of the first lecture. This alternative medium was encouraged by the general UDL encouragement to consider multiple means of representation

— Second, a detailed glossary of legal terminology that would be unfamiliar to a student from a European or civil law background was compiled. (This was inspired by the UDL recommendation to 'clarify vocabulary and symbols').[2] This glossary was inserted in the dedicated glossary folder in Brightspace within 'Module Tools'. The glossary covered terminology running from 'acceptance' to 'Workplace Relations Commission'. The list was designed to reduce the barriers to comprehension faced by students from different legal cultures. Of course, the provision of such a glossary has collateral benefits: it also benefits domestic students who also need to refresh their understanding of foundational principles.

A short research assignment makes up part (25%) of the overall assessment in the Employment Law module. In implementing the UDL standard of 'guiding appropriate goal setting', a dedicated essay writing workshop was organised for visiting students. Almost all of the exchange students on this module come from jurisdictions which use different techniques for presenting academic legal writing and for assessing legal writing. These students need to be acquainted with the resources used for undertaking research in the Irish legal system. A dedicated in-person meeting was held on 11 October 2022. The meeting was advertised as a 'Short Introduction to Legal Writing and Research for visiting students, taking the Employment Law module'. The meeting communicated academic expectations, introduced students to research databases and sources, and provided an introduction to Irish academic legal writing conventions. It was clear that this intervention met a need. Almost all visiting students attended the meeting. This dedicated writing and research class was not, on this occasion, offered to domestic students. On reflection, there is no reason why this should be so. The strong demand for a dedicated research and writing class amongst visiting students suggests that a next step might be to offer a version for domestic students.

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2   CAST UDL Guidelines, Guideline 2, checkpoint 2.1.

UDL principles encourage optimizing individual choice by 'offering choices in … the tools or supports available'[3] (CAST guideline 7.1) and 'providing options for comprehension'[4] (CAST guideline 3). Both of these principles underlie a fourth accommodation in the delivery of the module. The traditional class-based model offers little learner choice. It advantages those who are able to physically attend the class and can comprehend and transcribe the material at a very concentrated pace. In reality, most of us need several exposures in order to fully absorb difficult conceptual material. The early release of slides (as opposed to notes) is, arguably, of only limited effective utility. In the discipline of law, it has been found to be only 'moderately effective'[5] and to have no positive effect on exam performance.[6] Slides will typically contain disconnected bullet point references and quotations from statutes or judgments. However, most of the lecture content and argument will remain in the interstices; it will not be contained in the slides. As a result, slides alone will make little sense to a class member studying those slides in advance of the lecture.

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3   CAST UDL Guidelines, Guideline 2, checkpoint 2.1.

4   CAST UDL Guidelines, Guideline 3.

5   Nathan Garrett, 'PowerPoint Outside Class: The Impact of Slide Design on Student Use', (2015) *Journal of Educational Technology Systems* 1, 2.

6   Debra Worthington and David Levasseur 'To provide or not to provide course PowerPoint slides? The impact of instructor-provided slides upon student attendance and performance' (2015) 85 Computers and Education 14.

Early in the term I received a suggestion from a class member that - in addition to placing slides in advance of the lectures - I also post notes for each lecture in advance of the classes 'given the faster pace of in-person learning'. There are many key advantages to the visiting student in the provision of advance lecture notes. First, as Sambrook and Rowly suggest,[7] 'evidence [suggests] that notes taken by students [who have not read the lecture content in advance] typically include less than 50% of the ideas presented'.[8] This is particularly likely to be the case with visiting students who because of the pace of the lecture may not be able to understand some passages of the lecture. Advance lecture notes help those students to close that deficit. It is easier – often more interesting, in fact – to attend a lecture having had prior exposure to the topic. Furthermore, Sambrook and Rowly refer to the "interesting point", made by many international students' that such students "read in advance and identify any problem areas, which they can then focus on during the lecture and ask questions".[9] Advance exposure enables students the opportunity to identify areas of the forthcoming lecture on which they may need to concentrate more heavily. In addition, the level of preparation necessary to manufacture this tool improves the clarity, accuracy, and structure of the lecture itself. A lecture which has been polished to early release of notes' standard is likely to be better presented. This does not, it should be stressed, entail reading out lecture notes. Usually, the content will change spontaneously in the moment of live lecture delivery (The text of the lecture can be revised after the lecture in order to reflect changes made when delivering the lecture).

Some module coordinators, with whom I have discussed the topic, have expressed the objection that the release of lecture notes could kill class attendance. This is a legitimate concern, but my own experience suggests that this is exaggerated. In this case study, the early release of lecture notes did not have a negative impact upon overall attendance. Student feedback[10] suggested that class members treated this resource as supplementary to the lecture and not a substitute for the lecture. This is in line with research in other jurisdictions and disciplines, which indicate that the early release of slides does not encourage absenteeism or engagement.[11]

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7   S Sambrook and J Rowley 'Student attitudes towards and use of webnotes' (2010) 41 (2) International Journal of Management Education 31.

8   Sambrook & Rowley,32

9   Sambrook & Rowley, 35.

10   Student feedback suggests that these materials are looked upon as a secondary source.

11   Debra Worthington and David Levasseur 'To provide or not to provide course PowerPoint slides? The impact of instructor-provided slides upon student attendance and performance' (2015) 85 Computers and Education 14.

A fourth step was inspired by the UDL standard of 'varying methods for response and navigation'. In order to achieve variety and class engagement, the structure of the class is divided into lecture phases and class problem solving phases. The problem-solving section involves a "quick question' – always involving a hypothetical transaction involving a concealed legal issue. The problem is solved by class members participating live in class applying the appropriate legal doctrine.

A small minority of students are born with natural self-confidence and can shine in this type of exercise. However, exposure to a large class can be a very intimidating experience for those who may, by reason of their cultural or visitor background, be self-conscious about contributing in such a public forum. Students and teaching staff can both end up embarrassed when the answer proposed by the class member is incorrect. When this problem had been discussed previously at our teaching and learning forums there was discussion of technology such as 'clickers' and 'poll everywhere'. The problem with these polling technologies is that while they are useful in yes/no or multiple choice exercises, they are not built for the more heavily reasoned analysis, references and arguments that are used to solve legal problems. They do not allow participants to set out long, independent arguments in text. The solution was provided by 'Padlet'. Padlet suits a discipline such as law perfectly. It is easy-to-use and attractively designed technology in which class members are offered a digital text box in which they can anonymously insert text.
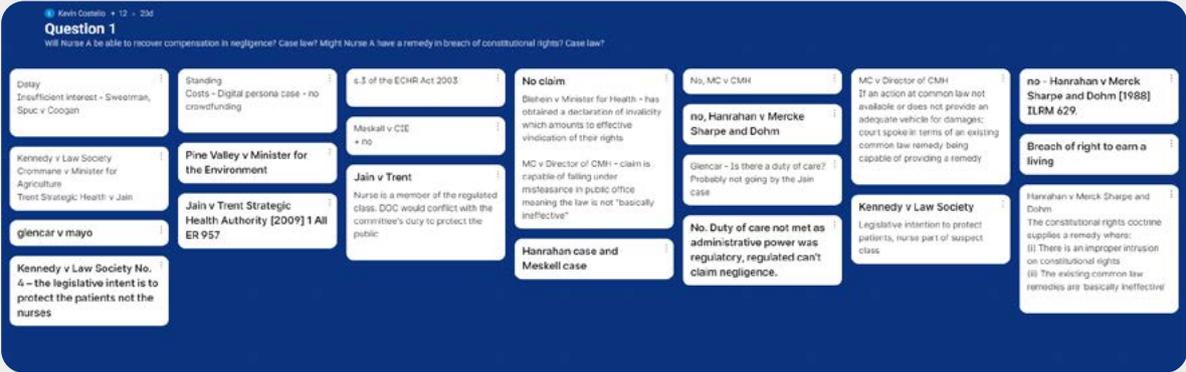
Figure 2: Padlet showing anonymous student responses to a set question.

Traditionally, the Employment Law module ends (week 12) with a two-hour examination preparation and revision session. After opening with a section on approaching examinations in law, the session moves on to a series of problem questions which have been the subject of previous exam questions. Padlet technology was embedded into the exam preparation PowerPoint presentation. When asked to respond to questions, class members, including those who were following the lecture remotely – a number of visiting students had returned home because of public health concerns – were able to discretely write their responses in their Padlet text boxes. After a couple of minutes, those responses were flashed up on the screen. Incorrect responses could be addressed and eliminated without embarrassment. The response rate was higher by several hundred percent than when class members were invited to contribute live within the class setting.

Results and Impact

These initiatives may explain an impressive modular grade profile amongst the visiting student cohort (66% B+). This is a rise from the assessment performance recorded in 2019-20 (the academic year when non-English speaking visiting students last took the module). In that year, 75% of the visiting cohort achieved a B grade or lower. But the more important personal lesson was that making accessibility for one constituency a point of reference in modular design does not just benefit the targeted group. It benefits all learners. All learners benefitted from a glossary of terminology; all learners benefit from a wider range of supports (including a wider range of advance lecture materials); and all learners benefit from the wider and more active class participation enabled by more amenable student response technology such as Padlet. One final point: In this study, a number of UDL-influenced measures were compressed into the delivery of a single module. This will not always be realistic. A more achievable strategy is to institute one small change at each delivery. Working incrementally can be just as effective.

Recommendations and Advice for Implementation

When designing a module, consider your notional audience and consider selecting your notional class member from one of the under-represented constituencies in your student cohort.

1. Consider publishing a glossary of terms. This may be essential for visiting students but may also be helpful to local class members.

2. Consider providing notes in advance for all students – these are more useful than slides; the provision of notes may not necessarily affect attendance.

3. Consider the adoption of a simple anonymous interactive textbox tool as a means by which class members can respond to questions.

References

CAST UDL Guidelines

Garrett, N. (2015). PowerPoint Outside Class: The Impact of Slide Design on Student Use. *Journal of Educational Technology Systems,* 1, 2.

Sambrook, S. Sambrook and Rowley, J. (2010). Student attitudes towards and use of webnotes. *International Journal of Management Education* 22.

Worthington, D. and Levasseur, D. (2015). To provide or not to provide course PowerPoint slides? The impact of instructor-provided slides upon student attendance and performance. *Computers and Education* 14.

Tell a Tale. Introducing Digital Storytelling as an Alternative Means of Expression for Assessment in Initial Teacher Education

Dr Rachel Farrell

Author	Dr Rachel Farrell

Abstract	This case study provides an overview of the approach taken by UCD School of Education to provide an alternative means of assessment through the use of digital storytelling. The overall aim was to align the use of digital storytelling with the principles of UDL so that student teachers on the Professional Master of Education programme could benefit from multiple means of representation, engagement and expression in how the module content is facilitated and assessed. In doing so, the University lecturers are modelling best practice in the use of technology enhanced learning which is a skill that student teachers need to learn as part of their professional practice as 21st Century educators.

Module/Course/Programme/School	Professional Master of Education, School of Education

Discipline	Education

Level and Credits	Level 9

Student numbers	260 Students

Introduction and Context

Through its Rising to the Future Strategy 2020-2024, University College Dublin is committed to ensuring that all members of the UCD community are empowered to achieve their full potential by embracing the principles of equity, diversity and inclusion and harnessing the potential of digital technology. The School of Education in the College of Social Science and Law has a strong commitment to educational inclusion and the transformative power of technology enhanced learning. The values that we espouse in our work with student teachers align with the principles of Universal Design for Learning (UDL). Through our programme structure and design, we ensure variety and choice in engagement, representation, action and expression (CAST, 2018) and provide a range of supports so that all of our student teachers have equitable opportunities to learn (AHEAD, 2017). This case study focuses on the Professional Master of Education Programme (PME) for post-primary teachers in the School of Education. The PME is the largest two year full-time professional master's programme in the University, comprising 260 students, 10 full-time faculty, and 80 occasional staff, from a diverse range of disciplines and backgrounds. Through "democratic pedagogical partnerships" (Farrell, 2021), the PME programme directors work with various placement schools, government departments and industry partners to ensure that our student teachers have an authentic learning experience during their studies with us. Building on an ongoing digital storytelling initiative with the Professional Development Services for Teachers (PDST), this case study centres on the introduction of digital storytelling as a multi-modal means of expression for the purposes of assessment.

Design and Implementation

Pioneered by Joe Lambert in the 1990s, digital storytelling is the practice of using computer and/or web-based tools and digital technology to tell stories that revolve around the idea of combining the art of storytelling with a variety of multimedia, including graphics, text, recorded audio narration, video clips, and/or music. Digital stories can vary in length, but most of the stories used in education typically last between two and ten minutes. Digital storytelling is a process and not a product. The graphic below illustrates the process that is underpinned by the ten elements of educational digital storytelling adapted from (Lambert, 2009).
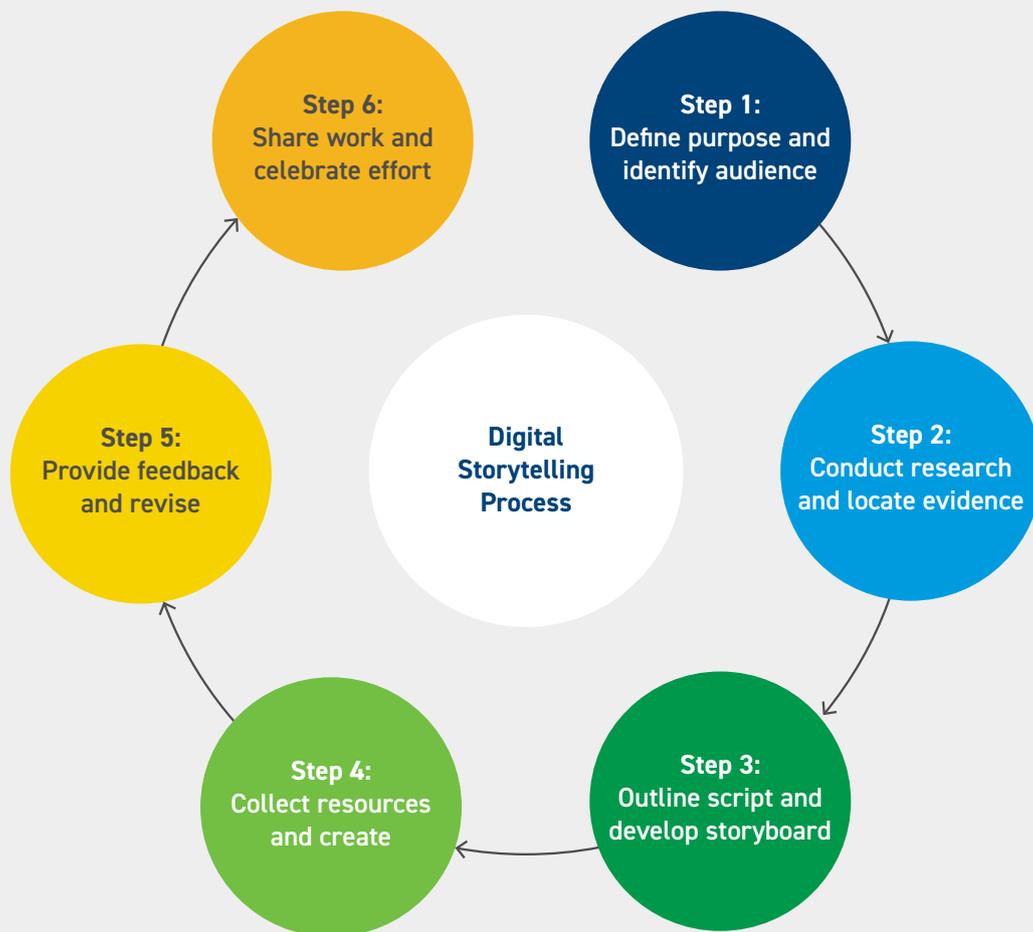

Figure 1: Digital Storytelling Process

Lambert's 7 Elements of Digital Storytelling (2009; Iwancio, 2010) has been adapted by the University of Houston (2013) for the purposes of educational assignments as outlined below.

1. The Overall Purpose of the Story

2. The Narrator's Point of View

3. A Dramatic Question or Questions

4. The Choice of Content

5. Clarity of Voice

6. Pacing of the Narrative

7. Use of a Meaningful Audio Soundtrack

8. Quality of the Images, Video & other Multimedia Elements

9. Economy of the Story Detail

10. Good Grammar and Language Usage.

In the first phase of the project, 120 first year PME students were taught the rudiments of digital storytelling during their Inclusive Pedagogy and Portfolio module. In addition, students were shown a variety of tools that they could use to create digital stories, including video editing software (e.g. iMovie for Mac, Microsoft Photo Story for PC) and web-based video tools such as Adobe Spark. They were then expected to apply this learning to their teaching practice. However, to ensure buy-in from students across the board, digital storytelling was introduced as a multi-modal means of assessment in the Philosophy of Education module. Philosophers such as John Dewey and Paulo Freire are featured on both modules and, as I was responsible for this element of both modules, it provided a good opportunity for me to trial this new approach. During a Philosophy of education lecture on the philosophical perspectives of Dewey and Frier, I modelled good practice by using formative assessment strategies such as key words and anticipation guides in advance of showing some engaging digital stories about the two philosophers selected from www.study.com. In doing so, I was enabling inclusive learning through both multiple means of representation and multiple means of engagement. In phase two of the project, students were then given the choice to include teaching resources

they developed using digital stories as part of their Inclusive Pedagogy and Portfolio assessment, and also the choice to complete their assignment for the Philosophy of Education module (see below) by a traditional essay or by a digital story. This enabled digital storytelling to be used as an alternative means of expression across both modules.

Title	Have your priorities for education shifted this trimester? Respond to this question with reference to the work of at least two educational philosophers encountered on this module.
Guidance	This question is seeking a formal reflective response that demonstrates how educational philosophical theory can inform, challenge and/or support student teachers' personal philosophies of education, leading to a strong rationale for their own emerging professional perspective.
Format	**Either** a 2,500 word essay **OR** the equivalent content captured through digital storytelling.

Table 1: Philosophy of Education Assignment

The assessment rubric for the digital story was based on work created by teachers and shared on the Rubistar website, as well as the work of Dr Helen Barrett, and the University of Massachusetts, Amherst (University of Heuston, 2011).

Element	Excellent	Very good
1. **Purpose of Story**	Establishes a purpose early on and maintains a clear focus throughout.	Establishes a purpose early on and maintains focus for most of the presentation.
2. **Point of View**	The point of view is well developed and contributes to the overall meaning of the story.	The point of view is stated but does not connect with each part of the story, although an attempt is made to connect it to the overall meaning of the story.
3. **Dramatic Question**	A meaningful dramatic question is asked and answered within the context of the story.	A dramatic question is asked but not clearly answered within the context of the story.
4. **Choice of Content**	Contents create a distinct atmosphere or tone that matches different parts of the story. The images may communicate symbolism and/or metaphors.	Contents create an atmosphere or tone that matches some parts of the story. The images may communicate symbolism and/or metaphors.
5. **Clarity of Voice**	Voice quality is clear and consistently audible throughout the presentation.	Voice quality is clear and consistently audible throughout the majority (85-95%) of the presentation.
6. **Pacing of Narrative**	The pace (rhythm and voice punctuation) fits the story line and helps the audience really "get into" the story.	Occasionally speaks too fast or too slowly for the story line. The pacing (rhythm and voice punctuation) is relatively engaging for the audience.
7. **Meaningful Audio Soundtrack**	Music stirs a rich emotional response that matches the story line well. Images coordinated with the music.	Music stirs a rich emotional response that somewhat matches the story line. Images mostly coordinated with the music.
8. **Quality of Images**	Images create a distinct atmosphere or tone that matches different parts of the story. The images may communicate symbolism and/or metaphors.	Images create an atmosphere or tone that matches some parts of the story. The images may communicate symbolism and/or metaphors.
9. **Economy of Story Detail**	The story is told with exactly the right amount of detail throughout. It does not seem too short nor does it seem too long	The story composition is typically good, though it seems to drag somewhat OR need slightly more detail in one or two sections.
10. **Grammar and Language Usage**	Grammar and usage were correct (for the dialect chosen) and contributed to clarity, style and character development.	Grammar and usage were typically correct (for the dialect chosen) and errors did not detract from the story.

Table 2: Assessment Rubric for Digital Storytelling

	Good	Satisfactory
	There are a few lapses in focus, but the purpose is fairly clear.	It is difficult to figure out the purpose of the presentation.
	The point of view is stated but no attempt is made to connect it to the overall meaning of the story.	The point of view is only hinted at, or is difficult to discern.
	A dramatic question is hinted at but not clearly established within the context of the story.	Little or no attempt is made to pose a dramatic question or answer it.
	An attempt was made to use contents to create an atmosphere/tone but it needed more work. Image choice is logical.	Little or no attempt to use contents to create an appropriate atmosphere/tone.
	Voice quality is clear and consistently audible through some (70-84%) of the presentation.	Voice quality needs more attention.
	Tries to use pacing (rhythm and voice punctuation), but it is often noticeable that the pacing does not fit the story line. Audience is not consistently engaged.	No attempt to match the pace of the storytelling to the story line or the audience.
	Music is ok, and not distracting, but it does not add much to the story. Not coordinated with images.	Music is distracting, inappropriate, OR was not used.
	An attempt was made to use images to create an atmosphere/tone but it needed more work. Image choice is logical.	Little or no attempt to use images to create an appropriate atmosphere/tone.
	The story seems to need more editing. It is noticeably too long or too short in more than one section.	The story needs extensive editing. It is too long or too short to be interesting.
	Grammar and usage were typically correct but errors detracted from story.	Repeated errors in grammar and usage distracted greatly from the story.

Samples of student assignments may be found on the School of Education academic advising website (School of Education, 2022).

Figure 2: Screenshot from sample digital story

Results and Impact

Student feedback (using menti-meter) on the use of digital storytelling as a means of representation and engagement was unanimously positive. However, the uptake of the alternative assessment was low. There was a higher uptake from students presenting digital stories as part fulfilment of their Inclusive Pedagogy and Portfolio assessment, with 20 out of 120 students engaging in this format. Thirteen out of the 120 students opted for the digital storytelling assignment for the Philosophy of Education assignment. To get buy-in from this pilot group, students were facilitated to meet in small groups or individually as a means of reassurance. During these meetings it emerged that their main concern was the risk of a dip in grades as this form of assessment was new to them and they had no baseline of their own standard or examples of work to view. A clear assessment rubric was provided, along with some additional support sessions for using the technology for those students who were interested. A focus group with the participating students was held to glean insights about the impact of the digital storytelling initiative. Increased motivation and enthusiasm for the subject matter was palpable. In addition, it was observed that students viewed the assessment as more than a means to an end; it was an impetus to hone a skill that could be transferred effectively to their own professional practice during school placement. For the small group that engaged in the alternative assessment and associated supports, digital storytelling added value in enhancing their experience through personal ownership and accomplishment. Furthermore, the digital stories that were published online (via UCD School of Education, 2022) provided students with the opportunity to share their work with their peers and gain valuable experience in critiquing their own and other students' work. Research suggests that this kind of sharing promotes gains in emotional intelligence and social learning (Darling-Hammond et al., 2019). Some comments from the student focus group are summarised below.

"
**I am more
motivated and
enthusiastic about
philisophy of
education now!**

"
**It is good to see
lectures practicing
what they preach
and modelling ways
of presenting**

"
**The assignment help
me develop a skill that
can be trasferred to
my teaching**

"
**I like seeing other
students' digital stories.
I may choose this form of
assessment in the future**

Figure 3: Student feedback on the use of digital storytelling

Recommendations and Advice for Implementation

The first step for others who wish to include digital storytelling in their teaching, learning and assessment is to note the feedback from the students who took part in this pilot initiative. The students in this case study responded well to seeing me as their lecturer practice what I preached, regarding the use of digital storytelling. Furthermore, students in the pilot were more inclined to step outside their comfort zone when they were provided with some reassurance and support. While this involved an investment of time, it was worth it to motivate a critical mass of early adapters to take the risk to engage with this alternative form of assessment. At the end of the pilot some of the digital stories were published online. This generated interest amongst students who have indicated that this has motivated them to engage with this type of assessment going forward. A lack of examples of the finished assessment for the initial cohort of students was a factor in the low uptake of the alternative assessment, therefore students who have agreed to allow their digital stories to be used as examples will help mitigate the fear of the unknown in future cohorts. Furthermore, the formative nature of this process led approach provides students with an opportunity to develop digital skills that will be of value to them in their own teaching, learning and assessment during their school placement. Generating and showcasing artefacts of learning from the perspective of the student teacher and their own pupils is a very powerful way to promote multiple means of engagement both on the PME programme and during teaching practice. Another important lesson that I learned in this process is the importance of a formative assessment rubric that provides specific information on the success criteria for each element of the digital story assignment. While I used the readymade rubric in Table 2 above in this pilot, going forward I will refine this rubric in consultation with students who completed the assignment this year, as it needs to include some other elements of the University assessment grade descriptor along with some other nuanced details that are context specific.

Digital storytelling as an effective approach to UDL will be further promoted and expanded at PME programme level going forward. The R-NEST model (reflection, narrative, engagement, sociality, and technology) (Long & Hall, 2015), which has been successfully implemented in other teacher education programmes for the purpose of reflective practice elements of the PME programme, will be embedded incrementally over the next few years in UCD School of Education. In addition, an online digital storytelling module that is offered as part of the suite of co-curricular modules on the PME programme will also be made available to full-time and occasional staff so that it can be modelled as a teaching, learning, and assessment approach across multiple modules. Careful consideration will be given to the tension between the need to make progress on the implementation of digital storytelling with the need to manage the potential (or perceived) burden this might place on students and lecturers. Incremental change in the form of the Plus One approach (Tobin, 2018), where faculty can make simple changes that does not require a significant investment of time on their part, may be a practical way to address this and make progress on embedding digital storytelling across the programme in a meaningful and supported way.

References

AHEAD (2017). Universal Design for Learning. Available at: https://www.ahead.ie/udl [10 July 2022]

CAST (2018). Universal Design for Learning Guidelines version 2.2. Available at: http://udlguidelines.cast.org [10 July 2022]

Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2019). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, 24(2), 97-140.

Farrell, R. (2021). Covid-19 as a Catalyst for Sustainable Change: The Rise of Democratic Pedagogical Partnership in Initial Teacher Education in Ireland. *Irish Educational Studies*, 40(2), 161-167.

Iwancio, P. (2010). 7 Elements in 4 minutes. Available at: https://youtu.be/NipDAd3_7Do [15 July 2022]

Long, B. and Hall, A. (2015). R-NEST: Design-based research for technology-enhanced reflective practice in initial teacher education. *Australasian Journal of Educational Technology*, 31(5), 572

Lambert, J. (2009). *Digital storytelling: Capturing lives, creating community* (3rd ed.). Berkeley, CA: Digital Diner Press.

Tobin, T.J. and Behling, K.T. (2018). *Reach everyone, teach everyone: Universal design for learning in higher education*. West Virginia University Press.

Ubuntu Network. (2022). http://ubuntu.ie/

UCD (2020). 2020-2024 strategy, 'Rising to the Future', Dublin, UCD. Available at: https://strategy.ucd.ie/wp-content/uploads/2019/12/UCD_2024_Strategy_Document.pdf

UCD School of Education. (2022). Artifacts of Learning: Sample digital stories. Available at: https://educonnect.ie/artefacts-of-learning/ [15 July 2022]

University of Houston. (2011). Rubrics. Available at: http://digitalstorytelling.coe.uh.edu/archive/rubrics.html [15 July 2022]

University of Houston. (2013). The 7 Elements of Digital Storytelling. Available at: https://digitalstorytelling.coe.uh.edu/page.cfm?id=27&cid=27&sublinkid=31 [15 July 2022]

Adopting an Inclusive Approach to the Teaching of Race and Racism on a Social Work Programme

 Associate Professor Muireann Ní Raghallaigh

Author	**Associate Professor Muireann Ní Raghallaigh**

Abstract	This case study discusses the implementation of Universal Design for Learning principles on a social work masters programme at University College Dublin. Specifically, it discusses how the approach to teaching content about race and racism was made more inclusive. It acknowledges the difficulties and sensitivities involved in teaching this content and discusses the use of a consultative model where students themselves were invited to be involved in the planning of the class. On foot of that consultation, a simple Google form was used to allow students to ask questions ahead of class. This contributed to the provision of 'multiple means of engagement' and 'multiple means of action and expression', whereby students had various ways to ask their questions and other students were supported to speak about their own lived experiences.

Module/Course/ Programme/School	Module: Social Justice, Human Rights and Probation Programme: Professional Master of Social Work School of Social Policy Social Work and Social Justice, College of Social Sciences and Law
Discipline	Social Work
Level and Credits	5 Credits
Student numbers	55 Students

Introduction and Context

Unsurprisingly, many topics that are taught on health and social care programmes, including social work, might be considered to be 'sensitive' in nature. For example, students learn about topics such as domestic violence, child abuse, bereavement, sexual violence, and addiction. Such content may also be considered difficult to teach. Indeed, Scriver and Kennedy (2016), writing about the teaching of content on sexual violence, state that "in many cases lecturers are, like their students, inexperienced in giving voice to such issues and may be uncomfortable about including sexual violence in modules" (p.198). Similarly, Gair (2016) refers to the "trials and tribulations" (p.593) of teaching content on race and racism.

The complexity of teaching such topics is increased by the fact that many sensitive topics will potentially touch on the lived experiences of students within the classroom. Within cohorts of students across any disciplines there are likely to be students with lived experience of these issues. Within social work, some students may, in fact, be drawn to the programme precisely because of their lived experiences, including experiences of adversity and oppression. Lecturers may worry about causing stress to such students and may avoid discussing certain topics or discuss them only peripherally. The literature suggests that the teaching of sensitive topics may be avoided in order to protect students who are vulnerable from distress, in order to protect themselves as lecturers or in order to manage the relationships between staff and students (Scriver and Kennedy, 2016, drawing on many).

My own experience suggests that teaching about racism is particularly challenging. For many years in my teaching career I barely touched on racism, instead opting for the safer ground of discussing 'culture' and 'cultural competence'. Even then, the teaching was challenging, particularly if there were only a few students whose cultural and ethnic background was not that of the majority (Irish and white). Classroom discussions of other topics such as bereavement or domestic violence, for example, will almost inevitably be very difficult for students (and staff) with lived experiences of these issues, but often nobody (or very few) in the room will know that they have experienced these adversities. The situation is very different in discussing race, where students from

Black or ethnic minority backgrounds may feel that the spotlight is shining on them, particularly if they are in a classroom with predominantly white peers; in general, they cannot hide their ethnicity, if they wished to. I became increasingly aware of this over several years, and most particularly one year when a Black student commented to me after a class that, had she known what topic was scheduled for that day, she simply would not have attended, as it was just too difficult. This suggested to me that the class was not sufficiently inclusive and that there was a risk of some students becoming "alienated" in teaching this content, despite its clear and obvious importance.

I needed to change my approach so as to create a safer and more supportive environment where student engagement and participation could be enhanced, thus ultimately allowing better learning to occur. I was influenced by both a trauma informed approach and by the principles of Universal Design for Learning. Indeed, Carello and Butler (2015) argue that "trauma informed and universal design theories share some similar principles: They are strengths-based, person-centered, and solution-focused approaches" (p. 265). I hoped that a changed approach would result in increased participation among all students, both the majority, white students and students who are Black or of an ethnic minority background. Having said that, the changes were made with the knowledge that discussions about racism will inevitably be uncomfortable and challenging to some extent and that this very discomfort may motivate learning, reflection, and change.

Design and Implementation

The Professional Master of Social Work is a 2-year, full time programme which comprises approximately 55 students in each year. All modules on the programme are compulsory, and successful completion of the modules (including two placements) allows the graduates to apply to CORU (the profession's regulator) for registration as a professionally qualified social worker. While data on the ethnicity of students is not gathered, I would estimate that until two years ago less than 10% of students were Black or of an ethnic minority[1]. In the last two years, my estimate is that this percentage has risen to over 20%. Students are of a mixed age profile also, with many mature students. Several students each year register with UCD Access and Lifelong Learning as having a disability.

The module in question – Social Justice, Human Rights and Probation – is delivered in the second year of the programme. A colleague (the module coordinator) delivers half of the lectures and I deliver the other half. The lectures I cover include two on race and racism, one on working with refugees, and one on working with the Travelling community. An external speaker comes in to deliver a lecture on working with LGBTQI+ populations. Each lecture is two hours long.

What did I do?

A few weeks before my lectures commenced, I emailed the students. I informed them of the topics that I would be covering and named the challenges that sometimes arise in discussing those topics, including the upset that can be caused. This was in keeping with suggestions from the literature where it is recommended that students should be alerted in advance if lectures are covering 'difficult' material (e.g. Scriver and Kennedy, 2016; Carello and Butler, 2015). I invited students in the class who were interested in being involved in the planning of the lectures to come forward and to meet with me.
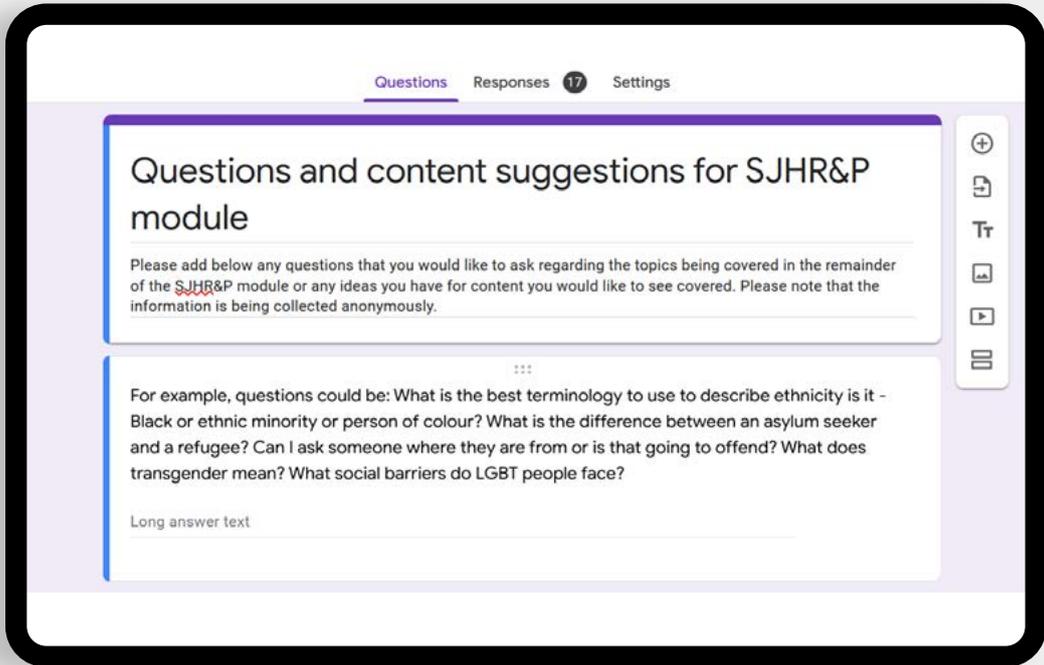
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1   I acknowledge that estimating in this way is problematic. I do not know how the students themselves would self-identify. It is also possible that some students may be of an ethnic minority background but that this might not be obvious to me.

On foot of this, I met with 5 students in the class (the 'preparation group'), 4 of whom were Black. The white student who attended was a member of the LGBTQI+ community. A sixth student (also white and a member of the LGBTQI+ community) engaged subsequent to the meeting by email.

As a group, we discussed the many challenges of covering topics such as racism and discrimination and we brainstormed in relation to how the class might happen in a way that might best allow learning and sharing of experiences to occur. We identified that in any class some students may find it hard to ask questions or to voice their opinions but that in classes about topics such as racism the challenges might be even greater and might extend to students who ordinarily would have no difficulty in participating. Students might find it hard to ask questions in class for fear that their question will be viewed as racist or for fear that they will upset a classmate. We recognised that this was not the case for everyone, however, and that there needed to be different ways to engage students and to encourage participation. We also identified that sharing one's own experiences of racism can also be very difficult but that doing so can be powerful for other students. This essentially amounted to an identification that there needed to be "multiple means of engagement" and "multiple means of action and expression" within the classroom environment. By multiple means of engagement, I am referring to providing students with a range of different ways "to engage positively" (Heelan and Tobin, 2021, p. 20) with the lectures. I wanted "to create purposeful and motivated learners" (Heelan and Tobin, 2021, p. 20) who wanted to learn about race and racism and who were motivated in this regard. By multiple means of action and expression I mean how I might provide a variety of ways for the students to "express themselves and demonstrate what they know in a way that works for them" (Heelan and Tobin, 2021, p. 31). I was particularly interested in providing students who had lived experiences of racism with different ways to share their knowledge and experiences if they wished to do so.

The preparation group and I discussed various ways of addressing the issues we had identified, including having smaller group discussions within the classroom where people might feel more able to take part. However, this too seemed problematic: in particular, it raised the issue of Black and ethnic minority students potentially being in a small group where everyone else was white and being placed in the uncomfortable position of feeling they have to 'represent' Black and ethnic minority communities. With further discussion we identified that a practical way of addressing this amounted to the creation of a Google form where students could post questions anonymously in advance of class. With this very simple change I hoped that we would allow students to engage using "multiple means", in keeping with the principles of Universal Design for Learning. Students could post questions in the form or they could contribute in class either verbally or via Mentimeter. Having the questions in advance in the form also meant that they could be shared with members of the preparation group ahead of class. This would allow the preparation group to know in advance what questions were coming up and could facilitate them to share their experiences in class (to express themselves in relation to their lived experience), if they wished to share.

Figure 1: Screenshot of Google Form that was used.

Results and Impact

The approach proved very successful. Good use was made of the form, with a total of 17 questions being posted in it, with questions covering the various different lectures. While some students might have asked these questions in class anyway, my experience of teaching this topic over many years suggests to me that some of the questions would not have been asked without this method of engagement. Examples of the kinds of questions included were the following:

> **How can we ask questions about other people's (clients or peers) ethnicity/ religion/sexuality, like what's helpful or not?**

> **Are there questions you as a person who is Muslim would like me to ask you or things I need to clarify with you when I start work with you either as a service user or colleague e.g. around prayer times/accommodations?**

Another positive and unexpected outcome was that some members of the class used the form to make specific points rather than to ask questions. I had not envisaged this happening. For example, it may be the case that the person who asked the following question was speaking from their own lived experience but would not have said this in class in front of his or her peers:

> **What do you think the other person who has been racially abused is feeling when no one stands up for them at the bus stop?**

In addition, on foot of having sight of the questions in advance of class, some members of the preparation group were then happy to address some of the questions in the lecture itself: as envisaged, having the questions in advance seemed to mean that they had time to consider how to answer them rather than being put on the spot in the classroom. In my mind, this made for a safer and more supportive classroom experience for those with lived experiences, enabling them to share their experiences if they wished to.

The sharing happened in a variety of ways, including writing something (anonymously) which I then read out, preparing and presenting some PowerPoint slides themselves, or responding verbally in class to a question posed in the google form. For me as the lecturer, I was able to incorporate the questions (and comments) into my slides, ensuring that each one was either explicitly addressed or that students were pointed to relevant resources and readings to learn more on the topic. This meant that important questions, which might previously have remained unvoiced, were addressed.

An evaluation form was distributed to students at the end of the module. In this evaluation students were asked how important they thought it would be to do something similar in future years. Of the 19 students who responded, seven indicated that this would be 'important' and 12 indicated that it would be 'very important'. In qualitative comments students made comments such as the following:

> "I think you [did] a great job incorporating students' lived experiences and supported those of us who did want to share our experiences which was really empowering. I know from chatting to people after the classes, that the topics generated a lot of needed discussion around racism and discrimination faced by people, including people we know or that are in our class/the social work profession"

> "Really enjoyed the classes, found the discussions extremely useful and the content covered areas I wanted to learn more about. Thought the lived experiences from other students was very important. The google docs only issue was sometimes I forgot to add a question before class but could ask during it instead"

> "I think the sessions were quite interactive and engaging. Participation and the sharing of the lived experiences during lectures brought the subjects to life and I think it was valuable learning and made the learning space quite inclusive. It also made some of the subjects less intimidating and less awkward"

Recommendations and Advice for Implementation

'Reaching out' to students in advance of class was essential in this implementation. It also helped that I was contacting the students about a number of different topics, rather than focusing on just one[2]. This meant the methodology was being used not only in relation to race and racism, but also in the lectures on refugees, on Travellers and on the LGBTQI+ population. I believe that this meant that the approach became more normalised and that one topic wasn't standing out as being different in relation to the pedagogical approach. It also meant that students became familiar with the approach. Given the nature of these discussions, I think it also helped that the students knew me and that I had taught related topics previously: I imagine that this was helpful in ensuring that some students responded positively to the initial email. For future years I will consider co-teaching these classes with a member of the communities being discussed (e.g. with a Traveller, with a member of the Black and ethnic minority community). I will also consider sending a second invitation to a follow up meeting, after the first class, in case additional students may wish to join the preparation group.

Navigating the teaching of sensitive topics can be challenging, perhaps particularly because social work pedagogy generally involves an interactive and discursive approach. There is, at all times, a need to be mindful of the impact of the subject matter on the students themselves. While discussions of race and racism are likely to be upsetting, challenging and uncomfortable, they cannot be avoided: they are, without a doubt, crucial discussions for health and social care students to have. Combining a trauma informed approach with principles of Universal Design for Learning can allow this topic to be covered and tackled in an inclusive way. Specifically, working in partnership with students and giving students opportunities to engage and express themselves in multiple ways ensures that the content is covered sensitively and meaningfully in a way that is likely to have a more lasting impact.

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2 Thanks to my colleague Dr Krisna Ruette-Orihuela for this suggestion

Acknowledgements:

References

Carello, J. & Butler, L.D. (2015). Practicing What We Teach: Trauma-Informed Educational Practice, *Journal of Teaching in Social Work,* 35(3), 262-278

Gair, S. (2016). Critical reflections on teaching challenging content: do some students shoot the (white) messenger?, *Reflective Practice,* 17(5), 592-604.

Scriver, S & Kennedy, K.M. (2016). Delivering education about sexual violence: reflections on the experience of teaching a sensitive topic in the social and health sciences, *Irish Educational Studies*, 35(2), 195-211.

Heelan, A. and Tobin, T.J. (2020). *UDL for FET Practitioners: Guidance for Implementing Universal Design for Learning in Irish Further Education and Training*. Dublin: AHEAD, SOLAS and ETBI.

Ten Destination Roadmap to a Journey of Discovery

Dr Ernesto Vasquez del Aguila

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Abstract	The 'Ten Destination Roadmap' uses Padlet as a platform to display and create content for tutors and students. The roadmap guides students through a journey, in which each destination provides resources and spaces that can be customised based on students' individual experiences and backgrounds. This is an inclusive space that can be used for online, blended, or face-to-face environments.

Module/Course/ Programme/School	This is a module taught at undergraduate (SSJ30080 Masculinities) and graduate levels (EQUL40310 Masculinity and Equality). School of Social Policy, Social Work and Social Justice

Discipline	Social Justice

Level and Credits	Level 3 & 4 | 5 & 10 Credits

Student numbers	61 Students

Introduction and Context

A very popular cultural idiom in Latin America, 'La excepción confirma la regla' (the exemption proves the rule), serves to make rules or generalisations difficult to challenge. Though it lacks coherence, it essentially uses an exceptional case as the argument to legitimise a questionable viewpoint in which 'majority rules'. I was always bothered by this cultural idiom but didn't have the background to argue against it. Principles of Universal Design for Learning (UDL) contest such fallacies that undermine diversity and uniqueness in education and everyday life.

I created this 'Ten Destination Roadmap' to celebrate diversity and uniqueness in my classrooms, promote intercultural learning, and challenge the hidden curriculum of heteronormativity in education. The roadmap seeks to: a) provide students an online platform to navigate all aspects of modules; b) present students with practical and theoretical tools to understand the main principles of our teaching philosophy, including UDL; and c) create a dynamic, inclusive space that fosters individual and group learning activities in online, blended, or face-to-face environments.

The roadmap encourages reflective engagement through interactions between concepts and everyday experiences. Borrowing Boyer's (1990) notion of "scholarship of discovery", this *Roadmap* guides students through an ongoing journey of discovery that, not only contributes to knowledge, but also transforms and extends it into their day-to-day lives. This *Roadmap* offers a platform to display and create content as part of what I am calling 'pedagogical capital', the currency educators and learners acquire and accumulate in the process of learning. It provides students with an inclusive space to adapt the learning materials to their needs and customise their responses based on their individual backgrounds. In this journey, it is pivotal that students learn and connect as part of a community of researchers.

Design and Implementation

UDL is a pedagogical approach that fosters inclusion and creates a community of learners beyond the idea of the "regular" student (Padden et al., 2017). Rose (2013) argues that designing for an "imaginary average" learner destroys talent by, a) ignoring diversity and uniqueness among learners; b) not allowing for gifted students who are "above average" in one aspect of their learning; c) preventing recognition of the specific struggles of those who don't fit within this imaginary notion; and d) preventing teachers from nurturing the talent of all learners.

I have created this Roadmap while taking the UCD Diploma in Teaching and Learning and have successfully implemented it across my modules since 2020.

UDL is a "team effort" for educators and learners. This approach aligns with my teaching philosophy, which embraces emancipatory pedagogy and conceives the educator as a facilitator of learning rather than a provider of knowledge. This Roadmap is a space for individual and group work in a community of researchers. The Roadmap also provides a learning environment that fosters "hard fun": joy and fun while still based in rigor and hard work (Barret, 2005).

The roadmap aligns with principles of UDL, as students are invited to use different modalities of expression and communication such as videos, photographs, graphics, mental-maps, and charts. Different learning styles are supported via this platform. The non-linear organisation of the posts within the platform allows students to share their insights and research in alternative ways that may defy hierarchical or unilinear thinking. In keeping with UDL principles, I use the metaphor of a kaleidoscope to highlight the uniqueness of learners and call for an awareness of the individual needs and circumstances of our students which might not be "visible" or evident in class but which, nonetheless, impact their engagement and learning. Our students are diverse in terms of gender, nationality, disability, and age, and each of these factors influences their learning approaches and challenges.

The Padlet version of this *Roadmap* (Vasquez del Aguila, 2022a) includes Ten destinations:

1. Destination 1 - South America: Module Introduction

Introduces module descriptors, content of classes, methods of assessment and other logistics related to the module. I collect students' expectations for the module to be revisited in destination six (midway reflection).

2. Destination 2 - North America: My Teaching Philosophy

Provides the opportunity for tutors to discuss their teaching philosophy as part of a core approach of the module journey rather than a simple section in the handbook. My seven principals are: learning as a Kaleidoscope and UDL; intersectionality; decolonising education; queering the curriculum; reflective thinking and co-learning; kindness, empathy, and compassion; and hard fun.

3. Destination 3 - Greenland: Case Studies

Presents case studies as tools to understand different societies through empirical studies. They are gateways to decolonising education; learning from literature, not only *about* the Global South, but also *produced by* scholars from the global South. A decolonised education challenges the lack of diversity, omissions, hidden curriculums, and "unconscious bias" of an ethnocentric curriculum and promotes interrogation of positionality and plurality in the production of knowledge (Bhambra et al., 2018).

4. Destination 4 - Europe: My Adopted Country

Assigns students a country to conduct research about during the entire trimester, becoming "experts" on a pressing issue in their country. This formative assignment is part of students' individual learning and will be the basis for a group exercise in destination Seven and their final assignment in destination Ten.

5. Destination 5 - Africa: Class Dynamics

Provides "real life" problems for in-class and outside of the classroom exercises. Students are encouraged to participate in several class dynamics I designed, to promote the multicultural exchange of ideas and to connect theory with practice and concepts to personal experiences. Some dynamics are: "The flower of intersections"; "Editorial Board of a Health's Magazine"; "My Lockdown Artifact"; "The Riding Tour", etc. (Vasquez del Aguila, 2022b).

6. Destination 6 - Middle East: Midway Reflection

Seeks to evaluate, reflect, and revisit the module teaching strategies and content. Students are encouraged to review the expectations they identified in destination one and evaluate their learning in the middle of the trimester.

7. Destination 7 - Central Asia: Virtual Gallery

Provides the opportunity for peer group learning, to resolve a current issue in their designated country. For this group exercise, each student, as the "expert" on their assigned country, is expected to share their expertise within their group's region to prepare an audio-visual representation of a pressing issue in their region (Vasquez del Aguila, 2022c).

8. Destination 8 - East Asia: My Cultural Artifact

Engages students to share an artifact that conveys a message of cultural diversity (e.g. a personal object, article, advertisement, photo, etc.) (Vasquez del Aguila, 2022d). I believe that the first step to create connections is to share our own experiences. I start this exercise by sharing my own artifact: "My Male Butterfly":

Figure 1: My male butterfly

I found this male butterfly on a trip to my home country in Peru and felt it captured my understanding of my own several identities, my culture, and my journeys as a migrant. I believe that embracing vulnerability (particularly for men) enables us to connect with people at a deeper level. I believe that sharing our vulnerability is a way to spread kindness, empathy, and compassion. My male butterfly represents a journey of transformation and a symbol of empowerment as a feminist, gay scholar from Latin America (Ernesto).

9. Destination 9 - South East Asia: The Roulette Of Identities

Provides the opportunity to bring together "threshold concepts" discussed during the trimester. Participants are randomly assigned five identities in terms of factors like a) gender, b) social class, c) race/ethnicity, d) sexual orientation, and e) HIV status, then asked to write a life story in the first person and interact with others sharing their assigned identities. The workshop "forces" participants to imagine and embrace the lives of others, while critically examining their positionalities and discussing inter and intra dimensions of power and inequality (Vasquez del Aguila, 2022e).

10.   Destination 10 - Australasia: Final Assignment

Introduces students to several options adapted for their different needs and interests. During the module, students move from an individual learning (My Adopted Country) to a group learning (Virtual gallery) to finalise in an individual project (Final assignment). These three projects constitute an iterative cycle in their learning journey.

**Travel Agency: Office Hours

Uses the metaphor of "travel agency" to illustrate that additional learning materials and flexible online office hours will form a supportive space to guide "travellers" (learners) across their journey of discovery. These additional learning materials incorporate a combination of teaching and learning strategies to provide students with resources to increase their "pedagogical capital": documentaries, advertisements, campaigns, workshops, etc.

Results and Impact

The *Roadmap* was successful in providing students with a dynamic, inclusive platform to navigate modules, embrace my teaching philosophy, and experience different levels and forms of interaction within face-to-face, blended, and remote learning.

At an individual scale, students are required to learn how to use the Padlet application, in order to post information and respond to their peers. This process enhances peer co-learning, as students can interact through their contributions. As my teaching philosophy illustrates, this co-learning environment is designed to embrace student diversity and uniqueness. In terms of inclusivity, the *Roadmap* provides learners with a digital space to build connections and share personal circumstances while feeling supported and represented. Through the *Roadmap,* students have shared a complex range of emotions, perceptions, and experiences. Students holding non-hegemonic positionalities have been able to express themselves and find a space for participating within this learning community.

The *Roadmap* allows students to build experiences of engagement at various levels of participation. The activities and case studies effectively engaged students with global pressing issues. The group assignments entail a high degree of interaction, as students need to engage in meetings to coordinate their topics collectively. The quality of the projects displayed in the virtual gallery platform demonstrates that students created continuous and deep dialogic interactions where they had to discuss and negotiate the commonalities and differences of their cases and the structure and style of their interventions.

This *Roadmap* was evaluated by a colleague from the same School in the context of "peer evaluation partnership" as part of the UCD Diploma in Teaching and Learning:

> This online platform is an outstanding learning tool that allows students to navigate the content of the module and learn in a clear, fun, inclusive and interactive way. The platform invites students to critically think and interact as they co-construct with the lecturer an active learning community. Students encounter and reflect on decolonial geographies, non-hegemonic constructs, and diverse representations of cultures and communities

In terms of students' evaluations, they value the space as an inclusive, dynamic, and enjoyable space for learning:

> "The virtual gallery is an excellent concept"

> "My favourite aspect of the module was being assigned a country in which I had no previous knowledge"

> "I found the exercises where we were asked to apply the theory/ concept to a hypothetical situation useful to enhance my understanding of the concept"

> "Inclusion of everyone in the activities"

> "The attention to key words/definitions for each topic was really helpful for my learning as was the use of case studies each week"

> "I found this roadmap to be incredibly useful and engaging. It was a central hub to which we could return throughout the module. Perhaps the most valuable piece of this learning tool was its interactive nature".

I was especially inspired by the notion of teaching-led research (Harland, 2016), by which teaching directly influences research while simultaneously enhancing student experience in the classroom. All my academic career I had the opposite approach: my research informed my teaching activities and I designed my modules to reflect the research topics I was working on. This shift in approach has helped me redesign my activities and conceive my classroom and students as both a community of learners *and* a community of researchers, in which my research topics are shaped and informed by what happens in my classroom.

An idea that I found very useful was the metaphor of the learning mentor as someone who provides "scaffolding" or support that will help students to a higher level, while gradually withdrawing this support so the student can become more independent and own their learning (Carlile and Jordan, 2005). This metaphor encapsulates the principle of co-learning and critical thinking by which students become accountable for their own learning.

A limitation to using an online platform such as Padlet is that it necessitates training in a specific digital learning technology. This can be solved by including other platforms such as FolioSpaces (eportfolios); Bloggerx (blogs); GoogleSite (personal webpages), so students can have a greater choice to present their own "pedagogical capital".

Recommendations and Advice for Implementation

The *Roadmap* requires educators to define the key destinations that learners should explore in a process that emulates a journey of discovery through individual and group research.

— Key dates: provide clear dates for each journey and their expected outcomes

— Teaching philosophy: incorporate the main principles of your teaching as part of a core aspect of the module journey rather than a separate section

— Create community: design individual and group learning activities that foster the creation of a community of researchers and learners

— FAQs: constantly update a section of Frequently Asked Questions. Collect individual questions and share your responses with everybody

— Case study approach: required readings to help students to analyse how concepts are being applied globally in empirical research

— Global approach: include readings that cover research from the Global North and South that expose students to a variety of sources and methodologies

— "Check points": a) list of "threshold concepts" presented as key concepts for each class; b) offer 'operational definitions' for these concepts; c) spend a few minutes at the beginning of each class discussing main ideas from the previous class; d) offer a final class to revise all threshold concepts discussed in the *Roadmap*

— Weekly group class dynamics for tutorials: individual and peer group activities which offer students the possibility to learn from peers and share their experiences in a friendly, safe environment

— Inclusive assessment: as the final destination of the *Roadmap,* provide multiple, flexible options for an inclusive final assignment (e.g. critical review of the literature; analysis of a TV/movie; produce a plot of a TV show, applied research; and free topic of their choice)

— Peer work exchange through peer feedback: encourage student participation in this mutual exchange of peer feedback to foster teambuilding, student engagement, and autonomous learning.

Ten Destination Roadmap to a J...

D02. North America: My teaching philosophy

D03. Greenland: Case studies - your gateway to a global and decolonised world

D04. Europe: My Adopted Country

D05. Africa: Class dynamic

D01. South America: Module introduction

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Journey of Discovery

D06. Middle East: Midway reflection

D07. Central Asia: Sexualities virtual gallery
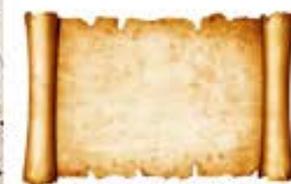
D08. East Asia: My cultural artifact

D09. South East Asia: The Roulette of identities

Supporting LGBT Communities: Police ToolKit

Travel Agency: Office hours + additional learning materials and

D10. Australasia: Final assignment

References

Barrett, T. (2005). Who Said Learning Couldn't be Enjoyable, Playful and Fun?, in Poikela, E. & Poikela, S. (eds.) *PBL in Context-Bridging Work and Education.* Tampere: Tampere University Press, 159-176.

Bhambra, G., D. Gebrial, and K. Nişancıoğlu (2018). Introduction: Decolonising the University? in G. Bhambra, D. Gebrial and K. Nişancıoğlu (eds.) *Decolonising the University.* London: Pluto Press, 1-18.

Boyer, E. (1990). *Scholarship Reconsidered: Priorities of the Professoriate.* Princeton: Carnegie Foundation for the Advancement of Teaching.

Carlile, O, and A. Jordan (2005). It Works in Practice but Will It Work in Theory? The Theoretical Underpinnings of Pedagogy, in G. O'Neill, S. Moore and B. McMullin (eds.) *Emerging Issues in the Practice of University Learning and Teaching.* AISHE.

Harland, T. (2016). Teaching to enhance research. *Higher Education Research & Development*, 35(3), 461-472.

Padden, L, J. O'Connor, and T. Barrett, eds. (2017). *Universal Design for Curriculum Design. Case Studies from University College Dublin.* Dublin: University College Dublin.

Rose, T. (2013). The Myth of Average. Available at: www.youtube.com/watch?v=4eBmyttcfU4.

Vasquez del Aguila, E. (2022a). Ten Destination Roadmap. Available at: https://padlet.com/ernestovasquezdelaguila/TenDestinationRoadmap

Vasquez del Aguila, E. (2022b). GS40080 Culture & Sexualities: Class dynamics. Available at: https://padlet.com/ernestovasquezdelaguila/dynamics

Vasquez del Aguila, E. (2022c). Sexualities Virtual Gallery-POSTS. Available at: https://padlet.com/ernestovasquezdelaguila/CSVGPOSTS

Vasquez del Aguila, E. (2022d). My Cultural Artifact. Available at: https://padlet.com/ernestovasquezdelaguila/MyCA

Vasquez del Aguila, E. (2022e). The Roulette of Identities. Available at: https://padlet.com/ernestovasquezdelaguila/Roulette

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