

Beyond Boundaries: A reflection on the implementation of universal design for learning in business school pedagogy.

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Abstract.

Universal Design for Learning (UDL) has the potential to enhance educational inclusivity by offering all learners equal opportunities to succeed. This article presents a comprehensive reflection on the implementation of UDL principles within a university business school, highlighting the similarities and disparities between undergraduate and postgraduate levels, and providing additional insights into the implications and challenges of UDL adoption. The authors call for a global commitment to embedding UDL principles within business school pedagogy. This is important to ensure inclusive and equitable education for an increasingly diverse student body, while also preparing students as tomorrow's leaders to engage in positive global change, in line with the United Nations Sustainable Development Goals.

Keywords: Inclusive education; Learner diversity; Reflection; Universal design for learning.

1. Introduction.

Universal Design for Learning (UDL) has the potential to enhance educational inclusivity by offering all learners equal chances to succeed. UDL is described as providing flexible curricula materials and activities that offer alternatives for students with disparities in abilities and backgrounds (Orkwis and McLane, 1998), ensuring that content is accessible to the largest audience by removing barriers to learning (CAST, 2011; 2023). This article reflects on the integration of Universal Design for Learning (UDL) within a third-level education setting at the University of Galway. The authors, two permanent lecturers in Business Information Systems and Business Enterprise, examine the implementation of UDL following completion of a

course on Universal Design for Teaching and Learning in 2024, delivered by AHEAD in partnership with UCD Access and Life Long Learning as part of the National Forum for the Enhancement of Teaching and Learning's open course initiative¹. This reflection highlights the transformative influence of UDL on instructional design and student engagement within the School of Business and Economics.

Al-Azawei et al., (2016, p. 53) assert that the "*traditional teaching approach of 'one-size-fits-all' cannot meet learner diversity in contemporary learning.*" Business-as-usual conditions no longer suffice (King-Sears et al., 2023). While the world of study, work and business faces an extraordinary amount of change and uncertainty (Carroll and Conboy, 2020), many business schools continue to follow an outdated signature pedagogy (Shulman, 2005; Tufano, 2020). Arguably, universities are instructing students of the twenty-first century employing teaching methodologies and curriculum materials reminiscent of the nineteenth and twentieth centuries.

In response to the COVID-19 pandemic, universities globally were compelled to transition from traditional classroom-based instruction to online learning, significantly disrupting the learning process. Despite proactive efforts by academic staff to adopt online teaching tools, the rapid implementation of solutions raised concerns about faculty competence in online education delivery, the suitability of digital tools for various subjects, and the quality of students' learning experiences (Carroll et al. 2024). As new technological breakthroughs such as generative artificial intelligence emerge, we also observe how they create disruptive shockwaves throughout third-level education.

We must reflect on how to address the requirements of today's student population. We believe that through the implementation of UDL principles, academic institutions can better prepare students to become more engaged citizens and successful business leaders. By reflecting on our experience of implementing UDL, we also identify commonalities and differences across higher education undergraduate (UG) and postgraduate (PG) programmes, in this context.

Commitment is essential for the implementation of UDL. Current research on how teachers acquire and apply their knowledge of UDL is still in its infancy. Research has primarily focused on defining teacher understanding of UDL in relation to familiarity with the CAST Framework (Lambert et al., 2023). In our approach to and application of UDL at the University of Galway, the authors diverge from the rigid and formulaic view of UDL as merely a collection of

¹ <https://www.ahead.ie/udl-digitalbadge>

strategies or the “*checklistification of UDL*”, as described by Dolmage (2017). Instead of passively aligning with predetermined methods, which often overlook learner diversity, fixating exclusively on lesson planning, we perceive UDL as a collaborative endeavour involving intentional design of routines, interactions, spatial considerations, and curriculum redesign.

Our experiences suggest that implementing UDL with students in mind or “*in the shoes*” of the students, is paramount for business education at university level. By adopting this approach, educators can accommodate for various learning styles and student preferences, fostering greater participation and understanding. Considering the perspective of students encouraged us to prioritise relevance and practical applications when redesigning the curriculum. For example, by aligning course content with real-world business scenarios and challenges, students are better equipped to transfer their knowledge and skills to professional settings. Incorporating UDL principles with a student-centred focus promotes equity and accessibility, ensuring that all students have equal opportunities to succeed in their business education journey. Our approach commenced with students rather than standards.

We approached UDL organically and holistically, viewing it as a mindset and a form of activism, as articulated by Hamraie (2017). While intentional design was a target of our intervention, it did not restrict our experimentation. We embraced UDL’s iterative nature, which fundamentally challenged the conventional “*business-as-usual*” approach to business school teaching and learning. We reflected continuously on how to adapt when new initiatives were not working, embracing “*in-the-moment*” teaching and decision-making. Our approach incorporated the needs and lived experiences of our students, leading to a significant shift in our beliefs about UDL and our teaching practices, militating against deficit thinking. This process boosted our confidence in implementing UDL, and strengthened our belief that our actions as lecturers can foster favourable learning conditions, aligning with Griful-Freixenet et al.’s (2021) findings regarding the positive impact of teachers’ growth mindset and self-efficacy in UDL implementation.

2. Context and methodology.

The University of Galway places a strategic emphasis on student diversity (University of Galway, 2023). In addition to a structured Student Services unit accommodating the Disability Support Service (DSS), the University’s dedicated structure and strategic plan for Equality,

Diversity, and Inclusion (EDI)², spanning from 2020 to 2025, serves as the cornerstone of a transformative culture emphasising equality, inclusivity, and respect. This framework places paramount importance on enhancing the student experience. For example, a primary objective is cultivating a campus culture which is welcoming, inclusive, safe and free from discrimination. This commitment is reflected in various policies such as a campus-wide Respect Charter³, the University of Sanctuary designation⁴, provision of Active Bystander Training⁵, and the development of a Reasonable Accommodations Policy⁶ alongside other relevant initiatives. Aligned with the University's explicit core values of Respect and Openness, the School of Business and Economics goes beyond numerical representation of non-traditional background students, prioritising their inclusion at all University levels. The School of Business and Economics is dedicated to fostering a sense of belonging and acceptance for every student, countering exclusionary practices that negatively impact not only the student journey, but also retention and completion rates (Quinn, 2013). By prioritising the student learning experience and the removal of barriers to participation, academic institutions can also improve student retention, progression, and academic performance (Carroll, 2013).

Completion of the AHEAD open course on Universal Design for Teaching and Learning culminates in the awarding of a digital badge. To earn this digital badge, we completed three main components. Firstly, we engaged in five online modules covering UDL fundamentals with a focus on reflective practice. Secondly, we participated in regular group interactions with peers, through workshops and ongoing peer triads, discussing campus diversity and how UDL can address learning barriers. Lastly, we undertook a UDL redesign activity, selecting a teaching task to modify using UDL principles resulting in the implementation of changes and the production of a brief report documenting the redesign process and its impact on both lecturers and students.

Our evaluation and reflection on the implementation of UDL within the School of Business and Economics arising from our participation on the open course spanned a 12-week semester, leveraging diverse feedback sources including our teaching experience and student module-

² University of Galway: Equality Diversity and Inclusion <https://www.universityofgalway.ie/science-engineering/edi/>

³ Respectful University of Galway: <https://www.universityofgalway.ie/strategy2025/respect/>

⁴ University of Galway's Universities of Sanctuary Programme: <https://www.universityofgalway.ie/sanctuary/>

⁵ Active Bystander Training: <https://www.universityofgalway.ie/medicine-nursing-and-health-sciences/medicine/staff/athenaswan/events/activebystandertraining/>

⁶ A Reasonable Accommodations Policy is being developed at the time of publishing this article

level feedback. Anonymous, module-level student feedback was obtained via mandatory, standardised school-wide online surveys (utilising Qualtrix), managed by School administrators. Classroom observations in relation to the effectiveness of UDL implementation were also conducted.

It is important to note that the authors did not seek ethical approval for this article due to its reflective nature which is not based on primary research. Additionally, this reflection leverages aforementioned anonymous, module level student feedback, routinely obtained on a voluntary basis. Specifically, UDL implementation occurred in one UG module (MS414: Business Intelligence and Analytics, 170 students) and two PG modules (MBA MG5136: Responsible Management, 16 students; and MSc MG5145: Responsible Management and Leadership, 26 students) within the School of Business and Economics.

The UDL implementation process resulted in the customisation of teaching methods, materials, and assessments to accommodate various learning styles and needs. Modifications included the incorporation of visual aids, interactive activities, and diverse assessment formats to create a more inclusive and engaging learning environment. An example of customised teaching methods included the use of the flipped classroom approach, with in-class time dedicated to case study discussion and role play. Another example is the use of game-based learning via McGraw Hill's Connect platform, which provides a dynamic way for students to think critically while immersed in "*real-life*" (albeit simulated) situations. Game-based learning integrates the tactics, regulations, and social dynamics of gaming into educational settings. This approach enabled us to focus on specific activities that enhance the practical understanding of concepts in real-world scenarios, fostering engaging and cooperative learning environments while promoting immersive experiences for students.

Modifications to assessment approaches to promote inclusion included offering students the choice of recording a video of their project findings or producing a written report. The incorporation of a video recording option necessitated the production of a separate grading rubric that assessed the module's learning outcomes to the same standard and rigour as the written report. Almost 20% of the PG class opted for the video format. In a similar vein, three students were given permission to deliver a project presentation to the lecturing staff only, rather than the wider student cohort. Our approach aimed to promote flexibility in participation methods, as well as accommodate diverse modes of expression. Recognising the spectrum of abilities, preferences, and backgrounds within the student cohort underscored the significance

of heightened awareness, and of adapting teaching and assessment methodologies to embrace these differences.

Reflections emerging from UDL implementation activities are structured within five sections:

- 1) Impact on professional practice
- 2) Student engagement, motivation and self-determination
- 3) Diversity, inclusivity and respect for the individual
- 4) Flexibility, adaptability and collaborative learning
- 5) Commonalities and differences between UG and PG UDL.

3. Key reflections.

3.1 Impact on professional practice.

Since we implemented UDL principles in our teaching practices, we re-evaluated student engagement, teaching strategies, and assessment formats. Despite initial perceptions of added workload, we now recognise the necessity of diverse assessment methods, aligning with UDL philosophy and principles, reinforcing the University of Galway's commitment to inclusiveness.

Our efforts aimed to create alternative pathways for students to demonstrate learning outcomes. As lecturers, we have become more conscious of diverse learning styles, incorporating varied assessment methods and additional audio materials to promote inclusion. Creating an inclusive learning environment is a key priority, fostering comfortable spaces for expression and positive group dynamics. Flexibility in adapting course materials and accommodating evolving student needs includes the provision of extended deadlines and additional guidance where required. University policies and resources in relation to reasonable accommodations are also highlighted.

The transformative potential of UDL in the School of Business and Economic is demonstrated via mid-module student feedback which indicated increased student motivation, engagement and success. UDL has also revitalised our teaching role. Adopting UDL practice and principles has equipped us with a structure for tailoring instruction to address the unique requirements of students in diverse classrooms, catering to various learning styles,

preferences, and abilities. UDL implementation has significantly enhanced our teaching philosophy by centring equity and student empowerment, emphasising the principles of social justice and fairness, and advocating for equal learning opportunities and student achievement, irrespective of background or situation. Such teaching philosophies demonstrate our commitment to delivering an exceptional learning experience that aligns with the current research and best practices in higher education.

UDL implementation has fostered enhanced collaboration among educators, students, and other stakeholders, including teaching and learning leads. By involving students in the co-creation of learning experiences and facilitating meaningful peer interaction and support, we have witnessed and personally experienced the cultivation of a more inclusive and cooperative learning atmosphere. UDL implementation has also deepened our understanding of the challenges and advantages inherent in inclusive education, highlighting the necessity of ongoing growth, empathy, and adaptability in our teaching approaches.

A limitation of this reflective article is that it does not incorporate a scientifically measured assessment of our UDL activities. In future research, we intend to employ Craig et al.'s (2022) rubric, which evaluates goals, obstacles, and the key UDL principles to gauge the effectiveness of our UDL implementation efforts. This reflection is also influenced by our participation in AHEAD's open course on Universal Design for Teaching and Learning. Future research would benefit from capturing the experiences of teachers with less experience or commitment to implementing UDL.

3.2 Student engagement, motivation and self-determination.

During the open course on Universal Design for Teaching and Learning, we adopted a comprehensive approach to integrating its fundamental principles, aiming to promote inclusivity and address diverse student needs. Modifications were made to teaching strategies, focusing on multiple means of representation, engagement, and expression. To enhance representation, teaching materials were diversified. A pre-class survey assessed student UDL needs anonymously, leading to tailored methods such as visual aids, audio resources, and varied lecture formats. For example, we opted for real-life images portraying various viewpoints rather than randomly chosen stock photos. The authenticity of this imagery promoted a feeling of inclusivity for students (Challouki, 2021).

PowerPoint presentations were enhanced with voiceovers and revamped to strike a balance between text and visuals, incorporating suitable colours conducive to individuals with autism, avoiding the use of over-stimulating, highly-saturated colours (Mostafa 2021). Additionally, specific content was pre-recorded using Audacity, creating bite-sized audio segments made available on the modules' Virtual Learning Environment (i.e. Canvas) 48 hours prior to each class.

3.3 Diversity, inclusivity and respect for the individual.

Guided by UDL principles, our educational approach focused on community and collaboration, introducing peer learning initiatives such as group projects and discussions to create a supportive learning environment, while considering student workload. Module-level student feedback indicated that the use of online tools such as Vevox and Kahoot deepened student understanding via increased student engagement and interaction.

The open course on Universal Design for Teaching and Learning also heightened our awareness of venue accessibility, leading to structural adjustments in physical spaces ensuring ease of movement, access to visual aids, and the incorporation of assistive technologies. Simple actions such as sitting at the back of a lecture room to observe a PowerPoint presentation can uncover challenges pertaining to text, images, and overall content visibility for students, encouraging us to reconsider the design principles of presentation and other teaching materials. Greater consideration of learner diversity and disability, provided a deeper insight into students' self-perceptions in relation to varying learning needs and challenges. This understanding guided and informed the shaping and reshaping of on-going UDL initiatives, prioritising accessibility throughout the entire module delivery process.

Extra time for post-lecture interactions and increased on-campus/online contact hours were allocated to increase support and accessibility, further enhancing the inclusion and flexibility in the learning environment. Classroom observations and module-level student feedback demonstrated the positive impact of these varied interventions on student engagement and learning outcomes, with improved involvement and interest noted. Student module-level feedback also emphasised lecturer empathy, the organised and accessible nature of learning materials and increased student interest generated by the provision of diverse materials and interactive tasks.

3.4 Flexibility, adaptability, and collaborative learning.

In our application of UDL principles, we emphasised flexibility, adaptability, and collaborative learning. Student module-level feedback indicated a heightened sense of empowerment and inclusivity in their learning journey. Students valued the opportunity to choose their preferred engagement methods and modes of expression, emphasising the positive impact of collaborative activities in fostering community and enhancing learning experiences. For example, one student stated, *“We spent some time in isolation during COVID in the early years at college. The collaborative activities allowed us to learn from each other and have a sense of community...and probably get to know other students better compared to during COVID.”* Others praised the lecturer’s structured approach, engaging teaching style and the inclusion of guest lecturers, noting the beneficial impact on exam preparation through recommended readings and case studies.

The incorporation of UDL principles at the School of Business and Economics has increased student engagement, enriched learning experiences, creating a stronger sense of inclusivity. Both student module-level feedback and our own observations affirm the effectiveness of UDL strategies in creating a conducive and supportive learning environment.

3.5 Commonalities and differences between UG and PG UDL.

In business school pedagogy, the implementation of UDL principles allowed us to identify key similarities and differences between UG and PG levels. Overall, both UG and PG modules benefited from UDL principles in fostering inclusive learning environments and promoting engagement. However, distinctions arise in terms of the depth of content, student autonomy, expectations, and teaching approaches. These differences influence how UDL is implemented in order to cater to the unique needs and levels of students in business schools, as summarised in Table 1 and Table 2.

Table 1. Commonalities of UDL across UG and PG business education.

Focus	Description
Diverse Learning Styles	Both UG and PG students benefit from UDL approaches that cater to various learning styles. Strategies, including multiple means of representation, engagement, and expression prove beneficial across both levels. Providing diverse formats for course materials and assessments aids students in comprehending and demonstrating their knowledge effectively.
Interactive Learning	Both UG and PG modules can benefit from interactive learning methods. Stimulating student participation through group discussions, case studies, and interactive technologies has the potential to enhance engagement and comprehension for students at both levels.
Assessment Variety	Offering a variety of assessment methods is beneficial for both UG and PG students. Including diverse assessment formats, such as exams, practical tasks, group projects, and presentations, enables students to demonstrate their understanding and skills in various ways.
Engagement Strategies	UDL promotes engagement through diverse means, and this is applicable to both UG and PG modules. Both levels incorporate interactive elements such as group discussions, case studies, technology-based activities, and collaborative projects to encourage active participation and facilitate deeper learning.

Table 2. Differences of UDL across UG and PG business education.

Focus	Description
Depth of Content	PG modules often explore complex theories, methodologies, and specialised topics at a deeper level compared to UG modules. Consequently, the level of content complexity and depth may differ, influencing the application of UDL principles. PG modules may necessitate more specialised and nuanced approaches to teaching and assessment in order to accommodate the higher level of complexity.
Autonomy and Experience	PG students typically have greater autonomy and experience compared to UG students. In implementing UDL in PG modules, there may be a focus on providing more self-directed learning opportunities, research-based tasks, and real-world applications tailored to their professional experience.
Expectations and Rigor	PG modules often have higher expectations and rigour in terms of critical analysis, independent thinking, and the practical application of knowledge. In implementing UDL strategies at PG level, there is an increased focus on challenging students' critical thinking abilities and providing opportunities for advanced problem-solving.

Teaching Approach	The teaching approach for UG and PG modules may vary. PG teaching often emphasises discussions, case studies, and collaborative learning amongst experienced peers. In contrast, UG teaching may involve more structured content delivery and foundational skills-building.
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4. Discussion and conclusion.

Implementing UDL in a business education context has been a transformative journey, both personally and professionally. Embracing UDL principles has profoundly impacted our teaching approaches and philosophy. Initially, we viewed teaching through a traditional lens, focused primarily on delivering high-quality content, rather than considering the diverse needs and learning styles of students. Delving into UDL principles forced us to reconsider this approach. UDL challenged us to adopt a more inclusive mindset, prompting us to design lessons and assessments that cater to the individual strengths and preferences of each student. This shift in perspective not only improved student engagement and comprehension, but also fostered a more supportive and collaborative learning environment.

Implementing UDL does present some challenges, one of which is the additional time and commitment required. Designing and implementing UDL-aligned lesson plans, assessments, and materials can be time-consuming, particularly when considering the diverse needs and preferences of students. This process prioritises the creation of multiple means of engagement, representation, and expression to accommodate different learning styles and abilities. Incorporating UDL may also necessitate the adaptation of existing curriculum and teaching methods, which requires careful planning and preparation. Adapting instructional materials, such as PowerPoints and handouts, to ensure accessibility for all students also adds to the workload.

Balancing the demands of implementing UDL with other professional responsibilities can be challenging for lecturers, especially when faced with limited time and resources. Despite these challenges, the benefits of UDL in promoting inclusive and equitable learning environments make the investment of time and effort worthwhile. UDL has deepened our understanding of the importance of equity and accessibility in education, as well as the need for continuous reflection and adaptation in our teaching practices. By embracing UDL, we have become a more empathetic and flexible lecturers, dedicated to providing all students with equal opportunities for success.

In conclusion, our reflection on implementing UDL highlights its effectiveness in accommodating diverse learning styles, enhancing flexibility, and fostering a stronger sense of student involvement and belonging. Diversifying delivery mechanisms and assessment techniques aligns with our goal of celebrating diversity within the curriculum. Shifting from traditional one-way teaching models to collaborative and interactive learning environments was a key objective and anchored our approach to UDL implementation, allowing us to de-centre ourselves whilst centring the student experience.

Improving educational accessibility involves integrating assistive technologies, offering materials in various formats, and aligning timetables with inclusive physical spaces. Despite some initial challenges, particularly in large UG classes, we call for a global commitment to embedding UDL principles within business school pedagogy, ensuring inclusive and equitable education for an increasingly diverse student body and preparing students as tomorrow's leaders to engage in positive global change, in line with United Nations SDGs (Timus et al., 2023). For the authors, UDL serves as a mindset as much as a strategy, a tangible and enjoyable practice that offers intangible, often unquantifiable benefits for lecturers, students and higher education institutions.

5. References.

- Al-Azawei, A., Serenelli, F., & Lundqvist, K. (2016). Universal Design for Learning (UDL): A content analysis of peer reviewed journals from 2012 to 2015. *Journal of the Scholarship of Teaching and Learning*, 16(3), pp. 39-56.
- Carroll, N., Lang, M., & Connolly, C. (2024). An extended community of inquiry framework supporting students in online and digital education. *Innovations in Education and Teaching International*, pp. 1-17. <https://doi.org/10.1080/14703297.2024.2326658>
- Carroll, N., & Conboy, K. (2020). Normalising the "new normal": Changing tech-driven work practices under pandemic time pressure. *International Journal of Information Management*, 55, pp.102186.
- Carroll, N. (2013). E-learning—the McDonaldization of education. *European Journal of Higher Education*, 3(4), pp. 342-356.
- CAST (2011). *Universal Design for Learning Guidelines version 2.0*. Wakefield, MA: CAST.
- CAST (2023). *About Universal Design for Learning*. <https://www.cast.org/impact/universal-design-for-learning-udl>.

- Challouki, H. (2021). *Inclusive Communication*. Pelckmans.
- Craig, S., Smith, S., & Frey, B. (2022). Professional development with universal design for learning: supporting teachers as learners to increase the implementation of UDL. *Professional Development in Education*, 48, pp. 22–37.
- Dolmage, J. T. (2017). *Academic ableism: Disability and higher education*. University of Michigan Press. Michigan
- Griful-Freixenet, J., Struyven, K., and Vantieghem, W. (2021). Toward more inclusive education: an empirical test of the universal design for learning conceptual model among preservice teachers. *Journal of Teaching and Education*, 72, pp. 381–395.
- Hamraie, A. (2017). *Building access*. University of Minnesota Press. Minnesota
- King-Sears, M., Stefanidis, A., Evmenova, A., Rao, K., Mergen, R., Sanborn Owen, L., & Strimel, M. (2023). Achievement of learners receiving UDL instruction: A meta-analysis. *Teaching and Teacher Education*, 122 (103956), pp. 1-15.
- Lambert, R., McNiff, A., Schuck, R., Imm, K., & Zimmerman, S. (2023). “UDL is a way of thinking”; theorizing UDL teacher knowledge, beliefs, and practices. *Frontiers in Education*, 8 (1145293), pp. 1-14.
- Mostafa, M. (2021). *The Autism Friendly University Design Guide*. Dublin City University. https://issuu.com/magdamostafa/docs/the_autism_friendly_design_guide.
- Orkwis, R. & McLane, K. (1998). *A Curriculum Every Student Can Use: Design Principles for Student Access*. ERIC/OSEP Topical Brief. Reston, VA: ERIC Clearinghouse on Disabilities and Gifted Education. www.eric.ed.gov/PDFS/ED423654.pdf.
- Quinn, J. (2013). Drop-out and completion in higher education in Europe among students from under-represented groups. An independent report authored for the European Commission. NESET Report. <https://nesetweb.eu/en/resources/library/drop-out-and-completion-in-higher-education-in-europe-among-students-from-under-represented-groups/>.
- Shulman, L. (2005). Signature Pedagogies in the Professions. *Daedalus*, 134(3), pp. 52-59.
- Timuş, N., Bartlett, M., Bartlett, J., Ehrlich, S. and Babutsidze, Z. (2023). Fostering inclusive higher education through universal design for learning and inclusive pedagogy – EU and US faculty perceptions. *Higher Education Research & Development*, 43(2) pp. 473-487. <https://doi.org/10.1080/07294360.2023.2234314>
- Tufano, P. (2020). A bolder vision of business schools. *Harvard Business Review*. March 11.
- University of Galway (2023). *Inclusive Learning at NUI Galway: Centring the Student*

Voice in Higher Education.

[https://www.universityofgalway.ie/media/access/NUIG_InclusiveLearningReport2021_web-\(1\).pdf](https://www.universityofgalway.ie/media/access/NUIG_InclusiveLearningReport2021_web-(1).pdf).