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ORIGINAL ARTICLE

# Uncovering Challenges in Universal Design for Learning in Higher Education†

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**Abstract**

In current Australian practice, higher education institutions provide access to reasonable adjustments for disabled students to support equitable access to learning. Although these practices can support access to learning, there are many barriers for students, including the requirement to disclose their disability, an administrative and advocacy burden, and variable implementation outcomes. In contrast, a Universal Design for Learning (UDL) approach reduces the individual student demand. It provides learning environments that are, by design, accessible, free of barriers, and appropriately challenging for all learners. In the present study, we conducted an anonymous online survey regarding the UDL practices used by academic teaching staff at a regional Australian university. In total, 113 respondents completed the 20-question survey, which included closed-response and open-text questions. The survey explored academic awareness and implementation of UDL in their teaching practice, and open-text questions were used to elicit their perspectives on UDL. Among other findings in the closed-response questions, there was a large discrepancy in the consistent implementation of UDL in practice, in which 50% of academics reportedly did not intentionally incorporate it. Results from the open-text questions revealed four key challenges academics encountered in implementing UDL: resources and time constraints, knowledge and awareness, institutional barriers, and implementation challenges.

**Keywords:** Universal Design for Learning; UDL; disabled students; reasonable adjustments

Facilitating individualised reasonable adjustments[1] is a current and standard method utilised in tertiary education to provide disabled students[2] with equitable access to learning (Fossey et al., 2017; Newham, 2020; Pitman & Brett, 2022). In Australia, this approach to adjustment is a focus of the Disability Standards for Education 2005 (Australian Government, 2005), a set of legislated standards under the Disability Discrimination Act 1992 (Australian Government, 1992, 2005; Punch et al., 2025). However, there is increasing criticism of the efficacy of this method for providing equitable

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[1]Reasonable adjustments are defined by the Disability Standards for Education 2005 (Australian Government, 2005). A reasonable adjustment is a measure or action taken by an education provider to create equitable access to admission, enrolment, education, services, or facilities for a disabled student, or prospective student (Australian Government, 2005).

[2]This manuscript uses 'identity-first' language to refer to individuals who view their disability as an integral part of their identity rather than as something separate from themselves.

access (Duncan et al., 2020). Griful-Freixenet et al. (2017) and Newham (2020) argued that the approach of providing adjustments to enable disabled students to access learning is a practice rooted in deficit-based or medicalised understandings of disability, within which the focus of the intervention is placed on individuals rather than adjusting the systems and institutions. Disabled students are required to take responsibility for ensuring their adjustments by proactively disclosing their disability to their university's disability support service, submitting medical evidence of their condition(s) before receiving an individualised access or learning plan of support, and needing to self-advocate directly with teaching academics for adjustments to be made (Fossey et al., 2017; Newham, 2020; Pitman & Brett, 2022). Spier and Natalier (2023) argue that using reasonable adjustments reinforces ableism by merely providing an accommodation to adapt to norms rather than challenging a problematic structure. This individual approach arguably confirms and strengthens a commonly held perception, as Bunbury (2020) identified, that disabled people inherently need additional help and support to succeed.

Due to the shortcomings of relying primarily on reasonable adjustments to facilitate equitable access to learning, there is a need within the higher education sector to explore and implement approaches that have the potential to make learning environments more accessible and inclusive for all learners from the outset (Cumming & Rose, 2022; Kilpatrick et al., 2017; Stentiford & Koutsouris, 2021). As well as this pressing need, students attending higher education nationally and internationally now come from a variety of backgrounds and experiences, naturally bringing wide diversity in learning needs and preferences (Coffman & Draper, 2022; Griful-Freixenet, 2017; Hill et al., 2016). It has, therefore, become advantageous in higher education to proactively anticipate this diversity and employ pedagogical approaches that support all students to succeed (Sanger, 2020; Stentiford & Koutsouris, 2021). One potential way to address this need is the practice of Universal Design for Learning (UDL; Stentiford & Koutsouris, 2021).

The UDL framework developed by CAST endeavours to create learning environments that are accessible, free of barriers and appropriately challenging for all learners (CAST, 2024a). Although UDL was initially intended for primary and secondary education (Fornauf & Erickson, 2020), it has since been established as a practical framework for enhancing the inclusivity of higher education for students from diverse backgrounds (Coffman & Draper 2022; Cumming & Rose, 2022). The core benefit of UDL is its ability to cater for diversity in tertiary education student cohorts (Kennette & Wilson, 2019; Newham, 2020; Sanger, 2020). The practice of UDL is based on using three principles: multiple means of engagement, multiple means of representation, and multiple means of expression and action (CAST, 2024b). While many of the strategies and tools incorporated in the application of the principles of UDL to teaching and learning contexts may be familiar to educators, an essential understanding is that UDL is a design-driven approach with emphasis placed on explicitly aligning each principle with its underlying purpose. In other words, the utility of UDL as an approach to curriculum design and delivery is inextricably linked to the integrity of implementation of the UDL principles elaborated below.

Multiple means of engagement focus on learner motivation, interest, autonomy and wellbeing by ensuring a connection to learning through the provision of precise instructions, learning outcomes and feedback (Black et al., 2015), learner choice in activities and assessments, opportunities for collaboration, and safe risk-taking (CAST, 2024b; Meyer et al., 2014). The aim of multiple means of representation is to ensure learners can access and process information in manifold ways, facilitating and accommodating differences in perception, comprehension and language. Learner diversity is valued via a core understanding that learners within the range of ability, culture and language backgrounds approach content in different ways, emphasising the importance of considering how identity, culture, ways of knowing, and multiple perspectives are represented in the content educators present. CAST (2024b) argues that providing content via diverse formats reduces cognitive barriers and ensures representation and appreciation of diverse perspectives. Exemplar strategies and formats advocated include text, captions, transcripts, visuals, sign language, interactive media, diverse learning platforms, ebooks, hard copy, activating prior learning, and focusing on the critical relationships in

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content (Black et al., 2015; CAST, 2024b). Multiple means of expression and action create flexibility in how learners can express their knowledge by creating bandwidth to leverage their strengths while simultaneously developing executive functioning skills (CAST, 2024b). Educators intentionally aim to reduce potential or perceived restrictions, barriers and/or biases in modes of communication used by students to demonstrate their understanding of content, in essence enabling students to manipulate task requirements to their preferred formats, learning styles, or cognitive strengths. Advocated modes include using multiple formats — written, audio, visual, multimedia, assistive technologies, alternative communication methods, presentations, practical demonstrations, and group discussions (Black et al., 2015; CAST, 2024b). The main advantages of this approach are increased educator capacity to assess and monitor learner progress and ability to set (subsequent) purposeful learning goals for all learners and increased learner autonomy (CAST, 2024b). Educators are supported in applying these three principles via nine detailed guidelines (CAST, 2024b).

Existing literature provides insight into student learning experiences within a UDL framework in higher education. The application of the framework in learning environments, activities, and assessments offers various options and flexibility for students, as they can choose how to engage and interact with education in ways that best meet their needs and preferences (Black et al., 2015; Espada-Chavarria et al., 2023; Fovet, 2021). For example, there is a benefit to students being able to choose a mode of assessment that will enable them to demonstrate their learning best (Black et al., 2015; Tai et al., 2024). However, students have also described these decisions as overwhelming (Coffman & Draper, 2022). Evidence suggests students appreciate clear guidance and feedback toward achieving learning objectives, a feature of UDL that strives to foster student engagement (Dinmore & Stokes, 2015; Espada-Chavarria et al., 2023). UDL has also been found to create more welcoming and supportive learning environments where students appreciate being able to communicate with and be supported by their teachers (Espada-Chavarria et al., 2023). Students also report overall positive enhancements to learning where UDL is applied, including improved academic growth, motivation, and enthusiasm for learning (Coffman & Draper, 2022; Griful-Freixenet et al., 2017).

In line with its central purpose, UDL has been found to address learner variability (Coffman & Draper, 2022). Where teaching academics can facilitate multiple options to engage with learning, they report being better able to support all students and enable students to express their skills and learning (Izzo et al., 2008). Additionally, where UDL is implemented, teaching academics also report a better connection with students and greater shared decision-making between students and themselves (Coffman & Draper, 2022). Dinmore and Stokes (2015) reported using UDL in an enabling program at an Australian university. The report indicated high student satisfaction, with 97% of students being satisfied with the course content and the support received from their teachers.

Although UDL is often viewed as an inspiring framework for educators, others consider it overly complex and arbitrary in its practical application (Anastasiou et al., 2024). There are questions about whether UDL is sufficiently defined to provide precise interventions and identify the key components contributing to its effectiveness (Fornauf & Erickson, 2020). Another perceived issue is the need for clarity on the required quantity of UDL interventions to achieve desired outcomes, such as access, engagement, and success (Edyburn, 2021). A point of criticism is the need for more rigorous, well-designed studies that assess the impact of UDL (Murphy, 2021). Although many studies report positive perceptions of the learning process and teaching materials, according to Al-Azawei et al. (2016), Capp's (2017) meta-analysis found very few studies supported measuring actual learning gains. Additionally, most UDL research focuses primarily on the principle of multiple representations, neglecting the other two fundamental tenets of the UDL guidelines (Al-Azawei et al., 2016). Nonetheless, despite the few studies mentioned, as a holistic model for lesson planning, UDL's effectiveness could be demonstrated through experimental studies within various curriculum areas (Almeqdad et al., 2023). Critics of the current state of UDL research, including Boysen (2024), point to a lack of empirical rigour, with many studies being small scale, anecdotal, or lacking robust

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methodology. The framework is often viewed as overly reliant on theoretical foundations from neuroscience, with limited validation in classroom settings. UDL principles can appear vague or broad, making consistent implementation and evaluation difficult. Teachers may also face challenges in applying UDL without sufficient professional development or systemic support. Furthermore, some argue that UDL does not adequately address the specific needs of diverse learners, particularly those with complex disability or from culturally and linguistically diverse backgrounds. There is also concern that UDL is too often implemented in isolation rather than integrated with other inclusive frameworks. Matters of efficacy aside, a common finding and identified barrier to the use of UDL is that it is more time-consuming to incorporate into courses, as it requires more investment in creating multiple means of engagement, representation, and expression (Bunbury, 2020; Coffman & Draper, 2022; Kirsch & Luo, 2023).

Despite limited empirical evidence, UDL is a promising approach because it promotes inclusive, flexible teaching that proactively addresses learner diversity. Although more rigorous research is needed, CAST (2018) highlights promising results from schools reporting improved student engagement, accessibility, and teacher satisfaction when applying UDL principles.

Currently, the application of inclusive pedagogies such as UDL is typically seen where teaching academics have a particular interest in improving the inclusivity of their teaching and voluntarily adopt inclusive practices (Fornauf & Erickson, 2020). Teaching academics who identify as female or do not specify their gender are more likely to adopt teaching practices that support students with disability, including principles of UDL (Lombardi & Murray, 2011; Timuș et al., 2024). In Lombardi and Murray (2011), using UDL practice was also found to be more likely among non-tenured teaching academics. Regardless of individual characteristics, however, knowledge and utilisation of inclusive pedagogies consistently predict the implementation of UDL by teaching academics, indicating that professional development is a core requirement to build this capability (Lombardi & Murray, 2011; Timuș et al., 2024).

While UDL encourages flexible, inclusive approaches to teaching and assessment, its application in university settings can be constrained by the demands of professional accreditation and competency-based standards. In disciplines such as health sciences, engineering, or education, certain assessments — like administering a diagnostic examination, performing a scientific procedure safely, or conducting a standardised assessment — may have limited flexibility due to legal, ethical, or procedural requirements (Black & Wiliam, 2018; Treviranus, 2018). These high-stakes tasks often require strict adherence to established methods, leaving little room for multiple means of expression. Nonetheless, UDL can still enhance learning in the lead-up to such assessments by offering varied ways to engage with content, practise skills, and build understanding, ensuring students are better prepared to meet fixed professional benchmarks (CAST, 2018; Meyer et al., 2014).

There is a commonly expressed potential of UDL for reducing reactive adjustments and accommodations for disabled students to participate in learning (Cumming & Rose, 2022; Dinmore & Stokes, 2015; Fornauf & Erickson, 2020). However, there appears to be limited evidence to indicate this is reflected in practice. Although interest and education are growing for the use of UDL in tertiary teaching (Australian Disability Clearinghouse on Education and Training, 2024), with some Australian universities actively working to incorporate the practice into curriculum delivery, it is currently far from standard practice (Cumming & Rose, 2022). The predominant focus in Australia is on reasonable adjustments as the solution to equitable access to education (Fossey et al., 2017; Newham, 2020; Pitman & Brett, 2022), perhaps due to ingrained perceptions of disability as an individual and medical problem (Bunbury, 2020; Fornauf & Erickson, 2020). UDL is primarily included in institutions voluntarily; therefore, we have yet to see the full potential of a UDL approach in higher education. UDL undoubtedly presents greater flexibility and options to engage with learning, but it does not present a panacea for the negation of reasonable adjustments, as some students will continue to require more specialised and sophisticated support, such as assistive technology (Bunbury, 2020; Griful-Freixenet et al., 2017). Therefore, it is pertinent to invest time and scholarly effort to consider further the

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potential and practicality of the UDL framework in tertiary education. As such, we sought to answer three questions:

1. To what extent have academic staff incorporated UDL into their teaching practices?
2. What challenges have academic staff encountered in implementing UDL in their teaching?
3. What resources or training have academic staff accessed to deepen their understanding and application of UDL?

## Methods

This study was conducted at an Australian regional university whose focus is equity. At the time of data collection, the overall student enrolment was approximately 35,000. Student enrolment comprised high proportions of Indigenous students (1,442 students, or approximately 4% of the student population), students with disability (5,556 students, or approximately 15% of the student population), and first-in-family students (12,704 students, or approximately 36% of the student population), which is above the Australian university average (Department of Education 2024). The study received ethics approval from the University of Newcastle Human Research Ethics Committee (H-2024-0091).

In this study, we aimed to investigate teaching academics' understanding and implementation of UDL in the context of tertiary teaching. We adopted a survey approach that included closed-response and open-text questions. This combination provided a comprehensive understanding of teaching academics' knowledge and practice of UDL.

### *Study Design*

The survey comprised 15 questions, of which 12 were closed response and three were open text (Table 1). It included five demographic questions. Seven closed-response questions focused on the participants' awareness and implementation of UDL in higher education. Three open-text questions were designed to elicit the teaching academics' perspectives on UDL. The online survey invited anonymous responses and was hosted on the survey platform Explorance Blue (https://www.explorance.com/products/blue). No incentives were offered for participation.

### *Data Analysis*

Data for closed and open responses were analysed separately. The university's Resource Division analysed the closed-response survey data (demographic data presented in Table 2). The first author analysed the open-text questions using Braun and Clarke's (2006, 2019, 2021) reflexive thematic analysis process, which involved six phases: becoming familiar with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and writing up. These stages were iterative and recursive. All research team members had access to the data and were invited to verify the results, with no differences in intra-researcher analyses.

### *Participants*

The university's Resource Division conducted a comprehensive outreach to 3,027 academic staff members, inviting them to participate in a research survey. This outreach included three separate email invitations, each containing a participant information statement and a link to the study with consent details. Additionally, the survey was promoted once in the university's staff internal newsletter. The survey remained open for 5 weeks. In total, 113 academics responded, resulting in a response rate of 3.7%. Participant demographics are presented in Table 2.

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**Table 1.** Survey Questions

| How familiar are you with Universal Design for Learning (UDL)? |
|---|
| Very familiar |
| Somewhat familiar |
| Not very familiar |
| Not familiar at all |
| Total |
| **How informed do you feel about UDL and its applicability in higher education?** |
| Very informed |
| Somewhat informed |
| Not very informed |
| Not informed at all |
| Total |
| **Have you incorporated UDL into your teaching practice?** |
| Yes |
| No |
| Don't know |
| Total |
| **How often do you intentionally incorporate UDL into your teaching practice?** |
| All tutorials, labs and lectures |
| Most tutorials, labs and lectures |
| Some tutorials, labs and lectures |
| I do not intentionally incorporate UDL into tutorials, labs or lectures |
| Total |
| **In which aspects of your teaching do you most frequently apply UDL? (Select all that apply.)** |
| Does not apply |
| Representation of information |
| Engagement of students |
| Expression of understanding |
| Assessment strategies |
| Other (please specify) |
| Total |
| **How do you assess the effectiveness of UDL in your teaching? (Select all that apply.)** |
| Student feedback in the Course Experience Survey |
| Student feedback in other forms |
| Observation of student engagement and participation |
| I do not currently assess the effectiveness of UDL in my tutorial, labs or lectures |

(*Continued*)

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**Table 1.** (*Continued*)

| How do you assess the effectiveness of UDL in your teaching? (Select all that apply.) |
|---|
| Other (please specify) |
| Total |
| **What resources or training have you accessed to deepen your understanding and application of UDL?** |
| Workshops or seminars |
| Online courses or webinars |
| Professional literature (books, articles) |
| None, but I would like to attend formal training |
| None, not interested |
| Other (please specify) |
| Total |
| **OPEN-SET QUESTIONS (1,000-character limit for each question)** |
| What challenges, if any, have you encountered in implementing UDL in your teaching? |
| What have you learned from student feedback regarding your UDL practice? |
| Do you have additional comments or suggestions regarding UDL in the context of tertiary teaching? |

## Results

### *Closed-Response Survey Results*

The closed-response survey results offered several insights into teaching academics' familiarity with and implementation of UDL in higher education. A substantial portion of respondents (32%) were somewhat familiar with UDL, 27.2% were not very familiar, and 31.1% were not familiar at all with UDL. Only 9.7% were very familiar with UDL. This indicates a general need for more familiarity with UDL among the academics surveyed, which could lead to improved teaching practices and student outcomes.

When asked how informed they felt about UDL and its applicability in higher education, 33% of respondents felt somewhat informed, 26.2% thought they needed to be more informed, and 35% felt uninformed. Only 5.8% felt very informed. This suggests that many academics thought they needed to be more adequately informed about UDL.

Although 31.1% of respondents had incorporated UDL into their teaching practice, 18.4% felt they needed to incorporate UDL, and 50.5% were undecided about whether UDL should be incorporated. While some academics applied UDL principles, a substantial number either needed to do so or were uncertain about its implementation.

Only 9.5% of respondents reported intentionally incorporating UDL principles in all their tutorials, labs, and lectures. A quarter (25%) did so in most of their sessions, 15.5% in some sessions, and 50% did not intentionally incorporate UDL. This highlights a gap in the consistent application of UDL principles, underscoring the urgent need for support.

Participants indicated that UDL was most frequently applied in student engagement (23.7%) and information representation (23.2%). It was also applied in the expression of understanding (21.1%) and assessment strategies (17%). However, 12.4% of respondents indicated that UDL did not apply to their teaching, and 2.6% of respondents provided other responses, mostly indicating they were not aware of UDL as a teaching and learning tool.

Respondents indicated that the effectiveness of UDL is primarily assessed through observation of student engagement and participation (27.9%), student feedback in the Course Experience Survey

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**Table 2.** Participant Demographics

| How many years teaching experience in the higher education sector do you have? | Count | Percent |
|---|---|---|
| Less than 5 years | 19 | 18.4% |
| 5–9 years | 17 | 16.5% |
| 10–19 years | 45 | 43.7% |
| Over 20 years | 22 | 21.4% |
| Total | 103 | |
| **What is your academic level?[a]** | **Count** | **Percent** |
| Level A – Tutor | 13 | 15.3% |
| Level B – Lecturer | 29 | 34.1% |
| Level C – Senior Lecturer | 21 | 24.7% |
| Level D – Associate Professor | 13 | 15.3% |
| Level E – Professor | 9 | 10.6% |
| Total | 85 | |
| **What is your employment status with the university?** | **Count** | **Percent** |
| Ongoing | 62 | 60.2% |
| Contract | 23 | 22.3% |
| Casual | 17 | 16.5% |
| Other (please specify) | 1 | 1.0% |
| Total | 103 | |
| **What teaching activities do you undertake? (Select all that apply.)** | **Count** | **Percent** |
| Undergraduate coursework | 93 | 27.8% |
| Postgraduate coursework | 48 | 14.4% |
| Online | 62 | 18.6% |
| In person (face to face) | 83 | 24.9% |
| Hybrid | 42 | 12.6% |
| Pathways and Academic Learning Support Centre Services | 6 | 1.8% |
| Total | 334 | |
| **What teaching role(s) do you have? (Select all that apply.)** | **Count** | **Percent** |
| Course coordinator | 86 | 32.5% |
| Lecturer | 87 | 32.8% |
| Tutor | 68 | 25.7% |
| Lab instructor | 24 | 9.1% |
| Total | 265 | |

[a]Eighteen participants responded N/A to academic level.

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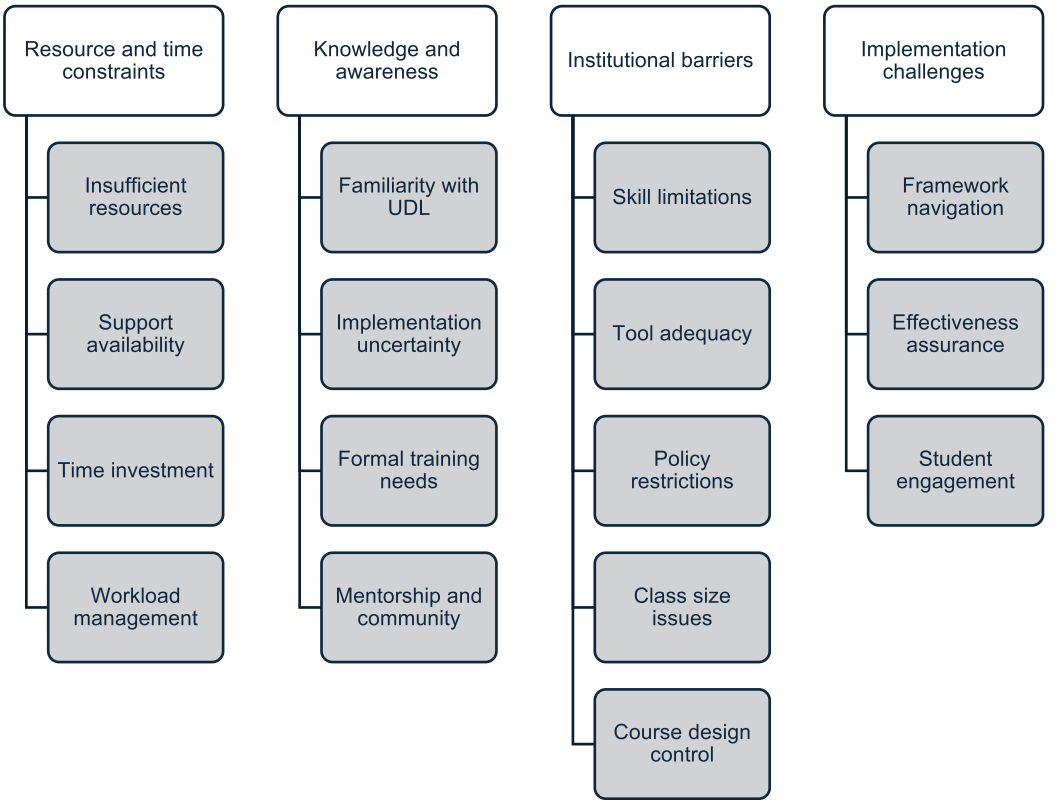


**Figure 1.** Challenges Encountered in Implementing Universal Design for Learning (UDL) in Teaching.

(24.3%), and student feedback in other forms (15.0%), while 27.1% of respondents indicated that they do not currently assess the effectiveness of UDL in their tutorials, labs or lectures, and 5.7% of respondents selected 'other', mostly stating they did not know what UDL was.

To deepen their understanding and application of UDL, respondents reported they had accessed professional literature (19.1%), workshops or seminars (13.0%), and online courses or webinars (13.0%). Notably, 35.7% of respondents have yet to access any resources but would like to attend formal training, 6.1% were not interested in any training, and 13.0% of academics selected the 'other' option, with, again, the majority of this group indicating it was the first time they had become aware of UDL. Four others reported using informal social media platforms such as online discussion groups and blogs, two others pre-academia professional experience, and one participant reported that their (current) completion of an external Master of Teaching degree was deepening their understanding of UDL.

## Open-Text Survey Results

Throughout all open-text responses, teaching academics identified several challenges to implementing UDL, categorised here into four primary themes, each comprising four subthemes, as illustrated in Figure 1. Each is described as follows with excerpt quotes.

### *Resource and time constraints*

Resource and time constraints emerged as a primary theme, encompassing four subthemes: insufficient resources, limited support availability, significant time investment, and challenges in workload

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management. Academics described resource constraints, with limited funding and access to necessary materials, as hindering their ability to conduct research and provide quality education. Additionally, time constraints, due to heavy teaching loads, administrative duties, and research obligations, made it challenging for academics to balance their professional responsibilities effectively. Each of the subthemes is elaborated upon as follows.

*Insufficient resources.* Academics reported encountering challenges in UDL implementation due to insufficient resources. These challenges seemed to create a sense of helplessness, with one academic stating that challenges included a 'lack of accessible resources, lack of a readily available go-to person, lack of opportunities (including time and resources) for co-designing curriculum with students with disabilities'. Another academic indicated that a challenge was that the 'university has even less budget than a public-school class'.

*Support availability*. Academics appeared to recognise the importance of UDL but were frustrated by the resource constraints and the negative influence of implementing it on time and their other areas of responsibility. One academic remarked, 'It [UDL] requires significantly more resources and devoting resources to it disadvantages other activities.' Another added, 'It takes time to do well. I've still got more to learn. Students appreciate having options about how they will be assessed.'

*Time investment*. Time, or lack thereof, was a common theme throughout most open-text responses, with this teaching academic stating, 'Time cost. Especially for larger courses, changing material for UDL is a significant cost, which is not easy to manage.' They elaborated, 'Time-workload models[3] mean that I am limited in some of the preparation and support I want to give students in UDL.'

*Workload management*. UDL implementation in academic settings presented several challenges concerning workload management. Workload and time often coincided, with one teaching academic stating, 'We have very large workloads, which decreases time able to consider considerations on teaching. I do as much as I can, but it is difficult given very limited time and threats of large workloads to academics' health.' Similarly, another stated, 'Time is a big challenge — for instance, in a 2-hour tutorial or 1-hour lab, it is difficult to provide a number of learning options.'

### *Knowledge and awareness*

Knowledge and awareness emerged as a primary theme, encompassing four subthemes: familiarity with UDL, implementation uncertainty, formal training needs, and mentorship and community. Each of these subthemes is elaborated upon below.

*Familiarity with UDL*. Surprisingly, many participants reported they had not encountered UDL. This academic stated, 'I honestly am not aware of UDL as a concept, though it appears I implement some of the key strategies anyway.' Another explained, 'I currently don't actively implement UDL, as I am not familiar with it. But I believe knowledge on how this could be done and then having time to revise existing materials would be a challenge.'

*Implementation uncertainty*. Academics expressed unfamiliarity and uncertainty with UDL: 'I am actually not even sure what UDL is, so I am not aware whether it is something I have been integrating.' Some academics appeared not to recognise the term UDL whatsoever: 'I'm not 100% sure what UDL is, so these questions are difficult to answer.'

*Formal training needs*. Despite their proactive efforts to educate themselves, academics recognise gaps in their formal training and knowledge: 'My lack of knowledge in this area. Apart from information from the Dept of Education that I have accessed independently, I have no formal training in this area.' Another stated, 'I have not received any training from the university in UDL specifically related to my role. I have sought out external and internal opportunities to build my professional knowledge and practice.' Nevertheless, they remain committed to seeking opportunities to enhance their professional skills and understanding.

[3]The University of Newcastle utilises a workload model especially for sessional staff, allocating a specific amount of time to each activity (e.g., a lecture [new] consists of 1 hour of presentation plus 2 hours of preparation time).

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*Mentorship and community*. Teaching academics acknowledged the complex nature of the UDL framework, and the challenges posed by the absence of a supportive community at the university: 'The complexity of the UDL framework. It takes time to learn and not having a community here at the uni who can mentor or advise.' Another academic stated,

> *The LDTI [Learning Design and Teaching Innovation] team at the university offer exceptional workshops and seminars, and I have drawn on their resources often and shared these with others. These are, however, not very well promoted to casual academic staff and are not generally promoted to professional staff.*

Despite these challenges, teaching academics commended the university's Learning Design and Teaching Innovation team for their exceptional workshops and seminars, noting the need to promote these resources to casual and professional staff.

### *Institutional barriers*

Two core UDL implementation challenges identified by teaching academics were technological and institutional barriers with subthemes of skill limitations, tool adequacy, policy restrictions, class size issues, and course design control. Each is discussed as follows.

*Skill limitations*. Some teaching academics acknowledged the challenges posed by (their) limited technological skills with Canvas and the complexities of initiating classroom teaching, mainly when classroom set-ups are not conducive to diverse activities. 'Using technology in an interactive way, particularly if there is a lack of online student engagement' was identified as a challenge. This academic stated, 'It is difficult to know where to start when engaging in classroom teaching. Often, our classrooms are not set up well for engaging in different types of activities — leading to more lecture-type content.' They recognised the need for enhanced technological proficiency and improved classroom environments to foster more engaging and varied teaching methods.

*Tool adequacy*. Academics recognised the challenges of engaging large student numbers in online teaching environments and the difficulties in utilising technology interactively when student engagement is lacking: 'Sometimes it is hard to engage with large student numbers when teaching online.' This academic further stated, 'using technology in an interactive way, particularly if there is a lack of online student engagement'.

*Policy restrictions*. Some academics expressed frustration with the restrictive nature of current policies that hinder the implementation of desired strategies and criticised the overall structure of university teaching and learning for failing to support UDL and broader teaching innovations: 'Policy — there are some strategies that I have wanted to implement that I have been told are difficult to implement due to current policies.' Another academic said, 'The structure of university teaching and learning in all regards DOES NOT encourage or promote the use of UDL or teaching innovation more generally.' Some academics advocated for policy reforms and structural changes within university teaching and learning frameworks to facilitate the adoption of UDL and innovative teaching practices.

*Class size issues*. Some academics highlighted the significant challenge posed by excessively large class sizes that can impede the flexibility and consultation essential for implementing UDL and pointed out the inadequacies of tutorial rooms and the constraints: 'Class sizes too large to accommodate flexibility and consultation needed for UDL.' This academic said, 'Inappropriate tutorial rooms; first-year tutorials of 50 students and more; university policies.' Academics call for reevaluating class sizes, tutorial room allocations, and university policies to better support the flexibility and consultation required for effective UDL implementation.

*Course design control*. In the context of academic employment, fixed-term contract staff members often face significant limitations in their professional autonomy. One such staff member noted, 'As a fixed-term contract staff member, I have limited control over the set assessments for my courses.' This lack of control extends further to casual staff, who experience even greater constraints. Another

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individual expressed, 'As a casual, I have little or no say in course design or assessment choice.' Consequently, both groups encounter substantial challenges in influencing their university's educational framework and pedagogical strategies.

### *Implementation challenges*

Several challenges were identified related to implementing UDL. These included UDL framework navigation, effectiveness assurance, and student engagement. Each is described below.

*Framework navigation*. Navigating the UDL framework presents challenges, particularly concerning time management. As academics have observed, 'Navigating the UDL framework is a chore at the best of times.' This complexity is further compounded when they inherit courses and must implement UDL principles with minimal preparation time. One educator noted, 'It takes time to implement UDL. Sometimes I have inherited courses and need to run them at very short notice.' Consequently, the perceived time-intensive nature of UDL implementation often poses substantial difficulties for academics striving to enhance their teaching practices.

*Effectiveness assurance*. One of the most common challenges academics reported encountering was determining the effectiveness of their teaching approaches. One educator said, 'The biggest challenge I've faced is knowing if my approach is effective. Providing alternatives for students is not hard for me, but I just want to make sure that I'm doing it to the best of my abilities.' This uncertainty is further exacerbated by the difficulty in ensuring comprehensive coverage of UDL requirements. Another educator highlighted this concern, stating, 'Not having an idea whether I have covered all relevant UDL requirements.' Consequently, these challenges underscore the need for clear guidelines and feedback mechanisms to support academics in effectively implementing UDL.

*Student engagement*. Academics often face challenges managing diverse classrooms, particularly when common discussions or group work are required. While navigating these complexities, they must also allocate sufficient time to design tutorial and lecture activities, materials, and assignments that cater to different learning styles and communication forms. One educator noted, 'Challenges include management of a diverse classroom when there needs to be some common discussion/group work, having the time to design tutorial and lecture activities, materials and assignments that cover a range of learning styles and communication mediums.' Accordingly, designing a curriculum that offers a diverse range of learning activities and assessment modalities while maintaining clarity and cognitive manageability is essential to fostering engagement without compromising student comprehension or wellbeing. As another educator succinctly put it, 'Balancing having a variety of activities and assessment options, but not overwhelming or confusing students.'

Academics strive to create inclusive and engaging learning environments for all students. One educator emphasised the importance of this approach, stating, 'Ensuring that all students are engaged and learning without making students uncomfortable' is important. Additionally, academics focus on developing various assessment options that require focused equity effort and meet the learning outcomes. As another educator noted, 'Developing various options for students to complete assessments that are of equal effort (size, time, etc.) and all meet the learning outcome' is essential.

## Discussion

UDL is considered a practical approach for ensuring that all students equitably connect with academic content and social opportunities in tertiary education. Kennette and Wilson (2019) argue that tertiary educators would better understand how to implement flexible approaches that enhance student access to educational opportunities if UDL were systematically employed. However, UDL is also perceived as complex, challenging to implement successfully, and time-consuming (Hall et al., 2012). This study explores teaching academics' awareness and knowledge of UDL and the challenges they face in implementing it effectively and consistently in a tertiary setting.

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### Awareness and Knowledge of UDL

Our survey results indicate varying levels of awareness and knowledge of UDL among teaching academics. Many respondents were unaware of UDL and did not consistently incorporate it into their teaching practice. Half of the respondents either did not apply any UDL principles or were unsure if they had. This aligns with previous literature, which identifies a gap in consistent practice and understanding of UDL among educators (Fornauf & Erickson, 2020).

Although some academics were familiar with UDL and certain related practices, such as student engagement, assessment flexibility, and representation, there was a clear desire to learn more. This is consistent with studies indicating that educators often wish to deepen their understanding of UDL but lack the necessary training (Kennette & Wilson, 2019). Some respondents attempted to research UDL independently, but the effectiveness of self-directed learning remains questionable. The literature suggests that structured professional development is more beneficial in helping educators grasp UDL principles and apply them effectively in higher education settings (Olivier & Potvin, 2021).

Many respondents expressed a need for formal university-based professional development on UDL. Research supports the notion that well-designed professional learning programs, especially those involving multiple sessions across faculties and diverse learning contexts, can improve educators' understanding and implementation of UDL (Olivier & Potvin, 2021). This highlights the need for a structured and institutionally supported approach to professional development in UDL, ensuring that all educators can access consistent and effective training.

### Implementation Challenges and Institutional Barriers

Despite a willingness to incorporate UDL principles, many teaching academics remain uncertain about how to do so in practice. Professional learning on the UDL framework extends beyond making reasonable adjustments for individual students; it involves creating multiple pathways for engagement and expression, free from barriers, and grounded in well-researched knowledge (CAST, 2024a; Izzo et al., 2008). However, the practical implementation of UDL remains hindered by several barriers, including time constraints, limited resources, and institutional policies.

Time constraints were a common challenge among survey respondents, reflecting broader findings in the literature (Bunbury, 2020; Coffman & Draper, 2022). Teaching academics reported a strong desire to integrate UDL but struggled with the time required to fully understand and implement its principles. Higher education institutions may need to allocate additional teaching resources, including digital, instructional, and interactive tools, to support the effective integration of UDL into teaching and learning practices.

Moreover, tertiary educators are expected to be highly qualified and to support diverse student populations while fulfilling rigorous academic and assessment criteria. Respondents indicated that they needed additional time to understand individual student needs and learning outcomes, but time spent on UDL training and implementation remained a major obstacle (Dinmore & Stokes, 2015). Addressing this issue requires systemic change at the senior management level within institutions to ensure that faculty members are given the necessary time and support to adopt UDL practices effectively.

Beyond time constraints, access to adequate resources is essential for meaningful UDL implementation. Respondents highlighted the need for professional development packages, such as those offered by CAST, or institutionally tailored online and in-person training. The CAST (2024c) tertiary-level UDL implementation framework provides structured guidance for institutions, but its adoption requires additional funding, administrative coordination, and trial periods. Without sufficient resources and institutional support, educators may struggle to engage fully with the UDL framework, leading to inconsistent implementation.

Ecological barriers also play a significant role in limiting UDL application. Respondents reported difficulties in providing innovative teaching methods due to large class sizes, outdated technological

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infrastructure, and restrictive institutional policies. Many educators expressed a desire to offer diverse engagement opportunities for students but found that existing administrative frameworks did not support such innovation. Previous research has emphasised that building meaningful student–teacher relationships is critical for effective learning (Lohmann et al., 2018), yet institutional structures often do not prioritise this aspect. Time limitations for course preparation, teaching, assessment, and student consultations further hinder the ability to apply UDL effectively (Fovet, 2021).

### *Limitations*

This study provides valuable insight into academics' familiarity with and implementation of UDL in one tertiary context. However, several limitations must be acknowledged. One limitation was the low survey response rate, necessitating caution in interpreting and generalising findings. We cannot conclude that the study represents the perceptions and understanding of most academics at this institution; instead, it reflects the perceptions and knowledge of UDL among those who responded to the survey. Future studies may seek to gain understanding from academics in ways that minimise the input of their time. In this study, we used a survey approach with predominantly closed-response questions, which may have constrained in-depth participant responses. Although the three open-text questions allowed for richer qualitative insights, the breadth of perspective is likely limited by the survey format and question framing.

Additionally, the study was conducted at one university, limiting the applicability of the findings to other higher education settings. Future research may seek similar insight from different institutions using comparable research tools to help assess the wider applicability of findings. Variations in institutional policy, resources, and student demographics may influence academics' experiences with UDL elsewhere. The reliance on self-reported data introduces the possibility of response bias, including overestimating or underestimating familiarity and implementing UDL principles. Some participants may have misinterpreted UDL concepts, as evidenced by their uncertainty about its definition and application. Moreover, the study emphasises the perspectives of teaching academics and does not include input from students or support staff. Including these groups could provide a more holistic understanding of UDL implementation and its impact. However, these results indicate the need for teaching academics to undertake UDL training.

## Conclusion

The findings of this study align with existing literature on the challenges of UDL awareness, knowledge, and implementation in higher education. Two conclusions emerge, one with regard to the work of academics and the other a systems-level outcome, if teaching staff desire the adoption of the principles of UDL in teaching and learning policy:

1. Academics: Although many teaching academics recognise the potential benefits of UDL, there is a strong need for structured professional development, institutional support, and additional resources to facilitate its effective adoption.
2. Institutions: Addressing these barriers requires systemic changes, including increased training opportunities, adequate time allocation, and investment in instructional resources. By implementing these changes, tertiary institutions can ensure that UDL is understood in theory and applied in practice to enhance equitable learning opportunities for all students.

Although we consider it too early to make a call on the efficacy of UDL as a system-wide approach in tertiary education and look forward to further research in this regard, what is apparent is the potential of a UDL approach to enhance the repertoire of academics to cater for a diverse and complex student population. The current research informs that effective institutional engagement with the UDL framework requires support from senior leadership and administration, delivering effective and timely

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UDL professional learning via well-resourced and targeted programs. This support would help interested teaching academics understand their crucial role in providing inclusive teaching and learning through an evidence-based approach focused on equity for all students, thereby maximising each student's potential.

Providing effective professional learning for teaching academics will facilitate successful local implementation of the UDL approach. As CAST (2024c) advocates, partnering with tertiary institutions to implement the UDL framework enables teaching academics to prepare excellent learners, enhancing their understanding of their capacities and future potential. Establishing a heterogeneous way of learning will develop skills and strategies that embrace diversity in personal learning abilities and ensure individuals can use these skills for future life goals, such as employment and self-advocacy.

Finally, the current study underscores the need for further research to explore diverse institutional contexts, include multiple stakeholder perspectives, and enhance the applicability of UDL in higher education.

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