

ORIGINAL ARTICLE

# Moving Towards Inclusive Education: Secondary School Teacher Attitudes Towards Universal Design for Learning in Australia<sup>†</sup>

Hongyu Chen<sup>1\*</sup> , David Evans<sup>1</sup>  and Betty Luu<sup>1,2</sup> 

<sup>1</sup>Sydney School of Education and Social Work, The University of Sydney, Sydney, Australia, and <sup>2</sup>Research Centre for Children and Families, The University of Sydney, Sydney, Australia

\*Corresponding author. Email: [hche6716@uni.sydney.edu.au](mailto:hche6716@uni.sydney.edu.au)

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## Abstract

Achieving Sustainable Development Goal 4 is underpinned by the provision of quality inclusive education for all young persons, including persons with disabilities. The universal design for learning (UDL) framework provides the basis for establishing an inclusive pedagogical learning environment in classrooms. However, implementing such an inclusive pedagogical framework continues to be profoundly challenging across all countries, including Australia. Teacher attitude is the most important construct in efforts to create inclusive educational contexts. The aim of this study was to examine secondary school teachers' attitudes towards the UDL framework in Australia. One hundred and twenty mainstream secondary classroom teachers in Sydney completed an online survey. The mean values and standard deviations of a self-designed UDL framework were calculated to examine teacher attitudes. Correlations and multiple regressions were conducted to verify the relationship between teachers' attitudes and their background variables. The main results indicated that Australian secondary school teacher attitudes towards the UDL framework were generally positive, although they still had some practical concerns, such as having inflexible ideas about how to provide instructions. The findings provide useful insights for developing professional teacher training to promote inclusive education, where the UDL framework is a lens for interpreting inclusive education.

**Keywords:** universal design for learning framework; inclusive education; teachers; attitudes; Australia

Inclusive education has become a global movement that aims to embrace the variability in learning characteristics of students with and without disabilities in mainstream classrooms (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2017). *Inclusive education* refers to a transformation in policy, culture and practice that enables communities (e.g., teachers, administrators, parents/carers) to accommodate the educational needs of all students and remove barriers to achieving this end (UNESCO, 2020; United Nations Committee on the Rights of Persons with Disabilities, 2016). It seeks to promote educational access, participation, and engagement for all students, as captured in Sustainable Development Goal 4 (United Nations, 2018). To achieve this, teachers need to adopt an inclusive pedagogical framework that considers the diverse educational needs of all students.

Universal design for learning (UDL) is an inclusive pedagogical framework that develops instructionally rich, barrier-free educational environments and accessible lessons for all students with and

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without disabilities (Balta et al., 2021; Evans, 2020; Nelson, 2014). It prompts teachers to proactively eliminate barriers to achieve high-quality education for all. To address educational barriers, the UDL framework provides scaffolds, supports and flexibility in curriculum development and lesson planning. The UDL framework comprises three principles that promote alternative ways for students to access, participate and engage in learning using multiple means of representation, action and expression, and engagement (García-Campos et al., 2020; Meyer et al., 2014). Within each principle, the underpinning nine guidelines and 31 checkpoints are developed from the simplest cognitive processing and implementation to the most complex (Fuentes et al., 2016). Based on these UDL principles, guidelines and checkpoints, in this study we aimed to examine teacher attitudes towards the UDL framework in Australia and, in doing so, explore teachers' inclusive educational skills and knowledge.

### ***Three Principles of the UDL Framework***

The principle of providing multiple means of representation (i.e., UDL Principle 1) is used to support teachers in designing instructional methods and materials that make learning content accessible to all students with diverse backgrounds, learning preferences and abilities (Center for Applied Special Technology [CAST], 2018b). In planning lessons for all learners, various formats such as videos, audio texts, images and animations are provided to demonstrate content and information (Griful-Freixenet et al., 2021). Hitchcock et al. (2016) mentions that critical features, vocabulary and big ideas need to be highlighted for students, with guidance at various levels to connections with their prior knowledge. This facilitates both broader access to and deeper engagement with the learning concept.

In providing multiple means of action and expression (i.e., UDL Principle 2), teachers are guided to provide alternative media such as film, text, speech and music for students to demonstrate their learning (CAST, 2018c). Students are encouraged to use multiple supportive tools such as grammar checkers and calculators to express their knowledge and skills. Personalised pedagogical supports are embedded in teaching to provide formative and summative feedback, as well as to engage students in self-evaluation processes (Winter, 2016). The increased number and variety of participation and assessment options for students to demonstrate their understanding will also increase their engagement across the curriculum.

The principle of providing multiple means of engagement (i.e., UDL Principle 3) focuses on designing various classroom activities where teachers motivate students and stimulate their learning interests and perseverance through hands-on, creative and meaningful instruction (CAST, 2018a). It is imperative to consider student choices as to how they access learning content and how they express knowledge in a student-centred learning climate (Kieran & Anderson, 2019). Providing opportunities for students to work and communicate collaboratively with clear learning goals, roles and responsibilities is also necessary in developing an inclusive educational environment (Rose et al., 2012). Within the UDL framework, providing multiple means of representation, action and expression leads to improved student engagement, intellectual engagement and classroom interaction (Katz, 2015).

### ***The UDL Framework in Australia***

In recent years, the UDL framework has been recommended by Australian education sectors and authorities to eliminate educational barriers to support all students (Capp, 2020). The right of students with disabilities to access education and participate in the same curriculum 'on the same basis' as students without disabilities is safeguarded by the Disability Discrimination Act 1992 and the associated Disability Standards for Education 2005 (Australian Government, 1992, 2005). A curriculum for all students upholds Australia's obligations under the Convention on the Rights of Persons With Disabilities (United Nations Committee on the Rights of Persons with Disabilities, 2016) and addresses

the call that ‘all children should learn from the same flexible, relevant and accessible curriculum, one that recognises diversity and responds to various learners’ needs’ (UNESCO, 2020, p. 21).

A curriculum designed for all students is consistent with the principles of inclusive education (Price & Slee, 2021). *The Shape of the Australian Curriculum (Version 5.0)* stated the Australian Curriculum consisted of ‘a continuum of learning that makes clear to teachers what is to be taught across the years of schooling. It makes clear what students should learn and the quality of learning expected of them as they progress through school’ (Australian Curriculum, Assessment and Reporting Authority [ACARA], 2020, p. 10). This was reiterated through the Alice Springs (Mparntwe) Declaration (Council of Australian Governments, 2019), and within *Version 5* of the shaping paper (ACARA, 2020).

Including all students within the Australian Curriculum is promoted through the three-dimensional architecture addressing eight learning areas, seven general capacities and three cross-curriculum priorities (ACARA, 2020). This design provides teachers ‘flexibility to cater for the diverse needs of students across Australia and to personalise their learning’ (p. 22). Teachers can draw on content from a range of levels and shift the personalised focus through managing the weight given to content and general capabilities, while considering the cross-curriculum priorities. The design of the Australian Curriculum provides access for a full range of students and learners.

The Australian Curriculum architecture identifies what should be taught to all young Australians, no matter their backgrounds. States and territories are responsible for how they interpret and implement the Australian Curriculum. At least three states, however, in interpreting the Australian Curriculum, have constructed additional elements that provide separately for students with disabilities (Anderson & Boyle, 2015; Humphreys & Jimenez, 2018) in response to the belief that the Australian Curriculum alone does not cater for students with disabilities (Australian Government, 2014). This position represents how a curriculum designed for ‘all young Australians’ (ACARA, 2022, para. 1) prevents access to curriculum for students with disabilities on the same basis as students without disabilities, lowers expectations and excludes students from being educated alongside their peers without disabilities (Ryndak et al., 2008).

A stronger vision or lens of inclusive education would assist with dismantling these attitudinal and professional barriers. The UDL framework provides such a lens. Yet little is known about the professional knowledge, skills and attitudes of teachers with regard to implementing the UDL framework. Understanding teacher attitudes towards the UDL framework is significant to facilitating students’ access and participation in education, thus ensuring authentic inclusiveness of student diversity.

### **Teacher Attitudes Towards the UDL Framework**

Implementing the UDL framework is promoted as an important step towards achieving the goals of inclusive education (Capp, 2020). However, attitudinal barriers to the UDL framework impede the design of personalised lessons and the provision of equal learning opportunities for all students. *Attitude* is generally understood as a summary evaluation of an object with a certain degree of favour or disfavour (Maio & Haddock, 2009). Although teacher attitudes towards inclusive education and inclusive practices have been the focus of numerous studies for decades throughout the world (e.g., Boyle et al., 2020; Goddard & Evans, 2018; Page et al., 2022), none of the prior research examined teacher attitudes towards a specific inclusive pedagogical framework. The current study has filled this research gap by investigating secondary school teacher attitudes towards the UDL framework in Australia. The role of secondary school teachers and the way they perceive their own teaching strategies to develop inclusive education can serve as critical pillars to improve both opportunities and participation for all in mainstream classrooms.

Teacher attitudes towards the UDL framework reflect their perspectives of learner variability and their willingness to implement the inclusive pedagogical framework. Based on a study carried out by Izzo et al. (2008), 92% of faculty participants reported they felt comfortable that they could meet the needs of students with disabilities after completing a formative evaluation of an online UDL training module. Teachers who presented with positive attitudes believed the flexible curricula design that can

be achieved using the UDL framework could be used to improve their teaching tactics and thus develop a supportive learning environment for all students. However, Russo (2019) claimed that some teachers view the UDL framework as another fad that will allow them to continue with, or return to, traditional instructional approaches they are familiar with. If teachers do not believe the UDL framework is effective and manageable for them to develop inclusive education, they will become resistant to introducing changes to the design of curriculum and instructional approaches in mainstream classrooms (Zhang & Zhao, 2019).

In a quantitative study conducted in Spain, Fuentes et al. (2016) designed a questionnaire to collect data on teacher perceptions based on the UDL framework. Fuentes et al. found the importance of obtaining empirical data that supported the use of the UDL framework. However, all 150 participants in this study were from the area of special education, providing limited insight into the perceptions of mainstream teachers. In the current study, an appropriate instrument was developed to measure mainstream teacher attitudes towards the UDL framework in their classrooms, and not exclusively within special educational settings.

Teacher attitudes, whether positive or negative, are underpinned by several factors. Teacher characteristics such as gender, years of teaching experience, and previous exposure to persons with disabilities (e.g., friends, family member, community group) are frequently studied variables associated with teacher attitudes towards inclusive education (e.g., Saloviita, 2019; Supriyanto, 2019; Vaz et al., 2015). However, none of the previous studies examined the association of gender, years of teaching experience, and previous exposure to persons with disabilities with teacher attitudes towards the UDL framework. The lack of attention to these associations creates difficulties in understanding teacher attitudes based on their personal attributes, which hinders the development of the inclusive pedagogical framework. Therefore, associations between secondary school teacher attitudes and their demographic variables (i.e., gender, years of teaching experience, and previous exposure to persons with disabilities) were also examined in the current study.

### ***Purpose of the Study***

The purpose of the current study was to answer two research questions: (1) What is the level of attitudes towards the UDL framework held by a sample of secondary school teachers in Sydney, Australia? (2) How are the attitudes towards the UDL framework of a sample of secondary school teachers in Sydney, Australia, related to gender, years of teaching experience, and their previous exposure to persons with disabilities?

The current study provides information about Australian secondary school teachers' attitudes towards the UDL framework and background variables associated with their attitudes. Through this study, it was anticipated that findings would provide a better understanding of what factors (e.g., teacher preparation, teacher efficacy) influence secondary school teacher attitudes towards the UDL framework in Australia. This information will be of interest to school executives and policymakers so they can create a supportive environment where secondary school teachers can develop their attitudes towards the UDL framework. It will also give teachers insights into how to implement the UDL framework and whether the UDL framework is an ideal inclusive pedagogical choice for educating all students, including students with disabilities, in their mainstream classrooms.

The current study will also assist school executives and policymakers to better understand the practical concerns of teachers in implementing the UDL framework. In this study, a self-designed UDL Framework Scale was applied to examine teacher attitudes towards the UDL framework (Chen, 2022). The findings of this study serve to inform school executives and policymakers with respect to addressing possible practical concerns in implementing the UDL framework. Teachers can reflect on their previous teaching strategies and make possible instructional changes following the UDL framework in their future teaching practices.

## Methodology

### Research Design

To explore teacher attitudes from a different perspective, the current study was derived from a cross-country study that had examined secondary school teacher attitudes towards inclusive education in Australia and China. For the scope and purpose of this paper, only the demographic data in Australia and the data collected using the self-designed UDL Framework Scale in Australia have been analysed and reported.

### Participants

A total of 120 mainstream classroom teachers who teach students in a range of curriculum areas from Year 7 to Year 10 in private and public secondary schools in Sydney metropolitan areas participated in this study. Among these, 82.7% of the respondents had completed a unit of study in special and inclusive education. In terms of completing further professional training, more than three quarters (75.8%) of the respondents had completed professional learning workshops or seminars about special and inclusive education, whereas 24.2% of the respondents reported that they had not. Also, around three fourths (73.3%) of the participants had previously been in contact with persons with disabilities. A summary of respondents' other demographic information is shown in Table 1.

### Procedure

Ethics approval for the study was obtained from the University of Sydney Human Research Ethics Committee (Protocol: 2021/609). To collect the data, a snowball sampling method was adopted. After randomly selecting secondary schools, their principals were invited to nominate classroom teachers who cater for students in Years 7 to 10. An online link to the participant information statement, the participant consent form, and the web-based questionnaire was emailed to 40 schools. The study information was also circulated through peer and professional teacher networks known to the authors. All participating teachers were encouraged to invite other colleagues to participate in the study.

### Instruments

To collect demographic data, participants answered questions such as gender, years of teaching experience, and previous exposure to persons with disabilities. Then, a self-designed UDL Framework Scale was utilised to capture secondary school teacher attitudes towards the UDL framework in Australia. The scale items focused on the important measures that teachers would likely believe were useful for eliminating barriers to developing inclusive education for all students in mainstream classrooms.

The UDL Framework Scale consists of 18 items measured with a 7-point Likert scale, ranging from *not at all important* (scored '1') to *extremely important* (scored '7'), with a neutral midpoint scored '4'. Although concern that a midpoint could act as a 'dumping ground' when participants did not know enough about the content (Chyung et al., 2017, p. 17), piloting of the instrument with teachers found that a midpoint provided greater clarity in responding to scale items. Higher scores in the UDL Framework Scale indicate more positive teacher attitudes towards the UDL framework. The scale has strong reliability with a high Cronbach's alpha coefficient ( $\alpha = 0.809$ ). It was designed around the three principles of the UDL framework and contains three subscales, which include providing multiple means of representation (Questions 1 to 6), providing multiple means of action and expression (Questions 7 to 10), and providing multiple means of engagement (Questions 11 to 18).

**Table 1.** Demographic Information of Participants ( $N = 120$ )

Demographics	%
<b>Gender</b>	
Female	84.2%
Male	13.3%
Non-binary/Third gender	0.8%
Prefer not to say	1.7%
<b>Years of teaching experience</b>	
< = 5 years	60%
6–10 years	20%
11–15 years	8.3%
16+ years	11.7%
<b>Age</b>	
18–24	33.3%
25–34	34.2%
35–44	19.2%
45–54	8.3%
55+	5%
<b>Highest degree earned</b>	
High school certificate	5%
Bachelor degree	51.7%
Diploma	0.8%
Master's coursework degree	33.3%
Master's degree by research	6.7%
Doctoral degree	2.5%
<b>Subject area(s) currently taught</b>	
Arts	19.2%
Language	28.3%
Science	9.2%
Mathematics	13.3%
Others	30%

### Data Analysis

Data analysis was conducted using IBM SPSS software (Version 26). In the first phase, the mean values and standard deviations of the overall scales and subscales were utilised to assess secondary school teachers' attitudes towards the UDL framework in Australia. In the second phase, a series of correlations and multiple regressions were carried out to verify the association of teacher attitudes towards the UDL framework with their background variables (i.e., gender, years of teaching experience, and previous exposure to persons with disabilities). In this study, the attitudes of secondary school teachers towards the UDL framework were the dependent variable. The independent variables were gender, years of teaching experience, and previous exposure to persons with disabilities.



## Results

### *Australian Teacher Attitudes Towards the UDL Framework*

The Australian secondary school teachers' overall attitudes towards the UDL framework ( $M = 5.31$ ,  $SD = 0.64$ ) were above the neutral midpoint of the UDL Framework Scale, thus indicating that the teachers expressed more positive attitudes towards the UDL framework. The difference from the neutral midpoint was statistically significant, with  $t(113) = 21.923$ ,  $p < 0.0001$ . Based on the kurtosis value of 1.834, the dispersion of the scores was larger with lighter tails relative to normal distribution. The skewness value was  $-1.163$  and its standard error was 0.226, indicating that the distribution deviated from normal distribution and had an obvious left tail with low values. This meant that normality was distorted because of the relative overrepresentation of low scores.

To better understand the attitudes subscale results, the combined percentages of teachers who judged each statement as *moderately important*, *very important*, or *extremely important* in the UDL Framework Scale are provided in Figure 1. The most positive attitudes were reported in Item 13, which is 'minimise threats and distractions in the classroom through building a supportive classroom climate' ( $M = 6.12$ ,  $SD = 1.033$ ). For Item 14, teacher attitudes towards 'keeping the complexity of learning activities constant for students' ( $M = 3.27$ ,  $SD = 1.718$ ) were close to the neutral midpoint of the scale. For Item 12, their attitudes towards 'providing all learners with complete autonomy during their learning' attained the lowest mean values ( $M = 2.86$ ,  $SD = 1.394$ ) among the subscales.

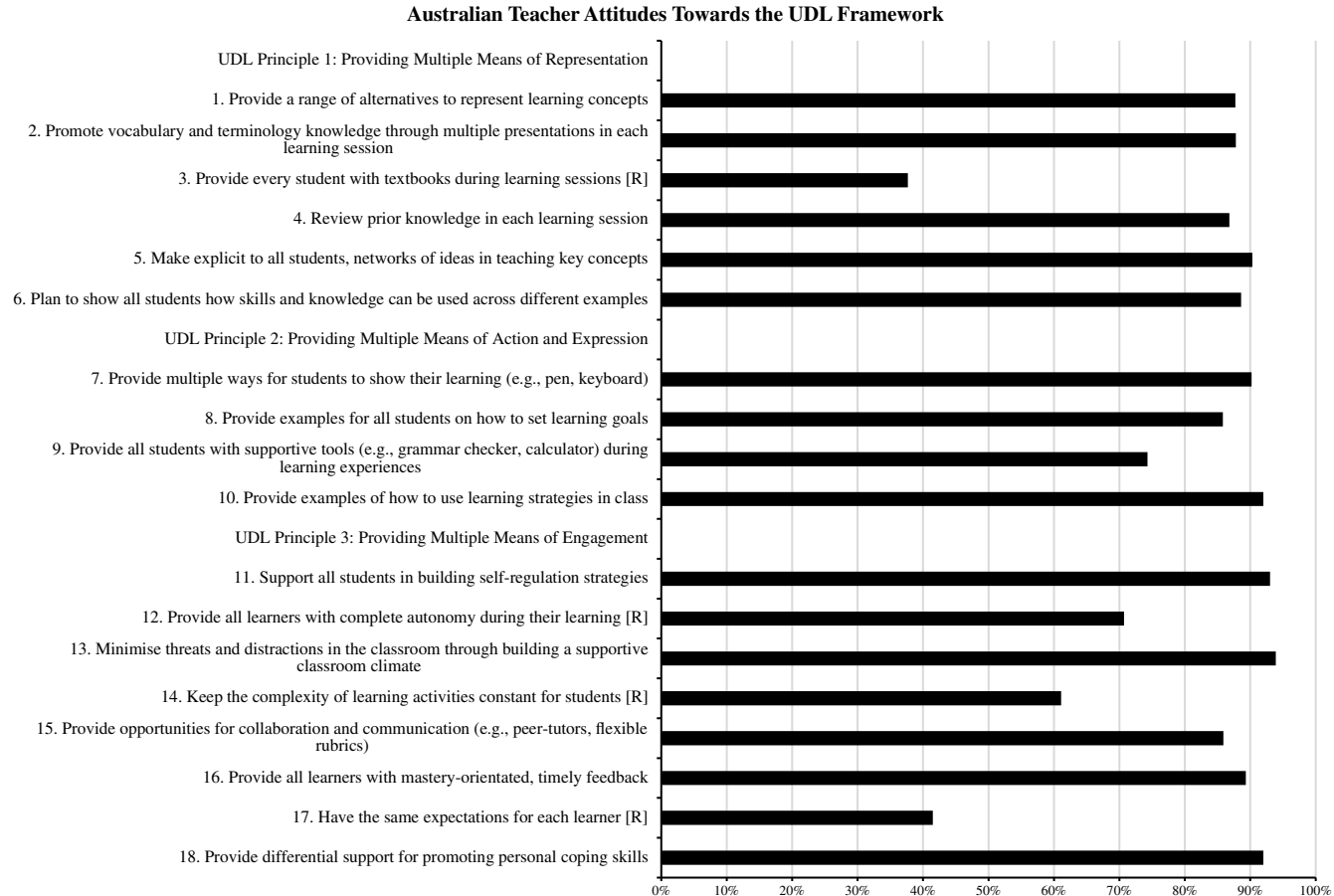
For UDL Principle 1 (i.e., providing multiple means of representation), more than 85% of Australian teachers noticed that Item 1, Item 2, Item 4, Item 5 and Item 6 were of vital importance. Only 37.7% of teachers held positive attitudes towards 'providing every student with textbooks during learning sessions'. For UDL Principle 2 (i.e., providing multiple means of action and expression), the Australian sample revealed that Item 10 obtained the highest percentage (92%) and Item 9 attained the lowest percentage (74.3%). For UDL Principle 3 (i.e., providing multiple means of engagement), Item 13 scored the highest percentage (93.9%) and Item 17 scored the lowest percentage (41.5%). Among all three UDL principles, teacher attitudes towards Item 13 also reached the highest percentage of endorsement in all the subscale items, as confirmed by the highest mean value mentioned previously. In addition, Item 11 scored the second highest individual item percentage (93%) with the Australian cohort, and Item 14 scored the second lowest individual item percentage (61.1%).

### *Correlation Between Teacher Attitudes and Background Variables*

Before conducting multiple regression, the correlations between Australian secondary school teacher attitudes towards the UDL framework and their gender, years of teaching experience, and previous exposure to persons with disabilities were analysed. There was a small but nonsignificant positive correlation between teacher attitudes towards the UDL Framework Scale and the gender of participants ( $r = 0.139$ ,  $p = 0.146 > 0.05$ ), indicating that female secondary school teachers held slightly more positive attitudes towards the UDL framework than male secondary school teachers in Australia. The statistical power of the comparison might be compromised because of the unbalanced number of male teachers ( $n = 16$ ) and female teachers ( $n = 101$ ) in the survey. No significant correlations between the UDL Framework Scale, years of teaching experience ( $r = 0.019$ ) and previous exposure to persons with disabilities ( $r = 0.099$ ) were found.

### *Background Variables as Predictors of Teacher Attitudes Towards the UDL Framework*

A multiple regression analysis was conducted in which gender, years of teaching experience, and previous exposure to persons with disabilities were tested as predictors for teacher attitudes towards the UDL framework. The results of multiple regression showed that the model explained about 3% of the total variance of Australian teacher attitudes towards the UDL framework ( $R^2 = 0.034$ ). This model was not statistically significant at a 95% confidence level,  $F(3, 110) = 1.243$ ,  $p = 0.298 > 0.05$ .



**Figure 1.** Percentage of Teachers Who Judge Each Statement as *Moderately Important*, *Very Important*, or *Extremely Important* in the UDL Framework Scale. Note. The scoring of items marked with [R] is reversed when counting the sum.



The results also revealed that gender ( $\beta = 0.148$ ,  $p = 0.125 > 0.05$ ), years of teaching experience ( $\beta = 0.076$ ,  $p = 0.449 > 0.05$ ), and previous exposure to persons with disabilities ( $\beta = 0.117$ ,  $p = 0.24 > 0.05$ ) were not statistically significant predictors of Australian secondary school teacher attitudes towards the UDL framework.

## Discussion

Overall, the significance of gathering data that support the implementation of an inclusive pedagogical framework should be highlighted. Accompanying the globalisation of inclusive education over the past 2 decades, applying appropriate inclusive pedagogical frameworks is necessary to remove learning barriers for all learners, including students with disabilities (Capp, 2020). Instead of the traditional 'one-size-fits-all' approach, the UDL framework is an optimal choice that enables teachers to eliminate barriers proactively and intentionally within learning goals, assessments, instructional methods and materials (Meier & Rossi, 2020, p. 83). To address educational barriers, teachers who adopt the UDL framework assume their students represent a diverse range of instructional needs when planning lessons inclusive of all, and make reasonable adjustments in mainstream classrooms based on the three UDL principles.

In the current study, the attitudes of Sydney secondary school teachers towards the UDL framework were examined using a reliable instrument (i.e., the UDL Framework Scale). The results found that teachers' overall attitudes towards the UDL framework were positive, although they had some practical concerns. These results provide support to the view that teachers are positive towards the intentions of inclusive education. Teacher attitudes towards inclusive education and inclusive practices have been investigated in numerous studies over the past 2 decades (e.g., Clipa et al., 2020; Goddard & Evans, 2018; Sharma et al., 2015). However, none of the prior literature focused on teacher attitudes towards inclusive education through the lens of the UDL framework. The following possible explanations for Australian teacher attitudes towards the UDL framework were drawn from previous studies examining inclusive education and inclusive practices.

An explanation for the generally positive Australian teacher attitudes towards the UDL framework could be through the focus of differing policy and legislation. The Australian Curriculum promotes education for all and provides an illustration of how the curriculum can be used to design learning opportunities for all students; it specifically mentions the UDL framework in one learning area (i.e., the Health and Physical Education curriculum; ACARA, 2012). To develop inclusive education, the right of all students, including students with disabilities, to equitable access and participation in the Australian Curriculum is safeguarded by legislation (e.g., Disability Discrimination Act 1992 and associated Disability Standards for Education 2005). With the increasing prioritisation of personalised learning and adjustments in recent years, utilising the UDL framework has been suggested to be inclusive of student diversity (Price & Slee, 2021; Rao & Meo, 2016). Hence, teacher attitudes towards the UDL framework may be more positive as a result of progressive legislation and a welcoming environment to use the framework in Australia.

A second possible explanation for teacher attitudes might be related to teacher preparation. The UDL framework as a critical professional preservice teacher training concept has been embedded in compulsory units of study in special and inclusive education in New South Wales (Forlin et al., 2013). Establishing preservice teachers' teaching philosophy through the lens of the UDL framework is helpful to remove educational barriers for diverse students (Meyer et al., 2014). Subban and Mahlo (2017) found that the attitudes of teachers who had undertaken preparation in the field of inclusive education were generally more positive than those who had not undertaken any form of preparation. Teachers who are better prepared to use the UDL framework may hold more positive attitudes and be more willing to implement the framework throughout their teaching careers. In the current study, the majority of the Australian teachers had completed professional learning workshops or seminars about special and inclusive education. This further supported the result of generally positive teacher attitudes towards the UDL framework in Australia.

Another possible explanation for the teacher attitudes may be their high level of self-efficacy when using the UDL framework. Teachers with positive attitudes towards an inclusive framework, such as the UDL framework, held high levels of self-efficacy towards inclusive education (Sharma et al., 2015). Teachers with high levels of self-efficacy in utilising inclusive practices were more willing to include students with disabilities in their classes and make positive instructional changes. This was consistent with other research, which found that teachers' expressed self-efficacy is an important factor affecting teacher attitudes towards inclusive practices (e.g., Malinen, 2013; Savolainen et al., 2012; Yada & Savolainen, 2017).

The impact of exposure to persons with disabilities on teacher attitudes towards the UDL framework should also be noted. It has been suggested that teachers who have social contact with persons with disabilities tend to hold a more positive attitude towards the inclusion of students with disabilities in their classes than those who have had no exposure (Yada et al., 2018). In the current study, most participants had previously been in contact with persons with disabilities. The high level of previous exposure to persons with disabilities contributed to the overall positive teacher attitudes of the 120 secondary teachers in Sydney.

Based upon the survey results in the current study, some practical concerns of teachers in implementing the UDL framework should also be noted. For example, the majority of teachers believed that providing every student with textbooks during learning sessions is of vital importance. However, a core idea of UDL Principle 2 is to provide multiple formats, such as video or digital images, to represent learning concepts rather than merely written textbooks. Teachers who hold inflexible ideas about how to represent learning objects may pose barriers to students' access and participation in education (Evans, 2020). For UDL Principle 1, empowering students to make choices or suggest alternatives in learning activities is imperative; however, complete autonomy cannot be suggested. Further, almost half of the teachers proposed keeping the complexity of learning activities constant for students. Nevertheless, varying the degree of difficulty or complexity within learning activities is a requirement in the UDL framework checkpoints to optimise challenge.

In addition to examining Australian teacher attitudes towards the UDL framework, the associations between teacher attitudes and three demographic variables (i.e., gender, years of teaching experience, and previous exposure to persons with disabilities) were also examined in the current study. The results showed that only gender had a small and nonsignificant correlation with teacher attitudes towards the UDL framework. Although none of the previous studies examined the relationship between gender and teacher attitudes towards the UDL framework, the result of the current study corroborates those of previous studies that indicate that female teachers generally have more positive attitudes towards inclusive education than male teachers (e.g., Navarro-Mateu et al., 2019; Specht et al., 2016; Subban & Mahlo, 2017). Given the imbalance in the male–female ratio in this study, the explanation of this finding needs further investigation or is best inferred from the higher tolerance of women towards addressing diversity (Butakor et al., 2020). However, the results of this study failed to show teachers' years of teaching experience and their previous exposure to persons with disabilities as related to their attitudes towards the UDL framework. In combination, the study has shown that gender, years of teaching experience, and previous exposure to persons with disabilities were not statistically significant predictors of secondary school teacher attitudes towards the UDL framework.

### **Limitations and Implications**

Due to the limited recruitment time, COVID-19 restrictions, and the difficulty experienced recruiting participants, conclusions drawn from the study were bounded by the limited sample size. This study is small in scale and thus the conclusions drawn cannot be generalised beyond the Australian sample analysed. Further research is needed to determine the extent to which the results could be transferred in other circumstances. Also, there were limitations around the survey itself. For the demographic survey, the differences in teacher attitudes towards the UDL framework between public and private schools remain unknown because the demographic questions did not address the types of educational

sectors. For the UDL Framework Scale, all the reversed questions obtained relatively lower mean values compared to the neutral midpoint. This indicated that some of the scale items may need to be revised. For example, 'use learning strategies' in Item 10 could be reinterpreted as 'create step-by-step personalised action plans for learning tasks' for clarification purposes in future research.

As discussed in the introduction, examining teacher attitudes towards inclusive education and inclusive practices continues to be the most important construct in the efforts to establish inclusive educational contexts. The current study contributes to a more comprehensive understanding of teacher attitudes towards the UDL framework and provides insight into how to develop teacher training for implementing the inclusive pedagogical framework. Based on the current research finding, Australian secondary school teachers held positive attitudes towards the UDL framework; however, they still had some practical concerns about how to implement the UDL framework. School administrators may need to consider providing professional development training and supporting resources pertaining to UDL implementation in mainstream classrooms. The professional development training should be customised to fit teachers' personal needs at a specific career stage (Yada et al., 2018). Both pre- and in-service teachers should be encouraged to participate in seminars, training activities and workshops, and to read relevant books to develop their knowledge and skills in implementing the UDL framework in their classes.

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