

Engaging potential: Using the UDL principle of engagement to motivate year 7-8 learners with autism in writing tasks

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ABSTRACT

Universal Design for Learning (UDL) is a research-based theoretical framework that can be used to design teaching and learning opportunities that are more responsive to the variability of student need in any classroom, although a vast number of teachers appear to know nothing about UDL. One population whose needs are becoming increasingly visible in classrooms are autistic learners. This article examines a process of facilitating teacher professional learning in UDL using a slideshow resource the author designed to support teachers to plan for the needs of their autistic learners in writing. The context for the inquiry was an autistic boy at a New Zealand intermediate school. Analysis showed that planning that involves understanding of an autistic learner's characteristics, and the potential barriers these may present, can improve engagement not only for these students, but also other students and the teacher. It was shown through the process used that teacher professional development in UDL is appropriate for meeting many learning needs in the classroom context.

KEYWORDS

Autism, tier 2, engagement, Universal Design for Learning (UDL)

Background

As a Learning Support Coordinator (LSC), I attended a Universal Design for Learning (UDL) workshop and was surprised to discover not only how few people knew of the UDL framework, but how often it is mistaken for just good teaching (Carrington et al., 2020; Edyburn, 2010). As part of the LSC role is to empower teachers to confidently meet more tier-two needs in the classroom (Ministry of Education, 2020), UDL is a valuable tool in my kete. Tier-two learners include those students with moderate learning and/or behaviour needs who benefit from targeted, additional support (Figure 1).

Building teacher capability and confidence with these learners is important because it has significant influence on student learning and achievement (Hattie, 2003). Many autistic characteristics can

present tier-two challenges in the classroom, and UDL has the potential to be an appropriate tool for teachers to design quality learning opportunities to realise these learners' potential. As I observed autistic learners in various classroom writing programmes, I wondered how the UDL principle of engagement might be used to motivate year 7-8 learners with autism in writing tasks.

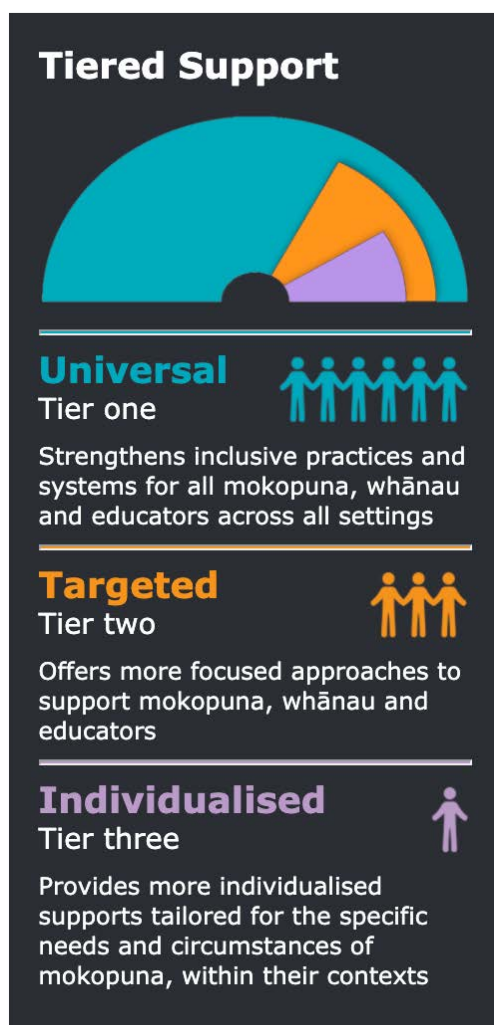


Figure 1. Tiered Support Model (Ministry of Education, n.d.) which has since been replaced by Te Tūāpapa (Ministry of Education, 2022)

Two key concepts

Universal Design for Learning

Inspired by the 1960s international universal design movement in architecture, UDL fosters inclusion by removing barriers and creating greater access to teaching and learning for all students. UDL involves a critical reflection and planning process to identify appropriate scaffolds and supports for target students, which are then made available to all. For example, a video clip may be shared with participants to refer back to after an instructional maths lesson that supports a student's short-term

memory limitations. Such an approach has been found to benefit not only targeted students, but also other students and the teacher (Ministry of Education, n.d.).

UDL comprises three interwoven principles comprising ways to engage students, present information, and have them demonstrate understanding. Each principle is underpinned by its own guidelines and checkpoints. The first guideline in the principle of engagement, for example, focuses on generating motivation toward a goal of growing expert learners who are purposeful and motivated (Figure 2). Three checkpoints then elaborate on this guideline: optimising choice and autonomy; value, relevance, and authenticity; and minimising threats and distractions (CAST, 2018). All three checkpoints need to be understood in the context of autism if planning using UDL is to realise potential for these learners.

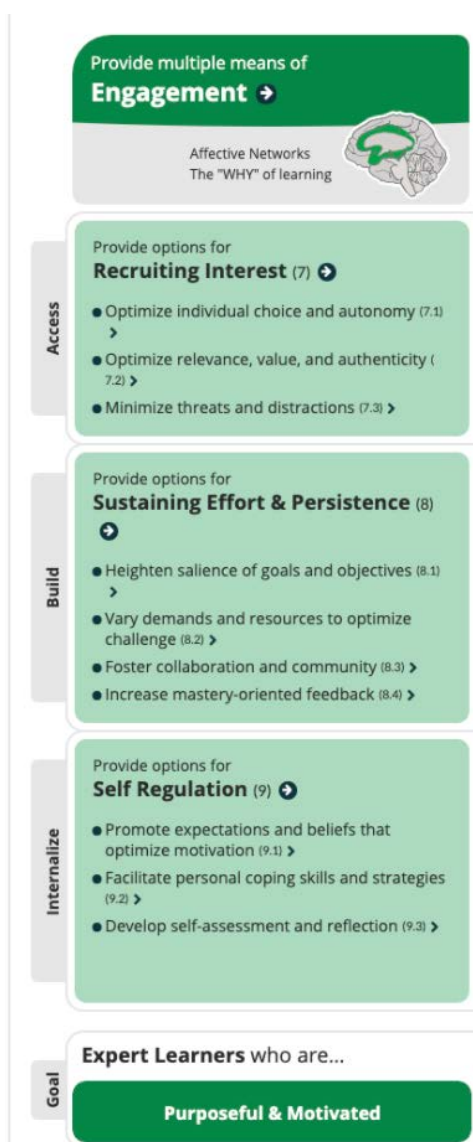


Figure 2. UDL Principle of Engagement (Ministry of Education. n.d.)

Autism

Autism describes a collection of core traits that present challenges in social skills, verbal and non-verbal communication, and engagement in repetitive, restricted interests and behaviours (New Zealand Guidelines Group, 2010). Sensory sensitivity typically accompanies autism, which describes increased and/or decreased responses to stimuli coming in through the range of senses. Autism is a lifelong condition that is more or less obvious depending on the demands of the environment (Table 1) (Bevan-Brown & Dharan, 2016). For example, barriers to motivation in writing may include challenges related to readers' perspectives and their own often concrete, linear thinking (Tomlinson & Newman, 2017). While concrete thinking may be a strength when writing a report, it can be a barrier in creating imagery in narrative writing.

Table 1. Typical strengths and needs of autistic individuals (Smith, 2021).

<p>Visual learners; Miss key detail and focus on less relevant information; Intense focus, may have difficulty shifting focus; Lack of motivation for things outside of interests/strengths; Selective attention; Adherence to routines, rules or rituals; Difficulty understanding and using verbal and/or non-verbal communication; Honest and reliable; Difficulty understanding social behaviour; Struggling to think and behave flexibly; Overstimulated by certain types of sensory input; Concrete thinker; Drive for perfection and order; Particular, sometimes restricted, interests pursued with intensity and focus; Difficulty understanding expectations; Difficulty breaking down information; Executive functioning difficulties; May need extra processing time (particularly as cognitive load increases); Take information and instructions literally; and Need time to settle into new instructions and/or settings.</p>

Both the social and sensory demands of group work can create threats and distractions that also inhibit motivation for autistic students. In order to realise these students' potential, teachers need to critically reflect on any potential barriers and enablers these learners may face in a learning task as a result of their autistic traits. Appropriate supports and scaffolds can then be created. Good design starts with really knowing the learner.

Autistic learners as a population are becoming increasingly visible in classrooms (Autism NZ, personal communication, 2020, November 10; Bevan-Brown & Dharan, 2016). As a spectrum, the core traits of social communication, repetitive and restrictive behaviours, and sensory needs will present with varying degrees of challenge across time and space. There may well be autistic learners unknown to their teacher in every classroom. Estimates suggest that New Zealand teachers have at least 1-2 autistic learners, either diagnosed or undiagnosed, in their classes each year (Autism NZ, personal communication, 2020, November 10). A design approach that makes supports and scaffolds universally available develops student potential in a more inclusive way (Ministry of Education, 2007; Ministries of Health and Education, 2016).

Drawing from the three circles of evidence

Practice that is evidentially grounded finds innovation in the intersection of contributing knowledge bases. Thus, gathering knowledge from diverse perspectives should be valued. An Evidence-based practice framework, Macfarlane's *He Ritenga Whaimōhio* (2012), was used in this research in order to design culturally responsive practice towards motivating year 7-8 learners with autism in writing tasks. Drawing from three circles of evidence appropriate to a New Zealand context, knowledge was gathered from research (Tika), practitioner knowledge and skill (Pono), and the learners' expertise (Aroha).

Tika: What does research say?

Martin-Kniep (as cited in Bray, 2019) reinforces that engagement is a worthwhile principle to focus on, as it has been found to be a strong predictor of both learner performance and behaviour. The use of UDL to improve access to writing and using UDL with autistic learners are both discussed in international research. As UDL is still relatively new, however, there is not yet any evidence-based research that has explored how the UDL principle of engagement has been used to motivate autistic learners in writing (Tomlinson & Newman, 2017). As motivation is a gateway to engagement (Hall et al., 2012), the scope of this professional development resource focuses on improving motivation for autistic learners through utilising individual choice, increasing value and relevance, and minimising threats and distractions.

The challenges of motivating autistic learners in classroom writing tasks are discussed in the literature (Denning & Moody, 2013; Mancil & Pearl, 2008). Across the field of autism, enhancing choice, value, and relevancy, while minimising threats/distractions, are all discussed as motivational challenges for these students (Baglieri, 2020; Carrington et al., 2020; Denning & Moody, 2013; Tomlinson & Newman, 2017). Choice can be incorporated using a learner's special interests; value can be reinforced through explicit routines and structure; visual strengths can be utilised through schedules and visuals to demonstrate relevance; and priming can minimise the distraction of what to attend to. Such inclusionary approaches align with our value of strengths-based, child-centred education in New Zealand (Ministry of Education, 2007; Ministries of Health and Education, 2016).

Pono: What does practitioner knowledge and skill say?

Although UDL is suited to our NZ context, it is not yet widely utilised (C. Butler, personal communication, 2021, February 10). Barriers to its implementation may lie in our perceptions of both UDL and autism. From interviews I undertook with a sample of New Zealand teachers, it appears that UDL is viewed largely as an idea rather than a framework. This may mean that some educators see UDL as a reflection of the innate skills of expert teachers rather than a deliberate design process of critical reflection and planning. Not understanding the typical strengths and challenges of the autistic population compounds further misunderstanding. Interview results highlighted a diverse understanding about the nature of autism. How can we plan for these students if we do not understand how their core characteristics create challenges and strengths? Thus, realising potential requires good design.

UDL's design can reliably improve access to learning for all students. One teacher's discovery in the interview illustrates this point. As she spoke of the challenges motivating her autistic learners, she suddenly identified a potential barrier an autistic learner may face in writing:

Writing is harder (than maths or reading) as there is no one answer or scaffold. [As a writer] you have to come up with your own ideas from scratch rather than follow a formula or refer back to a text. (Teacher)

Although this teacher knew her autistic learners well, it was through a deliberate reflective process that she connected the significance of rules and structure for these learners to the context of writing. Therefore, a slideshow resource that scaffolds a deliberate reflective planning process could empower teachers to more reliably design for the variability in their classrooms.

Aroha: What do students and whānau say?

A sample of year 7-8 autistic learners were interviewed. Questions focused on understanding the students' classroom writing experiences, motivations, enablers, and barriers. Although only a few enablers were touched on, a number of barriers to motivation in classroom writing were identified. These barriers are the focus of my discussion because of the implication they have for resource planning. First, to avoid the stress of generating new ideas, these students tend to write about the same things. Articulating their thinking added to this stress. Like many autistic learners, it appears that these participants tended to think in pictures, which then needed to be translated into words the reader can understand (Tomlinson & Newman, 2017).

Connecting with the reader created a second barrier for these autistic learners. Tomlinson and Newman (2017) discuss how writers typically draw from experience to connect with their audience. It is suggested that autistic writers struggle to relate to their audience because they have difficulty communicating their unique inner experiences, for which there appear to be no words. Additionally, autistic individuals typically struggle to understand another person's perspective. This challenge is described as 'Theory of Mind' (TOM). So, writing for others may then be demotivating for autistic people because of the potential difficulty of placing themselves in the shoes of their intended audience.

Thirdly, what was enabling for the students interviewed was how a genre's structure, writing process, and spelling rules helped to make some elements of writing predictable. Adherence to rules, however, also created a barrier to accessing supports and scaffolds. For example, although supports such as speech-to-text, timers, digital devices, and visuals were freely available to these participants, they did not access them because they did not explicitly know how or when to use them. Similarly, the need for rules and structure was a barrier to utilising choice. Although choice was available to them, too much choice was overwhelming.

Misunderstanding created a fourth barrier that illustrates the need for autistic learners to find value and relevance in writing. In a survey I undertook with whānau, some of whom were autistic themselves, they described how autistic learners misunderstanding the challenges led to limited motivation to write. Because of the nature of their autism, these students needed steps broken down, as well as clear and thorough expectations, logical writing themes, and purpose. When these elements were not made clear to them, motivation became solely a matter of individual choice of whether or not to engage in the writing task.

The heterogeneity of autism was clear from this survey. Autism is a spectrum. What works for one child in one context will not necessarily work in another, or for another autistic learner. This highlights the need for a reliable, student-centred design to planning that starts with the teacher.

Resource development and implementation

Teacher professional learning is shown to have a significant effect on student achievement (Timperley et al., 2007). Just as supports and scaffolds create greater access to learning for students, so too a specifically designed slideshow resource could provide a scaffold for teachers to clarify key concepts about both UDL and autism. As a Learning Support Coordinator, I find that providing professional development using a resource like this supports sustainable change because teachers can refer back to it. From the evidence, it is clear that such a slideshow must first create a clear understanding of UDL as a reflective design process that removes barriers to engagement, representation of learning, and demonstration of understanding. Secondly, it must guide the participant through an explicit process of identifying both potential barriers and strengths for their target students, and design accommodations and scaffolds that are made universally available. In this slideshow resource, that meant establishing a solid understanding of how the core characteristics of autism both positively and negatively affect motivational elements of choice, value, relevance, and threats/distractions in writing.

During this inquiry, I met with a teacher for a professional learning session that spanned forty-five minutes. The slideshow was used as a vehicle to introduce and discuss key concepts. First, the slideshow outlined the concept of inclusion from a UDL position of focusing on barriers (Figure 3). The discussion that ensued about the role of the environment in creating barriers allowed me to gauge understanding of UDL before moving forward. A short YouTube clip (SSHRC, 2016) building on this approach to inclusive practice was then presented and discussed. This clip uses a bowling analogy, where aiming for those who need the most support creates a domino effect that benefits

all. This analogy set the scene for introducing UDL's three principles, engagement being the one we concentrated on. We then discussed the guidelines and checkpoints that raise interest; motivational elements of individual choice; and value, relevance, and threats and distractions.

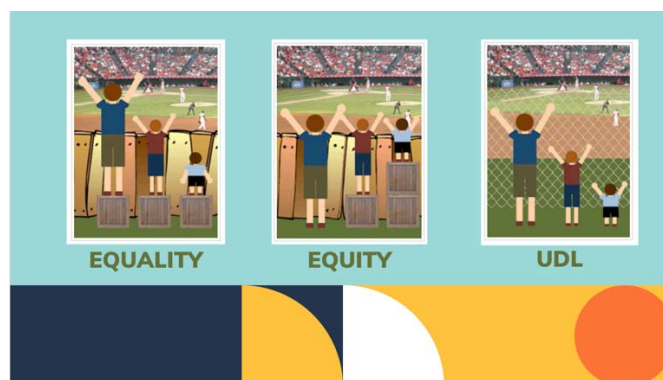


Figure 3. Slide 2: Equality versus equity versus UDL

Once a general understanding of UDL as both a concept and a framework was established, the professional learning then concentrated on the typical strengths and needs of autistic learners in writing. In order to be able to prepare for the upcoming critical reflection and planning phase, the four motivational elements making up the guidelines in checkpoint one were used as prompts to identify autistic traits that may present as barriers or strengths in the context of writing (Figure 4). This allowed the teacher to identify whether particular characteristics in a target autistic learner were more or less impactful on the upcoming lesson.

With a clear understanding of both UDL and the needs and strengths of the target autistic learner, the process of planning a writing lesson began. The slideshow was used to work through five reflective questions together:

1. What are the skills and concepts that I want my students to master by doing this task? How can they demonstrate these in varied ways?
 2. What are some potential barriers for autistic learners in this activity?
 3. How can I increase choice, value, and purpose, and minimise threats and distractions?
 4. What resources, materials, and tools can be used to provide multiple means to engage with this content?
 5. How will we know what success looks like for all learners?
- (Adapted from TIES Centre, 2021).

First - what do we need to know about autistic learners?

Individual choice

- highly motivating but easily overwhelmed by too many choices
- drive for perfection and order
- difficulty breaking down information

Value

- intense focus, may have difficulty shifting focus
- selective attention
- concrete, logical, and linear thinking
- challenges with thinking and behaving flexibly
- difficulty generalising

Relevance

- motivated by own interests
- strength in visual processing
- challenges with Theory of Mind
- challenges understanding social behaviour
- may miss key details and focus in irrelevant information
- difficulties learning new rules and strategies
- difficulty understanding expectations

Minimising threats and distractions

- extra processing time (particularly as cognitive load increases)
- need for routines and structure
- higher potential for sensory overload
- challenges with social demands
- increase in repetitive, restricted behaviours often reflects the above needs

(Baglieri, 2020; Carrington et al., 2020; Denning & Moody, 2013; Mancil & Pearl, 2008; Tomlinson & Newman, 2017).

Figure 4. Slides 9 & 10: Strengths and needs of autistic learners in writing

The Lesson

The writing lesson at the centre of this inquiry was aimed at teaching skills in constructing ‘red, white and blue sentences’ (Hunter, 2021). The underlying concept of this task was an understanding of the serial comma rule. In a sentence containing three or more elements, each is separated by a comma with the last comma coming before a conjunction that joins the last two elements. Usually, a lesson teaching a new sentence type for this class would include a short video explaining the sentence structure, some sentences co-constructed by the class, and then individual practice by students in their writing books.

As both idea generation and recording were barriers for this teacher’s target student, sentence construction was made less threatening through the option of physically constructing red, white, and blue sentences (Figure 5). To tap into this student’s interest in trains, a visual including a train engine and carriages was created to represent sentence parts. This train sentence analogy was already familiar to the students through the Write That Essay programme (Hunter, 2021), where the engine contains the subject beginning, and each carriage has an additional idea that relates to the subject. The serial comma was exaggerated to draw attention to its purpose. Humour was also utilised as a motivational hook to add value and choice as students constructed silly sentences using a selection of subjects and related ideas.

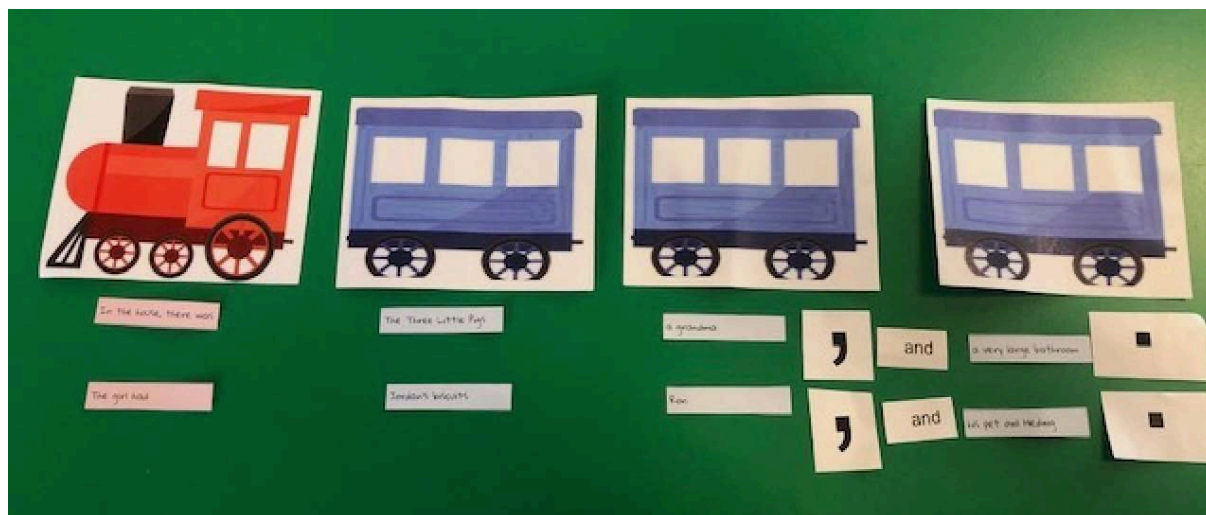


Figure 5. Red, white, and blue sentences

Best evidence in resource design

Best Evidence Synthesis (BES) of teacher professional learning and development (Timperley et al., 2007) outlines the context, content, activities, and processes that demonstrate educational best practice. In regards to evidence-based activities, Timperley et al. (2007) found that professional learning needs to engage participants in multiple, connected opportunities that support them to 'learn and apply new understandings and skills'. This slideshow resource and related professional learning activities included a number of BES features.

First, there was a clear connection between the learning goals and activities. The importance of understanding UDL theory and the nature of autism were the main drivers of the resource. Second, the professional learning activities provided diverse ways of understanding these concepts. These activities included the third feature – using the best vehicles, which in this instance included clear static images, video, text, discussion, critical reflection, and personalised planning. Fourth, these activities were sequenced to unpack the concept of barriers using the fifth feature of regular discussion opportunities and negotiation of this concept. As a result, this professional learning process, through the support of a slideshow resource, increased the potential for the teacher to develop new theories about inclusion from a student-centred perspective (Timperley et al., 2007).

Evaluation of a universally designed lesson

Evaluation of UDL must include measures of both primary and secondary impacts (Edyburn, 2010; King-Sears et al., 2015, as cited in Baglieri, 2020). Primary impacts focus on the target student(s), whereas secondary impacts identify others who may benefit, such as other students and/or the teacher. In order to measure the primary impact of UDL on student engagement in this writing lesson, time sampling of the target autistic student using a 1-5 engagement scale was undertaken, both prior to implementation and during the UDL lesson, by the same person. Indicators used were:

1. Completely off task;
2. Little evidence of engagement, e.g., daydreaming;
3. Somewhat engaged;
4. Mostly engaged; and
5. Completely engaged with the task.

Engagement indicators were observed in one-minute intervals. Totals for each indicator were converted into percentages, representing total time either ‘completely-mostly engaged’ (total of indicators 4 and 5), and ‘somewhat engaged’ (indicator 3) (Table 2). It is clear to see that in this instance the use of a simple visual scaffold that removed the threat of idea generation and recording, and instead utilised choice, interests, and value, created an overwhelmingly positive impact for this learner.

Table 2. Student engagement levels pre/post UDL

	Non UDL lesson			UDL lesson		
	Somewhat engaged	Mostly/completely engaged	Total engagement	Somewhat engaged	Mostly/completely engaged	Total engagement
Child A	33%	19%	52%	7.5%	85%	92.5%

In order to measure secondary impacts, a 1-10 Likert Scale was completed by all 30 students in the class following the UDL writing lesson, evaluating to what degree the train visual scaffold had helped them to demonstrate their ability to create a sentence using serial commas. For example, a ‘1’ indicated the student felt confused, ‘5’ indicated that they thought they wrote a red, white, and blue sentence, and ‘10’ indicated that they were confident that they created a good example of this sentence type. Students could place themselves anywhere between numbers one and ten. All students chose to use the train visual in the lesson. Eighty percent of them reported that they felt some level of confidence (score > 7) as a result.

An additional evaluative measure on secondary impact captured student preference for the two available scaffolds. This exercise consisted of two voting options - one for the video clip explanation, which had also been shown to the class, and one for the train manipulative. Each child was issued with two counters to vote for either, neither, or both scaffolds. All students voted. Two students indicated that both scaffolds helped them to achieve independence in this writing task; one student identified only the video clip as beneficial; and 29 identified only the train manipulative as useful. The wider positive impact on the class was clear: what was designed for one target student in fact benefited them as well. Of particular significance were the inclusive relational outcomes this universally designed lesson facilitated. To increase motivation using humour, sentence parts were carefully designed using students as characters. As sentence creations were shared, the look of pride and sense of belonging on some of these students’ faces was priceless, and other students made inclusionary comments following the reading of these sentences.

The impact on the teacher was also positive. She was excited by the motivation of the target student who was “more engaged on their own”. The student’s work was completed mostly independently, before initiating on-task dialogue with a peer, and engaging in the sharing process. The teacher also noted that her attention was freed up to engage with a wider range of students throughout this lesson. Extra time, and the humour the unique contexts of the sentences sparked, facilitated relationship-building with many students. This was seen as an enabler to planning the use of UDL. A barrier, however, was the time taken to create the train resource, which could be seen as a negative factor that might make the process unsustainable. It was, however, discussed how, as this resource could be used as an independent follow up activity, and parts of it could be utilised for other lessons across subject areas, initial time outlay can often be offset by the useability of a well-designed resource.

The teacher in this research felt that overall, her understanding of this autistic learner’s enablers and barriers in relation to the academic demands of writing had deepened her capabilities. facilitated greater analysis of her teaching, and of her student’s learning, through the lens of the student’s potential. As a result, there was a measurable improvement in the student’s motivation for writing, and both engagement and work output were noticeably higher. It was empowering for her as a teacher to be able to maximise a struggling learner’s strengths, and support the student’s needs, in such a simple and inclusive way. The positive impact on other students’ motivation and engagement was also noted as adding to the value of approaching planning in this way. Being able to plan for diversity with inclusive approaches offered confidence for this already expert practitioner to cater for the many learning needs in her classroom (Hattie, 2003).

Conclusion

The challenge of planning to meet the diversity of tier-two learner needs in New Zealand classrooms will only continue to grow. Good design understands variability while reliably planning to develop the potential of all learners. Facilitating professional development for educators using a slideshow format was successful because it facilitated evidence-based teaching activities following an inquiry and knowledge-building cycle. New understandings and problematic beliefs could be processed in a supportive environment that translated theory into practice, grounded in three circles of evidence: research, practitioner experience and expertise, and whānau and student perspectives. This professional learning approach increased teacher self-efficacy to meet the variability of needs in her class.

My research focused on a small sample population. Its results show promise for increasing engagement in writing for autistic learners. Further research with a larger sample group would be a valid next step towards better understanding the influence of professional development in planning using UDL on building teacher confidence and capability. What feedback a larger teacher sample might present, and how this professional development approach might influence teaching and learning across the different education sectors and mediums could be explored. This research ultimately shows promise for UDL facilitating increased engagement, not only for students needing additional learning support, but also for many other students in our classrooms. Importantly, these

results suggest that further research into the impact of UDL-focused professional development to achieve improved outcomes for other learning support populations, and in other learning areas, is a worthwhile consideration. For me, this professional development resource is now a staple in my kete for empowering teachers to confidently plan for the diverse learning needs in their classrooms. After an initial professional development session, teachers have the capability to plan more inclusive teaching strategies independently by referring back to the slideshow resource as a reflection and planning guide.

This scaffolded slideshow got to the heart of both UDL and the nature of autism in order to foster inclusive practice. From this position, appropriate supports and scaffolds were effectively designed through critical reflection about students' potential barriers and strengths. The inquiry led to increased student engagement through attending to: choice, value, relevance, and minimising threats and distractions for autistic learners in writing. This inquiry process demonstrates that UDL merits consideration as a contextual fit for New Zealand education's inclusive values, not only for autistic learners in the regular classroom, but for many other learning needs as well.

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