



Create corresponding learning adaptations using Universal Design for Learning

Universal Design for Learning

Universal Design for learning is based on principle of Universal Design in Architecture. When an architect is designing a building, he/she does not wait for someone in a wheelchair to try to access the building before installing a ramp. Rather, the architect anticipates that someone in a wheelchair will need to access the building and includes the ramp in the original design. Universal design works the same way in the classroom - rather than make adjustments as problems arise in the lesson, the teacher anticipates these problems and incorporates modifications into the curriculum from the outset.

The goal of UDL is to help all students to learn and achieve the most they possibly can and that students should not all be forced to fit into the mould of a single, inflexible curriculum. Education should be adjusted in order to accommodate all students and must embrace student differences. Individual students learn in different ways, and that each student needs to be given the opportunities to learn in ways that work best for him/her and are at an appropriate level.

It should be noted that Universal Design does not remove academic challenges; it removes barriers to access. Teachers are challenged to teach all kinds of learners to high standards, yet a single classroom may include students who struggle to learn for any number of reasons. CAST is a nonprofit education research and development organisation that works to expand learning opportunities for all individuals through Universal Design for Learning which defines the principles of UDL below.

The Three Principals of UDL

Three primary principles, which are based on neuroscience research, guide UDL and provide the underlying framework for the Guidelines (CAST, 2011):

- Provide multiple means of presentation.

This is how we gather facts, to categorize what we see, hear and read, termed the 'what' of learning, in response to Recognition Networks. In the classroom this means students have access to various presentations of the materials – auditory visual tactile kinaesthetic best suited to how they learn. In developing an app the multiple means of presentation of the learning materials is important. The student can choose a modality or modalities best suited to his or her learning. In thinking about the multiple means of representation we think about perceptions, language, symbols and comprehension or mode of comprehension of the students.

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- Provide multiple means of action and expression.

This is response to Strategic Networks – the ‘how’ of learning. This is how we plan and perform tasks, how we organise and express ideas. Writing an essay or solving a maths problem is an example of strategic learning. In the classroom this means that the students can engage with the learning material and interact with it – they can draw ideas, tape a list of ideas, make a project, design an art piece fill in a worksheet, write an essay etc. In designing an app we can think about a physical action, an expressive skill and fluency and executive function using audio image and text.

- Provide multiple means of engagement

This is in response to Affective learning – the ‘why’ of learning. How learners are engaged and motivated in learning and how they are excited, challenged and interested in learning. In a classroom this is about making it relevant and using examples that mean something to the students. Theoretical models related to providing achievable challenges in learning include stretch zones (Barab, 2005, Tal-Shahur, 2007) and the concept of ‘flow’ theory in task engagement (as previously discussed in the App document)(Shernoff et al., 2003).

The concept of UDL is the intersection where all our initiatives (multi sensory teaching multiple intelligences, differentiated instruction, use of computers, performance based assessment meet.

Principal 1: Provide Multiple Means of Representation	Application
<ul style="list-style-type: none"> • Learners differ in the ways that they perceive and comprehend information that is presented to them. • For example, those with sensory disabilities (e.g., blindness or deafness); learning disabilities (e.g., dyslexia); language or cultural differences, and so forth may all require different ways of 	<p>Provide options for comprehension</p> <ul style="list-style-type: none"> • Activate or supply background knowledge • Guide information processing, visualisation and manipulation • Maximise transfer and generalization <p>Provide options for language, mathematical expressions and symbols</p> <ul style="list-style-type: none"> • Clarify vocabulary and symbols

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<p>approaching content. Others may simply grasp information quicker or more efficiently through visual or auditory means rather than printed text.</p> <ul style="list-style-type: none"> Learning, and transfer of learning, occurs when multiple representations are used, because it allows students to make connections within, as well as between, concepts. 	<ul style="list-style-type: none"> Clarify syntax and structure Support decoding text, mathematical notation, and symbols The font used for print materials Promote understanding across languages Illustrate through multiple media <p>Provide options for perception</p> <ul style="list-style-type: none"> Offer ways of customizing the display of information Offer alternatives for auditory information Offer alternatives for visual information
<p>Principle 2: Provide Multiple means of Action and Expression - The how of learning</p>	<p>Application</p>
<ul style="list-style-type: none"> Learners differ in the ways that they can navigate a learning environment and express what they know. For example, individuals with significant movement impairments (e.g., cerebral palsy), those who struggle with strategic and organizational abilities (executive function disorders), those who have language barriers, and so forth approach learning tasks very differently. Some may be able to express themselves well in written text but not speech, and vice versa. It should also be recognized that action and expression require a great deal of strategy, practice, and organization. 	<p>Provide options for executive functions</p> <ul style="list-style-type: none"> Guide appropriate goal-setting Support planning and strategy development Enhance capacity for monitoring progress <p>Provide options for expression and communication</p> <ul style="list-style-type: none"> Use multiple media for communication Use multiple tools for construction and composition Build fluencies with graduated levels of support for practise and performance <p>Provide options for physical action</p> <ul style="list-style-type: none"> Vary the methods for response and navigation Optimise access to tools and assistive technologies
<p>Principle 3: Provide Multiple Means of Engagement</p>	<p>Application</p>
<ul style="list-style-type: none"> Learners differ markedly in the ways in which they can be engaged or motivated 	<p>Provide options for self-regulation</p> <ul style="list-style-type: none"> Promote expectations and beliefs that

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<p>to learn.</p> <ul style="list-style-type: none"> • There are a variety of sources that can influence individual variation in affect including neurology, culture, personal relevance, subjectivity, and background knowledge, along with a variety of other factors presented in these guidelines. • Some learners are highly engaged by spontaneity and novelty while other are disengaged, even frightened, by those aspects, preferring strict routine. Some learners might like to work alone, while others prefer to work with their peers. 	<p>optimise motivation</p> <ul style="list-style-type: none"> • Facilitate personal coping skills and strategies • Develop self-assessment and reflection <p>Provide options for sustaining effort and persistence</p> <ul style="list-style-type: none"> • Heighten salience of goals and objectives • Vary demands and resources to optimise challenge • Foster collaboration and community • Increase mastery-oriented feedback <p>Provide options for recruiting and interest</p> <ul style="list-style-type: none"> • Optimise individual choice and autonomy • Optimise relevance, value and authenticity • Minimise threats and distractions
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Taken from the National Centre for Universal Design and Learning website http://www.udlcenter.org/aboutudl/udlguidelines_theorypractice

NOTE: After thirty years of research around the world, it is now clear that the presence of students with disabilities does not negatively impact the learning of others (Katz, 2013). Students who have been part of an effectively inclusive classroom display better communication and leadership skills, have a more positive attitude to diversity and some also demonstrate stronger literacy and numeracy skills to those in non-inclusive classrooms (Bunch & Valeo, 2004; Cole & Waldron, 2002; Kalambouka, Farrell, Dyson, & Kaplan, 2007).

Universal Design and Learning

The movement to universal design and learning stems from the restraints of the curriculum, which many teachers feel their role has been reduced to raising student exam results on separate tests. Carol Tomlinson, an advocate and researcher in Education believes that teachers feel they are torn in their roles of educators. They must attend to student differences, yet they are also required to have each student become competent in each subject matter prepare the students to be examined in the same way.

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Tomlinson promotes differentiation instruction in the classroom, which first requires an understanding from the educator that each learner varies in their readiness, interests and learning profiles. Differentiation and UDL share the same goals to help all students learn what they can, and to not force them to fit into the mould of the typical curriculum.

The approaches differ in that Differentiation focuses on continuous assessment, which make the basis for many instructional decisions. The key difference here is to be constantly assessing students, determining needs and then adjusting curriculum until those needs are met.

In UDL, the approach differs as the teacher pre-empts problems and makes modifications to the curriculum from the outset.

As previously discussed, neuroscience research has identified different areas of the brain which taps into different areas of learning that use both cognitive and affective processes. Emotions control a variety of academic precursors such as memory and attention (Ohman, Flykt & Esteves, 2001, Phelps, 2004). Therefore the student needs to feel safe and protected in their learning environment. The Three Block model expands the traditional research of Universal Design from technology and differentiation to explore both the social and academic practices of the classroom (Katz, 2012a).

Block 1 - Social and Emotional Learning

This involves building compassionate learning environments in which all students feel safe, valued and have a sense of belonging. The Respecting Diversity Programme involves 8 lessons that introduce students to their own and others learning profiles. It is intended to foster student's self concept, respect for the diversity of others and an inclusive classroom environment.

Block 2 – Inclusive Instructional Practise

Physical and instructional environments are designed so that students have access to differentiated learning opportunities in order to address their particular learning modes. Essential teachings of curricula are identified and inquiry activities which promote higher order thinking are planned. Course materials are differentiated in terms of complexity, methods of acquiring knowledge and strategies for demonstrating understanding. Regular feedback and assessment is ongoing.

Block 3 – Systems and Structures

Policy, divisional, implementation requirements, and school-based service delivery models are outlined. The Three-Block-Model of UDL links framework such as RTI and Co-Teaching, School Turnaround and research on effective inclusive education practises in one framework for 21st century education.

Teachers are not be expected to cater for all needs of students within the classroom through the process of UDL, but to cater for as many needs as possible through various resources / technologies which will be discussed.



How does this apply to the ALSo Project?

Using the principles of UDL we focus on making it accessible for all students. When developing the app we need to consider the following UDL principles:

- Students with disabilities fall along a continuum of learner differences rather than constituting a separate category
- Technical adjustments for learner differences should occur for all students, not just those with disabilities
- Materials should be varied and diverse rather than focusing on a single mode of presentation
- Instead of remediating students so they can learn from a set programme, the programme should be made flexible to accommodate learner differences

Meyer & Rose (2002) recognise that no one single option will work for all students. A curriculum should include alternatives that make the learning in it accessible and applicable to students with different backgrounds, learning styles, abilities, and disabilities. The "universal" in Universal Design for Learning does not imply a single solution for everyone, but rather it underscores the need for inherently flexible, customisable content, assignments, and activities (Hitchcock, Meyer, Rose & Jackson, 2002).

UDL achieves the goal of meeting individual needs by providing alternative media and having the capacity to transform and link content from one medium to another. There is no universal medium of instruction. Different media present different challenges, different demands on the learner, and different strengths in conveying different kinds of meaning. Providing alternatives transforms the way material is presented and how students respond encompasses the central feature of UDL – its' flexibility.

Applying universal design to learning materials and activities can increase access for learners with wide disparities in their abilities to see, hear, speak, move, read, write, understand English, attend, organize, focus, engage, and remember.



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