

Access to School and the Learning Environment II - Universal Design for Learning

Webinar 11 - Companion Technical Booklet



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With major thanks to Australian Aid for its strong support to UNICEF and its counterparts and partners, who are committed to realizing the rights of children and persons with disabilities. The Rights, Education and Protection partnership (REAP) is contributing to putting into action UNICEF's mandate to advocate for the protection of all children's rights and expand opportunities to reach their full potential.

Access to School and the Learning Environment II – Universal Design for Learning

Webinar Booklet

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What this booklet can do for you

The purpose of this booklet and accompanying webinar is to assist UNICEF staff and our partners to understand the basic concepts of Universal Design for Learning with an emphasis on children with disabilities, and how it fits within UNICEF's mission.

In this booklet you will be introduced to:

- *Universal Design for Learning and its implications for children with disabilities.*
- *Ways of representing material so it is accessible to children with disabilities.*
- *Ways of facilitating children's responses that are flexible and support children with disabilities.*
- *Ways of providing opportunities for all children to be engaged in learning.*
- *Ways to make assessments accessible for children with disabilities.*

For more detailed guidance on programming for inclusive education, please review the following booklets included in this series:

1. Conceptualizing Inclusive Education and Contextualizing it within the UNICEF Mission
2. Definition and Classification of Disability
3. Legislation and Policies for Inclusive Education
4. Collecting Data on Child Disability
5. Mapping Children with Disabilities Out of School
6. EMIS and Children with Disabilities
7. Partnerships, Advocacy and Communication for Social Change
8. Financing of Inclusive Education
9. Inclusive Pre-School Programmes
10. Access to School and the Learning Environment I – Physical, Information and Communication
11. Access to School and the Learning Environment II – Universal Design for Learning (*this booklet*)
12. Teachers, Inclusive, Child-Centred Teaching and Pedagogy
13. Parents, Family and Community Participation in Inclusive Education
14. Planning, Monitoring and Evaluation

How to use this Booklet

Throughout this document you will find boxes summarizing key points from each section, offering case studies and recommending additional readings. Keywords are highlighted in bold throughout the text and are included in a glossary at the end of the document.

If, at any time, you would like to go back to the beginning of this booklet, simply click on the sentence "Webinar 11 - Companion Technical Booklet" at the top of each page, and you will be directed to the Table of Contents.

To access the companion webinar, just scan the QR code.



Acronyms and Abbreviations

CAST	Center for Applied Special Technologies
UDA	Universal Design for Assessment
UDL	Universal Design for Learning
UN	United Nations

I. Introduction

In this booklet we will describe **Universal Design for Learning (UDL)**, an approach that is designed to provide all students an equal opportunity to learn in inclusive environments through flexible curricular approaches. According to the Center for Applied Special Technologies (CAST), Universal Design for Learning is “a set of principles for curriculum development that give all individuals equal opportunities to learn”¹.

Further, CAST states that “UDL provides a blueprint for creating instructional goals, methods, materials and assessments that work for everyone – not a single, one-size-fits-all, solution but rather flexible approaches that can be customized and adjusted for individual needs”.

In the following pages we will describe a variety of approaches to UDL. All of the approaches maintain a common focus on providing access to learning opportunities for diverse students. Although many of the strategies are designed to help children with disabilities, UDL is an approach that can provide high-quality educational opportunities for *all* children.

UDL has three main approaches, which will be discussed in detail in this booklet:

- Multiple Means of Representation (present information and content in different ways).
- Multiple Means of Action and Expression (differentiate the ways that students can express what they know).
- Multiple Means of Engagement (stimulate interest and motivation for learning).²

UDL’s focus on **access** is rooted in the field of architecture. Ron Mace, an architect and wheelchair user, first coined the term **universal design** to describe a set of principles that would increase access to built structures. Mace argued that sound architectural principles would benefit people with disabilities but would also have ‘spillover’ effects for non-disabled people. Mace’s ideas can be seen in everyday life. For example:

- Curb cuts on sidewalks are helpful to people with disabilities and also parents with children in strollers and people with shopping carts.
- Handles on doors designed to help people who have gripping challenges are also useful for people carrying items, who can use their elbows to open doors.
- Large print is helpful for both people with visual disabilities and children learning to read.
- ‘Universal signage’ (signs without words) helps people who speak different languages and those who cannot read.³

Summary

- *The main purpose of UDL is to create access for students in regular classrooms.*
- *UDL focuses on flexible approaches to teaching and learning, without changing the level of challenge for students.*
- *The philosophies for UDL come from the process of making architectural structures accessible.*

In a universally designed learning environment, teachers provide multiple opportunities for students to understand content, express their knowledge and engage in learning. Some modes of learning, facilitated by teachers, are specifically designed to support students with disabilities. However, the 'multiple means' approach allows all children to engage in a variety of activities which should capture their learning needs, learning styles and personal preferences.



II. Universal Design and UNICEF

As noted above, Universal Design for Learning provides a concrete approach to meeting the educational needs of all children. UNICEF's rights-based approach to education can arguably be traced to the United Nations' 1948 Universal Declaration of Human Rights. As noted in Booklet 1, all children have the right to education. To the furthest extent possible, UNICEF advocates for such education to be inclusive in nature.⁴

UDL is the operationalization of the UNICEF rights-based approach to education. The strategies provided in this booklet demonstrate ways to create classrooms where learning is accessible to a wide variety of students, ensuring that children have the right to an education that is appropriate, inclusive and empowering.

Appropriate, inclusive and empowering schools may be characterized as schools where *quality* education is present. Quality of education is described in the Dakar Framework as "improving all aspects of education and ensuring excellence of all so that recognized and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills".

In 2000, UNICEF outlined five dimensions of quality in its Working Paper entitled 'Defining Quality in Education'.⁵ These dimensions are intended to provide understanding of the functions and predictors of high-quality education systems, and include: 1) **Learners**; 2) **Environment**; 3) **Content**; 4) **Processes**; and 5) **Outcomes**. Universal Design for Learning may have an impact across all five of UNICEF's dimensions for learning. Classroom learning approaches that are designed with accessibility in mind may minimize the segregation of children with special needs because the approaches used in class are designed to capture the learning needs of a wide variety of students. Within the framework of UNICEF's 'dimensions', Universal Design for Learning can improve quality for:

1. **Learners** – UDL creates an engaging classroom where learners are expected to understand and demonstrate knowledge on what they have learned, but are provided a variety of pathways to do so. Teachers who use UDL strategies might expect greater engagement from students, a better understanding of students' capacities, and therefore a greater degree of success and confidence from their students.
2. **Environment** – UDL-inspired classrooms are designed to be inclusive in nature. Because students are engaging with materials and their teacher in varied ways, teachers can expect greater levels of participation and fewer off-task behaviours. Such engagement may provide safer classroom environments as well as a greater level of acceptance among students about learning differences.
3. **Content** – In UDL, the content remains constant but the delivery and student engagement around content vary by classroom and student learning need. To this end, UDL-inspired classrooms can at the same time provide high-level content (such as those found in national standards or curricula), but create multiple pathways by which students can understand and show mastery of content.
4. **Processes** – Processes within the classroom are the centrepieces of UDL. All processes – including how content is represented, how knowledge can be expressed, and how children engage in class – are designed with accessibility in mind. The *process* of creating UDL involves teachers knowing their students' learning needs, philosophically committing to access of content for all students, and creatively designing a multitude of ways for students to engage with content. Many UDL strategies fit into a broader UNICEF 'Child-Centred Learning' model, but are explicitly focused on accessibility and decreasing the impact of special learning needs through high-quality teaching.
5. **Outcomes** – Assessing student outcomes can also be framed in a UDL philosophy. Assessing outcomes begins with providing children multiple ways to respond to the content they have learned

III. UDL and Access to Instruction for All Students

Just as Universal Design, the predecessor of Universal Design for Learning, sought to make physical structures like sidewalks and buildings accessible to all people, UDL seeks to make learning accessible to all students, particularly those students who have not been successful because of inflexible systems of learning.⁶ When implemented well, UDL can result in students feeling competent, secure and successful in their educational endeavors. UDL has the potential to create and sustain learning environments where all students feel welcomed, valued as learners, and can experience academic success.⁷

As noted above, UDL seeks to improve accessibility by maintaining high expectations for children, but allowing children opportunities to learn and respond in different ways. Figure 1 (below) provides a graphic example of how UDL works in practice. The following chapters will provide further information, detail and examples of UDL at work.

When a teacher considers UDL, she considers all of the disabilities and learning-style differences that students may have, and then finds ways to work around these through pedagogical strategies that provide access to the curriculum. This approach is very different to segregated or medical-model approaches to disability, which may limit access to the mainstream curriculum because of student differences.⁸

Through the use of UDL, barriers to learning are minimized. Designing barrier-free learning involves attention to the needs of all learners within a given classroom. When a teacher plans lessons using UDL as a guiding framework, she considers how best to teach students whose differing needs might be in the areas of language, learning styles, sensory input, perception, culture, or levels of background knowledge. She considers the child who lacks confidence to speak up in class as well as the student who excels in certain content areas. By proactively designing instruction and selecting curricula and class activities that allow for multiple pathways for learning, educators are far more likely to create access to learning. Successful access creates successful learning and acquisition of knowledge.

Each of the three UDL guidelines is based on a learning network in the brain.⁹ The overall UDL framework reflects the ways in which students receive and process information. The first guideline, *multiple means of representation*, examines the recognition of information. The second guideline, *multiple means of action and expression*, examines the strategies that learners use to process information. The third guideline, *multiple means of engagement*, examines the 'affective' component of learning.¹⁰

The figure below provides a framework for lesson design in a UDL framework.



Summary

- *UDL is a process that aligns with a rights-based approach to education.*
- *A central tenet is the removal of barriers caused by rigid or inflexible pedagogies.*
- *UDL is a process whereby teachers hold high standards but proactively employ a variety of approaches to teach children.*

Notes

IV. Multiple Means of Representation: Providing Content and Instruction in Different Ways

According to the UDL framework described by the Center for Applied Special Technologies, the first guideline for designing universally accessible curricula and instruction involves the design and presentation of information. The delivery of information involves both the delivery of instruction as well as the design and delivery of curricula. Because a 'one-size-fits-all' style of presentation poses barriers to learning for many students, UDL supports both multiple and flexible approaches to presentation of content. Making information accessible is the first step to supporting students in acquiring knowledge.

The table below provides an overview of how 'multiple means of representation' may minimize the impact of disability in order to facilitate learning. Each of the strategies listed below focuses on ways teachers can better present information.

Learning Style or Learning Challenge	Teacher Strategy
Visual learners (including learners with hearing impairments)	Objects or pictures (photographs, concrete line drawings, or abstract visual representations); colour-coded information; visual organizers
Auditory learners (including learners with visual impairments)	Lecture or discussion-based learning, peer-based activities; audiobooks, text-to-speech software
Children with learning or attention challenges	Small chunks of information, frequent repetitions, varied levels of text materials, multiple examples, concrete learning experiences
Kinesthetic learners or active children	Hands-on learning, touching objects, tactile graphics, frequent movement, project-based learning
Culturally diverse learners	Culturally-relevant materials and instructional methods
Children with diverse background knowledge on topics	Background knowledge may need to be pre-taught or reviewed.

Creating Access for All Learners

As with all three guidelines of UDL, lesson design maintains a focus on the end-user. For the purposes of this booklet, the end-users are all of the children who receive instruction in a given classroom. Within the constellation of a classroom, students will undoubtedly reflect a variety of differences and individualized needs. Some of these students will have disabilities.

For example, a student with visual impairments will need access to tactile input for learning. A student with hearing impairments will need information presented in ways that don't rely solely on auditory input, or might need amplification in order to benefit from instruction. A student with autism may need a picture schedule that clearly depicts the instructional activities for the day. A student with physical limitations may need adaptations made to instructional materials in order to accommodate physical dexterity. Other students may differ greatly in the academic background knowledge they bring to a subject area lesson. All students will have learning preferences that create preferred modes of learning through visual, auditory or kinesthetic means. Some students will have linguistic differences and will need instruction that takes into account their strengths and limitations with the receptive and expressive language used in the classroom.

As the teacher designs each lesson, he must proactively consider the diverse needs and learning preferences of all of his learners. The teacher's selection of multiple and flexible instructional delivery options as well as choices of curricular materials should be provided in ways that promote effective learning for all students in the classroom. Incorporating the needs of all learners into the flexible design and delivery of instruction greatly decreases barriers to learning and increases opportunities for each learner to access the instruction and be successful in acquiring skills and knowledge.

Multiple Means of Representation: A UDL Classroom Example in Science

Imagine that a teacher is designing a series of lessons on ocean waves. As part of the curricular unit of study, she will teach students the meaning of key words such as waves, breaking waves, breakers, erosion, sea floor slope, hurricane and tsunami. She will teach students how waves involve a combination of water and energy and she will help students understand how weather patterns affect wave action. As she designs her lessons and selects her curricular materials, she must keep in mind all the ways in which her students differ in their learning needs and preferences. She must anticipate potential barriers to learning and proactively address flexible methods to bypass those barriers. Examples include:

- Her students have different levels of background knowledge about ocean waves. Because of these differences, the teacher plans to accommodate them in several different ways. She will deliver small-group instruction to those students having minimal-to-no background knowledge and introduce several key vocabulary words, after providing an introductory lesson before beginning the lesson with the entire class.
- Some students struggle with their reading skills so she will provide different levels of text material. To assist several other students who are non-readers, she or other students will read aloud for important portions of text materials or provide digital books with read-aloud features.
- For students who are not fluent in the language spoken in the classroom, she will make a unit 'dictionary' that will combine easy-to-understand descriptions with pictures or drawings of key vocabulary words and concepts. Each of these students will have his or her own copy to use throughout the unit.
- Many of her students may be more successful if they learn through a kinesthetic modality, so part of her introductory lesson will involve the use of gestures and body motions to simulate how a wave builds then breaks. As she provides verbal instruction, she will demonstrate using gestures and body movements as a way of explaining essential vocabulary words.
- To build on the visual strengths and preferences of many of her students and because her classroom is equipped with internet capabilities, she plans on incorporating several short video clips that will show examples of actual waves and allow students to hear the sounds associated with

different types of waves. If access to video clips is not possible on the day she plans to use them, she will use a variety of pictures and a tape recording of crashing waves. She will make all of these materials available throughout the unit for students who need to review them multiple times to aid in their understanding.

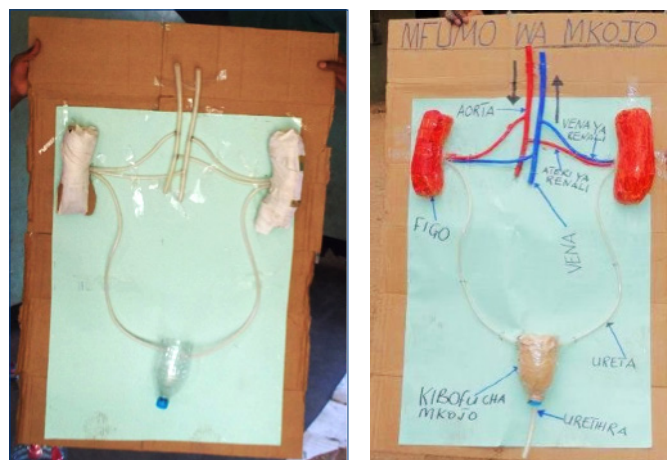
- Throughout the series of lessons in the unit on waves, she anticipates that students will benefit from engaging in instruction and curricular materials that are at different levels of complexity. She plans to break her students into small groups for portions of the instruction. Depending on their levels of understanding, she might offer instruction to one group in which she will demonstrate how energy and water produce waves using a picture sequence. In another group, students will independently read about the interaction between severe weather patterns and wave action.

The examples provided above depict how a teacher incorporates multiple means of representation into lesson planning. Through an understanding of her students' needs, she is able to incorporate flexible methods for delivering instruction and varied ways for students to access curricular materials.

UDL in Action: Tanzania

In a small, rural school in Tanzania, a teacher had several students with visual impairments. The teacher knew that it was important for these children to learn the national science curriculum, so she employed a strategy of *multiple means of representation* to help her children learn about the urinary system.

In order to make the content accessible, the teacher created a tactile urinary system poster. As can be seen in the in-progress and finished product photographs, the poster was constructed using cardboard, manila paper, tape, tubing and plastic water bottles. The various parts of the urinary system that were created using these locally attained materials were then labeled in Kiswahili with coloured markers. Due to the tactile nature of this poster, with the three-dimensional tubing and bottles fixed on to the two-dimensional poster surface, students with visual impairments and kinesthetic learners could use their sense of touch to physically feel the different parts of the urinary system, thereby aiding in their learning.



Urinary system curricular material in-progress and completed.

Credit: Alisha Brown, Michigan State University, USA

V. Multiple Means of Action and Expression: Providing Multiple Ways for Students to Demonstrate What They Are Learning

According to the UDL framework described by CAST, the second guideline for designing universally accessible curricula and instruction involves flexible approaches for students to both manage their learning and demonstrate what they know. Opportunities for students to express their learning is essential in order for teachers to monitor how well students are understanding and acquiring content knowledge and skills. Equally important for some students is support aimed at the acquisition of processes that will assist students in setting goals, managing progress and developing life-long strategic learning skills. Multiple means of action and expression can be achieved by incorporating options for students to communicate through such avenues as spoken words, written words, pictures, gestures, or manipulation of objects. Supporting students in the acquisition of managing learning and information can be achieved through modeling, exemplars, explicit instruction, personal accommodations, and use of available resources or resources obtained through online sources.

The table below provides examples of multiple means of action and expression.

Learning Style or Learning Challenge	Teacher Strategy
Students who prefer expressing themselves through printed word (including students with speech difficulties)	Opportunities for journaling, fill in the blank activities, and essays; writing stories or poems
Students who are verbally expressive (including students who have writing challenges)	Opportunities for discussion in class or 'reporting back' to questions
Students who communicate best with drawing, sculpture, or diagrams (including students with speech or writing challenges)	Opportunities to demonstrate knowledge in visual or artistic formats
Kinesthetic learners or active children	Opportunities to use drama, body movements, or music to demonstrate knowledge; build models; complete projects
Students who need time to think before responding (including second-language learners)	Providing time for students to construct responses before sharing with teacher or classmates
Students with complex physical disabilities	Eye gazing at correct information, use of scribe to support writing
Students with learning or organizational challenges	Organizers, peer support, 'sentence starters' in writing, work banks, pictures, to-do lists, task checklists

Multiple Means of Action and Expression: A UDL Classroom Example in Reading

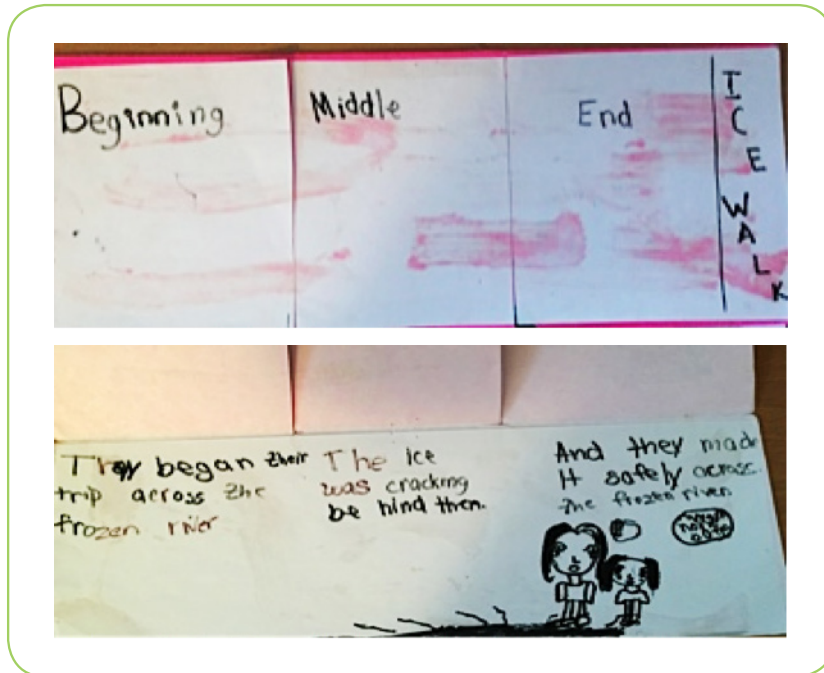
Imagine that a teacher is designing a series of lessons on reading and listening comprehension. One important learning goal will focus on students being able to correctly sequence a story after they have read it or heard it read aloud. In addition to the primary skill of retelling a story, she wants students to understand that there are specific words that are used when talking about sequence. She knows that some students, unfamiliar with the language spoken in the classroom, will need to start with basic sequencing words like *first*, *then* and *last*. The teacher understands that several students with learning challenges may not yet be able to verbalize the sequence words so she will print the words on both wall charts and individual cards so that the students can begin to build familiarity with the words. Her lesson plans will include a variety of ways to involve the students in demonstrating their understanding of how to sequence key events from a story and retell those events using appropriate sequence words.

She is also aware that some of her students with disabilities need assistance in initiating and completing tasks as well as over how to organize possible resources. She plans to provide task checklists and both picture and word choice-boards for different activities.

Throughout the series of lessons, the teacher will need a variety of ways to support her students in gaining a conceptual understanding of sequencing as well as flexible methods to encourage the students to demonstrate their knowledge. Examples include:

- **Teacher models the sequence of a familiar task:** To introduce the focus skill of sequencing, she will have the students observe her completing the familiar activity of washing her hands. She will arrange the students in small groups in which there will be at least one student who can write down the step-by-step sequence. As she demonstrates each step, she will verbally describe her actions using common sequencing words (for example: *“First, I will turn on (or ladle) the water. Next, I will get my hands wet. Then, I will pick up the soap...”*) After she demonstrates the sequence, she will encourage students to discuss the various steps recorded by the classmate. For each group, she will then provide pictures representing the steps of the sequence as well as sentence strips describing each step in words. Students can choose to practice sequencing using either pictures or words. Once the students have completed the sequence, she will provide slips of paper on which she has written sequencing words. The students will place the correct sequencing word next to each step in the sequence.
- **Students practice sequencing a familiar task:** In order to practice sequencing, students will choose a short activity that they complete on a regular basis (e.g. walking to school, making their lunch, getting dressed for school, playing a game). They will think about the sequence they follow for their selected activity. Working with a classmate, each student will select a method for demonstrating the sequence (writing the steps, acting out the steps, drawing pictures of the steps, verbally describing the steps). While demonstrating the sequence, students will practice using sequence words that have been provided by the teacher.
- **Students apply sequencing to a story:** To assist the students in generalizing their sequencing skills to retelling a story, the teacher plans to read a story aloud to her students. While she reads the story, she will encourage all students to form visual pictures in their minds about the characters and the events that take place in the story. At the conclusion of the read aloud, she will present options for students to retell the story. She will encourage the students to draw pictures, use written or spoken words, arrange the pictures provided, or arrange objects on the magnetic board. She recognizes that students will vary in their level of complexity with the retell and individualizes her options and

materials as much as possible. The example below shows how one student with disabilities made a flip book to retell the story.



- Plans for students who need additional assistance:** Knowing that some students might struggle with the retell, she has several options available. She will read the story a second time and this time she will tie a knot in a piece of rope for each important event. At the conclusion of the story, she will provide guided practice as she and the students will recall one event for each of the knots on the rope. She hopes that this tactile cue might be a strategy that some students will find helpful. For several other students, she might try a 'Five Ws' chart and prompt the students to answer *who*, *what*, *when*, *where* and *why* questions to assist them with their retell of the story.
- A variety of curricular materials:** Based on reading levels and interests, the teacher has gathered a variety of books. For the next lesson, students will choose an appropriate book. They will choose to read independently, read with a classmate, or join the teacher for a small group to read aloud. Once the story has been read, students will sequence the key events in the story. Various materials will be used. Graphic organizers will be used for students needing support to sequence their pictures or words while other students may choose to retell their story using puppets or props. Other students will be encouraged to utilize the computer to type their responses. For students who prefer a kinesthetic demonstration, the teacher tapes pieces of paper to the floor. On each paper, the teacher writes a sequencing word. She instructs the students to start at the paper on which she has written 'First'. The students retell the first event then move to the second sheet of paper, on which she has written the word 'Next'. The students continue to step on the appropriate sequence word as they take turns retelling their story.
- Helping students establish goals:** In order to facilitate her students learning in setting goals and progress monitoring, the teacher leads a discussion in which the students are asked to describe something they are learning to do well in their ability to sequence and retell a story. Each student is asked to establish a goal for the remainder of the unit. Their goals are recorded so that students can revisit their goals at the end of the unit, assess their progress and determine their level of progress.

The examples provided above depict how a teacher can incorporate multiple means of action and expression into lesson delivery. It is important that the teacher focuses on flexible approaches for students to demonstrate what they have learned, as well as providing a variety of supports for students to become effective and strategic learners.

UDL in Action: Azerbaijan

As part of UNICEF's 'Active Learning' initiative in Azerbaijan, teachers have been exposed to new ways of teaching that are designed to be more engaging to students than in previous generations. Often, this means experiential approaches.

In one classroom, a teacher was presenting a lesson on verbs. Using traditional pedagogies, she would have likely written verbs on the chalkboard and asked students to copy notes. Using active learning pedagogies, the teacher engaged students in looking at magazine pictures and drawing pictures of action words (multiple means of representation). In this process, students were able to engage visually in the concept of verbs and discuss actions with one another (multiple means of expression). One student in particular had reading challenges, so this method provided that student with an opportunity to engage in content that was not impacted by his reading disabilities. When the teacher did write words on the board, she connected the words to photos so students could see the link.

The process of identifying verbs continued. For most students, writing notes in their exercise books was sufficient. However, two students struggled with writing. Therefore, the teacher asked these students to either draw or verbally report on verbs (multiple means of expression). In this process, students were able to respond and engage in a variety of ways. The most important aspect of the lesson was that students understood verbs, with flexibility built into the lesson to allow for multiple pathways of understanding and responding.

Summary

- Multiple Means of Action and Expression *provides opportunities with diverse learning styles and abilities to express their understanding of content in a way that builds upon their expressive strengths.*
- *By understanding how children best act and express themselves in class, teachers can plan lessons that best help them participate.*
- *Response in class might be verbal, written, graphic or technology-enhanced.*

VI. Multiple Means of Engagement: Providing All Students Opportunities to Participate

According to the UDL framework described by CAST, the third guideline for designing universally accessible curricula and instruction involves flexible approaches to engaging students in learning. Opportunities to engage all students in meaningful participation is essential if students are to be successful in their learning endeavours.

Multiple means of engagement can be achieved with attention to students' interests and sources of motivation, as well as providing learning tasks at appropriate levels of challenge.

Multiple Means of Engagement: Creating Access

Students come to school with varying degrees of motivation to learn. Some learners are motivated by intrinsic factors. Other learners are motivated by extrinsic factors. Many students are motivated by both intrinsic and extrinsic factors. Learners might be motivated by parental pressures to receive an education or a desire for a better future. Some students might seek education as a source of self-empowerment or a means through which to contribute to the well-being of their families. Still other students might be motivated by the sheer excitement of learning. By contrast, some students will struggle with the relevancy of school. For these students, education might not seem as important as helping their families to subsist on a day-to-day basis. Other students may struggle with the relevancy of what is being taught and struggle to find meaning with the curriculum. The table below provides an overview of different approaches to increasing engagement.

Learning Challenge	Teacher Strategy
Students are not interested in lesson topic	Make relevant connections between topic and student's lives; show students practical applications of topic or skill; use examples that connect with student's interests
Children are unmotivated to engage in learning activities	Provide choices within the classroom, increase opportunities for peer-based learning, ensure learning task is at an appropriate level of difficulty
Students are reluctant to participate in class	Provide options for participation, be flexible in expectations for participation, encourage participation among peer partners or small groups

Multiple Means of Engagement: A UDL Classroom Example in Maths

Imagine that a teacher is designing a series of lessons on mathematical operations. He wants his students to be curious about how maths connects to the world around them. He wants students to understand both conceptual aspects and practical applications of maths. He realizes that some students with learning disabilities will need concrete representations of mathematical operations. These students will need manipulative objects in order to make sense of maths. For other students, he wants to expand their use of abstract representations. His lessons will involve maths problems involving words as well as numbers. For some students, maths is their favourite subject. These students bring a level of self-confidence to their ability to solve maths problems. They are eager to share their knowledge and participate in class. The teacher has another group of students which struggles with mathematical concepts as well as mathematical calculations. Some students' maths skills are far below those of their classmates and they are reluctant to participate in class. He will need a variety of ways in which he can motivate and engage his students. Examples include:

- To engage his students in a curiosity about maths and to build relevant connections between the learning goals and maths in students' everyday lives, the students will keep a journal about all the places in which they see numbers. Students will then work together in small groups to make a mural about how maths is used in their daily lives.
- The teacher will use information from the students' journals to compose word problems that the students will solve. He will *use their life experiences* to encourage his students to create their own rationale for the importance of maths. He hopes that using examples from his students' lives will provide a context for engagement as well as bring meaning to their understanding of maths.
- Several students are very shy and are reluctant to participate in class activities. The teacher will encourage these students to choose a partner and work together at the chalkboard. If he asks questions of the whole class, he will give those students the questions prior to the discussion. This will enable the students to have extended time to compose a response and hopefully feel more comfortable volunteering to speak.
- The teacher knows that some of his students enjoy interacting with classmates so he structures small groups in which students work together to solve maths problems. Other students prefer to work by themselves, at their own pace. There will be times when students can choose their optimal learning environments and choose to work in groups or work independently.
- All of his students enjoy choices relative to instructional options and learning formats. Maths centres are established in which several activities are provided at each centre. Students rotate through all centres and choose activities to complete. While students are working at the maths centre, the teacher might work with small groups or individual students and provide additional explanations or practice. For other students, he might extend their skills or knowledge and challenge them to higher levels of thinking.
- The teacher incorporates student interest into curricular options. Some students are interested in solving maths problems with a practical application to their daily lives. Other students enjoy maths problems that relate to their future aspirations or career opportunities, while different students like the element of surprise and choose maths problems out of the surprise basket. He also provides different levels of maths problems so that each student is challenged but not overwhelmed.
- The teacher anticipates that one student with disabilities will have difficulty stopping the maths

activity and transitioning to the next activity. For this student, the teacher will provide a timer to provide adequate time for the child to anticipate the end of the activity.

The examples provided above illustrate how a teacher might incorporate multiple means of engagement into lesson planning. When planning and delivering instruction, the teacher must be mindful that incorporating multiple ways to increase meaningful student engagement will dramatically decrease barriers to learning.

UDL in Action: USA

In a Grade 6 classroom in the USA, students had diverse learning styles, experiences and language capacities. About 80 per cent of students in the class were indigenous, a group that has been historically marginalized or educated in a culturally insensitive manner in the USA. Another 15 per cent of students spoke Spanish as a first language. Students in the class had diverse reading and writing abilities, including some students who had reading disabilities.

In order to support learning in geography and world civilizations, the teacher created study guides. These study guides had a variety of diagrams, along with text that was simplified for struggling learners, highlighted important information, and came on different-coloured paper (all examples of multiple means of representation).

In class, the teacher provided students with options for completing study guides. Some students chose to work together in groups and discuss concepts, while others were more comfortable working alone with a textbook. She also allowed one student to reproduce a civilizations map in order to reinforce thinking on where particular civilizations lived in comparison to rivers and other resources (multiple means of response).

By providing students with choices and engaging activities (multiple means of engagement), the teacher noticed that there were fewer student behaviour problems in class. She believed this was because students were meaningfully engaged with the content and they enjoyed the challenge posed to them. The diverse ways presented to them for engagement with the content allowed them to choose the way they learned best.

Summary

- Multiple Means of Engagement *is a UDL approach that focuses on finding flexible ways for students to engage in learning.*
- *Children who are more engaged in learning may find learning more meaningful and may have fewer off-task behaviours.*
- *Motivation for certain topics may be mediated by children's home culture, previous success, learning style, or a variety of other factors. Therefore, providing multiple means for engagement will provide opportunities for diverse learners to engage meaningfully.*

VII. Universal Design for Assessment

Similar to UDL, it is possible to present assessments through ‘multiple means’. The most important consideration in assessment is that the **construct** – what is supposed to be tested – is not changed. If the construct is clearly defined,¹¹ it is possible to arrange assessments to be accessible for children with disabilities. The philosophy of ‘multiple means’ is enacted in four types of **accommodations**.¹²

- **Accommodations in presentation** – Under these conditions children with disabilities can access assessments by being allowed:
 - Oral reading of the assessment (either by recorded voice or adult reader).
 - Large print assessments.
 - Magnification devices (i.e., magnifying glasses).
 - Sign language administration for test questions.
 - Braille tests.
 - Tactile graphics (3-D diagrams so children with disabilities can feel them).
 - Manipulative objects (shape blocks, real coins, abacus).
 - Audio amplification to aid in listening (hearing aids or speakers).
 - Computerized screen readers of text.
- **Accommodations in response:**
 - Using a computer or utilizing a scribe to help with answering of questions.
 - Using assistive technology (point to signs, computers, etc.) to support answering of questions.
 - Using a Braille writer.
 - Circling answers directly in the text booklet rather than a separate book.
 - Using organizational devices (calculators, organizers, spell checkers, dictionaries) as long as they do not interfere with the construct.
- **Accommodations in setting:**
 - Administration of the test in a separate place to minimize distraction.
 - Testing in a small group.
 - Adjusting lighting in a room (more or less light for children who need it).
 - Providing noise buffers (headphones, ear plugs, ear phones).
- **Accommodations in timing:**
 - Extended time to complete a test.
 - Multiple or frequent breaks.
 - Change the order of a test (e.g., provide easier subjects first to decrease anxiety).
 - Testing over multiple days rather than one day.

Accommodations can provide a way for children with disabilities to show their knowledge without changing the construct of the test. At the same time, students are provided with flexible testing mechanisms. Therefore, when accommodations are built into the regular testing environment, assessments become more universally designed.

Universally designed tests are clear about what the construct is, but allow flexibility for students. They also try to minimize problems which may impact children with disabilities by creating designs that are maximally accessible. This includes questions that minimize bias based on experiences of certain groups, instructions that are clear and easy to understand, questions that are at or below the reading level of all students, and diagrams that are clear and easy to read. An example of Universal Design for Assessment (UDA) is found below.

UDA in Action: Lesotho

In Lesotho, a teacher had received training on inclusive education from his Ministry of Education. It was time for a test in his mathematics class, and he wanted to make sure his children with disabilities had equal opportunities to those without disabilities. The teacher thought about accommodations and decided that he would remove all time barriers from students. He made the test untimed, and provided a long period of time so that all students could complete the test, no matter how fast they processed information.

He also decided that some children in his class might make copying errors if he made children place answers in a separate booklet. Instead, he allowed students to answer questions directly on the test by circling correct answers.

Finally, he knew he had a few children with low vision, plus a child with albinism, so he arranged seating so that the children with low vision would have plenty of sunlight (there was no electricity in the room) and the child with albinism was out of direct sunlight to protect her skin and eyes.

Finally, the construct the teacher was testing was geometry and shapes, so the teacher allowed the students to use the number lines on their desks in order to help with calculations. Had the construct of the test been about calculation, he may have set up his test differently.

He incorporated many accommodations into the general way he administered a test, thus making it more universally designed.



Additional Free Resources

- **Assessment Accommodations:**

<http://www.parentcenterhub.org/repository/assessment-accommodations/>

- **Protecting Students with Disabilities:**

<http://www2.ed.gov/about/offices/list/ocr/504faq.html>

- **Universal Design for Postsecondary Education:**

http://www.washington.edu/doi/Brochures/Academics/equal_access_ss.html

- **Universal Design for Learning:**

<http://www.ncset.org/publications/viewdesc.asp?id=707>

<http://www.cast.org/udl/>

<http://www.udlcenter.org/>

<http://www.udlcenter.org/aboutudl/udlguidelines>

<http://www.udlnet-project.eu/>

http://sennet.eun.org/wiki?p_p_id=36&p_p_lifecycle=1&p_p_state=exclusive&p_p_mode=view&p_p_col_id=column-1&p_p_col_pos=1&p_p_col_count=2&_36_struts_action=/wiki/get_page_attachment&p_r_p_185834411_nodeId=65129&p_r_p_185834411_title=FrontPage&_36_filename=Thematic_Study_Year2.pdf

- **Universal Design for Assessment:**

<http://www.cehd.umn.edu/nceo/onlinepubs/Synthesis44.html>

<http://www.udeducation.org/resources.html>

- **Add here your own resources:**

Glossary of Terms

Access – The opportunity for children with disabilities to participate and progress in the general education curriculum.¹³

Accommodations – Any changes made to typical tests or testing conditions that allow children with disabilities to demonstrate their knowledge and skills in a testing situation.¹⁴

Content – The intended and taught curriculum in schools.¹⁵

Construct – Test construct refers to the concept or the characteristic that a test is designed to measure.¹⁶

Environment – The physical, psychosocial and service delivery elements of schools.¹⁷

Learners – Children who come to school and the health, early childhood and home support experiences they bring.¹⁸

Processes – How teachers and administrators use inputs to frame meaningful learning experiences for students.¹⁹

Outcomes – Intentional, expected effects of an educational system.²⁰

Universal Design – A design concept that recognizes, respects, values and attempts to accommodate the broadest possible spectrum of human ability in the design of all products, environments and information systems.²¹

Universal Design for Learning – An approach that is designed to provide all students an equal opportunity to learn in inclusive environments through flexible curricular approaches.

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