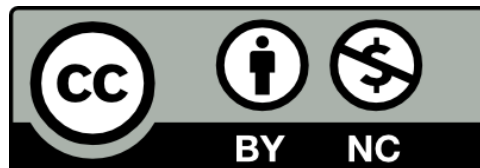


UNIVERSAL DESIGN FOR LEARNING

AN INTRODUCTORY WORKBOOK FOR TEACHING FACULTY



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Overview

The Centre for Applied Special Technology (CAST) defines Universal Design for Learning (UDL) as an educational approach for designing curriculum for *all* learners. UDL is based on three principles, which are summarized in Version 2.2 of [The Universal Design for Learning Guidelines](#). These principles are:

1. Provide multiple means of **representation** (Recognition Networks)
2. Provide multiple means of **action and expression** (Strategic Networks)
3. Provide multiple means of **engagement** (Affective Networks)

Aims for this Workbook

As Faculty who employ UDL principles in our instruction, we work to make learning accessible (see [Seneca's Accessibility Policy](#)), build capacity within our learners, and encourage the use of effective independent study strategies.

In line with UDL Goals, the aim of this workbook will be to encourage evidence-based, purposeful practice that motivates learners, and provides goal-directed instruction.

Organization of the workbook

This workbook is divided into three sections, which follow the numbers provided in Version 2.2 of the [UDL Graphic Organizer](#) (please make sure you are using the numbered version for your reference)

Multiple Means of Representation: Recognition Networks	Multiple Means of Action and Expression: Strategic Networks	Multiple Means of Engagement: Affective Networks
1. Perception (1.1-1.3)	4. Physical Action (4.1-4.2)	7. Recruiting Interest (7.1-7.3)
2. Language and Symbols (2.1-2.5)	5. Expression and Communication (5.1-5.3)	8. Sustaining Effort and Persistence (8.1-8.4)
3. Comprehension (3.1-3.4)	6. Executive functions (6.1-6.4)	9. Self-Regulation (9.1-9.3)

Note: UDL is not a prescriptive method, there is no formula. The activities in this workbook will encourage you to reflect on some strategies that you might consider using in your course.

Icons used in the boxes to represent above sections are [Oliver Caviglioli's](#) creations.

1. Provide options for perception

<p>1.1 Offer ways of customizing the display of information 1.2 Offer alternatives for auditory information 1.3 Offer alternatives for visual information</p>	
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As you work through this section, think about how you might present information and course content in different ways. [Creating Accessible Documents](#) is a component of the [Accessibility for Ontarians with Disabilities Act \(AODA\)](#). You can also access [Accessible Document Templates](#) through Seneca.


You may also want to think about different formats through which learners process information. For example, can a large piece of text be displayed using diagrams and illustrations? Are there times when video recordings might be more appropriate than text? Are captions and transcripts provided with video recordings? What techniques might you use to pre-teach important vocabulary before a lesson?

Technology can also be used to leverage multiple means of representation. This may include videos, audio recordings, or the use of graphic organizers.

Try It! Think about how you currently present information using audio and visual means. Add at least one change you will try to this chart.

Audio	Visual
1.	1.

2. Language and symbols

<p>2.1 Clarify vocabulary and symbols</p> <p>2.2 Clarify syntax and structure</p> <p>2.3 Support decoding of text, mathematical notation, and symbols</p> <p>2.4 Promote understanding across languages</p> <p>2.5 Illustrate through multiple media</p>	
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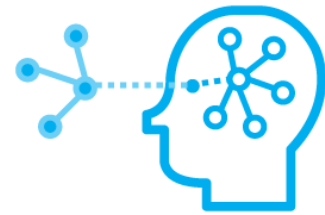
In this section, consider how subject specific vocabulary might be communicated to students, so that they can access course material. Consider [Principles of Effective English Language Learner Pedagogy](#) by Jun Li, which guides faculty to consider how they might design their lessons with English Language Learners in mind.

In the following chart there are some tools you might try. Enter a **Y** for **yes**, I currently use, **T** for I might **try** this and **N** for **not** for my subject.

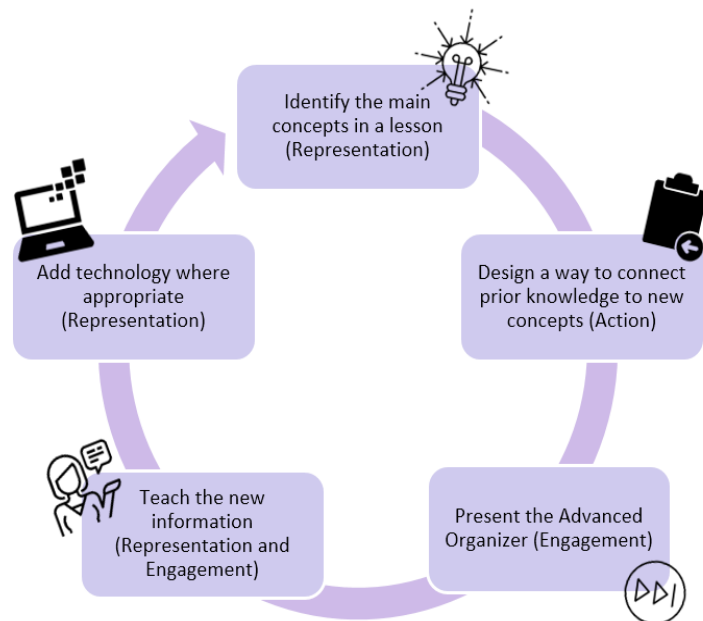
	Resource Title and Link	Thoughts and Yes/No/Try
1	Geogebra offers online tools for graphing, interpreting the relationship between lines, and visualizing 3D objects. Equatio allows users create mathematical notation including conversion of handwritten text to typed math notation, the use of speech to text for math notations and STEM support for abbreviations expanded to full notation	
2	Quizlet and Study Stack can be used to practice new vocabulary and become familiar with key terms	
3	The Noun Project is a collaboratively created resource of icons. Students may use in assignments, presentations as appropriate and the preparation of study materials	
4	Related Words is an online thesaurus which helps learners to build vocabulary and look up definitions of unfamiliar or unique words	
5	Khan Academy offers online videos and tutorials for a variety of subjects, in several different languages	

3. Provide options for comprehension

- 3.1 Activate or supply background knowledge
- 3.2 Highlight patterns, critical features, big ideas and relationships
- 3.3 Guide information processing and visualization
- 3.4 Maximize transfer and generalization



Prior knowledge plays a large role in making sense of new learning. One way that instructors can plan for their students is by using Advance Organizers (AOs), which can provide a suitable way to situate the learner by providing them with a point of reference, and preparing them for learning new material. AOs can be visual or text-based. There are multiple steps in designing and presenting AOs. These are also a good way to pre-introduce subject specific vocabulary, which is particularly useful of English Language Learners.



In addition to AOs, consider using the Dual Coding method (combining verbal with visual) to help learners access and organize material. Visuals also help to engage learners, motivating them to read on. You can read more about this approach in the [Dual Coding poster](#) by Oliver Caviglioli.

Try It! Go through this [Advanced Organizers resource](#) and try building your own AO.

4. Provide options for physical action

- 4.1 Vary the methods for response and navigation**
4.2 Optimize access to tools and assistive technologies



When considering providing options for physical action we may immediately consider what we are doing to provide more access for someone with a physical disability. This guideline point is like considering a ramp, it provides options all can use. When requesting an in-class response, for example, consider having options such as verbal, manipulatives (e.g. an anatomy model), real time polling, etc.

This section provides you with a bank of potential resources which you might consider using as part of your lesson design for all learners. Take some time to browse through the resources. In the chart below identify a resource you could use in your courses.

	Resource Title and Link	Yes/Perhaps/No
1	Read and Write Gold : a versatile full featured reading Writing and study skills software available to all Senecans via Seneca MyApps	
2	Inspiration : A mind mapping software program with brainstorming and built in templates. Available to all Senecans via Seneca MyApps	
3	Real Time Polling: Apps such as NearPod , Kahoot , Answer Garden are just a few of the real time polling options. Students who might feel hesitant in front of their peers can text and answer in a low risk format	
4	Adobe Creative Cloud : All Senecans have access to various Adobe products including Photoshop, Xd, Premiere Rush, Spark, etc. Students can use different formats to demonstrate competency	
5	Consider the use of Blackboard's various tools such as Voice Thread for students to submit their work in formats other than typed documents.	

5. Provide options for expression and communication

<p>5.1 Use multiple media for communication 5.2 Use multiple tools for construction and composition 5.3 Build fluencies with graduated levels of support for practice and performance</p>	
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For this section, you are thinking about the different ways that students can demonstrate their developing knowledge and skill development. Using different tools to convey your content and communicate with your students and, conversely, for them to communicate with you is the focus in these guide points.

Blackboard can be a confusing place for our students. Consider adding a [screencast](#) of how to navigate your Blackboard course as it is the primary place for communication with students. Could you add voice to things like announcements?

Provide scaffolding and support as required. [Formative](#) assessment in addition to summative assessment is a good way to provide guided practice before independent practice.

Try It!

- 1. What are the [different tools in Blackboard](#) that you could use to deliver content? What are the different tools that students can communicate with you in addition to face-to-face or email?**

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- 2. What are the different formats that students can use to create and submit their assignments? Voice Thread is an option to consider.**

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- 3. In addition to lecturing, what other media can you make use of? [Seneca's Sandbox](#) provides a place for the production of media.**

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6. Provide options for executive functions

<p>6.1 Guide appropriate goal setting 6.2 Support planning and strategy development 6.3 Facilitate managing information and resources 6.4 Enhance capacity for monitoring progress</p>	
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Maintaining high expectations of students whilst also encouraging a [Growth Mindset](#) is an important part of building expert learners.

Metacognition and self-regulation are often two terms, which are seen together. The Education Endowment Foundation in the U.K. has published a [Metacognition and Self-Regulated Learning Guidance Report](#), which has seven recommendations for developing these traits in learners.

The report introduces three different aspects of metacognitive knowledge: learner, strategies, and task. These areas, along with the cycle of plan, monitor, and evaluate form the core of its message.

Try It! Take a moment to read pg. 10-11 of the report. How might you encourage metacognitive practice in your course?

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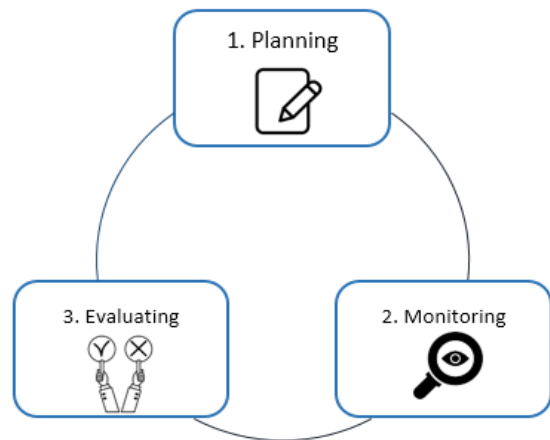
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Introducing learners to Seneca’s [Assignment Calculator](#) early in your course is also a good way to encourage self-regulation and metacognitive practice in action. The Calculator helps learners to break down assignments into manageable tasks, and also connects them to useful tools and services found in the Library and Learning Centre.

7. Provide options for recruiting interest

<p>7.1 Optimize individual choice and autonomy 7.2 Optimize relevance, value and authenticity 7.3 Minimize threats and distractions</p>	
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Think about how a lesson or course assignment might optimize individual choice and autonomy. Choice will allow learners to pursue areas that they are interested in, while demonstrating learning outcomes. Incorporating student voice and choice in your lessons will also help to maintain a more equitable environment. It is important to note that students will vary in what they find interesting, relevant, valuable, and even threatening. In any case, a UDL environment involves planning around your outcomes, and anticipating a level of learner variability.

Try It! What are some ways in which you might include student voice and choice?

Example: Choice boards are a good way to provide options for learners.

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Try It! What tools have already been introduced in this workbook that might allow you to reduce threats and distractions?


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Share the list with a colleague, and discuss the relevance and value of the options you have selected. It is important to note that, whilst maintaining interest and trying novel teaching techniques is important, these experiences should always be designed around your course learning outcomes.

Minimizing threats and distractions means to maintain a safe environment for learning, physically, emotionally, and cognitively.

8. Provide options for sustaining effort and persistence

<p>8.1 Heighten salience of goals and objectives 8.2 Vary demands and resources to optimize challenge 8.3 Foster collaboration and community 8.4 Increase mastery oriented feedback</p>	
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Students will remain persistent in the face of challenges if they are interested and invested in what they are doing. In the previous section, you considered how to design authentic resources to capture student interest. Now, you will think about how students will successfully move forward, once they have made their choices.

Students will understand the relevance of your planned learning activities and how they align with the learning outcomes.

Try It! Think about a lesson you have designed, and how your goals might align with your chosen outcomes.

Example:

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Your turn:

Learning Outcome

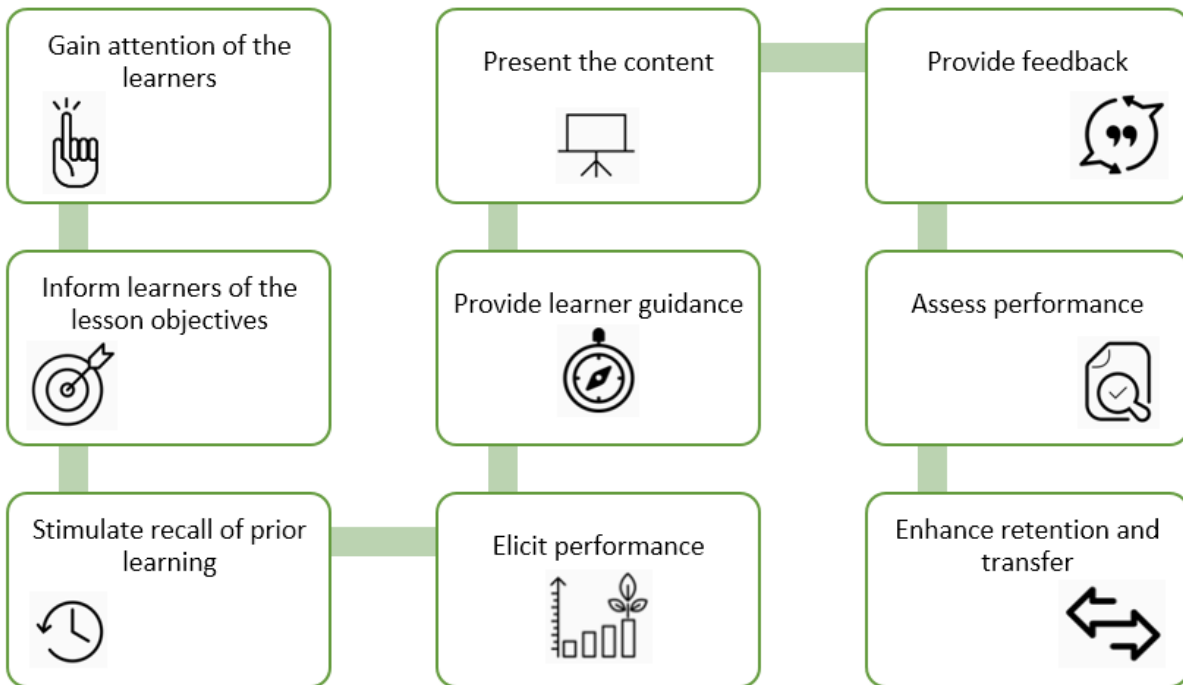
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9. Provide options for self-regulation

<p>9.1 Promote expectations and beliefs that optimize motivation</p> <p>9.2 Facilitate personal coping skills and strategies</p> <p>9.3 Develop self-assessment and reflection</p>	
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Reflective learning is an important metacognitive tool for both instructors and students. It is crucial to create a safe and inclusive environment, where students are able to look at mistakes as learning opportunities. Keeping a consistent overarching structure to lessons can help create a desirable environment for learning.

Gagne’s Nine Events of Instruction offers a good roadmap for instructors:



Try It! How might you structure a lesson, using Gagne’s Nine Elements of Instruction?

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References

CAST (2018). Universal design for learning guidelines version 2.2 [graphic organizer]. Wakefield, MA: Author.

Meyer, A., Rose, D.H., and Gordon, D. (2016). Universal Design for Learning: Theory and Practice. CAST Professional Publishing

List of Resources and Links mentioned in the workbook (and additional recommendations)

Multiple means of representation	Creating Accessible Documents
	Accessibility for Ontarians with Disabilities Act (AODA)
	Accessible Document Templates
	Principles of Effective English Language Learner Pedagogy
	Geogebra
	Equatio
	Quizlet
	Study Stack
	The Noun Project
	Related Words
	Khan Academy
	Dual Coding poster
	Advance Organizers
	Coggle
Graphic Organizer and Concept Map templates	
Multiple Means of Action and Expression	Read and Write Gold
	MyApps
	NearPod
	Kahoot
	Answer Garden
	Adobe Creative Cloud
	Voice Thread
	Screencast-o-matic
	Formative assessment at Seneca
	Blackboard Course Tool Availability
	Seneca's Sandbox
	Growth Mindset
	Metacognition and Self-Regulated Learning Guidance Report
	Assignment Calculator

Multiple Means of Engagement	Choice boards
	Gagne's nine events of instruction
	Padlet
	Plickers
	Poll Everywhere
	Socrative
	Explain Everything

Checklist for UDL Implementation

- 1) Use the selected items below as checkpoints to determine where you are in your UDL journey
- 2) Engage in reflection and goal setting for your instructional practice

Provide multiple means of Representation		Y	N	Try
Perception	I consider the layout of visual and text elements, such as size of text, images, graphs, tables and any other content			
	I use text equivalents to audio in the form of captions, or automated speech-to-text for spoken language			
	I provide auditory cues for key concepts, and any transitions in visual information			
	I use physical objects or spatial models to convey key ideas in my course			
	I provide access to text-to-speech software such as Read and Write Gold			
Language & Symbols	I pre-teach vocabulary and symbols, especially in ways that promote connection to my students' experience and prior knowledge			
	I make relationships between elements explicit (e.g., highlighting the transition words in an essay, links between ideas in a concept map, etc.)			
	I allow for easy access to multiple representations of notation where appropriate (for example, formulas, word problems, graphs)			
	I embed visual, non-linguistic supports for vocabulary clarification (for example, pictures, diagrams, videos)			
	I make all key information available to students in their first language, for students who have limited English proficiency			
Comprehension	I anchor instruction by linking to and activating relevant prior knowledge of my students			
	I use advance organizers (for example, concept maps)			
	I use relevant analogies and metaphors to help students bridge key concepts			
	I use multiple examples and non-examples to highlight critical features			
	I offer opportunities over time to revisit key ideas and linkages between ideas			
Provide multiple means of Action and Expression		Y	N	Try
Physical Action	I provide alternatives for physically responding or indicating selections (e.g., alternatives to marking with pen and pencil, alternatives to mouse control)			
	I offer my students support in using their assistive technologies in lessons as appropriate			

	I use physical manipulatives and models where appropriate in my instruction to demonstrate a concept			
	I provide alternatives in the requirements for rate, timing, speed, and range of motor action required to interact with instructional materials, physical manipulatives, and technologies			
	I model problem solving using a variety of strategies			
Expression & Communication	I use social media and interactive web tools (for example, discussion forums, chats, annotation tools, storyboards, comic strips, animation presentations)			
	I allow my students access to spellcheckers, grammar checkers and word prediction software			
	I provide multiple examples of novel solutions to authentic problems			
	I provide differentiated models to support my students understanding (models that demonstrate the same outcomes but use different approaches, strategies, skills, etc.)			
	I provide scaffolds that can be gradually released with increasing independence and skills			
Executive Functions	I post goals, objectives and schedules in an appropriate place			
	I embed prompts to “stop and think” before acting, or to “show and explain your work” to guide my students			
	I provide graphic organizers and templates for data collection and organizing information			
	I provide templates, assessment checklists and scoring rubrics to guide self-reflection on quality and completeness of work			
	I assist my students in note-taking procedures, and provide alternatives forms of note-taking where appropriate			
Provide multiple means of Engagement		Y	N	Try
Recruiting Interest	I allow my students to participate in the design of classroom activities and academic tasks			
	I involve my students in setting their own personal academic and behavioural goals, wherever and whenever possible			
	I design authentic learning activities which clearly reflect and communicate the learning outcomes			
	I work to create an accepting and supportive classroom environment which is responsive to student voice and choice			
	I use instructional strategies which minimize perceived threats and distractions for my students			
Effort & Persistence	I engage students in assessment discussions of what constitutes excellence and generate relevant examples			
	I differentiate the degree of difficulty or complexity within which core activities can be completed			
	I emphasize process, effort, and improvement in meeting desired standards rather than evaluation and competition			

	I encourage and support opportunities for peer interactions and supports (for example, peer-tutors)			
	I create and share expectations for group work by collaboratively setting norms, and using rubrics			
Self-regulation	I design activities which incorporate self-reflection and the identification of personal goals			
	I support my students in managing academic disappointment or frustration, and encourage them to seek appropriate emotional support where necessary			
	I use real-life situations or simulations to demonstrate coping skills			
	I use incorporate timely feedback in all my activities, and ensure that my students have access to alternative scaffolds (e.g., charts, templates, feedback displays)			
	I assist my students in using the right tools to monitor changes in their academic performance or behavioural goals			

Important Note: The statements above have been taken and/or modified from the CAST website. See more here: [UDL CAST Guidelines](#)

Reflection

1) What are your areas of strength? Using the checkpoints above, give specific examples

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2) Where do opportunities for improvement lie?

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Goal Setting

1) Select one area to work on from the 'Provide multiple means of Representation' section. Write down what you wish to achieve, and give yourself an appropriate timeframe

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2) Select one area to work on from the 'Provide multiple means of Action and Expression' section. Write down what you wish to achieve, and give yourself an appropriate timeframe

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3) Select one area to work on from the 'Provide multiple means of Engagement' section. Write down what you wish to achieve, and give yourself an appropriate timeframe

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