

Universal Design for Learning: Multiple Means of Representation

Educator presents new learning to students through multiple types of medium by applying the Universal Design for Learning (UDL) Principle of Multiple Means of Representation.

Key Method

The educator delivers new learning through multiple types of medium to enable learners to perceive new information, understand various representations, and transfer new information into usable knowledge.

Method Components

Recognition Networks: Provide Multiple Means of Representation

Recognition Networks in the brain are responsible for receiving, analyzing, and forming concepts from information gathered through the senses. For this reason, the Recognition Networks are known as the “what” of learning. Educators who implement multiple means of representation into lesson design provide students with

- access to key vocabulary necessary to unlock the meaning of disciplinary content.
- control over the pace and process for accessing content.
- ways to understand abstract concepts and the relationships among ideas related to the content.
- smaller segments or chunks of content at one time.

The following guidelines provide a more in-depth understanding of the Recognition Networks.

Guideline 1: Provide Options for Perception

Perception refers to the way humans process sensory information and make interpretations about that information. It is important to note that perception is not the same as the sensation—seeing, hearing, feeling, tasting. A new mother might awaken to a tiny whimper from her baby in the night, but sleep through the sound of an ambulance. She hears both sounds, but she perceives the sound of her baby, not the sound of the ambulance. Likewise, students often interpret the same sensations differently or have different perceptions based on their current knowledge and past experiences. Many new technologies have alternatives that enhance auditory and visual

displays that students can easily access. Educators can offer support for Guideline 1 by considering the following questions.

- 1.1: Do I provide flexibility for students to adjust the way content is displayed (e.g., font size, colors, volume, graphics, contrast) and the speed or rate of delivery?
- 1.2: Do I provide an alternative to auditory information, or must learners rely solely on sound?
- 1.3: Do I provide non-visual alternatives to images and printed text, or must learners rely solely on sight?

Guideline 2: Provide Options for Language, Mathematical Expressions, and Symbols

For students to build understanding from words, symbols, icons, and mathematical notations, they must first be able to unlock the meaning that each word or symbol conveys. They are then able to build on this knowledge and create meaning as they learn about sentence structures and mathematical formulas, as well as the meaning of figurative language and idioms. Educators support Guideline 2 by considering the following questions.

- 2.1: Do I pre-teach unfamiliar vocabulary, symbols, or icons and embed alternate representations within the content to support students in new learning (e.g., footnotes, glossaries, illustrations)?
- 2.2: Do I explicitly teach the relationship between words, a sentence, or a paragraph and notations in a formula or equation?
- 2.3: Do I provide students who struggle with decoding and automaticity with options to reduce barriers caused by a lack of fluency?
- 2.4: Do I promote understanding of formal English and academic language through tools and translations in the student's dominant language?
- 2.5: Do I illustrate concepts and processes through multiple media (illustrations, simulations, images, interactive graphics) to make text more comprehensible?

Guideline 3: Provide Options for Comprehension

The goal of comprehension is for students to store new learning in their long-term memories so the information can be recalled and transferred to practical applications in the future. As students increase their comprehension of context, they transform information into usable knowledge. Educators support Guideline 3 by considering the following questions.

- 3.1: Do I relate new content to students' existing background knowledge and experiences?

- 3.2: Do I relate patterns, critical features, and big ideas in new content to help students connect with what they already know?
- 3.3: Do I prompt and support students as they acquire understanding through information processing, visualization, and manipulation of materials?
- 3.4: Do I help students organize information in ways that maximize transfer of content and generalization of concepts?

Supporting Rationale and Research

The Supporting Research and Resources includes several articles and videos for learning more about UDL Multiple Means of Representation. As you interact with these learning materials, take time to reflect on your professional practice.

Supporting Research

CAST. (2018). Universal Design for Learning Guidelines (version 2.2). Retrieved from <http://udlguidelines.cast.org>.

Rao, K., & Meo, G. (2016). *Using Universal Design for Learning to Design Standards-Based Lessons*. SAGE Open. <https://bit.ly/3BHvVyG>

Strangman, N., Vie, G., Hall, T., & Meyer, A. (2004). *Graphic Organizers and Implications for Universal Design for Learning: Curriculum Enhancement Report*. Wakefield, MA: National Center on Accessing the General Curriculum. <https://bit.ly/3vEmpZw>

Meyer, A., Rose, D.H., & Gordon, D. (2014) *Universal design for learning: Theory and practice*, Wakefield MA: CAST. <http://udltheorypractice.cast.org/login> To access the book, the website requires a free account (username and password).

Supporting Resources

UDLA How to Read the UDL Guidelines. This video explains the Universal Design for Learning Networks, Guidelines, and Principles and includes connections to the classroom (<https://bit.ly/3zyg0jL>).

UDL Guideline #2: Provide Multiple Means of Representation. This resource, created by UNC Greensboro, includes many examples for providing multiple means of representation in various instructional settings (<https://bit.ly/3OYcSD8>).

UDL Representation Progression Rubric. This rubric (<https://bit.ly/3NxlvDY>) provides suggested criteria for successfully implementing the UDL Principle of Representation. The full UDL Progression Rubric can be accessed here (<https://bit.ly/3O2RQUY>).

UDLA Representation Video Series. The Universal Design for Learning Academy developed a series of videos for educations focused on the UDL Principle of

Representation: Provide Options for Perception (<https://bit.ly/3SpZx9S>), Provide Options for Language and Symbols (<https://bit.ly/3zTGFbS>), and Provide Options for Comprehension (<https://bit.ly/3zuhKuj>).

Guide to Universal Design for Learning: Provide Multiple Means of Representation. This resource (<https://bit.ly/3QIH0i1>), developed by New Zealand's Inclusive Education website, provides an overview and strategies for implementing the principle of multiple means of representation.

UDL for Teachers: Representation. This website (<https://bit.ly/2D3OEX9>) provides videos and includes suggested strategies for implementing the three UDL guidelines aligned with the Principle of Providing Multiple Means of Representation.

UDL-Aligned Strategies. This website (<https://goalbookapp.com/toolkit/v/strategies>) provides instructional methods and tools used by education professionals to ensure that all students have an equal opportunity to learn. The strategies are aligned with the networks and guidelines of UDL.

Removing the Barriers: Planning for ALL! This video talks about a paradigm shift in mindset and the importance of context when planning for all students (<https://www.youtube.com/watch?v=MzL8yMBKM7k>).

Assistive Technology Resource Guide for Arkansas Schools. Assistive technology is used to increase or improve the independence of a student with a disability in education. This guide places an increased focus on assistive technology and the application to a Universal Design for Learning Framework. (<https://bit.ly/3MSDIT3>)

Arkansas Division of Elementary and Secondary Education: Accessible Educational Materials. This website is designed to provide information about accessible educational materials, including available resources and services, to Arkansas educators, parents, and students. ([DESE AEM Resources for School Staff](#))

National Center on Accessible Educational Materials. The National Center on Accessible Educational Materials for Learning at CAST provides technical assistance, coaching, and resources to increase the availability and use of accessible educational materials and technologies for learners with disabilities across the lifespan. (<https://aem.cast.org/>)

Submission Guidelines and Evaluation Criteria

This micro-credential is divided into three areas: Overview, Artifacts and Evidence, and Reflection. Each area contains guidelines for the item(s) you must submit for this micro-credential and the criteria by which your evidence and artifacts will be evaluated.

- Please read each task and corresponding rubric carefully to ensure a thorough understanding of the expectations for the artifacts and evidence you submit.
- Before uploading evidence and artifacts for this micro-credential, remove any personally identifiable information. When referring to students or student work samples, use fictitious names or Student A, Student B, etc.
- To earn this micro-credential, you must receive “Passing” on Part 1 and Part 3, and “Demonstrated” on all criteria in Part 2.

Part One. Overview

Read the Overview guidelines and evaluation criteria carefully to ensure a thorough understanding of the expectations for a “passing” submission.

The Overview submission should be uploaded as a Word document or PDF. (Please do not use Google Docs.)

Task: Describe the challenges your students experience when they encounter new academic content. In your response include:

- Student demographics (e.g., race, ethnicity, socioeconomic status, English learners, students eligible to receive special education, IEPs, and/or 504 plans)
- Content area and grade level(s)
- Your primary method for delivery of content (i.e., explain how you typically present students with new academic content)

This submission is scored either “passing” or “not passing.”

Passing: Earner includes a response to each part of the prompt; total response should be at a minimum of 150-words and provide adequate detail to help the scorer understand the context for your submission.

Part Two. Artifacts and Evidence

Read the Document Submission Requirements carefully to ensure a thorough understanding of the expectations for “Demonstrated.”

Any written documents should be uploaded as a Word document or PDF. (Please do not use Google Docs.)

Task 1: Options for Perception

Incorporate the UDL Perception Checkpoints 1.1, 1.2, and 1.3 into your lesson design. In a written response, explain how you incorporated the UDL Checkpoints in the lesson, describe specific challenges related to one of these checkpoints, and explain how you

provided flexibility for students to access or modify content through multiple means of representation to accommodate student learning needs.

In addition to your written response, upload artifacts that demonstrate implementation of the perception checkpoints. Artifacts may include photos and/or video/audio recordings (5 minutes or less) that highlight the checkpoints in the lesson design and the before and after of student interfacing materials.

Please submit the written response and artifacts with the titles “Task 1 Lesson Design” and “Task 1 Checkpoint Artifacts” as evidence for Task 1.

Task 2: Options for Language and Symbols

If teaching a course with text, select a chunk of text for an upcoming lesson and identify the related vocabulary and concepts. Upload as Artifact 1 for this task.

If teaching a course without text, select an upcoming lesson and identify the related vocabulary, symbols, equations, notations, and concepts. Upload as Artifact 1 for this task.

Based on the text or concept, create a lesson design that incorporates a minimum of three checkpoints (2.1, 2.2, 2.3, 2.4, and/or 2.5) for Guideline 2 Language and Symbols. In a written response, explain how the selected checkpoints provide students with access to the content and provide meaning for unfamiliar words, symbols, syntax, equations, notations, or concepts.

In addition to your written response, upload artifacts that demonstrate implementation of the selected checkpoints. Artifacts may include, but are not limited to slide deck presentations, visuals, video/audio technology, graphic organizers, or concept maps that students have completed.

Please submit the text or concept, the written response, and artifacts with the titles “Task 2 Artifact 1”, “Task 2 Written Response”, and “Task 2 Artifacts of implementation” as evidence for Task 2.

Task 3: Options for Comprehension

Submit a 5-minute video of you engaging students in new learning that incorporates the four checkpoints for Comprehension (3.1, 3.2, 3.3, and 3.4). In addition, provide a written or recorded commentary explaining how you addressed the four checkpoints and how your delivery enabled all learners to better comprehend the information and form relationships between new and prior knowledge.

Please submit the video of engaging students and the commentary with the titles “Task 3 Engaging Students Video” and “Task 3 Commentary” as evidence for Task 3.

Artifacts and Evidence Scoring Guide

Tasks	Not Met	Progressing	Demonstrated
Task 1: Options for Perception	<p>Earners submit a written response that includes some of the components listed for Task 1</p> <p>OR</p> <p>Earners provide checkpoint artifacts that partially demonstrate implementation as described in Task 1.</p>	<p>Earners submit a written response that includes some of the components listed for Task 1</p> <p>AND</p> <p>Earners provide checkpoint artifacts that partially demonstrate implementation as described in Task 1.</p>	<p>Earners submit a written response (200-word minimum) that includes all components listed for Task 1.</p> <p>AND</p> <p>Earners provide checkpoint artifacts that demonstrate implementation as described in Task 1.</p>
Task 2: Options for Language and Symbols	<p>Earners do not submit the text or the lesson.</p> <p>OR</p> <p>Earners provide a written explanation (less than 200-words) of the intentional integration of one - two checkpoints from Guideline 2 into lesson design to support student access to learning.</p> <p>OR</p> <p>Earners do not submit artifacts that demonstrate the implementation of checkpoints.</p>	<p>Earners submit the text without the identified vocabulary and concepts, or earners submit the lesson without the related vocabulary, symbols, equations, notations, and concepts.</p> <p>AND</p> <p>Earners provide a written explanation (less than 200-words) of the intentional integration of three checkpoints from Guideline 2 into lesson design to support student access to learning.</p> <p>AND</p> <p>Earners submit artifacts that partially demonstrate the implementation of checkpoints.</p>	<p>Earners submit the text with identified vocabulary and concepts, or earners submit the lesson with related vocabulary, symbols, equations, notations, and concepts.</p> <p>AND</p> <p>Earners provide written explanation (200-word minimum) of the intentional integration of three checkpoints from Guideline 2 into a lesson design to support student access to learning.</p> <p>AND</p> <p>Earners submit artifacts to demonstrate the implementation of checkpoints.</p>
Task 3: Options for Comprehension	<p>Earners submit a video that does not illustrate the checkpoints for Comprehension and students engaging in learning.</p> <p>OR</p> <p>Earners provide written documentation or audio recording that does not explain how the four checkpoints are used to impact comprehension and content connections for all student learners.</p>	<p>Earners submit a 5-minute video that illustrates three checkpoints for Comprehension and students engaging in new learning.</p> <p>AND</p> <p>Earners provide written documentation or audio recording that partially explains how the four checkpoints are used to impact comprehension and content connections for all student learners.</p>	<p>Earners submit a 5-minute video that illustrates the four checkpoints for Comprehension and students engaging in new learning.</p> <p>AND</p> <p>Earners provide written documentation or audio recording to explain how the four checkpoints are used to impact comprehension and content connections for all learners.</p>

Part 3. Reflection

Read the Reflection guidelines and evaluation criteria carefully to ensure a thorough understanding of the expectations for a “passing” submission.

Your Reflection should be uploaded as a Word document or PDF. (Please do not use Google Docs.)

Task: Submit a response to the following prompts:

- Reflect on ways that implementation of UDL: Multiple Means of Representation enable learners to perceive new information, understand various representations, and transform new learning into usable knowledge.
- Use the UDL Progression Rubric to rate your implementation of Multiple Means of Representation. What evidence did you consider for your rating?

This submission is scored either “passing” or “not passing.”

Passing: Earner includes a response for each part of the prompt (300-word minimum). Responses should clarify and further explain how earning this micro-credential has impacted your professional practice and student outcomes.