

UDL Strategies: removing universal barriers and planning for variability

Danielle Organ and Andrea French

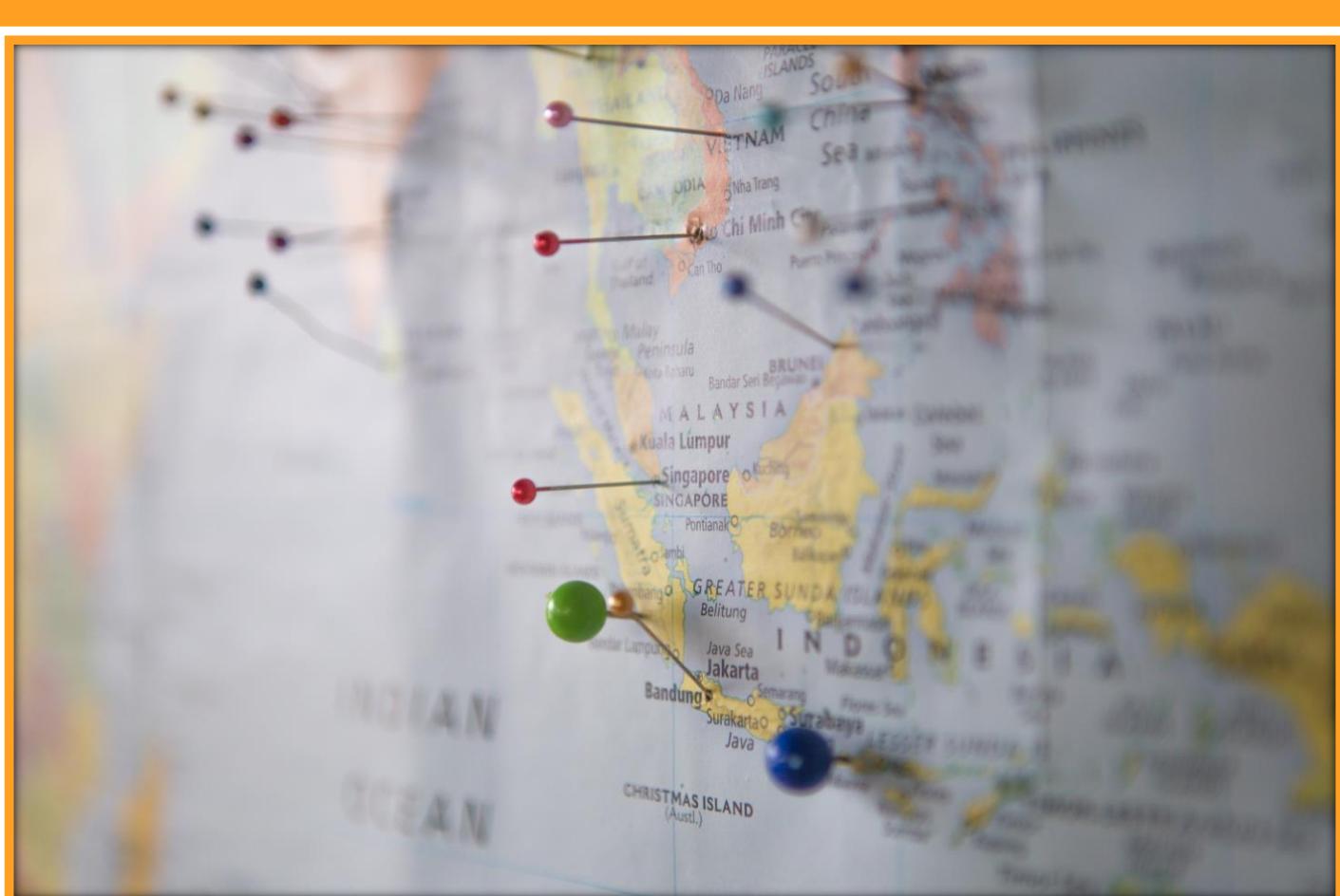
QSI LSC and LST

QSI Learning Support

QSI QUALITY SCHOOLS INTERNATIONAL



Planning for a Journey!



Planning for student variability



Learner variability

Learner Variability is the NORM in the classroom.



Systematic Variability

Learner Variability is systematic and predictable.



Learning Design

Barriers to learning can be reduced when learning is designed from the outset to count for individual variability.



A picture illustrating the concepts of equality, equity and justice.

Courtesy of [Advancing Equity and Inclusion: A Guide for Municipalities](#), by City for All Women Initiative (CAWI), Ottawa

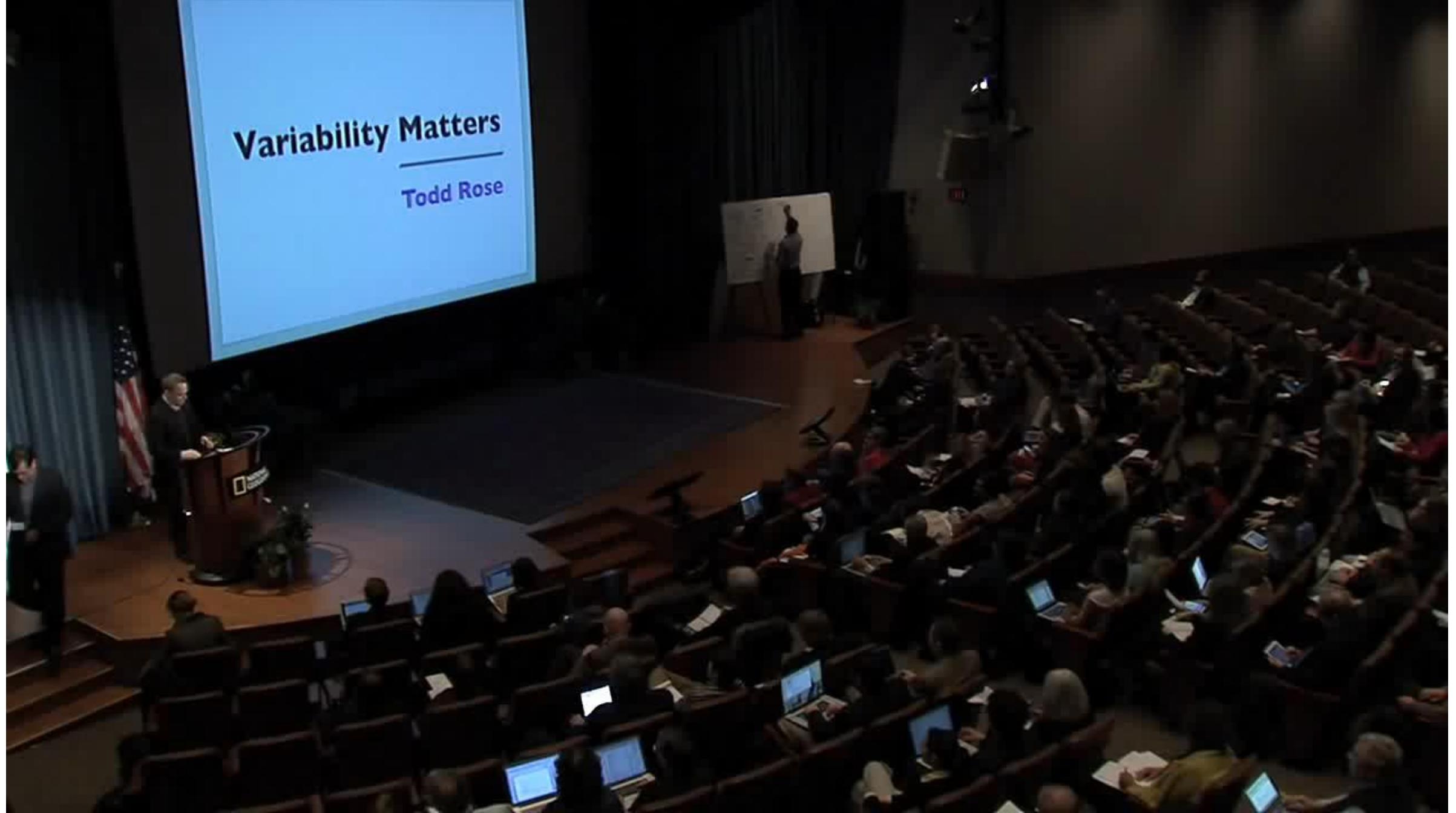
Concept of Universal Design



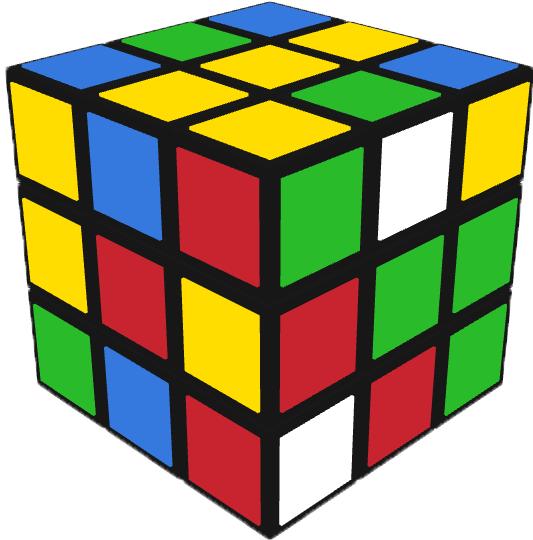
“The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design”

Variability Matters

Todd Rose



How can you design a learning environment in which ALL students can demonstrate potential?



- Change the representation of the material.
- Offer multiple representations of the content.
- Explicitly teach different strategies of the material.

Universal Design for Learning



Multiple means of expression and representation

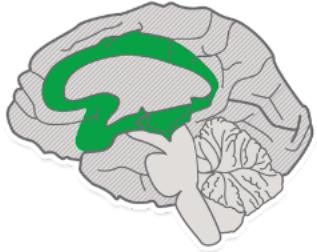


Transforming education through Universal Design for Learning — <http://www.cast.org>

UDL at a glance

UDL Principles

AFFECTIVE NETWORKS:
THE **WHY** OF LEARNING

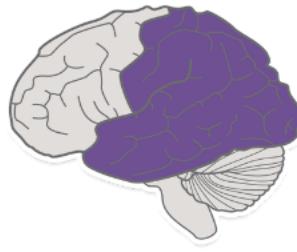


Engagement

For purposeful, motivated learners, stimulate interest and motivation for learning.

[Explore Engagement](#)

RECOGNITION NETWORKS:
THE **WHAT** OF LEARNING

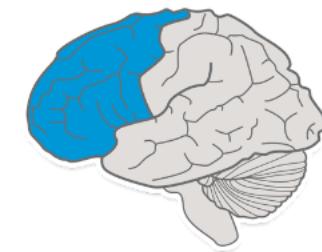


Representation

For resourceful, knowledgeable learners, present information and content in different ways.

[Explore Representation](#)

STRATEGIC NETWORKS:
THE **HOW** OF LEARNING

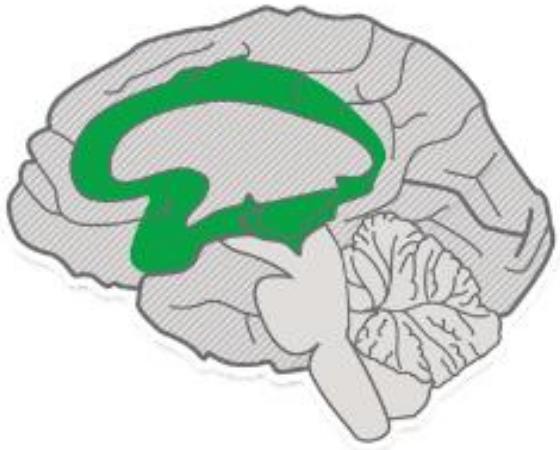


Action & Expression

For strategic, goal-directed learners, differentiate the ways that students can express what they know.

[Explore Action & Expression](#)

AFFECTIVE NETWORKS: THE **WHY** OF LEARNING



Engagement

For purposeful, motivated learners,
stimulate interest and motivation for
learning.

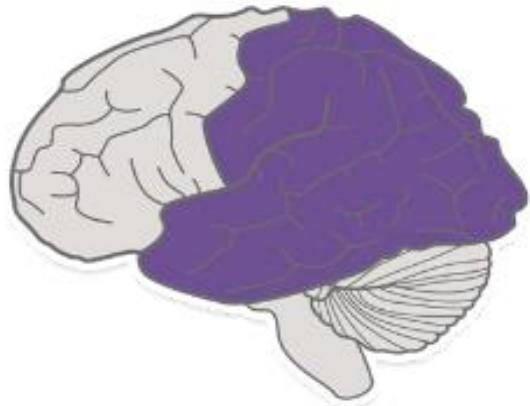
- **Recruiting Interest**
- **Sustaining Effort and Persistence**
- **Self Regulation**

How to ENGAGE

Strategy	How to Implement
Guided Notes	<ol style="list-style-type: none"> 1. Create an outline of the lecture, video, or reading content you plan to share. 2. Identify and omit important information from the outline. 3. While listening, viewing, or reading ask learners to fill in the guided notes.
Four Corners	<ol style="list-style-type: none"> 1. Ask a complicated or controversial question. 2. In each of the four corners of the room, post an answer option and have learners gather in the corner that best represents their answer. 3. Each corner group then discusses their rationale for selecting their shared response and has a spokesman share out the rationale. While listening, any learner can move to another corner at any time. 4. After all groups have shared, ask learners to reflect on changes in their thinking.
CLOSE Reading	<ol style="list-style-type: none"> 1. Ask learners to select a quote or short passage from one of the readings that they found interesting and/or useful. 2. Have the learners write the selected passage in full. 3. Next, learners should rewrite the quote in their own words. 4. Finally, ask the learners to write a 1-2 paragraph reflection on why they selected that quote. Have them address how it applies to the course content, informs their thinking, and/or prompts them to ask new questions.
Lecture Wrappers	<ol style="list-style-type: none"> 1. Provide a 10-20 minute mini-lecture. 2. While pausing, have the learners write down all the important points they recall. They can also list any questions they have. 3. Pair the learners to compare, fill in, and fine-tune their free-recall note



RECOGNITION NETWORKS:
THE **WHAT** OF LEARNING



Representation

For resourceful, knowledgeable learners, present information and content in different ways.

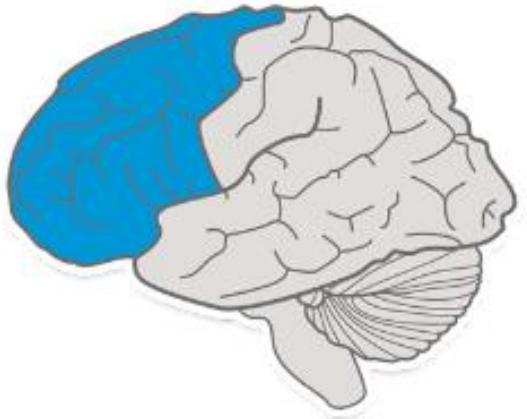
- Perception
- Language and Symbols
- Comprehension

How to TEACH

Strategy	How to Implement
Podcasts	<ol style="list-style-type: none"> 1. Listen to a variety of podcasts to experience different genres and production approaches. 2. Provide a Wrapper or other supplemental activity for learners to complete while listening. 3. Questions to answer while listening 4. Questions to answer after listening 5. Guided notes 6. Use podcasts to share interviews with different colleagues or experts from the field.
Mnemonics	<ol style="list-style-type: none"> 1. Discuss the topic to be learned. 2. Pre-select a mnemonic strategy (acronym, acrostic, chain, keyword, rhyme, or phrase). 3. Model the strategy and assist learners until they use it independently. 4. Allow learners the opportunity to practice orally and provide corrective feedback.
Escape Rooms	<ol style="list-style-type: none"> 1. Provide a narrative that interests the learners for escaping a room. The plot and problems should be relevant to course content. 2. Find or create a problem-set (use multiple-choice, numeric, one-word, or true-false questions). 3. Create sub-groups of 3-4 problems that become the clues to open one lock at a time – there should be multiple locks that need to be opened to escape.
Cube It	<ol style="list-style-type: none"> 1. Ask learners to fold a piece of paper into 6 sections (in half/long ways, then in thirds). Number each 1-6. 2. In groups, one person will roll a dice to determine which question will be answered first. The six question topics are... • Describe it • Analyze it • Apply it • Take a Stand • Reinvent it • Choose a different perspective 3. The group discusses the question and answer. 4. Moving clockwise, the next person roles the dice to determine the next question to be answered. 5. Continue this process until time runs out.



STRATEGIC NETWORKS:
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Action & Expression

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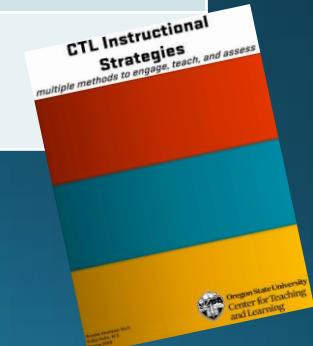
- **Physical Action**
- **Expression and Communication**
- **Executive Function**

41. Assumption Wall
 42. Goals & Wants
 43. 3-2-1
 44. Brain Dump
 45. Minute Paper
 46. Muddiest Point (MP)
 47. Most Important Point (MIP)
 48. Mix-Freeze-Pair
 49. Paraphrase Passport
 50. Carousel Brainstorm
 51. Text Transformation
 52. RAFT
 53. Cube It
 54. What's the Principle?
 55. Graphic Organizers
 56. Exam Autopsy
 57. Send-a-Problem
 58. Wikis
 59. Portfolios
 60. Rubrics

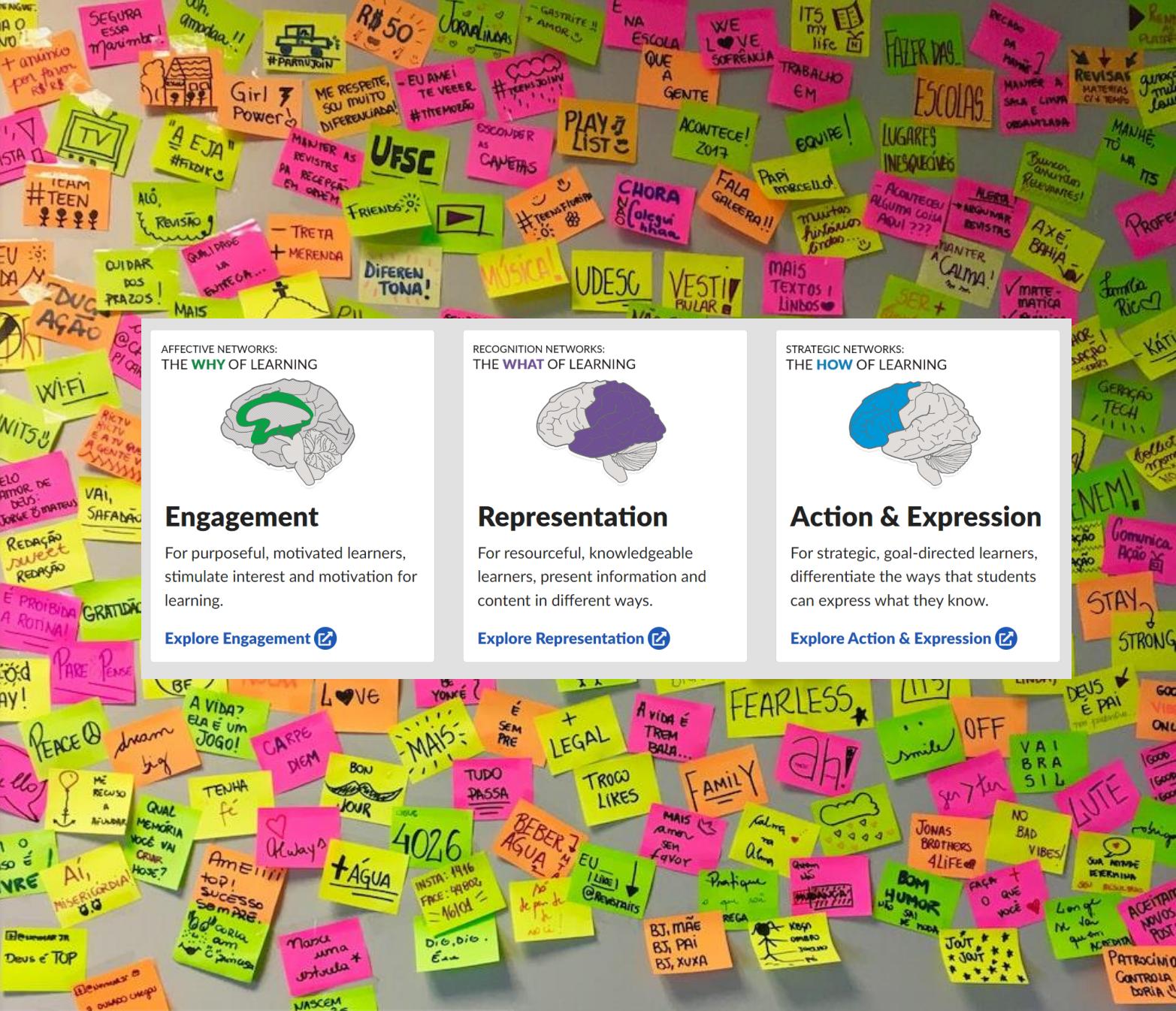
How to ASSESS

How to Implement

Strategy	How to Implement
Exam Autopsy	<ol style="list-style-type: none"> Ask learners to examine the questions they missed and why. Ask learners to reflect on their study habits. <ul style="list-style-type: none"> How many hours per week did you study? What were your study methods—re-read lecture slides, highlight notes, re-watch the lecture capture, read the textbook? Did you engage with study groups, online videos, or any other method? How much sleep did you get the night before? Did you experience test anxiety? Did you change answers during the exam? Based on their results, help learners pinpoint specific tactics to use either in preparation for the test.
Graphic Organizers	<ol style="list-style-type: none"> Select (or design) a graphic organizer that aligns with the learning goal. Ask learners to apply the information they deconstructed in order to make meaning or develop unique insights.
Portfolios	<ol style="list-style-type: none"> Throughout the term, ask learners to collect artifacts (samples) of their learning. • Samples may be best work or the revision history (evolution) of work (writing samples, explanations of mathematical steps, journal articles, lab reports, projects, badges) For each artifact, learners write a reflective narrative (explaining what the artifact is, how it relates to the course content, connections they made, their learning process, relevancy to their future careers)
Brain Dump	<ol style="list-style-type: none"> Have students write down everything they remember from the class lecture, video, and/or readings. After 5-10 minutes, collect their recollections.



Brainstorm!



AFFECTIVE NETWORKS:
THE WHY OF LEARNING



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STRATEGIC NETWORKS:
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For strategic, goal-directed learners,
differentiate the ways that students
can express what they know.

[Explore Action & Expression](#)

Using a multi-tiered system of support for **ALL** students.



What is UDL?

UDL or DI? How are they different?

UDL

More focused on student-centered learning where the learning experiences are pro-actively designed so there are options that are accessible for every learner.

The goal is to remove the barriers to learning so students can achieve optimum knowledge and become expert learners.

Used to design flexible goals, methods, materials, and assessments by keeping in view diverse learner needs from the very beginning.

Provides multiple means of engagement, representation, and action and expression to all learners from the start. Students are encouraged to self-differentiate and choose the best path for themselves.

DI

A responsive practice where adjustments are made based on the individual needs of the students.

Oftentimes, differentiation is done after the data is collated and trends are noticed.

The goal is to provide a responsive and optimal learning environment for individuals/groups of learners.

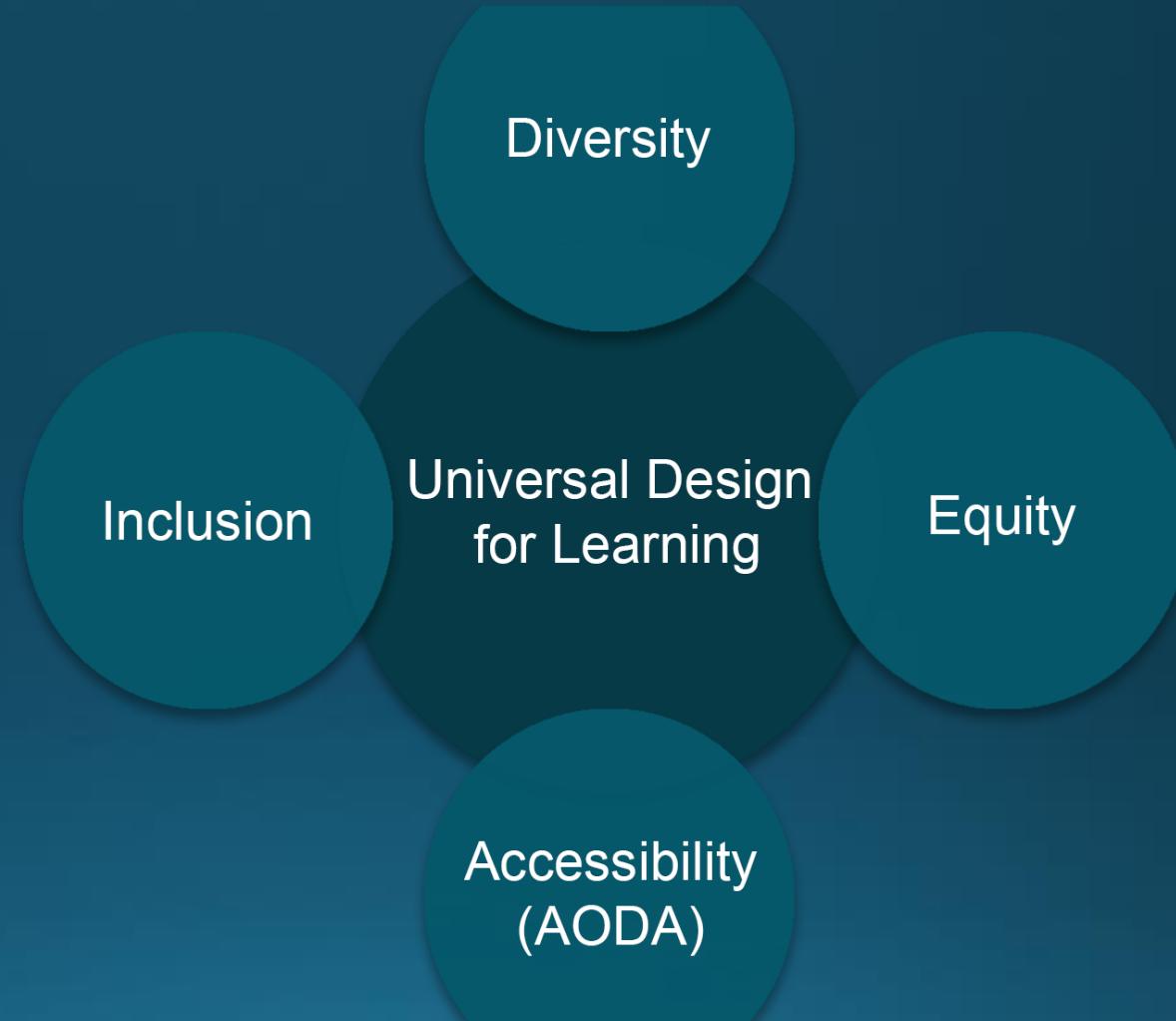
Provides targeted strategies that are teacher-directed as teachers choose which strategies students receive.

CAST UDL Framework

Eliminates barriers to learning and supports learning.

Addresses and facilitates inclusion, diversity, equity and accessibility.

CAST UDL Framework



How have you implemented
UDL principles in your
classroom/lab/other?

Stand Up, Hand Up, Pair Up

Mix Pair Share

Rally Robin

Rally Table

Rally Coach

Simultaneous Rally Table

Quiz-Quiz-Trade



Timed Pair Share

Single Round Robin

Continuous Round Robin

All Write Round Robin

Timed Round Robin

Stand-N-Share

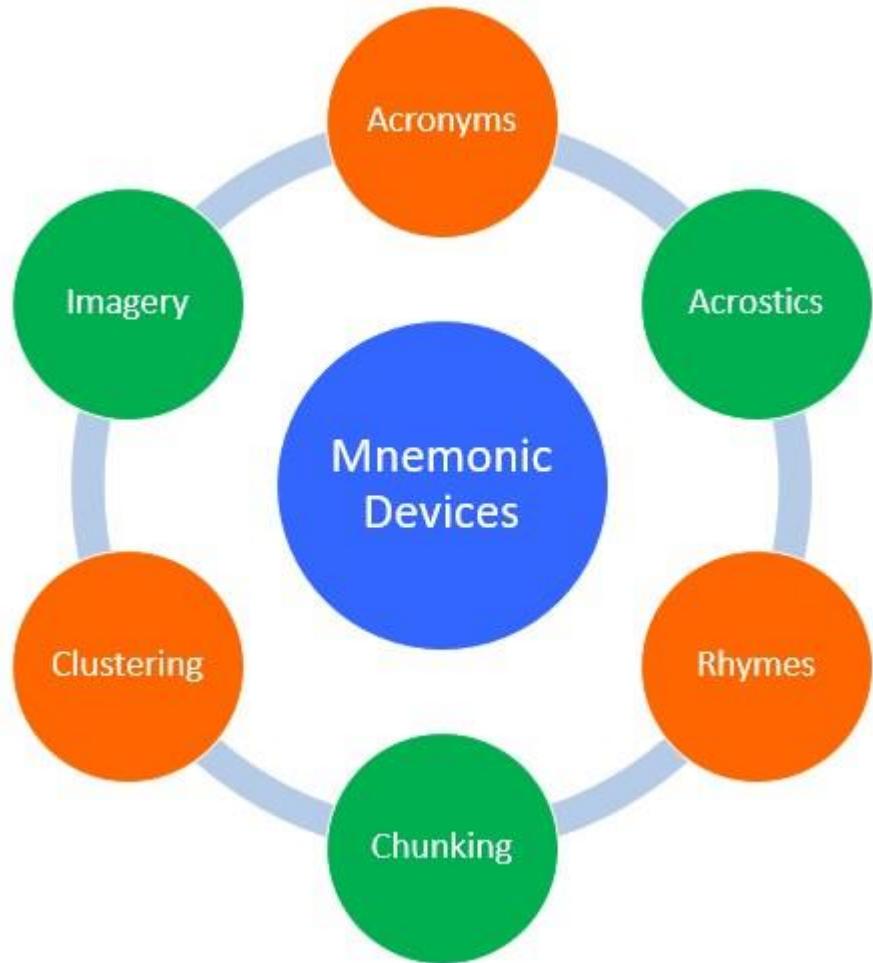
Fan-N-Pick

Numbered Heads Together

Single Round Table

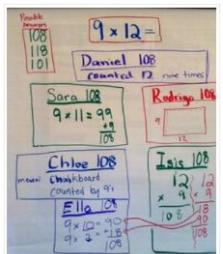
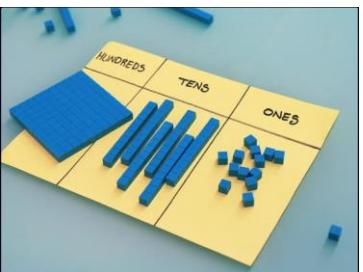
Continuous Round Table





Flocabulary

UDL Strategies for Math



Math Talks



Participation Quiz



3 Read Protocol



Digital Resources

<https://www.sfusdmath.org/>

Math Games and Georgia Numeracy Project



NUMERACY PROJECT TASKS AND ACTIVITIES

Stage Six

- The following list of activities is designed to be used for a student who scores at Stage Six on the Numeracy Assessment Universal Screener.
- Teachers and interventionists should choose activities in the areas in which the student was unable to demonstrate mastery of a particular skill in order to create an "Intervention Prescription".
- These resources can be found by clicking on the activity name below.

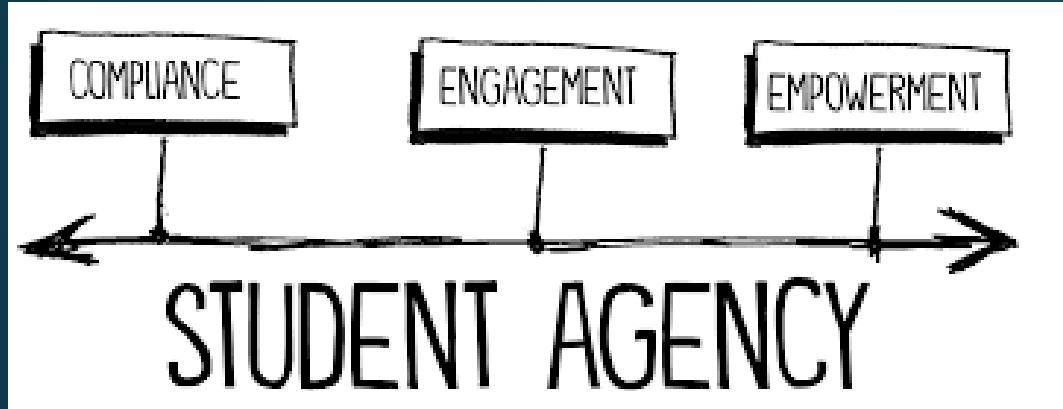
6:1 <i>Recall the multiplication and division facts for the multiples of 2,3,5, and 10</i>	6:2 <i>Recall multiplication to 10 x 10, and the corresponding division facts</i>	6:3 <i>Recall groupings of twos, threes, fives, and tens that are numbers to 100 and the resulting remainders</i>	6:4 <i>Identify all of the numbers in the range 0-1,000,000</i>	6:5 <i>Say the forwards and backwards whole number word sequences by ones, tens, hundreds, and thousands in the range of 0-1,000,000 including finding numbers that are 10, 100, and 1,000 more or less than a given number</i>	6:6 <i>Order whole numbers in the range of 0-1,000,000</i>
❖ Beep ❖ Bowl a Fact ❖ Dividing: Thinking About Multiplication Using Calculators	❖ Beep to 10 ❖ If You Know... ❖ Knock 'em Down ❖ Multiplication Cards	❖ Bead Strings ❖ Dividing? Think About Multiplying First ❖ Skip-Counting on the Number Line	❖ Number Fans to a Million ❖ Number Hangman to a Million ❖ Place Value Houses to a Million	❖ Counting ❖ A Million Number Fan ❖ Starting Point	❖ To a Million and Beyond ❖ Unlock the Order ❖ Who Wants to Be a Millionaire?
6:7 <i>Read decimals with tenths, counts forwards and backwards in tenths, order decimals with tenths</i>	6:8 <i>Recall groupings within 1,000, (e.g. 240 + 760)</i>	6:9 <i>Round whole numbers to the nearest 10, 100, or 1,000</i>	6:10 <i>Find out how many ones, tens, hundreds, and thousands are in all of a whole number</i>	6:11 <i>Find the number of tenths and hundredths in decimals to two places</i>	6:12 <i>Round decimals with up to two places to the nearest whole number</i>
❖ Decimal Card Ordering ❖ Reading Decimal Fractions ❖ Rocket Decimals ❖ Squeeze – Guess My Decimal	❖ Base Ten to 1,000 ❖ Saving Hundreds ❖ Tens and Hundreds and More	❖ Can You Guess to 1,000? ❖ Place Your Bet to 1,000 ❖ Round to 10, 100, and 1,000 ❖ Sensible Differences	❖ Changing Money ❖ How Many Tens and Hundreds? ❖ Large Numbers Roll Over ❖ Zap Whole Numbers	❖ Building Decimals ❖ Decimal Designs ❖ Representing Decimals	❖ Linking Money and Decimal Fractions ❖ Making Money by Rounding ❖ Rounding to the Nearest Whole Number ❖ Sensible Rounding
6:13 <i>Identify symbols for any fractions, including tenths, hundredths, thousandths, and those greater than 1</i>	6:14 <i>Ask the forwards and backwards word sequences for halves, quarters, thirds, fifths, and tenths</i>	6:15 <i>Order and compare unit fractions</i>	6:16 <i>Rename improper fractions as mixed numbers and position improper fractions on a number line</i>	6:17 <i>Solve addition and subtraction problems by going through tens</i>	
❖ Fraction Pieces ❖ Improper Fractions ❖ Non-Unit Fractions ❖ Show a Fraction	❖ Beep, Beep ❖ Creating Fractions ❖ Fraction Fraction ❖ More Fractions	❖ Open Number Lines ❖ Unit Fraction Card Ordering ❖ Who Has More Cake?	❖ Fractions Greater Than 1 ❖ Fractions on a Number Line ❖ Trains	❖ Finding Groups of 10 ❖ Subtraction In Parts ❖ Subtraction With Tens	



Formative Assessment Strategies for Students with Significant Disabilities



Formative Assessment	Example for Students with Significant Needs
Quick Quiz (ungraded)-Quizzes assess students for factual information, concepts, and discrete skill. There is usually a single best answer. Some quiz examples are Multiple Choice, True/False, Matching, Extended Response, Short Answer.	The teacher will ask a single question using simple and direct language, and/or with visual support. Based on the question, students will determine a single best answer. To meet individual student need, students may respond orally, by selecting a visual choice or utilizing an AAC Device.
Learning Logs/Journals-Students record in a journal their understanding of the topic, concept or lesson taught. The teacher reviews the entry to see if the student has gained an understanding of the topic, lesson or concept that was taught.	Independently or with targeted/guided questions, a student uses speech to text to record in journal or log; student uses picture cues to describe learning.
Exit Tickets-Exit cards are written student responses to questions posed at the end of a class or learning activity or at the end of a day.	The teacher will pose a single question, at the end of a class or learning activity, the student will respond using a visual picture and/or simple words.
Hand Signals/Polls-Ask students to display a designated hand signal to indicate their understanding of a specific concept, principle, or process: - I understand _____ and can explain it (e.g., thumbs up). - I do not yet understand _____ (e.g., thumbs down). - I'm not completely sure about _____ (e.g., wave hand).	The teacher will provide students with preestablished cards or recorded responses to determine level of student understanding.
Student Conferences-One on one conversation with students to check their level of understanding.	The teacher will have a one on one conversation with the students to check their level of understanding. Questions are worded in a manner that a student may use their AAC Device or Core Vocabulary for a response.
Observation-Walk around the classroom and observe students as they work to check for learning.	The teacher, paraeducator, or peer tutor will walk around the classroom and observe students as they work on a skill to check for learning. Make sure that paraeducators and peer tutors know what skills, aligned to the standards, they are observing.
Checklists-Set of criteria provided to ensure students understand how to fulfill assignment, requirement, or task.	A checklist can be used sequentially to include a few steps of a task at a time. For example, the entire task may be divided into beginning, middle, and end steps, which can be completed in groups of 2-3 steps. Students may need visuals or simple words included for each step.
One Minute Essay-A one-minute essay question (or one-minute question) is a focused question with a specific goal that can, in fact, be answered within a minute or two.	Students may provide a one-minute verbal response, it may include visual support, an outline, graphic organizer, or teacher-directed verbal cues. Students with limited communication may choose visuals to represent their response or pre-record their response on their AAC Device.
One Question/One Comment-Students are assigned a chapter or passage to read and create one question and one comment generated from the reading. In class, students will meet in either small or whole class groups for discussion.	As a text is read aloud or a student is listening to an audio book, the student will generate one question and one comment related to the passage. A student may need visual support, a graphic organizer or teacher prompting.



Preplanned methods to provide students with a choice of activities, materials, etc .

Provide meaningful choices to all students. Use student passions, wonderings and curiosities to drive student work.

Allow students to set goals and allow regular time for self reflection.

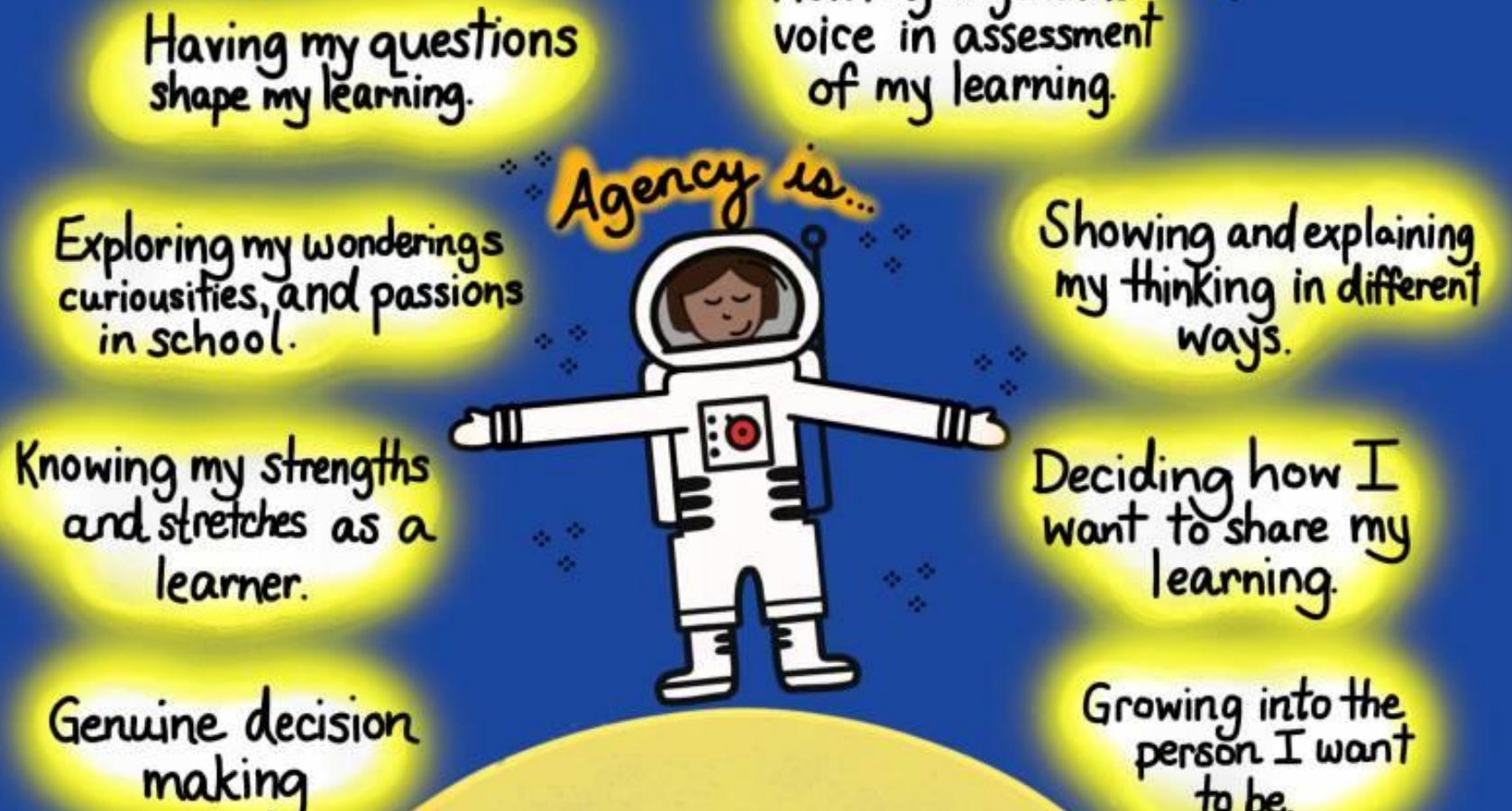
Internalize self efficacy through building a growth mindset and internal empowerment.



Learner Agency is Out of This World

@trev_mackenzie

@rbathursthunt





Universal Design for Learning

Why Use U.D.L.?

Equal Opportunity



Serve the needs of all learners

Benefits of UDL

Enhanced Curriculum



Challenging & Achievable

Removes Barriers



Strengths

UDL Principles

Expression



Representation

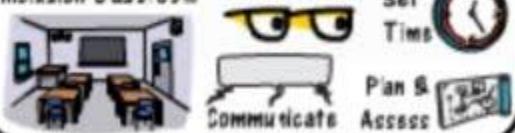


Engagement



Collaboration

Inclusion Classroom Shared Vision Set Times



Communicate Plan & Assess

Incorporating a UDL

Choice Assignments Flexible Assessment Support



Variety of Materials



Vary Presentation

Lesson Planning

Class Profils



Find Viable Curriculum



S.M.A.R.T. Goals



Variety

Reflection

SUBSCRIBE LIKE

Classroom Examples

Environment



Group Work



Projects



Flexibility



Multi-sensory Lessons

Student Centered





Oregon State University

- [CTL Instructional Strategy Cards.pdf](#)
- <https://ctl.oregonstate.edu/resources>



UDL Framework

Engagement

This section includes strategies designed to promote purposeful, motivated, interested, and emotionally charged learners by activating the **affective** networks of the brain. It provides multiple means of engagement that speak to learners' needs, interests, and autonomy. This supports the development of self-efficacy and persistence.

Representation

This section includes instructional strategies designed to promote resourceful, knowledgeable learners by activating the **recognition** networks of the brain. It provides multiple means of representation that meet the educational and cultural experiences learners bring.

Action & Expression

This section includes instructional strategies designed to promote goal-directed learners by activating the **strategic** networks of the brain. It provides multiple means for knowledgeable expression without barriers for learners.

Step by Step Planner : UDL Lesson Design

[UDL lesson planner.pdf](#)

Step-by-step planner: UDL lesson design

Step 1: Proactively design

Analyze the lesson goal

Record what students will know, do, and care about in this part of the lesson. (Think about the content they need to understand, group work there may be, and different skills in the activity or task.)

Next, decide on the primary goal for this part of the lesson. Craft a clear, specific goal for students to focus on.

Optional tool: [Top 10 UDL Tips for Developing Goals](#)

Anticipate variability: Engagement

What do you anticipate the range of student interest and effort will be for this part of the lesson?

What do you anticipate as barriers to student engagement?

What one or two design strategies can you include in your lesson to increase engagement?

Optional tool: Use CAST's [UDL Engagement Guidelines](#) to explore options for engagement.

- Examples:
- Choice boards to get students' interest
 - Options for collaboration to sustain effort
 - Options for self or group reflection for self-regulation

- Ask yourself or a planning partner:
- Is my goal clear and specific?
 - Have I separated the primary goal from the other parts of the lesson?

Anticipate variability: Representation

What do you anticipate the range of student background experience, vocabulary, and perception will be for this part of the lesson?

What do you anticipate as barriers to student comprehension?

What one or two design strategies can you include in your lesson to increase options for representation?

Optional tool: Use CAST's [UDL Representation Guidelines](#) to learn more.

- Examples:
- Different ways of presenting directions
 - Clarifying vocabulary to support with language
 - Activating background knowledge to improve comprehension

Ask yourself or a planning partner:

- Do the design strategies support the learning goal?
- Do the design strategies support students' range of my students' perception, language and symbol knowledge, and comprehension?

Anticipate variability: Action and expression

What do you anticipate the range of student action and expression will be for this part of the lesson?

What do you anticipate as barriers to students demonstrating what they know?

What one or two design strategies can you include in your lesson to increase options for action and expression?

Optional tool: Use CAST's [Action & Expression Guidelines](#) for more ideas about how students can show what they know.

- Examples:
- Different tools for physical action
 - Different forms of media to communicate
 - Goal-setting to support executive functioning

Ask yourself or a planning partner:

- Do the design strategies support students' physical action, expression and communication, and executive function?

Step 3: Reflect and redesign

Reflect on your lesson

How did the lesson go? Were all students able to progress toward the goal? How could you tell?

What are some ideas you want to integrate into the lesson design next time?

How did the goal drive the design decisions?

Ask yourself or a planning partner:

- Do I need to reframe or refocus the goal?
- Did the design anticipate variability?
- Did the additional design strategies further reduce barriers?

UDL Case Studies Link

LAURA'S LESSON: KINDERGARTEN READING
READINESS

PAT'S LESSON: MIDDLE SCHOOL MATHEMATICS

RAY'S LESSON: HIGH SCHOOL ENGLISH

CONCLUSION



What strategy will you use with your students this week?

- Everyone learns in different ways, through different modalities, and needs different accommodations in their learning careers.
- When choosing accommodations for kids, proactively anticipate barriers to learning and build in supports, so all kids can be successful.
- If a student is struggling and we are not removing barriers to their learning is it a student problem or a teacher problem?



Resources



[UDL Understood](#)



[CAST UDL Guidelines](#)



[NFLRC Podcast UDL in World Languages](#)

UDL to Change the World

