Universal Design for Learning Professional Development Materials

Activities/Handouts

Specific materials are required to ensure completeness of the professional development experience. This document provides a quick reference to the materials needed in the Accommodations Professional Development Module which can be copied or referenced when preparing for the presentation. These are listed here in the order they appear in the presentation.

1) Overview of Universal Design for Learning Presentation (1.5 hours) PowerPoint
    a. UDL pre-test
    b. Video with audio: Learner Variability
       http://www.youtube.com/watch?v=8WClnVjCEVM 1:04-7:56
    c. Video with audio: Universal Design for Learning
       http://www.cast.org/library/video/udl_guidelines/index.html 0:00-6:22
    d. Video with audio: Multiple Representation Example
       http://udlseries.udlcenter.org/presentations/bach_to_gaga.html 21:11-25:00
    e. Video with audio: Classroom Representation Example
       http://www.edutopia.org/masterful-teacher-jonathan-winn-calculus-video
       0:00-6:33
    f. Video with audio: Classroom Action & Expression Example
       http://www.youtube.com/watch?v=dTxFYf50l-4 0:00-6:58
    g. Video with audio: Classroom Engagement Example
       https://www.teachingchannel.org/videos/increase-engagement-and-understanding
       0:00-4:44
    h. Video with audio: One Lone Nut
       http://www.youtube.com/watch?v=fW8amMCVAJQ
    i. Handout: UDL Synopsis (double sided) (Slide 9)
    j. Handout: UDL Guidelines (single sided, color copies, laminated or cardstock) (Slide 35)
    k. Handout: UDL Wheel laminated or cardstock (scissors and brass brads- 1 for each participant) (Slide 38)
    l. Handout: UDL Follow up questions (double sided and stapled)
    m. Reference: UDL Follow up questions with answers (for presenter use only)

2) Application of UDL Activity (1.5 hours) PowerPoint
    a. Video with audio: Making Salsa http://www.mahalo.com/how-to-make-salsa/
    b. Making Salsa Ingredients (for each group of 4 participants): knife, cutting board, spoon, mixing bowl, jalapeño, olive oil, salt, cilantro, two tomatoes, one stalk of green onion, one small onion, one lime, clove of garlic
    c. Handout: UDL Guidelines (single sided, color copies) (Slide 5)
    d. Salsa Handout 1 (Slide 8)
    e. Salsa Handout 2 (Slide 9)
    f. Handout: UDL Activity Reflection (Slide 15)
    g. Index Cards/Pencils: I learned statements (Slide 25)

3) Activity 1 Identification of UDL Principles (30 minutes)
    a. Handout: UDL Math Activity Guidance (single sided)
    b. Yellow, Blue, Pink Highlighter for each teacher
    c. Handout: UDL Math Activity 1 (double sided, stapled)
    d. UDL Math Activity 1 Answers

4) Activity 2 Creation of UDL Principles (45 minutes)
    a. Handout: UDL LA Activity Guidance (single sided)
    b. Handout: UDL LA Activity 2 (double sided, stapled)
    c. Handout: UDL post-test

Additional Resources

These are additional resources for educators to share with students and parents. A description for each will assist the educators with a better understanding of the documents and how they may be utilized.

OSDE-SES UDL Self-Assessment- Resource for teachers to evaluate effectiveness of UDL implementation in their own classrooms.
http://ok.gov/sde/sites/ok.gov.sde/files/UDL%20Self%20Assessment.pdf

OSDE-SES UDL Self-Assessment Instructions- Resource for teachers/administrators to aid in the process of completing UDL Self-Assessment sheet.
http://ok.gov/sde/sites/ok.gov.sde/files/UDL%20Instructions.pdf

OSDE-SES UDL PD Resource Sheet- Reference for specific tools and resources helpful to implementation of UDL. Title of resource, brief description, and link to URL provided.
http://ok.gov/sde/sites/ok.gov.sde/files/PD%20Resources%20-%20UDL.pdf

OSDE-SES UDL Synopsis- Document produced by OSDE-SES to provide a brief overview of UDL, highlighting the three principles and accompanying definition.
http://ok.gov/sde/sites/ok.gov.sde/files/UDL%20Synopsis.pdf

OSDE-SES Universal Design for Learning Webpage- The OSDE webpage designated for UDL contains tools, videos and resources related to Universal Design for Learning. http://ok.gov/sde/universal-design

UDL Guidelines- Document produced by Center for Applied Special Technology (CAST) to identify the three principles of UDL and guidelines within each category.
http://www.udlcenter.org/sites/udlcenter.org/files/updateguidelines2_0.pdf

UDL Wheel- Document produced by Maryland State Department of Education in conjunction with CAST. The wheel provides practical applications the teacher can use in the classroom to provide options for students of each of the three principles of Universal Design for Learning: Multiple Means of Representation, Multiple Means of Action and Expression, Multiple Means of Engagement.

Interactive: http://udlwheel.mdonlinegrants.org/
Paper Template: http://ok.gov/sde/sites/ok.gov.sde/files/UDL%20Wheel.pdf

UDL Exchange- A resource for educators available from CAST to browse, and build resources, lessons and collections. Materials support instruction utilizing the UDL principles.
http://udlexchange.cast.org/home

UDL Planners, Guides and Checklists- Tools including document and pdf files provided by Montgomery County Public Schools in Maryland to plan lessons utilizing principles of UDL and strategies for UDL implementation.
http://www.montgomeryschoolsmd.org/departments/hiat/udl/awareness_guides.shtm

Analyzing the Lesson- Document provided by Cast to evaluate a lesson for effectiveness of UDL implementation.
http://www.cast.org/teachingeverystudent/toolkits/downloads/PAL_udllessonanalysis.pdf

Pre-Test Score: _____
*Post-Test Score:*_____

Universal Design for Learning

Pre-Test/Post-Test

Name: _____ Date: _____

Universal Design for Learning is an instruction/assessment model based on brain research to assist teachers in thinking proactively about designing effective curricula (goals, methods, materials, and assessments) to help all individuals gain knowledge skills and enthusiasm for learning.

1. Which field of study did Universal Design for Learning originate?

a) Medical Research
b) Architecture
c) Education
d) Archaeology

2. What is a description of Learner Variability?

a) All learners learn differently
b) Only students with special needs learn differently
c) All learners require the same support
d) All learners acquire information at the same rate

3. What are the three principles of Universal Design for Learning?

i. Multiple means of _____
ii. Multiple means of _____
iii. Multiple means of _____

4. Name one device designed with Universal Design components in mind. What components make the device accessible?

i. Device _____
ii. Accessibility feature _____
iii. Device designed for (specific user) _____
iv. Others benefitting from this device _____

5. What is one advantage of Universal Design for Learning?

a) All learners are provided the same accommodations
b) The teacher puts extended time and thought into each lesson
c) The teacher has access to multiple resources
d) Planning is purposeful for all students rather than a few with special needs

6. Name a specific example of how Multiple Means of Representation can be used in a classroom.

a) Teachers use color coding to represent each step in a math problem
b) Students choose to respond using paper or a word processor document
c) Students choose to watch a video or read text based on their interest
d) Students choose to work with a partner or alone

7. Name a specific example of how Multiple Means of Action and Expression can be used in a classroom.

a) Teachers use color coding to represent each step in a math problem
b) Students choose to respond using paper or a word processor document
c) Students choose to watch a video or read text based on their interest
d) Students choose to work with a partner or alone

8. Name a specific example of how Multiple Means of Engagement can be used in a classroom.

a) Teacher activates background knowledge by showing students rock formations including Mount Rushmore.
b) After a thumbs up/down response time, the students record their response on individual white boards. No teacher feedback is provided.
c) Teacher directs students to a poster explaining the process of photosynthesis.
d) Teacher provides students the choice to respond to one of the four questions posted around the room.

9. What is a distinction between Universal Design for Learning and differentiation?

a) UDL lessons are designed well from the onset to address the needs of the widest users, Differentiation provides accommodations after the needs of the learners are known.
b) UDL and Differentiation address the diverse needs of learners.
c) UDL and Differentiation require appropriate planning to address the diverse needs of learners in the classroom.
d) UDL provides the widest range of accommodations possible to meet the needs of all learners. Differentiation addresses the needs of the learners with the most significant impairments.

10. What is the purpose of the Universal Design for Learning interactive or paper wheel in the classroom?

_____

_____

_____

Pre-Test Score: _____
*Post-Test Score:*_____

Name: _____ Date: _____

Universal Design for Learning

Pre-Test/Post-Test

1. Which field of study did Universal Design for Learning originate? (Correct answer: b)

a) Medical Research
b) Architecture
c) Education
d) Archaeology

2. What is a description of Learner Variability? (Correct answer: a)

a) All learners learn differently
b) Only students with special needs learn differently
c) All learners require the same support
d) All learners acquire information at the same rate

3. What are the three principles of Universal Design for Learning?

i. Multiple means of Representation
ii. Multiple means of Action and Expression
iii. Multiple means of Engagement

4. Name one device designed with Universal Design components in mind. What components make the device accessible?

i. Device Multiple responses possible. Ex: iPad
ii. Accessibility feature Multiple responses possible. Ex: Make text larger
iii. Device designed for (specific user) Multiple responses possible. Ex: Visually Impaired
iv. Others benefitting from this device Multiple responses possible. Ex: Elderly

5. What is one advantage of Universal Design for Learning? (Correct answer: d)

a) All learners are provided the same accommodations
b) The teacher puts extended time and thought into each lesson
c) The teacher has access to multiple resources
d) Planning is purposeful for all students rather than a few with special needs

6. Name a specific example of how Multiple Means of Representation can be used in a classroom. (Correct answer: a)

a) Teachers use color coding to represent each step in a math problem
b) Students choose to respond using paper or a word processor document
c) Students choose to watch a video or read text based on their interest
d) Students choose to work with a partner or alone

7. Name a specific example of how Multiple Means of Action and Expression can be used in a classroom. (Correct answer: b)

a) Teachers use color coding to represent each step in a math problem
b) Students choose to respond using paper or a word processor document
c) Students choose to watch a video or read text based on their interest
d) Students choose to work with a partner or alone

8. Name a specific example of how Multiple Means of Engagement can be used in a classroom. (Correct answer: d)

a) Teacher activates background knowledge by showing students rock formations including Mount Rushmore.
b) After a thumbs up/down response time, the students record their response on individual white boards. No teacher feedback is provided.
c) Teacher directs students to a poster explaining the process of photosynthesis.
d) Teacher provides students the choice to respond to one of the four questions posted around the room.

9. What is a distinction between Universal Design for Learning and differentiation? (Correct answer: a)

a) UDL lessons are designed well from the onset to address the needs of the widest users, Differentiation provides accommodations after the needs of the learners are known.
b) UDL and Differentiation address the diverse needs of learners.
c) UDL and Differentiation require appropriate planning to address the diverse needs of learners in the classroom.
d) UDL provides the widest range of accommodations possible to meet the needs of all learners. Differentiation addresses the needs of the learners with the most significant impairments.

10. What is the purpose of the Universal Design for Learning interactive or paper wheel in the classroom?

A quick reference sheet, providing options for the lesson to address the diverse needs of learners while maximizing learning opportunities.

Special Education Services

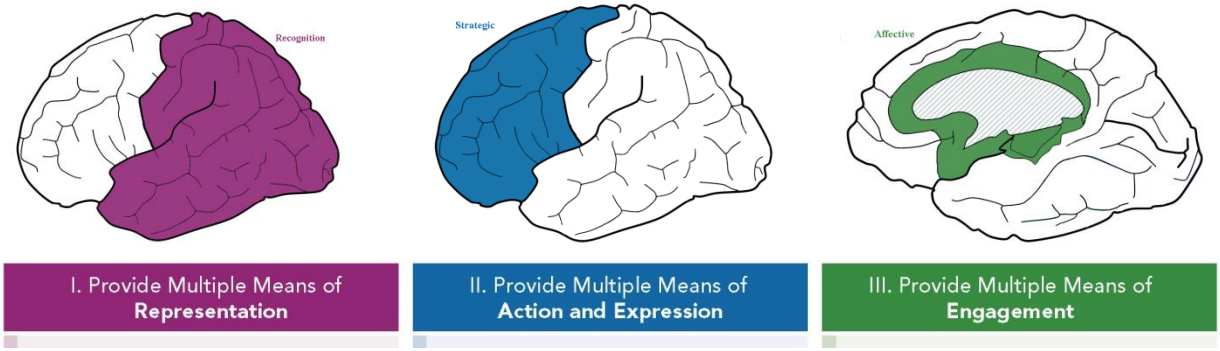
Universal Design for Learning: Synopsis

Definition: Universal Design for Learning (UDL) is a proactive design of curricula (educational goals, methods, materials, and assessments) that enable all individuals to gain knowledge, skills, and enthusiasm for learning. This is accomplished by simultaneously providing rich supports for learning and reducing barriers to the curriculum, while maintaining high achievement standards for all students.

Definition of UDL included in the reauthorization of the Higher Education Opportunity Act 2008 (HEOA)[i]

Universal design for learning (UDL) means a scientifically valid framework for guiding educational practice that- (A) provides flexibility in the ways information is presented, in the ways students respond or demonstrate knowledge and skills, and in the ways students are engaged; and (B) reduces barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all students, including students with disabilities and students who are limited English proficient.

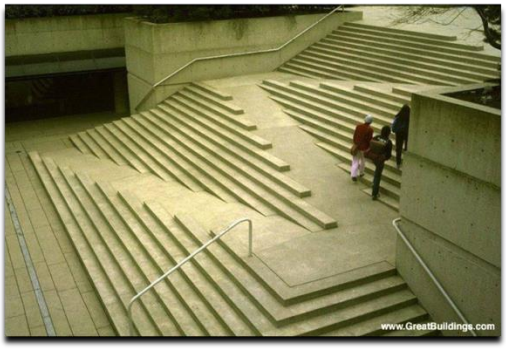
Through research on how the brain processes information, Center for Applied Special Technology (CAST)[ii] has identified three primary brain networks and the roles they play in learning. The three UDL principles are listed below.



I. Multiple Means of Representation- (the "what" of learning). This principle is based on the brain's recognition networks- the networks used to identify and categorize what we see, hear, and read. Examples include: text size, color contrast, captions, symbolic representation, pre-taught vocabulary, chunking information, activating prior knowledge

II. Multiple Means of Action and Expression- (the "how" of learning). This principle is based on the brain's strategic network- the networks used for planning and performing tasks. There are a variety of ways for students to demonstrate what they have learned including: alternatives to pen & pencil tasks, drawing/illustrations, speech to text software, manipulatives including base ten blocks, web applications, scaffolding instruction, prompts, checklists, short term objectives

III. Multiple Means of Engagement- (the "why" of learning). This principle is based on the brain's affective dimensions. Multiple options encourage active engagement and motivation to learn.



Background and benefit of UDL: Universal Design originated in architecture and urban planning, as part of a movement to begin designing building and other structures that would accommodate the widest spectrum of users, including those with disabilities, right from the start. UDL originated at Center for Applied Technology (CAST) where, "students are provided with scaffolds and supports to deeply understand and engage with standards-based material. They not only have access to content and facts, but they learn to ask questions, find information, and use that information effectively. They learn how to learn."

Why UDL is effective?

Latest information places the rate of graduation with a regular high school diploma at approximately 62% nationwide. One in four students with LD drops out of school. The use of UDL designed curriculum has the potential to provide new and different ways to engage students with Learning Disabilities, increasing their interest in learning and decreasing their risk of dropping out. [iii]

UDL ensures preparedness for student's future. Students should not be limited to be taught primarily in a world of print. They need to understand all literacies and tools that will be critical in their future. [iv]

All students benefit due to minimizing barriers to learning and maximizing learning opportunities. [v]

Oklahoma State Department of Education
Special Education Services
(405)521-3351
Universal Design for Learning
http://ok.gov/sde/universal-design

[i] http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=110_cong_public_laws&docid=f:publ315.110.pdf
[ii] http://www.cast.org
[iii] Cortiella, Candace 2008 A Parent's Guide to Universal Design for Learning (UDL). National Center for Learning Disabilities. P. 6
[iv] Cortiella, Candace 2008 A Parent's Guide to Universal Design for Learning (UDL). National Center for Learning Disabilities. P. 7
[v] Cortiella, Candace 2008A Parent's Guide to Universal Design for Learning (UDL). National Center for Learning Disabilities. P. 13

Universal Design for Learning Guidelines

I. Provide Multiple Means of **Representation**

1: Provide options for perception

1.1 Offer ways of customizing the display of information

1.2 Offer alternatives for auditory information

1.3 Offer alternatives for visual information

2: Provide options for language, mathematical expressions, and symbols

2.1 Clarify vocabulary and symbols

2.2 Clarify syntax and structure

2.3 Support decoding of text, mathematical notation, and symbols

2.4 Promote understanding across languages

2.5 Illustrate through multiple media

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, visualization, and manipulation

3.4 Maximize transfer and generalization

Resourceful, knowledgeable learners

II. Provide Multiple Means of **Action and Expression**

4: Provide options for physical action

4.1 Vary the methods for response and navigation

4.2 Optimize access to tools and assistive technologies

5: Provide options for expression and communication

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

6: Provide options for executive functions

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

Strategic, goal-directed learners

III. Provide Multiple Means of **Engagement**

7: Provide options for recruiting interest

7.1 Optimize individual choice and autonomy

7.2 Optimize relevance, value, and authenticity

7.3 Minimize threats and distractions

8: Provide options for sustaining effort and persistence

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

9: Provide options for self-regulation

9.1 Promote expectations and beliefs that optimize motivation

9.2 Facilitate personal coping skills and strategies

9.3 Develop self-assessment and reflection

Purposeful, motivated learners

CAST

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APA Citation: CAST (2011). *Universal design for learning guidelines version 2.0.* Wakefield, MA: Author.

Figure A

Diversity is the norm, not the exception, in schools today. When curricula are designed only to meet the needs of a few, those with different preferences, abilities, learning styles, or backgrounds, may fall behind. 21st century teaching and learning focuses efforts on ensuring that all individuals have opportunities to learn.

Universal Design for Learning (UDL) is a research-based framework that addresses learner diversity at the beginning of the design or planning effort. Using UDL to design academic goals and curriculum has the potential to dramatically change how we teach, how learners engage in learning, and how we measure what learners learn. Using UDL principles allows us to embed flexibility into all aspects of instruction from the beginning, rather than trying to retro-fit a rigid curriculum, set of instructional materials, or test for each student who happens to learn a different way. Educators should provide multiple ways to access resources and content so learners are given the opportunity to take charge of their engagement in learning.

The principles of Universal Design for Learning (UDL) can help us refine how we approach who we teach, what we teach and how we teach. Universal Design for Learning (UDL) is all about "how" we define goals, teaching methods, instructional materials and assessments. Innovative technologies and online resources can assist teachers when they modify instruction to better meet student needs. The UDL framework encourages creating flexible designs from the start that have customizable options, which allow all learners to progress from where they are and not where we would have imagined them to be. The options for accomplishing this are varied and robust enough to provide effective instruction to all learners

Through the use of the framework of Universal Design for Learning, educators can plan and deliver flexible and meaningful lessons that emphasize problem solving, project based learning, and student choice. Exposing novice learners to innovative content acquisition and application supports their development as expert learners. Expert learners are individuals who know how to learn, who want to learn, and who, in their own highly individual ways, are well prepared for a lifetime of learning.

The pedagogical, neuroscientific, and practical underpinnings of UDL are also discussed at greater length in books such as Teaching Every Student in the Digital Age by Rose & Meyer (ASCD, 2002), The Universally Designed Classroom (Rose, Meyer, & Hitchcock, Eds.; Harvard Education Press, 2005), and A Practical Reader in Universal Design for Learning (Rose & Meyer, Eds.; Harvard Education Press, 2006).

Universal Design for Learning Guidelines

These UDL Guidelines and checkpoints can assist educators in designing flexible lessons and curricula that reduce barriers to learning and provide innovative and supportive learning to meet the needs of all learners. They can also help educators evaluate existing curricula goals, materials, methods and assessments.

Principle I: Provide Multiple Means of Representation - the "**WHAT**" of learning - Learners differ in the ways that they perceive and comprehend information that is presented to them. **There is no one means of representation that will be optimal for all learners; but providing multiple options for representation is essential.*

Principle II: Provide Multiple Means of Expression - the "**HOW**" of learning - Learners differ in the ways that they can navigate a learning environment and express what they know. **There is no one means of expression that will be optimal for all learners; but providing multiple options for action and expression is essential.*

Principle III: Provide Multiple Means of Engagement - the "**WHY**" of learning - Learners differ markedly in the ways in which they can be engaged or motivated to learn. Some learners are highly engaged by spontaneity and novelty while other are disengaged, even frightened, by those aspects, preferring strict routine. **Learners have different preferences for what is engaging and motivating so providing multiple options for engagement is essential.*

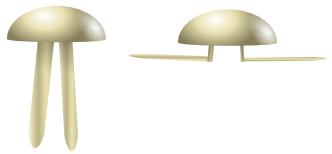
HOWARD COUNTY PUBLIC SCHOOL SYSTEM

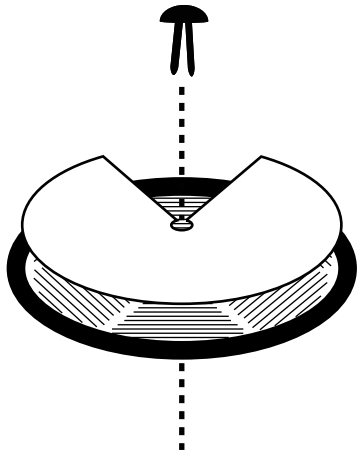
MARYLAND STATE DEPARTMENT OF EDUCATION
Achievement Matters Most

Center for Applied Special Technology (CAST)
Universal Design for Learning Guidelines

Universal Design for Learning DIY Template

1. Cut out figure A
2. Cut out figure B
3. Fasten figure A on top of figure B with a mini round safety pin





Center for Applied Special Technology (CAST).
Universal Design for Learning Guidelines

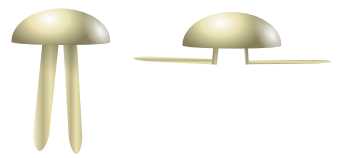
Figure B

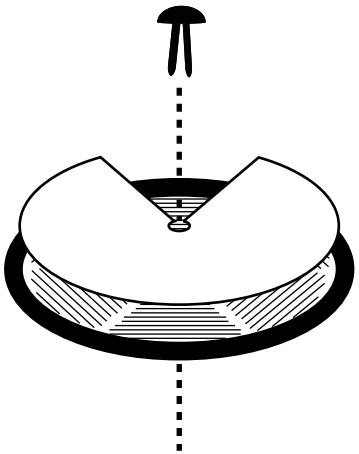
Universal Design for Learning DIY Template

1. Cut out figure A

2. Cut out figure B

3. Fasten figure A on top of figure B with a mini round safety pin





Options for Perception

• Use text equivalents in the form of captions or automated speech-to-text (voice recognition) for spoken language • Provide visual diagrams, charts, notations of music or sound • Provide written transcripts for videos or auditory clips • Vary the display of information in a flexible format including: The size of text, images, graphs, tables, or other visual content. • The contrast between background and text or image • The color used for information or emphasis • The volume or rate of speech or sound • The speed or timing of video, animation, sound, simulations, etc • The font used for print materials

Options for Language & Symbols

• Pre-teach vocabulary & symbols, especially in ways that promote connection to the learners' experience and prior knowledge • Highlight how complex terms, expressions, or equations are composed of simpler words or symbols • Clarify unfamiliar syntax (in language or in math formulas) or underlying structure (in diagrams, graphs, illustrations, extended expositions or narratives) • Support decoding of text, mathematical notation, & symbols • Present key concepts in one form of symbolic representation (e.g. an expository text or a math equation) with an alternative form (e.g. an illustration, dance/movement, diagram, table, model, video, comic strip, storyboard, photograph, animation, physical or virtual manipulative)

Options for Comprehension

• Activate prior knowledge (e.g. using visual imagery, concept anchoring, or concept mastery routines), using advanced organizers (e.g. KWL methods, concept maps), & pre-teaching critical prerequisite concepts through demonstration or models, concrete objects • Bridge concepts with relevant analogies & metaphors • Highlight patterns, critical features, big ideas and relationships • Emphasize key elements in text, graphics, diagrams, formulas • Use cues & prompts to draw attention to critical features, explicit prompts for each step in a sequential process • "Chunk" information into smaller elements • Use checklists, organizers, sticky notes, electronic reminders, & mnemonic strategies • Explicit opportunities for spaced review & practice

Options for Physical Action

• Provide alternatives in the requirements for rate, timing, amplitude, & range of motor action necessary to interact with instructional materials, physical manipulatives, & technologies • Provide alternatives for physically responding or indicating selections (e.g. to marking with pen & pencil, to mouse control) • Provide alternatives for physically interacting with materials (e.g. by hand, voice, switch, joystick, keyboard, or adapted keyboard) • Use keyboard commands for mouse action • Consider switch options, alternative keyboards, & customized overlays for touch screens & keyboards

Options for Expressive Skills & Fluency

• Compose in multiple media such as text, speech, drawing, illustration, comics, story boards, design, film, music, visual art, sculpture, or video • Provide learners with prediction software, & recording software, human dictation, & speech-to-text checkers • Provide calculators, graphing calculators, & recording software • Use sentence starters, pre-formatted graph paper, selectpads, outlining tools, concept map-ping tools, computer-aided-design (CAD), & music notation (writing) software • Provide concrete or virtual, animation, algebra blocks (either base-10 blocks, presentation) • Provide scaffolds that can be gradually released with increasing independence & skills

Options for Executives Functions

• Use prompts & scaffolds to estimate effort, resources, & difficulty, & models or examples of the process & product of goal-setting • Provide learners with guides & checklists for scaffolding goal-setting • Use prompts, coaches or mentors & think" before acting, & "stop & think" model think-alouds of the process, & prompts for categorizing & systematizing & project planning & prioritization & scheduling up priorities • Use checklists for setting up templates for organization, sequences, & schedules of steps • Break long-term goals into reachable short-term objectives • Use checklists & guides for note-taking, & guided questions for self-monitoring

Options for Self-regulation

• Use prompts, reminders, guides, rubrics, & checklists that focus on self-regulatory goals • Use differentiated models, scaffolds & feedback for managing frustration, seeking external emotional support, & developing internal controls & coping skills • Provide recording devices, aids, or charts to assist individuals in learning to collect, chart & display data from their own behavior (including emotional responses, effect, etc.) to monitor changes in those behaviors • Design activities that in which learners get feedback & have access to alternative scaffolds (charts, templates, feedback displays) that support them in understanding their progress in an understandable & timely manner

Options for Sustaining Efforts & Persistence

• Use prompts or reminders with explicity formulate or restate goals • Use hand-held or computer-based scheduling tools with peer tutoring & support • Vary the degree of freedom for accept-able performance • Emphasize process, effort, improvement in meeting standards as alternatives to external evaluation • Use cooperative goals, competition • Use scaffolded roles & learning groups with prompt learners to exchange roles or teacher • Constructive feedback on when & how to ask peers and/or teachers for help • Differentiate virtual communities of learners engaged in common interests or activities or the degree of difficulty within which core activities can be completed

Options for Recruiting Interest

• Provide learners with as much discretion & autonomy as possible by providing choices in the level of challenge, type of tools used, color, design & layout of graphics, and sequence or timing of tasks • Involve learners, where & when ever possible, in setting their own personal academic & behavioral goals • Vary activities so that they can be personalized for different & responsive, lives, culturally relevant, racial, cultural, appropriate for different & gender groups • Design activities so that outcomes are authentic, communicate to real audiences, & are purposeful • Provide tasks that allow for active participation, exploration & experimentation • Invite personal response, evaluation and self-reflection to content & activities

Center for Applied Special Technology (CAST). Universal Design for Learning Guidelines

Universal Design for Learning

Follow-Up Questions

Name: Date:

Universal Design for Learning is an instruction/assessment model based on brain research to assist teachers in thinking proactively about designing effective curricula (goals, methods, materials, and assessments) to help all individuals gain knowledge skills and enthusiasm for learning.

1a. What are the three networks of the brain?

i. ii. iii.

1b. How do the three networks of the brain relate to learning?

i. Multiple means of
ii. Multiple means of
iii. Multiple means of

2. Name one device designed with Universal Design components in mind (either from the presentation or on your own). What components make the device accessible?

i. Device
ii. Accessibility feature
iii. Specific user device designed for
iv. Others benefitting from this device

3a. What does the phrase "variability of learners" mean to you?

"Variability of learners" means:

3b. Explain how you could address this in your class.

I would address this in my class by:

4. What is one advantage of Universal Design for Learning?

5. Name a specific example of how a teacher, such as Jonathan Winn, addressed provided Multiple Means of Representation in his classroom.

6. Name a specific example in Samantha Colby's classroom of how students can be provided Multiple Means of Action and Expression.

7. Explain how the "Wall of Silence" addressed a teacher's ability to provide Multiple Means of Engagement.

8. What is an appropriate distinction between Universal Design for Learning and differentiation?

Universal Design for Learning is:

Differentiation is:

9. When is an appropriate time to use differentiation?

10. How could you use the Universal Design for Learning interactive or paper wheel in your classroom?

11. How could you see utilizing Universal Design for Learning in your classroom?

12. Sign up for the resources at CAST UDL exchange at http://udlexchange.cast.org/home ☐

Name one resource and its short explanation of its benefit to you.

Resource:

Personal Benefit:

Name one UDL lesson and a short explanation of its benefit to you.

UDL Lesson:

Personal Benefit:

Universal Design for Learning

Follow-Up Questions

Name: Date:

Universal Design for Learning is an instruction/assessment model based on brain research to assist teachers in thinking proactively about designing effective curricula (goals, methods, materials, and assessments) to help all individuals gain knowledge skills and enthusiasm for learning.

1a. What are the three networks of the brain?

i. Recognition ii. Strategic iii. Affective

1b. How do the three networks of the brain relate to learning?

i. Multiple means of Representation
ii. Multiple means of Action and Expression
iii. Multiple means of Engagement

2. Name one device designed with Universal Design components in mind (either from the presentation or on your own). What components make the device accessible?

i. Device Multiple responses possible. Ex: iPad
ii. Accessibility feature Multiple responses possible. Ex: Make text larger
iii. Device designed for (specific user) Multiple responses possible. Ex: Visually Impaired
iv. Others benefitting from this device Multiple responses possible. Ex: Elderly

3a. What does the phrase "variability of learners" mean to you?

"Variability of learners" means: Multiple responses possible. Ex: Students come to our class with a variety of ability levels and needs.

3b. Explain how you could address this in your class.

I would address this in my class by: Multiple responses possible. Ex: I would create a classroom environment of mutual respect and provide students with choices and/or instruction based on their interest or ability level.

4. What is one advantage of Universal Design for Learning?

Multiple responses possible. Purposeful planning for all rather than consideration of a few.

5. Name a specific example of how a teacher, such as Jonathan Winn, addressed provided Multiple Means of Representation in his classroom.

Multiple responses possible related to representation of teaching context. Ex: Used color coding to represent each step in the calculation process.

6. Name a specific example in Samantha Colby's classroom of how students can be provided Multiple Means of Action and Expression.

Multiple responses possible related to student demonstration of the material. Ex: Partially completed grid, use of calculator

7. Explain how the "Wall of Silence" addressed a teacher's ability to provide Multiple Means of Engagement.

Students chose a quote from the reading No Name Woman that had meaning to them to post on a large piece of paper displayed in the classroom. (Activated student interest and got all students engaged in the activity).

8. What is an appropriate distinction between Universal Design for Learning and differentiation?

Universal Design for Learning is: Before you know the learners, design well from the onset.

Differentiation is: Address the needs of learners after you know who the learners are in your classroom.

9. When is an appropriate time to use differentiation?

When the needs of the learners go beyond your planning of UDL, address the needs on an individual basis.

10. How could you use the Universal Design for Learning interactive or paper wheel in your classroom?

Multiple responses possible. Ex: Have quick reference sheet to have lesson perceived by students.

11. How could you see utilizing Universal Design for Learning in your classroom?

Multiple responses possible. Designing one lesson this year with a lot of time and effort will not only help this year's students, but next year's too. There will be multiple opportunities for students to acquire information, demonstrate their understanding and tap into each student's interests.

12. Sign up for the resources at CAST UDL exchange at http://udlexchange.cast.org/home

Name one resource and its short explanation of its benefit to you.

Resource: Multiple responses possible

Personal Benefit: Multiple responses possible

Name one UDL lesson and a short explanation of its benefit to you.

UDL Lesson: Multiple responses possible

Personal Benefit: Multiple responses possible

Handout #1: *BUILD BACKGROUND:*

Goal:

Write an explanation of the process of ***how to make salsa*** *to communicate write simple narrative, descriptive, persuasive, and creative paragraphs. (PASS 3.2.2). Use descriptive language such as action verbs, vivid adjectives, and adverbs to make writing interesting. (PASS 3.2.8).*

The first step of beginning the writing piece, is to build background knowledge on the process of making salsa. Within this handout are three options: read text, view a video, or make salsa. Listed below is an explanation of each of the three options in more detail. Please select one option. The information acquired from the background experience will be used as part of the writing piece. Templates for recording the results of your experience will be available in handout #2.

Option 1: ***Build Background: Read Article***

1. Read the following article to build background about how to make salsa.
2. When you finish building background, get Handout #2.

How to Make Salsa **(from Mahalo.com)**

Are you looking for a great salsa recipe with instructions? With a few tomatoes and these step-by-step instructions on how to make salsa, you'll soon be gobbling up delicious salsa faster than you can say "Cinco de Mayo." Nothing complements a tortilla, chip, or a burrito, nacho, or taco quite like a dollop of fresh homemade-salsa! Making and eating your own salsa is something families remember years later. No more store-bought salsa, even if it is shipped from Texas. You can use your own tomatoes from your own garden or fresh-picked from a local farm! In the middle of the winter you can have tortilla chips and your salsa and taste the summer flavor of fresh tomatoes.

The word salsa means salsa in Spanish, and indeed this tomato-based concoction is considered the ultimate in dipping sauses. Salsa, also known as pico de gallo, adds a burst of flavor to any and all Mexican food. Mexican food can refer to traditional Mexican cuisine as well as the more Americanized"Tex-Mex" cuisine found in many American restaurants. Most modern Mexican food is derivative of a hybrid of Spanish and Aztec cuisines, frequently using spices and chili peppers to enhance the flavors of meat. Corn and corn-related dishes are common, as it is one of the largest indigenous crops of the Americas. Nothing can compare to fresh salsa made from scratch. You'll find it far more tasty and satisfying than store-bought brew, whether you prefer your dip smooth or chunky, mild or spicy, sweet or tangy. Here's how to do it. This method is so easy, ANYONE can do this!

First, you need to get together a number of ingredients and some basic equipment.

First, gather the equipment you will need. You will need a sharp chef's knife, a butter knife, a non-reactive mixing bowl. (Most ceramic, glass, and stainless steel bowls are non-reactive), a cutting board, and a spoon. Once you gather your equipment, it is time to lay out your ingredients. You will need two tomatoes, one onion, one jalapeño pepper, green onions, fresh cilantro, garlic, juice from a lime, olive oil, and salt to taste. Note: when selecting tomatoes, it is fun to pick your own and you can obviously get better quality tomatoes! There are four common varieties that will work: beefsteak, boy yellow, Roma paste-type, and Better-boy. Once you have all your ingredients, get a big mixing bowl ½ inch size cubes. Next, you need to chop the onion, jalapeño, cilantro, green onions, and garlic into small chunks and add to your tomatoes. Mix and add juice of half a lime. Mix again and add salt. Drizzle with olive oil. Finally, stir everything together and serve. This fresh salsa is a great appetizer to serve at any party.

Option 2: ***Build Background: Watch Video***

1. Watch the video to help build background about how to make salsa: http://www.mahalo.com/how-to-make-salsa/
2. When you finish building background, get Handout #2.

Option 3: ***Build Background: Make Salsa***

1. Follow the Steps below to build background about how to make salsa.
2. When you finish building background, get Handout #2 from your teacher.

What to do:	Support:	Check when done:
1. Gather your materials: • sharp knife, • cutting surface, • spoon, • a mixing bowl	 	☐ ☐ ☐ ☐
2. Gather the ingredients: • one jalapeño • olive oil		☐

• salt • cilantro • two tomatoes • one stalk of green onion • one small onion • one lime • minced garlic	 	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
3. Make the salsa: 1) Chop tomatoes into 1/2 inch size cubes. 2) Put them in the bowl.	 	☐ ☐
3) Chop onion, jalapeno, green onions. 4) Add to the bowl. 5) Mix the ingredients together.	 	☐ ☐ ☐
6) Squeeze juice from lime into bowl of chopped ingredients. Don't touch your eyes! 7) Mix.	 	☐ ☐

8) Add salt, cilantro, and garlic to taste.		☐
9) Drizzle 2 tsp. olive oil.		☐
10) Stir everything together and enjoy your fresh salsa!		☐

Material adapted from http://www.cast.org

Handout #2: *Writing Templates & Assessment Tools*

Directions: Compose an explanatory paragraph on the process of making salsa using a topic sentence, supporting details, and a conclusion sentence summarizing the main idea. You will need two or more facts, vivid adjectives, and the definition of a vocabulary word specific to the process of making salsa.

Goal:

Write an explanation of the process of ***how to make salsa*** *to communicate write simple narrative, descriptive, persuasive, and creative paragraphs. (PASS 3.2.2). Use descriptive language such as action verbs, vivid adjectives, and adverbs to make writing interesting. (PASS 3.2.8).*

Procedures: Using the making salsa experience, use the templates in this handout to begin the planning phase of your writing. There are three examples of templates: sentence starters, graphic organizer, or a written example. Choose one template and one medium (notecard, whiteboard, chart paper, notebook paper, or a computer) to record your response. The final draft of your writing will be written on the teacher provided handout entitled: Written Paragraph Response.

1. Recall your experience on how to make salsa (Activity 1: building background knowledge).
2. Select one template (below) to begin the planning phase of your writing: sentence starters, graphic organizer, or a written example.
3. Select one format to compose an explanatory paragraph on the process of making salsa: notecards, whiteboard, chart paper, notebook paper, or a computer.
4. Self-Assess your writing using the self-assessment checklist (below).
5. Assess other's writing using the rubric provided (below).
6. Edit the first draft of your writing. Make revisions using the rubric as a guide.
7. Write the final draft on the teacher provided handout entitled: Written Paragraph Response.
8. Turn your work into your teacher.

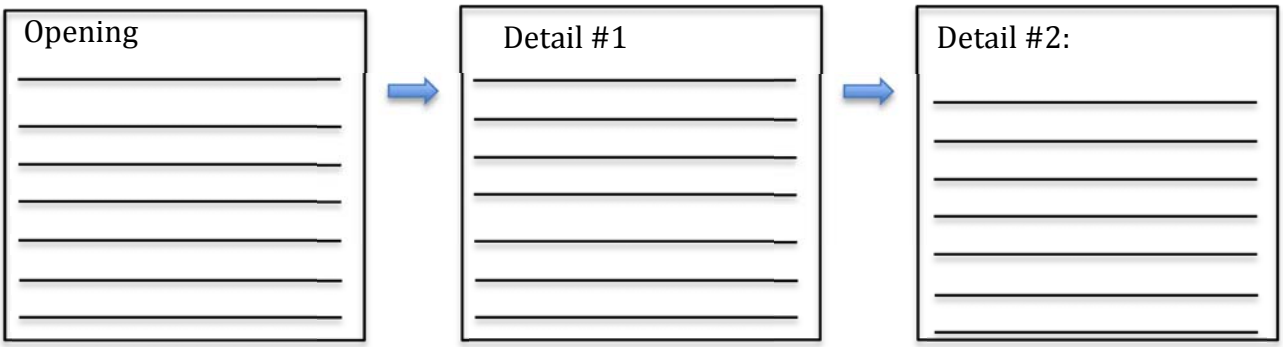
Option 1: ***Sentence starters template***

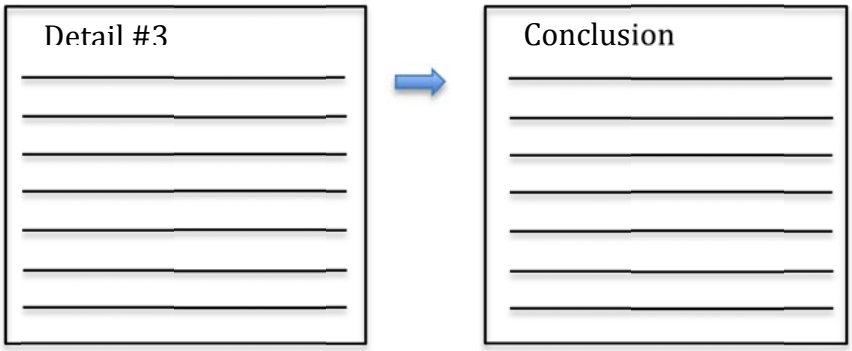
Use the following sequence to start each sentence in your writing. Add descriptive words and details from your own making salsa experience. It may be helpful to write one idea on a separate note card and then arrange in the correct sequence.

- *To make salsa, there are – steps to follow.*
- *First you…*
- *Next…*
- *In conclusion,*

<u>Option 2</u>: *Graphic organizer*

Write the ideas of each sentence, on the process of making salsa, according to the appropriate sequence of events. Using the boxes provided, add descriptive words and details from your own making salsa experience.





<u>Option 3</u>: *Following a written example*

Using the example on how to ride your bike, write a similar example on the process of making salsa. Add descriptive words and details from your own making salsa experience.

Written Example: How to <u>ride your bike</u>.

Topic statement

Riding a two-wheel bike may look easy, but there are actually many steps you need to think about before you can ride. First, be sure the kick-stand is in the 'up' position. Straddle the bike, so one leg is on one side of the bike and the other leg is on the other. As you sit down on the seat, balance yourself with one leg and put your other foot on the pedal. Start to push yourself forward, gaining a little speed. When you are going fast enough, put the other foot on the pedal and begin to push both pedals forward. Now you can ride your bike all day.

Supporting details

Conclusion

Self-Assessment (Edit/Revise/Compose Final Draft)

Directions: Using the template selected within the planning stage, edit your writing considering the criteria below for any revisions needed. Ask a friend to assess your writing using the rubric (below). Write the final draft of your explanatory paragraph on the UDL Activity Reflection handout. Turn in your draft copy with edits and final draft when complete.

1. All ideas and information are clear to the reader.
   - ☐ The '**opening sentence'** is interesting for the reader.
   - ☐ There is a logical **sequence of steps** explaining the process.
   - ☐ The '**conclusion sentence'** summarizes the paragraph.

2. The topic is developed with facts and definitions**.**
   - ☐ Two or more **facts** are included.
   - ☐ An **unknown word** was defined (example: salsa).

3. The topic is developed with details to explain the process of making salsa.
   - ☐ There are **3 supporting details**.
   - ☐ Multiple **adjectives** add sensory detail.

4. All grammar is accurate.
   - ☐ All words are **spelled** correctly.
   - ☐ The first word of each sentence and proper nouns are **capitalized.**
   - ☐ Correct **punctuation** is at the end of each sentence.

Material adapted from http://www.cast.org

Challenge: Ask a classmate to grade your writing using the rubric. Ask a friend to assess your writing using the rubric (below). Write the final draft of your explanatory paragraph on the UDL Activity Reflection handout. Turn in your draft copy with edits and final draft on the teacher provided handout entitled: Written Paragraph Response.

RUBRIC:

	Expert: **2 points**	**Progressing:** **1 point**	**Novice:** **0 point**
1. Opening sentence	Opening sentence is interesting.	There is an opening sentence.	There is no opening sentence.
2. Logical sequence	Sequence of steps explaining the process is a logical progression.	There is some progression, but 1 idea is out of order.	Ideas are random. There is no progression.
3. Conclusion sentence	The conclusion sentence summarizes the main idea of the paragraph	There is a conclusion sentence.	There is no conclusion sentence.
4. Facts are included	Two or more facts are present.	One fact is present.	There are no facts present.
5. Unknown words defined	All vocabulary words related to salsa are stated and defined.	A vocabulary word is present related to salsa, but not defined.	There are no terms present related to salsa vocabulary.
6. Supporting details	There are 3 supporting details about main idea	There are 1-2 supporting details about main idea	There are no supporting details about the main idea
7. Multiple adjectives	Multiple adjectives are used throughout.	There is a 1 adjective present.	There are no adjectives present.
8. Spelling	All words are spelled accurately.	There are 1-4 spelling & mistakes.	There are more than 5 spelling mistakes.
9. Grammar	All words are capitalized accurately with appropriate punctuation.	There are 1-4 capitalization or punctuation mistakes.	There are more than 5 capitalization or punctuation mistakes.
10. Planning Phase Evidence	Evidence of planning, revisions made to final draft.	Evidence of planning, no revisions to initial draft.	There is no evidence of planning.
TOTAL:_____ /20 points possible. _____(Score) x 5 = _____%			

90-100% = A 80-89% = B 70-79% = C 60-69% = D <59% = F

Name:_____ Date:_____

Universal Design for Learning

UDL and UDL Activity Reflection

How to make Salsa process paragraph

_____
_____
_____
_____
_____
_____
_____
_____

1. **My Definition of UDL**

_____

2. **Name the 3 principles of UDL.**

Multiple means of _____, _____, _____.

3. **Describe where/how you have seen UD/UDL used in schools/community.**

_____
_____.

4. **Reflect on how you could use UDL in your classroom.**

How could you use Universal Design for Learning Principles in your classroom? _____
_____.
_____

Activity 1 Identification of UDL Principles (30 minutes)

Materials:
10 index cards in blue, yellow and pink for each group of 4 teachers
1 Yellow, Blue, and Pink Highlighter for each teacher
Handout: UDL Math Activity 1 (Double Sided, stapled) 1 for each teacher
Handout: UDL Guidelines, 1 for each teacher
1 Roll of masking tape to attach index cards to whiteboard
2 Black markers for each group of 4 teachers

Step 1: *Participants use the math lesson handout to highlight each of the three UDL principles identified in the lesson. Teachers may work independently or with a partner.*
Materials Needed: Math Activity Guidance, UDL Guidelines, UDL Math Activity, highlighters
Time Allotted: 10 minutes

Say: Using the provided math lesson, highlight the principles of UDL you can identify in the lesson. You may use the UDL Guidelines handout as a reference. Examples of Multiple Means of Representation will be highlighted yellow, Multiple Means of Action and Expression will be highlighted blue, Multiple Means of Engagement will be highlighted pink. You may work independently or with a partner. You will have 10 minutes to complete this portion of the activity.

Step 2: *Teachers form groups of 4. Each group discusses the specific areas they have highlighted on the lesson. Once consensus is obtained each group writes the highlighted UDL principles from their worksheet onto the appropriate colored index card with a black marker.*
Materials Needed: Colored index cards, markers
Time Allotted: 8 minutes

Say: Now that you are finished highlighting, please take your work and form groups of 4 team members (4 people total). Share your highlighted responses with one another. Once you have identified a practice of UDL that others identified from the lesson also, write that idea on the appropriate colored index card with a black marker. Continue creating colored index cards for as many areas of UDL practices you and your group members were able to identify in the lesson. You will have 10 minutes to complete this portion of the activity.

Step 3: *A group discussion is conducted by the presenter regarding the UDL principles identified in the lesson. The three UDL principles: Multiple Means of Representation, Multiple Means of Action & Expression, Multiple Means of Engagement are written at the top of a three column*

chart on the white board. Each group is called on to share a response they have written on their colored index card. Once shared, the index card is posted with tape under the appropriate heading on the whiteboard. (i.e. Under the Multiple Means of Representation heading, the teacher tapes a yellow index card with the phrase "Teachers uses flash cards" on the white board under the heading Multiple Means of Representation). Note: *Some cards may address more than one principle. A group discussion can occur to address which Principle is most appropriate. Reference to the UDL Guidelines handout would be appropriate.*
Materials Needed: Whiteboard, masking tape
Time Allotted: 10 minutes

Say: We are going to share the UDL principles you identified in the math lesson. Would anyone like to share a classroom practice they identified on their index card? *Listen to provided audience response.* **Thank You. If you would, please post your index card under the appropriate heading on the whiteboard with masking tape. Could we have another group share a principle of UDL they identified in the lesson?** (Continue this process until all answers have been provided and no duplicate index cards remain).

Step 4: *Once all index cards have been posted (excluding duplicate ideas), each teacher is encouraged to take one index card from the whiteboard of a practice of UDL he/she would like to implement into his/her lessons during the next week.*
Time Allotted: 2 minutes

Say: Today the objective of the activity was to address the principles of UDL and identify those principles in a math Lesson. As a summary of today's activity I would like each one of you to take an index card from the board and challenge yourself to use that UDL example in your classroom this week.

UDL Math Activity:

Using the attached lesson, highlight (using the designated colors) any elements in the lesson that represent the three elements of Universal Design for Learning.

Yellow highlight: Recognition Networks, Multiple Means of Representation

Blue highlight: Strategic Network, Multiple Means of Action and Expression

Pink highlight: Affective Network, Multiple Means of Engagement

Highlighted areas in this document (as an answer key) are only approximate designations. As UDL considerations are made there is a blend when one Network is activated rather than another.

On the Hunt for Measurements: Estimation, Area and Perimeter of Rectangles

Major Concept: Use Customary and Metric Measurement Systems to solve application problems and an understanding of area and acquire strategies for finding area of two-dimensional shapes.

- I can estimate a variety of objects using customary units.
- I can use metric measurements to estimate and measure a variety of objects.

PASS: Grade 4 Standard 4.1a

Link: http://www.cpalms.org/Public/PreviewResource/Preview/30373

Objective: Students look for rectangular objects in the classroom or on the school campus that match the measurements for given clues. Students will estimate the measurements of the object, then take the exact measurements and use this information to determine its area and perimeter.

Grade Level(s): 4

Instructional Time: 2 Hour(s)

Keywords: approximate, distance, estimate, exact, foot/feet, length, linear, area, perimeter, rectangle

Resource Collection: Brevard County School District

ATTACHMENTS

Classroom Activity Sheet On the Hunt for Measurements.doc
Solutions to Measurement Puzzles On the Hunt for Measurements.docx
Take Home Activity Sheet on the Hunt for Measurements.docx

LESSON CONTENT

Learning Objectives:
Students will be able to:

- Understand how to measure and estimate lengths/widths
- Understand the difference between measuring and estimating
- Become more aware of linear measurements in the world and communicate better about the significance of these measurements
- Convert units of measurement within the same unit of measurement/system
- Determine the perimeter and area of rectangles after measuring length/width of objects

Guiding Questions:

1. Why do we measure?
2. Why do we need standardized units of measurement?
3. How does what we measure influence how we measure?
4. How exact does a measurement have to be?

Materials Needed:

- Copies of the Classroom Activity Sheet
- Standard tools for measuring length, such as rulers, yardsticks, tape measures, and trundle wheels
- Materials to create unique tools for measuring length (optional): string, scissors, colored markers
- Flip Cameras (optional)

Prior Knowledge:
Students should be able familiar with how to calculate the perimeter and area of rectangles. (In this lesson, these skills are *applied*.)

Introduction:
Begin the lesson by briefly reviewing measuring and estimating length.

- Ask students to provide some examples of real world situations when measuring is necessary. What are some examples of how you use measurement?
- Elicit responses from students about jobs they are aware of in which measurement is part of the job. Record students' responses on the board or a piece of chart paper.

Direct students' attention to a long object in the classroom. Ask students to suggest different ways to estimate its length. Possible strategies include:

- Estimating the length of part of the object and using this to estimate the whole length
- Comparing the length with a length they know

- Estimating the shortest and the longest possible lengths and using these to estimate the range of the length

Have two students measure the object. What unit should they use to measure it? Why, for example, would you use feet, not inches, to measure the length of a chalkboard? If students need additional practice, have them select a few more objects to estimate and measure. Emphasize that estimates are approximate, not exact, measurements

Group students into teams of four. Provide students with measuring tools, such as rulers, yardsticks, tape measures, and trundle wheels. Students may also make their own "yardsticks" by cutting a piece of string 1 yard long, marking feet in one color on the string, and marking inches in a second color over the length of 1 foot at one end of the string.

Distribute the Classroom Activity Sheet to each student. Have students work in teams to answer all the questions on the sheet. Each student, however, should fill in his or her own sheet. Students should try to finish the sheet during one class period. As you observe students measuring, encourage them to estimate to help them find appropriate objects.

Investigate:
Students will complete the Measurement Scavenger Hunt on the Classroom Activity Sheet. Use the clues to find an object and estimate its length, then measure its exact length.

Analyze:
Students will use the Classroom Activity Sheet to record the data they collect on their scavenger hunt.

Closure: Day 2

Using a flip camera, have students record their group discussing the following questions (instruct students that each student should be shown on the video contributing to the discussion). The teacher will determine if the students have reached the learning targets for this lesson through student responses to questions on Day 2 of the lesson as a summative assessment.

1. Suppose there were no units for measuring length. Hypothesize how lengths might be described. Then discuss how measuring length would be different without inches. Finally, discuss why having a range of units for measuring length, such as inches and feet, to choose from is necessary.
2. Would you measure a pencil in feet? A hallway in inches? Discuss whether these approaches make sense or whether using different units would be better.
3. Discuss some careers in which being able to measure or estimate length is essential. Some examples are jobs in architecture and construction, interior design, and medicine.

4. Suppose you were asked to design a room for young people in a neighborhood community center. You would need to tell the planners how big the room should be, whether a basketball hoop should be installed, whether the room should be divided into different sections, how many gallons of paint would be needed to paint the space, and how many sheets of flooring would be needed. How would you go about making these decisions? Would you use estimation, measuring, or both? What would your plan look like?
5. State whether you agree or disagree with each of the following, and defend your position.
   - An estimate is not a guess.
   - If you can measure, why estimate?
   - Linear measurements are not useful in everyday life.
   - Unless a measurement is exact, what good is it?

For additional practice, have students complete the Take Home Activity Sheet.

If a flip camera is not available to you, plan to meet individually with each group and listen to the groups discussions in response to the questions. While you meet individually with each group, you can have the other groups complete the Take Home Activity Sheet in class rather than having them complete this worksheet for homework.

ASSESSMENT

Formative Assessment

Students should work independently on the following problem to determine readiness for this lesson: (*This activity requires students to make determinations with measurements, as well as apply the area formula).*

Malia was comparing the size of her new bedroom to her old bedroom to determine if her area rug would be a good fit. Her new bedroom is 12 x 8 feet. Her old bedroom was 10 x12 feet. Her square area rug is 120 inches long.

- Will her rug fit in the new bedroom? How did you decide? *(No, it is too long: 120 inches = 10 ft. The area rug is square: 10x10, whereas the bedroom is 12 x 8.)*

- Which bedroom is larger? How much larger? How did you decide? *(The old bedroom was larger by 24 square ft. Students could apply the area formula to each room, or recognize the difference is 2 x12 feet.)*

Feedback to Students

As students work on their classroom activity sheet, the teacher should be monitoring their progress by circulating the room. This will allow the teacher an opportunity to provide feedback and suggestions for improvement. Throughout the lesson, teachers can give students verbal feedback immediately. While students are investigating, the teacher may choose to ask the guiding questions to track what the students are thinking.

Questions could include:

- Why do we measure?
- Why do we need standardized units of measurement?
- How does what we measure influence how we measure?
- How exact does a measurement have to be?

Use the answers to these questions to help guide your instruction and student progress.

Summative Assessment

Below is a suggested point system for scoring student responses of the summative assessment (questions from page 4 of this document).

Three points:

- Accurately calculate area and perimeter, sound judgment, and good understanding of linear relationships
- Reasonable estimates
- Communication of decisions about measuring or estimating length

Two points:

- Mostly accurate calculations of area and perimeter, some judgment, and some understanding of linear relationships
- Somewhat reasonable estimates
- Some communication of decisions about measuring or estimating length

One point:

- Some accurate calculations of area and perimeter and a basic understanding of linear relationships
- A few reasonable estimates
- Communication of a few aspects of measuring or estimating length

Extensions:
Pose the challenge of estimating how many pennies lined up end to end it would take to make 1 yard. Then ask a few students to arrange a row of pennies along a yardstick.

Continue estimating with other objects and lengths, such as the following:

- About how many pencils placed side by side would it take to make 1 foot?
- About how many paper clips placed end to end would it take to equal 1 foot?

Now have students try to solve the following problems, which require calculating, measuring, and/or estimating.

- About how many cars lined up bumper to bumper would it take to stretch for 1 mile?
- About how many desks like the ones in your classroom stacked on top of each other would it take to reach 10 miles high?
- Guide students in creating similar problems for their classmates.

SOURCE AND ACCESS INFORMATION

Contributed by: Cindy Speece
Name of Author/Source: Cindy Speece
Email of Author/Source: speece.cindy@brevardschools.org

UDL Math Activity:

Using the attached lesson, highlight (using the designated colors) any elements in the lesson that represent the three elements of Universal Design for Learning.

Yellow highlight: Recognition Networks, Multiple Means of Representation

Blue highlight: Strategic Network, Multiple Means of Action and Expression

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On the Hunt for Measurements: Estimation, Area and Perimeter of Rectangles

Major Concept: Use Customary and Metric Measurement Systems to solve application problems and an understanding of area and acquire strategies for finding area of two-dimensional shapes.

- I can estimate a variety of objects using customary units.
- I can use metric measurements to estimate and measure a variety of objects.

PASS: Grade 4 Standard 4.1a

Link: http://www.cpalms.org/Public/PreviewResource/Preview/30373

Objective: Students look for rectangular objects in the classroom or on the school campus that match the measurements for given clues. Students will estimate the measurements of the object, then take the exact measurements and use this information to determine its area and perimeter.

Grade Level(s): 4

Instructional Time: 2 Hour(s)

Keywords: approximate, distance, estimate, exact, foot/feet, length, linear, area, perimeter, rectangle

Resource Collection: Brevard County School District

ATTACHMENTS

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Solutions to Measurement Puzzles On the Hunt for Measurements.docx
Take Home Activity Sheet on the Hunt for Measurements.docx

LESSON CONTENT

Learning Objectives:

Students will be able to:

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- Understand the difference between measuring and estimating
- Become more aware of linear measurements in the world and communicate better about the significance of these measurements
- Convert units of measurement within the same unit of measurement/system
- Determine the perimeter and area of rectangles after measuring length/width of objects

Guiding Questions:

1. Why do we measure?
2. Why do we need standardized units of measurement?
3. How does what we measure influence how we measure?
4. How exact does a measurement have to be?

Materials Needed:

- Copies of the Classroom Activity Sheet
- Standard tools for measuring length, such as rulers, yardsticks, tape measures, and trundle wheels
- Materials to create unique tools for measuring length (optional): string, scissors, colored markers
- Flip Cameras (optional)

Prior Knowledge:

Students should be able familiar with how to calculate the perimeter and area of rectangles. (In this lesson, these skills are *applied*.)

Introduction:

Begin the lesson by briefly reviewing measuring and estimating length.

- Ask students to provide some examples of real world situations when measuring is necessary. What are some examples of how you use measurement?
- Elicit responses from students about jobs they are aware of in which measurement is part of the job. Record students' responses on the board or a piece of chart paper.

Direct students' attention to a long object in the classroom. Ask students to suggest different ways to estimate its length. Possible strategies include:

- Estimating the length of part of the object and using this to estimate the whole length
- Comparing the length with a length they know
- Estimating the shortest and the longest possible lengths and using these to estimate the range of the length

Have two students measure the object. What unit should they use to measure it? Why, for example, would you use feet, not inches, to measure the length of a chalkboard? If students need additional practice, have them select a few more objects to estimate and measure. Emphasize that estimates are approximate, not exact, measurements

Group students into teams of four. Provide students with measuring tools, such as rulers, yardsticks, tape measures, and trundle wheels. Students may also make their own "yardsticks" by cutting a piece of string 1 yard long, marking feet in one color on the string, and marking inches in a second color over the length of 1 foot at one end of the string.

Distribute the Classroom Activity Sheet to each student. Have students work in teams to answer all the questions on the sheet. Each student, however, should fill in his or her own sheet. Students should try to finish the sheet during one class period. As you observe students measuring, encourage them to estimate to help them find appropriate objects.

Investigate:
Students will complete the Measurement Scavenger Hunt on the Classroom Activity Sheet. Use the clues to find an object and estimate its length, then measure its exact length.

Analyze:
Students will use the Classroom Activity Sheet to record the data they collect on their scavenger hunt.

Closure: Day 2

Using a flip camera, have students record their group discussing the following questions (instruct students that each student should be shown on the video contributing to the discussion). The teacher will determine if the students have reached the learning targets for this lesson through student responses to questions on Day 2 of the lesson as a summative assessment.

1. Suppose there were no units for measuring length. Hypothesize how lengths might be described. Then discuss how measuring length would be different without inches. Finally, discuss why having a range of units for measuring length, such as inches and feet, to choose from is necessary.
2. Would you measure a pencil in feet? A hallway in inches? Discuss whether these approaches make sense or whether using different units would be better.

3. Discuss some careers in which being able to measure or estimate length is essential. Some examples are jobs in architecture and construction, interior design, and medicine.
4. Suppose you were asked to design a room for young people in a neighborhood community center. You would need to tell the planners how big the room should be, whether a basketball hoop should be installed, whether the room should be divided into different sections, how many gallons of paint would be needed to paint the space, and how many sheets of flooring would be needed. How would you go about making these decisions? Would you use estimation, measuring, or both? What would your plan look like?
5. State whether you agree or disagree with each of the following, and defend your position.
   - An estimate is not a guess.
   - If you can measure, why estimate?
   - Linear measurements are not useful in everyday life.
   - Unless a measurement is exact, what good is it?

   For additional practice, have students complete the Take Home Activity Sheet.

   If a flip camera is not available to you, plan to meet individually with each group and listen to the groups discussions in response to the questions. While you meet individually with each group, you can have the other groups complete the Take Home Activity Sheet in class rather than having them complete this worksheet for homework.

ASSESSMENT

Formative Assessment

Students should work independently on the following problem to determine readiness for this lesson: (*This activity requires students to make determinations with measurements, as well as apply the area formula).*

Malia was comparing the size of her new bedroom to her old bedroom to determine if her area rug would be a good fit. Her new bedroom is 12 x 8 feet. Her old bedroom was 10 x12 feet. Her square area rug is 120 inches long.

- Will her rug fit in the new bedroom? How did you decide? *(No, it is too long: 120 inches = 10 ft. The area rug is square: 10x10, whereas the bedroom is 12 x 8.)*

- Which bedroom is larger? How much larger? How did you decide? *(The old bedroom was larger by 24 square ft. Students could apply the area formula to each room, or recognize the difference is 2 x12 feet.)*

Feedback to Students

As students work on their classroom activity sheet, the teacher should be monitoring their progress by circulating the room. This will allow the teacher an opportunity to provide feedback and suggestions for improvement. Throughout the lesson, teachers can give students verbal feedback immediately. While students are investigating, the teacher may choose to ask the guiding questions to track what the students are thinking.

Questions could include:

- Why do we measure?
- Why do we need standardized units of measurement?
- How does what we measure influence how we measure?
- How exact does a measurement have to be?

Use the answers to these questions to help guide your instruction and student progress.

Summative Assessment

Below is a suggested point system for scoring student responses of the summative assessment (questions from page 4 of this document).

Three points:

- Accurately calculate area and perimeter, sound judgment, and good understanding of linear relationships
- Reasonable estimates
- Communication of decisions about measuring or estimating length

Two points:

- Mostly accurate calculations of area and perimeter, some judgment, and some understanding of linear relationships
- Somewhat reasonable estimates
- Some communication of decisions about measuring or estimating length

One point:

- Some accurate calculations of area and perimeter and a basic understanding of linear relationships
- A few reasonable estimates
- Communication of a few aspects of measuring or estimating length

Extensions:
Pose the challenge of estimating how many pennies lined up end to end it would take to make 1 yard. Then ask a few students to arrange a row of pennies along a yardstick.

Continue estimating with other objects and lengths, such as the following:

- About how many pencils placed side by side would it take to make 1 foot?
- About how many paper clips placed end to end would it take to equal 1 foot?

Now have students try to solve the following problems, which require calculating, measuring, and/or estimating.

- About how many cars lined up bumper to bumper would it take to stretch for 1 mile?
- About how many desks like the ones in your classroom stacked on top of each other would it take to reach 10 miles high?
- Guide students in creating similar problems for their classmates.

SOURCE AND ACCESS INFORMATION

Contributed by: Cindy Speece
Name of Author/Source: Cindy Speece
Email of Author/Source: speece.cindy@brevardschools.org

Universal Design for Learning Guidelines

I. Provide Multiple Means of **Representation**

1: Provide options for perception

1.1 Offer ways of customizing the display of information

1.2 Offer alternatives for auditory information

1.3 Offer alternatives for visual information

2: Provide options for language, mathematical expressions, and symbols

2.1 Clarify vocabulary and symbols

2.2 Clarify syntax and structure

2.3 Support decoding of text, mathematical notation, and symbols

2.4 Promote understanding across languages

2.5 Illustrate through multiple media

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, visualization, and manipulation

3.4 Maximize transfer and generalization

Resourceful, knowledgeable learners

II. Provide Multiple Means of **Action and Expression**

4: Provide options for physical action

4.1 Vary the methods for response and navigation

4.2 Optimize access to tools and assistive technologies

5: Provide options for expression and communication

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

6: Provide options for executive functions

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

Strategic, goal-directed learners

III. Provide Multiple Means of **Engagement**

7: Provide options for recruiting interest

7.1 Optimize individual choice and autonomy

7.2 Optimize relevance, value, and authenticity

7.3 Minimize threats and distractions

8: Provide options for sustaining effort and persistence

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

9: Provide options for self-regulation

9.1 Promote expectations and beliefs that optimize motivation

9.2 Facilitate personal coping skills and strategies

9.3 Develop self-assessment and reflection

Purposeful, motivated learners

CAST

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APA Citation: CAST (2011). *Universal design for learning guidelines version 2.0.* Wakefield, MA: Author.

Activity 2 Creation of UDL Principles (45 minutes)

Materials:
Handout: UDL LA Activity 2 (double sided, stapled) 1 for each teacher
Handout: UDL Guidelines (1 for each participant)
Handout: UDL Wheel (1 for each participant) with gold brad and scissors
Handout: Analyzing the Lesson (1 handout for each group of 4 teachers)
Handout: Bright Ideas for UDL Solutions (1 handout for each group of 4 teachers)

Step 1: (10 minutes)

Teachers work in groups of 4 to extend the English Language Arts lesson to include principles of UDL for Multiple Means of Representation.

Say: Today we will be reviewing an English Language Arts lesson. We will be using the lesson to identify additional ways the teacher can extend this lesson to include the three principles of UDL. The UDL Guidelines Handout and UDL Wheel may be used as a reference.

Our brains are divided into three different learning networks. One of those networks is the recognition network. It is how we see, hear, and read. This network is associated with the UDL Principle: Multiple Means of Representation. Using the handout entitled, Analyzing the Lesson, complete the grid for the Recognition Network (page 1). Write down the UDL characteristics the lesson has in the first column. Write down UDL ideas you and your team have to improve the lesson in the area of Multiple Means of Representation in the 2nd column. Write down any materials needed for implementation in the 3rd column. You will have 10 minutes to complete this portion of the activity.

Step 2: (10 minutes) Teachers work in groups to identify and create lesson activities related to the UDL Principle: Multiple Means of Action and Expression.

Say: Another region of our brain is the Strategic Network. This is the task we are doing to perform the assignment. This network is associated with the UDL Principle: Multiple Means of Action and Expression. Using the handout entitled, Analyzing the Lesson, complete the grid for the Strategic Network (page 2). Write down the UDL characteristics the lesson has in the first column. Write down UDL ideas you and your team have to improve the lesson in the area of Multiple Means of Representation in the 2nd column. Write down any materials needed for implementation in the 3rd column. You will have 10 minutes to complete this portion of the activity.

Step 3: (10 minutes) Teachers work in groups to identify and create lesson activities related to the UDL Principle: Multiple Means of Engagement

Say: Another region of our brain is the Affective Network. This is motivation to learn. This network is associated with the UDL Principle: Multiple Means of Engagement. Using the handout entitled, Analyzing the Lesson, complete the grid for the Affective Network (page 3). Write down the UDL characteristics the lesson has in the first column. Write down UDL ideas you and your team have to improve the lesson in the area of Multiple Means of Representation in the 2nd column. Write down any materials needed for implementation in the 3rd column. You will have 10 minutes to complete this portion of the activity.

Step 4: (5 minutes)

Say: Our final activity is to share our responses with one another. Please pass your completed, Analyzing the Lesson, sheet to your left. Review the groups work. Choose three of their very best ideas to record on the handout: Bright ideas for UDL Solutions. You will have 5 minutes to work and then we will continue with the next group.

Step 5: (5 minutes)

Say: Please pass the, Analyzing the Lesson, sheet you have to your left. Choose three of the very best ideas to record on the handout: Bright ideas for UDL Solutions. You will have 5 minutes to work and then we will continue with the next group. Please pass the, Analyzing the Lesson, sheets back to the original groups, you may keep your Bright Ideas paper.

Step 6: (5 minutes) Conclusion/Reflection

Say: Reflect on the activity we did today about creating UDL activities within a given lesson. As a group, talk about some of the bright ideas your group, or other teams came up with. If you have a bright idea on your original lesson idea you would like to include on your Bright Idea sheet you may add it at this time. Circle the one bright idea that you and your team members would like to challenge yourselves to include in your lessons this week. After you have come to a consensus and circled your idea write your groups names at the top of the paper and turn it in. Thank you for your participation today.

Note: This activity emphasizes bright ideas for UDL implementation. You may want to spice up the presentation with a theme of sunshine, lightbulbs, or yellow table paper. Theme snack items may be served such as Sunflower seeds, Sunchips, Sunkist or Sunny-D orange drink. The bright ideas for UDL Solutions handout may be substituted for die-cut sun shapes or lightbulbs to create a collage of ideas as part of a staff bulletin board.

What are Idioms?

Objectives:

- Students will be able to recognize and understand the meaning of idioms.
- Students will be able to create their own idioms and illustrate the meaning.
- Students will be able to appreciate and value the use of idioms.

PASS: Grade 4 Standard 1.3

Link: http://k6educators.about.com/cs/lessonplanskin/a/lessonplan46c.htm

Materials Needed:

- Amelia Bedelia, by Peggy Parish
- Mad As A Wet Hen!, by Marvin Terban
- Chart of Amelia's idioms
- Two idiom booklets (Teacher examples from steps 3-5 in lesson procedures)
- 9 x 11" construction paper
- 5 x 8" white paper
- glue
- markers

Prior Knowledge:

Students participate in a daily reading of "Dear Mr. Henshaw". *(Optional)*

Introduction:

1. Read Amelia Bedelia, by Peggy Parish to the students. Point out the idiom phrases without saying the word idiom. For example:
   a. What does Amelia do when the things to list said to change the towels in the bathroom?"
   b. Did Mrs. Rogers want Amelia to physically change the towels?

2. After reading the book, ask the children if they could recall any other silly phrases like "change the towels" from Amelia's list.

3. Then take out an already made chart with "Amelia's Things to Do" idioms listed. Go through each idiom and discuss the meanings to the expressions.

4. From this, elicit responses from the students for the following questions:

a. From looking at this list, what do you think we are going to talk about today?
b. What are these expressions called? *Tell students that we call these types of phrases idioms. Idioms are phrases or expressions that have hidden meanings. The expressions don't mean exactly what the words say.*

Lesson Procedure:

1. "Who can think of any other idioms that you've heard before?"
   Write the word idioms with a circle around it on the chalkboard.
   Make a web of the students' idioms around the word.
   Have the children explain the literal and non-literal meaning of the idiom while you write the phrases on the board.
   Ask each student to put his or her idiom in a sentence so that the rest of the class can understand the meaning.

2. After there are many phrases on the board, hold up one of the idiom booklets and ask the students if they can guess what the idiom is from looking at the illustration. After they have guessed the idiom, open it up and show them the phrase and the meaning written inside. When showing the idiom "It's raining cats and dogs", read the idioms origin from Mad As A Wet Hen!, by Marvin Terban. Explain that some idioms have explanations. Post this on the board and then do the same for the other idiom booklet.

3. Tell the students to pick their favorite idiom but they cannot tell their neighbor what idiom they have chosen. Give each student a white sheet of 5 x 8" white paper. Tell them to illustrate their favorite idiom. Examples:
   a. Refer to when Amelia was told to draw the drapes. She physically drew the drapes.
   b. Also recall the idioms in their daily reading of "Dear Mr. Henshaw". For example ask, "Where did you hear the phrase, 'Dad ran up a high bill.'"

4. After students are finished with their illustrations, give out construction paper 9 x 11" and tell students to fold paper in half widthwise. Tell them to glue the illustration on the front.

5. Tell the students to write the idiom and its' hidden meaning inside the booklet.

6. After they have completed their idiom booklets, have students come up to the front of the class and show their illustration. The other students will try and guess the idiom.

ASSESSMENT

Formative Assessment

The students listened to the different idioms heard in the story Amelia Bedelia. The students thought of their own idioms and illustrated them. The students shared their work with the other students.

Summative Assessment

Student complete the worksheet on idiom phrases.

Extensions:

Students will look for idioms in their independent reading books and share them with the class the following day. They will also add their idioms to the idiom chart.

SOURCE AND ACCESS INFORMATION

Name of Author/Source: Rosanna Rizzo

Name: _____ Date:_____

IDIOMS can be the most confusing part of any language. Idioms are sayings that have hidden meanings. The expressions don't mean exactly what the words say.

Write the meaning to the following idiom expressions.

1. That's the way the cookie crumbles. _____

2. He spilled the beans. _____

3. She's the apple of his eye. _____

4. The students in Class 4-420 are going bananas. _____

5. He's feeling blue today. _____

6. You're walking on thin ice mister! _____

7. Uh, oh. We're in hot water now. _____

8. You'd better hold your tongue and button your lip. _____

9. Mrs. Seigel has eyes in the back of her head. _____

10. Something's fishy here. _____

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Figure A

Diversity is the norm, not the exception, in schools today. When curricula are designed only to meet the needs of a few, those with different preferences, abilities, learning styles, or backgrounds, may fall behind. 21st century teaching and learning focuses efforts on ensuring that all individuals have opportunities to learn.

Universal Design for Learning (UDL) is a research-based framework that addresses learner diversity at the beginning of the design or planning effort. Using UDL to design academic goals and curriculum has the potential to dramatically change how we teach, how learners engage in learning, and how we measure what learners learn. Using UDL principles allows us to embed flexibility into all aspects of instruction from the beginning, rather than trying to retro-fit a rigid curriculum, set of instructional materials, or test for each student who happens to learn a different way. Educators should provide multiple ways to access resources and content so learners are given the opportunity to take charge of their engagement in learning.

The principles of Universal Design for Learning (UDL) can help us refine how we approach who we teach, what we teach and how we teach. Universal Design for Learning (UDL) is all about "how" we define goals, teaching methods, instructional materials and assessments. Innovative technologies and online resources can assist teachers when they modify instruction to better meet student needs. The UDL framework encourages creating flexible designs from the start that have customizable options, which allow all learners to progress from where they are and not where we would have imagined them to be. The options for accomplishing this are varied and robust enough to provide effective instruction to all learners

Through the use of the framework of Universal Design for Learning, educators can plan and deliver flexible and meaningful lessons that emphasize problem solving, project based learning, and student choice. Exposing novice learners to innovative content acquisition and application supports their development as expert learners. Expert learners are individuals who know how to learn, who want to learn, and who, in their own highly individual ways, are well prepared for a lifetime of learning.

The pedagogical, neuroscientific, and practical underpinnings of UDL are also discussed at greater length in books such as Teaching Every Student in the Digital Age by Rose & Meyer (ASCD, 2002), The Universally Designed Classroom (Rose, Meyer, & Hitchcock, Eds.; Harvard Education Press, 2005), and A Practical Reader in Universal Design for Learning (Rose & Meyer, Eds.; Harvard Education Press, 2006).

Universal Design for Learning Guidelines

These UDL Guidelines and checkpoints can assist educators in designing flexible lessons and curricula that reduce barriers to learning and provide innovative and supportive learning to meet the needs of all learners. They can also help educators evaluate existing curricula goals, materials, methods and assessments.

Principle I: Provide Multiple Means of Representation - the "**WHAT**" of learning - Learners differ in the ways that they perceive and comprehend information that is presented to them. **There is no one means of representation that will be optimal for all learners; but providing multiple options for representation is essential.*

Principle II: Provide Multiple Means of Expression - the "**HOW**" of learning - Learners differ in the ways that they can navigate a learning environment and express what they know. **There is no one means of expression that will be optimal for all learners; but providing multiple options for action and expression is essential.*

Principle III: Provide Multiple Means of Engagement - the "**WHY**" of learning - Learners differ markedly in the ways in which they can be engaged or motivated to learn. Some learners are highly engaged by spontaneity and novelty while other are disengaged, even frightened, by those aspects, preferring strict routine. **Learners have different preferences for what is engaging and motivating so providing multiple options for engagement is essential.*

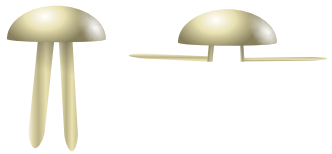
HOWARD COUNTY PUBLIC SCHOOL SYSTEM

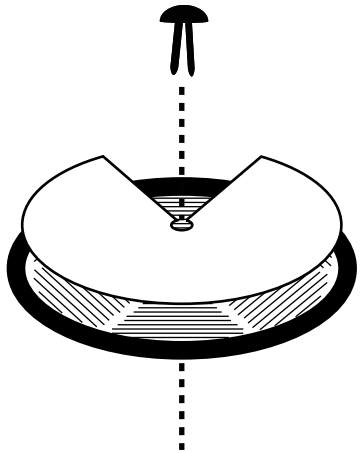
MARYLAND STATE DEPARTMENT OF EDUCATION
Achievement Matters Most

Center for Applied Special Technology (CAST)
Universal Design for Learning Guidelines

Universal Design for Learning DIY Template

1. Cut out figure A
2. Cut out figure B
3. Fasten figure A on top of figure B with a mini round safety pin





Center for Applied Special Technology (CAST).
Universal Design for Learning Guidelines

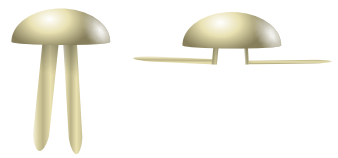
Figure B

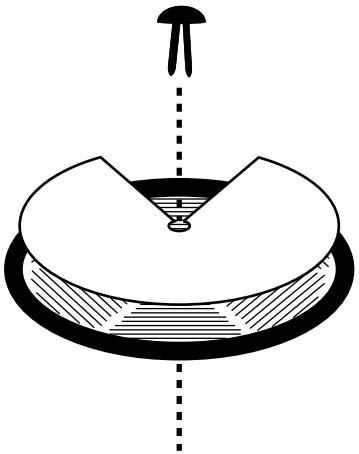
Universal Design for Learning DIY Template

1. Cut out figure A

2. Cut out figure B

3. Fasten figure A on top of figure B with a mini round safety pin





Options for Perception

• Use text equivalents in the form of captions or automated speech-to-text (voice recognition) for spoken language • Provide visual diagrams, charts, notations of music or sound • Provide written transcripts for videos or auditory clips • Vary the display of information in a flexible format including: The size of text, images, graphs, tables, or other visual content. • The contrast between background and text or image • The color used for information or emphasis • The volume or rate of speech or sound • The speed or timing of video, animation, sound, simulations, etc • The font used for print materials

Options for Language & Symbols

• Pre-teach vocabulary & symbols, especially in ways that promote connection to the learners' experience and prior knowledge • Highlight how complex terms, expressions, or equations are composed of simpler words or symbols • Clarify unfamiliar syntax (in language or in math formulas) or underlying structure (in diagrams, graphs, illustrations, extended expositions or narratives) • Support decoding of text, mathematical notation, & symbols • Present key concepts in one form of symbolic representation (e.g. an expository text or a math equation) with an alternative form (e.g. an illustration, dance/movement, diagram, table, model, video, comic strip, storyboard, photograph, animation, physical or virtual manipulative)

Options for Comprehension

• Activate prior knowledge (e.g. using visual imagery, concept anchoring, or concept mastery routines), using advanced organizers (e.g. KWL methods, concept maps), & pre-teaching critical prerequisite concepts through demonstration or models, concrete objects • Bridge concepts with relevant analogies & metaphors • Highlight patterns, critical features, big ideas and relationships • Emphasize key elements in text, graphics, diagrams, formulas • Use cues & prompts to draw attention to critical features, explicit prompts for each step in a sequential process • "Chunk" information into smaller elements • Use checklists, organizers, sticky notes, electronic reminders, & mnemonic strategies • Explicit opportunities for spaced review & practice

Options for Physical Action

• Provide alternatives in the requirements for rate, timing, amplitude, & range of motor action necessary to interact with instructional materials, physical manipulatives, & technologies • Provide alternatives for physically responding or indicating selections (e.g. to marking with pen & pencil, to mouse control) • Provide alternatives for physically interacting with materials (e.g. by hand, voice, switch, joystick, keyboard, or adapted keyboard) • Use keyboard commands for mouse action • Consider switch options, alternative keyboards, & customized overlays for touch screens & keyboards

Options for Expressive Skills & Fluency

• Compose in multiple media such as text, speech, drawing, illustration, comics, story boards, design, film, music, visual art, sculpture, or video • Provide learners with prediction software, & recording software, human dictation, & speech-to-text checkers • Provide calculators, graphing calculators, & recording software • Use sentence starters, pre-formatted graph paper, selectpads, outlining tools, concept map-ping tools, computer-aided-design (CAD), & music notation (writing) software • Provide concrete or virtual, animation, algebra blocks (either base-10 blocks, presentation) • Provide scaffolds that can be gradually released with increasing independence & skills

Options for Executives Functions

• Use prompts & scaffolds to estimate effort, resources, & difficulty, & models or examples of the process & product of goal-setting • Provide learners with guides & checklists for scaffolding goal-setting • Use prompts, coaches or mentors & think" before acting, & "stop & think" model think-alouds of the process, & prompts for categorizing & systematizing & project planning & prioritization & scheduling up priorities • Use checklists for setting up templates for organization, sequences, & schedules of steps • Break long-term goals into reachable short-term objectives • Use checklists & guides for note-taking, & guided questions for self-monitoring

Options for Self-regulation

• Use prompts, reminders, guides, rubrics, & checklists that focus on self-regulatory goals • Use differentiated models, scaffolds & feedback for managing frustration, seeking external emotional support, & developing internal controls & coping skills • Provide recording devices, aids, or charts to assist individuals in learning to collect, chart & display data from their own behavior (including emotional responses, effect, etc.) to monitor changes in those behaviors • Design activities that in which learners get feedback & have access to alternative scaffolds (charts, templates, feedback displays) that support them in understanding their progress in an understandable & timely manner

Options for Sustaining Efforts & Persistence

• Use prompts or reminders with explicity formulate or restate goals • Use hand-held or computer-based scheduling tools with peer tutoring & support • Vary the degree of freedom for accept-able performance • Emphasize process, effort, improvement in meeting standards as alternatives to external evaluation • Use cooperative goals, competition • Use scaffolded roles & learning groups with prompt learners to exchange roles or teacher • Constructive feedback on when & how to ask peers and/or teachers for help • Differentiate virtual communities of learners engaged in common interests or activities or the degree of difficulty within which core activities can be completed

Options for Recruiting Interest

• Provide learners with as much discretion & autonomy as possible by providing choices in the level of challenge, type of tools used, color, design & layout of graphics, and sequence or timing of tasks • Involve learners, where & when ever possible, in setting their own personal academic & behavioral goals • Vary activities so that they can be personalized for different & responsive, lives, culturally relevant, racial, cultural, appropriate for different & gender groups • Design activities so that outcomes are authentic, communicate to real audiences, & are purposeful • Provide tasks that allow for active participation, exploration & experimentation • Invite personal response, evaluation and self-reflection to content & activities

Center for Applied Special Technology (CAST). Universal Design for Learning Guidelines

Analyzing the Lesson: Recognition Networks

Name: Date: Subject Area: Lesson Title:

Learning Goal(s):

1. Use multiple ways to present information (Recognition Networks)	What current methods are used to address the needs of all learners?	What methods are needed for access, participation, & progress for all learners?	Materials
Provide multiple examples. Show the range of examples, provide examples and counter-examples. (e.g., persuasive writing – Op/Ed v. factual article in a newspaper)			
Highlight critical features (e.g., teacher tone of voice, marker underline or highlight, point to words or phrases)			
Represent information in multiple media and formats (e.g., text version of book, books on tape)			
Provide supports for limited background knowledge, and establish a context for learning (e.g., classroom resources, peer tutoring)			

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Analyzing the Lesson: Strategic Networks

Name: Date: Subject Area: Lesson Title:

Learning Goal(s):

2. Provide multiple pathways for students' action, expression (Strategic Networks)	What current methods are used to address the needs of all learners?	What methods are needed for access, participation, & progress for all learners?	Materials
Provide flexible models of skilled performance (e.g., Math – math calc. demonstration (a) draw lines, (b) show manipulatives. Language Arts – sentence development verbally expand sentence in multiple acceptable ways.			
Provide opportunities to practice with supports (e.g., teacher prompt a multi-stepped task, provide a rubric/checkbox to edit writing)			
Provide ongoing, relevant feedback (e.g., (a) questions and answers in classroom, (b) quiz or test)			
Provide flexible opportunities for demonstrating skill. (e.g., written, oral, or visual presentation, explanations, word process)			
Provide novel problems to solve (e.g., unique problems outside the initial instructional set to promote generalization and transfer)			

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Analyzing the Lesson: Affective Networks

Name: Date: Subject Area: Lesson Title:

Learning Goal(s):

3.Provide multiple ways to engage students (Affective Networks)	What current methods are used to address the needs of all learners?	What methods are needed for access, participation, & progress for all learners?	Materials
Offer choices of content and tools (e.g., choice of (a) books to study literature; select tragedy from a list, (b) report: written, drama, tapped presentation)			
Provide adjustable levels of challenge: (e.g., range of materials at different reading difficulties, provide response formats with prompts v. open-ended)			
Offer a choice of rewards: (e.g., provide a menu of reinforcements, treats, stickers, free time, no homework, grades)			
Offer a choice of learning context (option to work in study carrel v. open classroom, student use headphones)			

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Universal Design for Learning - Lesson Planning Flow Chart

Bright Ideas for UDL Solutions

http://www.montgomeryschoolsmd.org/departments/hiat/udl/awareness_guides.shtm

Pre-Test Score: _____
*Post-Test Score:*_____

Universal Design for Learning

Pre-Test/Post-Test

Name: _____ Date: _____

Universal Design for Learning is an instruction/assessment model based on brain research to assist teachers in thinking proactively about designing effective curricula (goals, methods, materials, and assessments) to help all individuals gain knowledge skills and enthusiasm for learning.

1. Which field of study did Universal Design for Learning originate?

a) Medical Research
b) Architecture
c) Education
d) Archaeology

2. What is a description of Learner Variability?

a) All learners learn differently
b) Only students with special needs learn differently
c) All learners require the same support
d) All learners acquire information at the same rate

3. What are the three principles of Universal Design for Learning?

i. Multiple means of _____
ii. Multiple means of _____
iii. Multiple means of _____

4. Name one device designed with Universal Design components in mind. What components make the device accessible?

i. Device _____
ii. Accessibility feature _____
iii. Device designed for (specific user) _____
iv. Others benefitting from this device _____

5. What is one advantage of Universal Design for Learning?

a) All learners are provided the same accommodations
b) The teacher puts extended time and thought into each lesson
c) The teacher has access to multiple resources
d) Planning is purposeful for all students rather than a few with special needs

6. Name a specific example of how Multiple Means of Representation can be used in a classroom.

a) Teachers use color coding to represent each step in a math problem
b) Students choose to respond using paper or a word processor document
c) Students choose to watch a video or read text based on their interest
d) Students choose to work with a partner or alone

7. Name a specific example of how Multiple Means of Action and Expression can be used in a classroom.

a) Teachers use color coding to represent each step in a math problem
b) Students choose to respond using paper or a word processor document
c) Students choose to watch a video or read text based on their interest
d) Students choose to work with a partner or alone

8. Name a specific example of how Multiple Means of Engagement can be used in a classroom.

a) Teacher activates background knowledge by showing students rock formations including Mount Rushmore.
b) After a thumbs up/down response time, the students record their response on individual white boards. No teacher feedback is provided.
c) Teacher directs students to a poster explaining the process of photosynthesis.
d) Teacher provides students the choice to respond to one of the four questions posted around the room.

9. What is a distinction between Universal Design for Learning and differentiation?

a) UDL lessons are designed well from the onset to address the needs of the widest users, Differentiation provides accommodations after the needs of the learners are known.
b) UDL and Differentiation address the diverse needs of learners.
c) UDL and Differentiation require appropriate planning to address the diverse needs of learners in the classroom.
d) UDL provides the widest range of accommodations possible to meet the needs of all learners. Differentiation addresses the needs of the learners with the most significant impairments.

10. What is the purpose of the Universal Design for Learning interactive or paper wheel in the classroom?

_____

_____

_____

Pre-Test Score: _____
*Post-Test Score:*_____

Name: _____ Date: _____

Universal Design for Learning

Pre-Test/Post-Test

1. Which field of study did Universal Design for Learning originate? (Correct answer: b)

a) Medical Research
b) Architecture
c) Education
d) Archaeology

2. What is a description of Learner Variability? (Correct answer: a)

a) All learners learn differently
b) Only students with special needs learn differently
c) All learners require the same support
d) All learners acquire information at the same rate

3. What are the three principles of Universal Design for Learning?

i. Multiple means of Representation
ii. Multiple means of Action and Expression
iii. Multiple means of Engagement

4. Name one device designed with Universal Design components in mind. What components make the device accessible?

i. Device Multiple responses possible. Ex: iPad
ii. Accessibility feature Multiple responses possible. Ex: Make text larger
iii. Device designed for (specific user) Multiple responses possible. Ex: Visually Impaired
iv. Others benefitting from this device Multiple responses possible. Ex: Elderly

5. What is one advantage of Universal Design for Learning? (Correct answer: d)

a) All learners are provided the same accommodations
b) The teacher puts extended time and thought into each lesson
c) The teacher has access to multiple resources
d) Planning is purposeful for all students rather than a few with special needs

6. Name a specific example of how Multiple Means of Representation can be used in a classroom. (Correct answer: a)

a) Teachers use color coding to represent each step in a math problem
b) Students choose to respond using paper or a word processor document
c) Students choose to watch a video or read text based on their interest
d) Students choose to work with a partner or alone

7. Name a specific example of how Multiple Means of Action and Expression can be used in a classroom. (Correct answer: b)

a) Teachers use color coding to represent each step in a math problem
b) Students choose to respond using paper or a word processor document
c) Students choose to watch a video or read text based on their interest
d) Students choose to work with a partner or alone

8. Name a specific example of how Multiple Means of Engagement can be used in a classroom. (Correct answer: d)

a) Teacher activates background knowledge by showing students rock formations including Mount Rushmore.
b) After a thumbs up/down response time, the students record their response on individual white boards. No teacher feedback is provided.
c) Teacher directs students to a poster explaining the process of photosynthesis.
d) Teacher provides students the choice to respond to one of the four questions posted around the room.

9. What is a distinction between Universal Design for Learning and differentiation? (Correct answer: a)

a) UDL lessons are designed well from the onset to address the needs of the widest users, Differentiation provides accommodations after the needs of the learners are known.
b) UDL and Differentiation address the diverse needs of learners.
c) UDL and Differentiation require appropriate planning to address the diverse needs of learners in the classroom.
d) UDL provides the widest range of accommodations possible to meet the needs of all learners. Differentiation addresses the needs of the learners with the most significant impairments.

10. What is the purpose of the Universal Design for Learning interactive or paper wheel in the classroom?

A quick reference sheet, providing options for the lesson to address the diverse needs of learners while maximizing learning opportunities.