

Welcome to the National Center State Collaborative Making General Education Instruction in Mathematics Accessible module. This presentation will review how to unpack the standards in general education lessons and make the lessons accessible to students using Universal Design for Learning.



This printable PDF version of a NCSC module has been provided for your convenience. The PDF version of the module will be very similar to the online module, with a few revisions to eliminate features that are only necessary in the online learning environment. Because the PDF presentations are the content of the online courses and retain the formatting and some of the features of the modules, we have included the following description.

The NCSC professional development courses each consist of one or more modules. To help the learner navigate in the courses, the modules have a uniform design and format. All learning modules follow four themes: plot the course, explore the terrain, check the map, and expand your horizons. In plot the course learners discover what is covered in the module, including their learning objectives and other steps they will follow while viewing the module. In explore the terrain, the learner will engage with the content and learn about the topic covered in the module. In check the map the learner has the opportunity to review and self-assess their understanding.

Some of the PDF presentations (printable versions of the modules) will not contain Check the Map sections as there are no self-assessments in the printable PDFs. Finally, expand your horizons offers ways in which the learner can explore the content further, or apply what they have learned. Theme Indicators appear on most slides to tell the user what type of content is contained in the slide.

MODULE GOALS



Ensure that instruction on grade level content standards is accessible for all students.

Understand how to use the principles of Universal Design for Learning (UDL) to design/plan instruction.

Identify areas within instruction that need to be made accessible.




In this module, we are going to discuss how to ensure instruction to the grade specific Common Core State Standards through general education lessons is accessible for all students. If you are using your own state's grade level standards, you'll be directed to view the lesson objectives and find matching concepts from your standards. They may not be word for word.

By the end of this module, you should know what the principles of Universal Design for Learning are and begin to use them when planning instruction. You should also be able to identify areas within instruction that are not yet accessible for all students.

RELATED CONCEPTS

Here are some concepts that will be discussed in this module. If you would like background on these concepts, click forward on the playbar. If you are familiar with the concepts and do not need additional background, click on the button labeled skip definitions.

- UDL - Universal Design for Learning
- CCSS - Common Core State Standards or your state standards

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In this module reference is made to the following concepts:

- Universal Design for Learning
- CCSS - Common Core State Standards or Grade level content standards from your state.

If you would like background on these concepts, click forward on the playbar. If you are familiar with the concepts and do not need additional background, click on the button labeled skip definitions.

RELATED CONCEPTS - UDL UNIVERSAL DESIGN FOR LEARNING

Universal Design for Learning (UDL) is a set of principles that guide development of curriculum.

- Multiple Means of Representation
- Multiple Means of Action and Expression
- Multiple Means of Engagement

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Universal Design for Learning (UDL) is a set of principles that guide development of curriculum. When implemented, UDL provides opportunities for learning to all individuals by utilizing the following:

- Multiple Means of Representation focusing on big ideas, themes, and patterns to provide options for comprehension. Customizing the display of information, using auditory methods and other alternatives to visual presentation for conveying content, using multimedia presentations, clarifying symbols, vocabulary, and structures are all examples of multiples means of representation.
- Multiple Means of Action and Expression to provide options for demonstrating understanding and strategizing. Providing multimedia and other mediums to students for their work, providing tools and strategies for conveying learned information, scaffolding or graduated levels of support for instruction and practice, and optimizing access to tools and assistive technology are all examples of multiple means of action and expression.
- Multiple Means of Engagement to provide options to self-regulate, develop reflective skills and sustain interest. Promoting motivational techniques, fostering collaborative learning, providing feedback and opportunities to participate in class-wide activities, and using incentives to encourage effort are

all examples of multiple means of engagement.

**RELATED CONCEPTS - CCSS
COMMON CORE STATE STANDARDS**

Your State has either developed their own grade level state standards or has adopted the Common Core State Standards to establish guidelines for learning in Math and English Language Arts from kindergarten through 12th grade.

Achieving the learning goals put forth in the standards will prepare students for college and career.





We based our work in all these modules on the CCSS and the College and Career Readiness Standards. You can apply the same process with your state standards.

Your State has either developed their own grade level state standards or has adopted the Common Core State Standards to establish guidelines for learning in Math and English Language Arts from kindergarten through 12th grade. These are based on the **College and Career Readiness Standards**.

The actual implementation of the standards, including how they are taught, the curriculum developed, and the materials used to support teachers as they help students reach the standards, is led entirely at the state and local levels.

INSTRUCTIONS FOR COMPLETING THE MODULE



- Review the Common Core State Standards in mathematics
<http://www.corestandards.org/Math/> **Or**
- Review your state's grade level content standards
- Complete 5 self assessment items throughout the module
- Review the additional resources listed at the end of this module




Having a basic understanding of the Common Core State Standards in mathematics or your state's grade level content standards will be helpful before starting this module. Review these documents for reference and more detailed information



This section of the module will identify the physical and instructional environments of a classroom or lesson and explain how to address the barriers that teachers may find. The key words to Universal Design for Learning or UDL are representation, expression and engagement. How do you break down what's hindering each student's learning? Let's start with the environments.

RECOGNIZING CHARACTERISTICS OF A LESSON (CLASSROOM)




Physical

- Accessibility
 - Chairs and tables are of appropriate height
 - Appropriate space to maneuver

Instructional

- Pace of Lesson
- Method of delivery of content (e.g., lecture, audio)
- Complexity of academic content
- Accessibility of materials (e.g., printed text books, written assignment)
- High expectations



Lets look at what we mean by barriers. People automatically think about physical barriers – a table that is not high enough for a wheelchair, schools that require everyone to go up stairs to get into the building. These are significant and must be managed, but we often miss *instructional* barriers.

- For instruction, first consider the pace of the lesson, then the method of delivery, how complex the academic content is and if the student can access the material. For instance, do students have special needs for reading printed text books, or completing written assignments? Are there high expectations for learning for the student? Low expectations for learning can constitute a barrier to instruction that the student might otherwise receive.

Finally, think about barriers within our own lives. What can prevent learners from making the best use of information they are given?



HAS AN ACCESSIBLE LEARNING ENVIRONMENT BEEN PROVIDED ?

Within the context of what all students are learning/doing think about the 3 areas of UDL...

1. Representation
2. Expression
3. Engagement




How do we create an accessible learning environment? Ask yourself these 4 questions to guide the areas of support for students.

- Does the student have a way to organize information? This is Representation.
- Do they have a way to communicate their learning and knowledge? This is Expression.
- Do they have a way to interact with the material? This is both Representation and Engagement.
- Are they interested in the lesson? This is Engagement in UDL.

If you cannot answer yes to these questions then the environment still needs some work. What is in the way of the student comprehending information? ... What is in the way of communicating what they know, and their interaction with material provided during instruction? What are these barriers?


WHAT IS MEANT BY GRADE LEVEL OR GRADE-APPROPRIATE TEXT?




Grade-appropriate text is: text that students in a specific grade would read from interest or be required to read as part of the curriculum

It DOES NOT mean the student is given the text and has to read the words himself or herself


"I plan on planting a garden that is 12ft X



read out loud



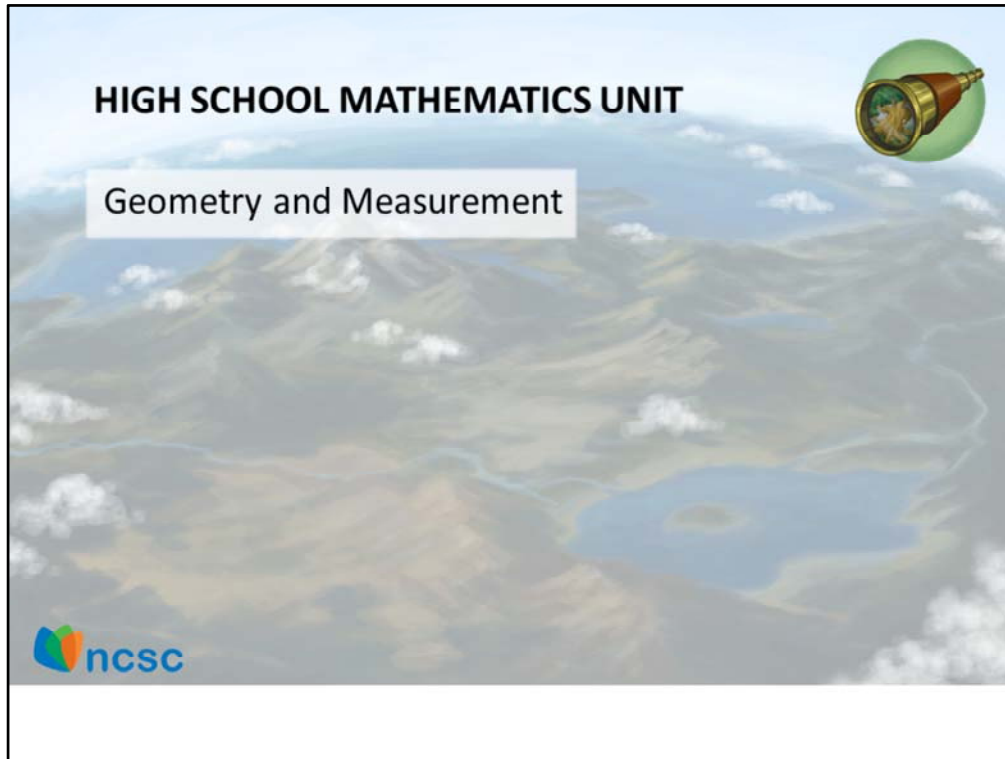
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read this

Access to the general curriculum assumes grade appropriate texts. An assessment that is linked to grade level also assumes grade appropriate text. The next few slides are designed to make clear what is meant by grade appropriate or grade level text. Grade level does not mean reading level – it is the **content** that has to be at grade level or grade appropriate. Most instruction, including mathematics, requires students to interact with grade level print materials. As we go through a sample lesson, pay attention to places where text is used.

Grade appropriate text does not mean students must read text word-for-word. However, students must have access to the grade appropriate text.



In this section of the presentation, we will look at a small part of an instructional unit designed to teach a high school geometry standard. The lesson we will review is one part of the unit of study which can be found on the NCSC wiki in the instructional units. This unit is the High School Mathematics UDL Instructional Unit.

HIGH SCHOOL GEOMETRY UNIT



Each lesson in the unit first presents objectives and essential questions for the lesson which are followed by several components:

- Materials and Vocabulary
- Introduction
- Body
- Practice
- Closure
- Resources



All lessons of the sample unit follow the same format. Lessons include:

- Objectives for learning
- Materials and vocabulary needed to complete the lesson.
- The lesson introduction in which students are reminded of previous skills learned and/or where background knowledge is built.
- The lesson body which is the main presentation of the concept.
- Practice which generally includes hands-on practice of the concept. Such as, Given a situation (word problem) involving rectangles that have the same perimeter but different areas, determine the length and width for the largest area possible.
- Closure which is the formative assessment of the concept. Such as, give a new situation that includes mixed standard measures (inches and feet).
- Resources which include printable documents, PowerPoints and other resources needed or helpful in the delivery of the lesson.

SAMPLE GENERAL EDUCATION LESSON PLAN FOR MATHEMATICS

Sample Lesson Plan

HS Common Core State Standard: Modeling with Geometry G-MG

Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).

PRACTICE

1. In small groups, have students work on a variety of problems, using different given dimensions such as:

Alex has 140 feet of fencing to place around a rectangular garden he is making. He wants the area of the garden to be as large as possible. What should the length and width of the garden be?

Give each student the chart below. Students may use models to explore the various possibilities and complete the chart.

Rectangle	Length	Width	Perimeter	Area
A	40 ft	30 ft	140 ft	1200 ft ²



This general education lesson plan addresses the high school Common Core State Standard, “Apply concepts of density based on area and volume in modeling situations.” You’ll be able to find this concept in your state grade level standards in high school. We need to identify the characteristics of the learning environment, and in particular the instructional characteristics of this lesson, to ensure all students have access and an opportunity to learn.

SAMPLE LESSON CONTINUED



Practice

2. Bring the whole group back together. Ask one student from each group to discuss the results.

After reviewing student results, generalize: For a perimeter of 140 units, the length plus the width is always 70 units, but the length times the width varies.

Make a chart with the students: $70 = 5 + 65$ $5 \times 65 = 325$

$$70 = 10 + 60 \quad 10 \times 60 = 600$$

$$70 = 20 + 50 \quad 20 \times 50 = 1000$$

$$70 = 35 + 35 \quad 35 \times 35 = 1225$$

$$70 = 50 + 20 \quad 50 \times 20 = 1000$$

Ensure students conclude that as the dimensions change, the area gets larger, reaches a highest value, then gets smaller. Generalize that for a given perimeter, a square would have the greatest area.



The second part of the lesson pulls the students back into a whole group. A student from each small group reports their results and together the class reviews the group results and generalizes. This is then charted. The goal is for the students to generalize that for a given perimeter, a square would have the greatest area. To ensure access and opportunity, we must understand what student performance of the skills and concepts includes. One way to understand student performance is to unpack the standard.

WHY UNPACK THE STANDARDS?



To identify what students need to **know** and be able to **do** to demonstrate learning unpack the standard.

Unpacking Questions:

What do students need to know?

Nouns

What do students need to do?

Verbs

To what degree do students need to perform it?

Verbs (e.g., Bloom's and Marzano's Taxonomies)



The primary reason to unpack the standard is to identify what a student needs to know and be able to do to demonstrate learning. Unpacking the standards helps us to see specific skills and concepts of the standard when planning for instruction.

When unpacking the standards to determine what students need to know, we look for the nouns. To determine what students need to do **and** to what level, we look at the verbs.

It is very important to remember that when teaching the standard, we must put all the pieces back together during instruction.

PLANNING FOR INSTRUCTION: LEARNING A GRADE-SPECIFIC STANDARD

HS Common Core State Standard: Modeling with Geometry G-MG
Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).

What are students supposed to know? (nouns)

- Situations
- Area
- Volume
- Density (*unit rate*)

What will learning look like for this standard?

Model area of a given situation to apply concepts of density (unit rate).

What are students supposed to do? (verbs)

- Apply
- Model

A graphic organizer

- Of situation
- Formulas

?

Manipulatives



What kind of evidence would show learning of this standard? First, we must examine the nouns. The nouns are: situations, area, volume, and density or unit rate. Then, we look at the verbs. The student must apply and model the concepts of density. One element of learning might be to analyze the situation. Perhaps a graphic organizer would demonstrate student understanding. Another element of learning might be to use formulas and models to determine area, volume and unit rate.

SAMPLE GENERAL EDUCATION LESSON PLAN FOR MATHEMATICS



Sample Lesson Plan in HS- MG Geometry Practice	Student Needs
<p>1. In small groups, have students work on a variety of problems, using different given dimensions such as:</p> <p><i>Alex has 140 feet of fencing to place around a rectangular garden he is making. He wants the area of the garden to be as large as possible. What should the length and width of the garden be?</i></p> <p>Give each student the chart below. Students may use models to explore the various possibilities and complete the chart.</p>	<ol style="list-style-type: none">1. Representation2. Expression3. Engagement



Now that we have unpacked the standard and know what learning might look like, let's look at the lesson. We need to make sure that we have an accessible learning environment. When reviewing a lesson, concentrate on the characteristics of the lesson and determine what students need to do to participate in and access the instruction. For example, within this lesson reading is assumed for students to access the information in the word problem; large numbers are used when determining area; writing is required to complete a chart.

APPLYING THE PRINCIPLES OF UDL



Sample Lesson Plan HS-MG Geometry Practice	Student Needs
<p>Bring the whole group back together. Ask one student from each group to discuss the results.</p> <p>After reviewing student results, generalize: For a perimeter of 140 units, the length plus the width is always 70 units, but the length times the width varies.</p> <p>Make a chart with the students</p> <p>Ensure students conclude that as the dimensions change, the area gets larger, reaches a highest value, then gets smaller. Generalize that for a given perimeter, a square would have the greatest area.</p>	<ol style="list-style-type: none">1. Representation2. Expression3. Engagement



Once the lesson's characteristics are identified, we must determine how to provide the needed supports to ensure all students can access and learn from the instruction. This is when we apply the principles of Universal Design for Learning (UDL).

How Can We Ensure Student Learning Occurs?

1. Provide options in the ways materials are presented to students.
2. Provide options in the ways responses are anticipated/expected.
3. Provide options in the ways student interest is captivated to keep them engaged.

PROVIDE OPTIONS IN THE WAY WE PRESENT MATERIALS TO STUDENTS

Provide information electronically.

Support text with objects or tactile cues.

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Think about the multiple ways we can present materials/information to students. We must always consider each student's mode of communication when presenting information. How do students best receive information?

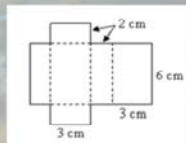
Information presented electronically allows students to receive as much or as little support as needed. For example, an electronic glossary can give students options for a written definition that is read using text-to-speech software, or presented with symbols or pictures, signed or a definition with examples and non-examples. Some students may need pictures, objects and/or tactile cues to accompany information presented. Demonstrating or modeling concepts can be an effective way to represent information.

PROVIDE OPTIONS IN THE WAY WE EXPECT A RESPONSE



Circle a prediction and graph the results in a science experiment

Make a selection using an eye-gaze board



Use geometry nets when working on surface area.



Use symbol-based text vocabulary cards

Use stamps to add information:

- Add a date with a date stamp.
- Add numbers with stamps.
- Use scented ink (engagement).



Think about the multiple ways students can express or demonstrate what they know. We must again consider each student's mode of communication, as we did when considering multiple means of representation. In this case, how does a student communicate expressively?

A student might communicate what they have learned through choices of picture symbols, objects, or tactile cues. They might communicate using models or stamps to add information. They might use eye gaze boards, symbol-based texts or vocabulary cards to write their answers. These are just a few options of expression.

PROVIDE OPTIONS IN THE WAYS STUDENT INTEREST IS CAPTIVATED TO KEEP THEM ENGAGED



Use schedules to support student understanding of what to expect from their day and to help them plan.



Use min-schedules to support student understanding of expectations (First you do this...then you get to do...)

Use media to capture student interest. Sounds and animation can be used to count or organize items, etc. (Backpacks of Literacy, Abner)



Work with friends.



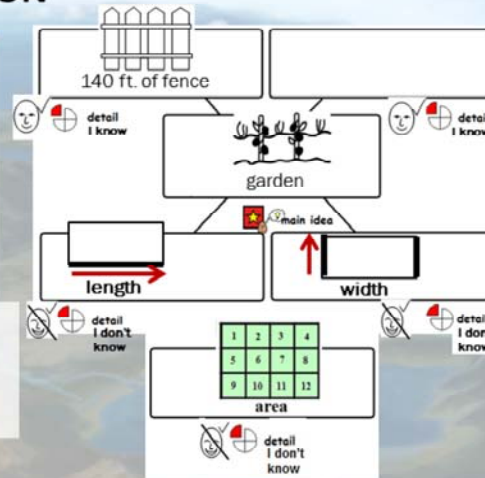
Let's think about the multiple ways to keep students engaged in the instruction long enough to learn.

Use schedules to help students anticipate what is going to happen throughout their day. Using electronic media that includes sounds and animation may hold student interest and keep them engaged. Mini schedules can help students maintain attention to a task by understanding what the expectation is for that specific activity. Working with peers in small groups or with partners may help engage students.

WAYS ANY STUDENT MIGHT ANALYZE THE TEXT OF A MATHEMATICAL SITUATION

Alex has 140 feet of fencing to place around a rectangular garden he is making. He wants the area of the garden to be as large as possible. What should the length and width of the garden be?

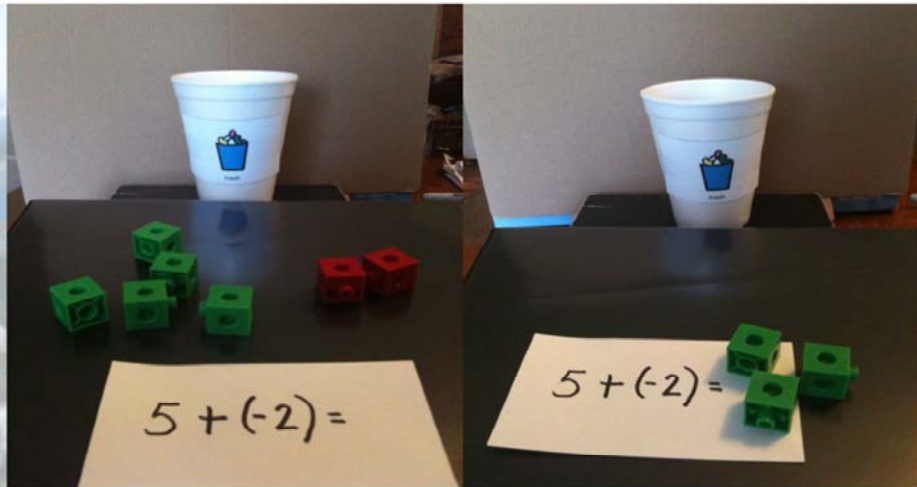
Ask or tell the student:
 What is the main idea of the problem?
 What details do we know that will help us solve the problem?
 What details do we need to find out?



We have presented several ideas for considering the principles of UDL. Let's look one more time at multiple means of representation, expression, and engagement as it relates specifically to mathematics. Mathematical situations or word problems are often used in math and can be represented in a variety of ways including using picture symbols and graphic organizers.

Lets take this break-down a little further before we move on. The student has to analyze a text – what are some things we might do as we analyze? The student has to draw inferences – what are some things we might do as we draw inferences?

Provide Options for Expression: Use models.



Using models is a typical way for students to demonstrate mathematical concepts. In this situation of adding negative numbers, you can throw away pairs of red and green to find the answer.

**PROVIDE OPTIONS FOR ENGAGEMENT:
DIGITAL REPRESENTATIONS OF MATH CONCEPTS.**

The diagram illustrates the concept of density using trees in an orchard. It shows a grid with a tree in a 4x4 area labeled 16ft^2 , and two separate trees, each also labeled 16ft^2 . The background is a landscape with a lake and mountains.

8ft

4ft

4 8 12 16

16ft^2

16ft^2

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We can engage students by using animation to demonstrate specific math concepts in action. In this case, we are looking at density. How many trees fit in an orchard per square feet?

Accessible Mathematics

Add numbers with manipulatives and number line

$2 + 2$

🔥 🔥 🔥 🔥

-5 -4 -3 -2 -1 0 1 2 3 4

Use algebra tiles (red cancels out green) to work with negative numbers

■ ■

■ ■

Fraction bars

$12 \div 2 =$

Use place value manipulatives for division

Measure area using a Geoboard and counting

Use geometry nets to figure the area of a 3-D shape

Use number cubes to do probability problems

There are a variety of ways to provide access to mathematical concepts. Many of the options are typical mathematics strategies or manipulatives used by all children.

CHECK FOR LEARNING



How can we ensure student learning occurs? We need to ensure that the lesson includes:

- 1) multiple means of representation
- 2) multiple means of expression
- 3) multiple means of engagement

All of which are principles of UDL.



How can we ensure student learning occurs? We need to ensure that the lesson includes: 1) multiple means of representation 2) multiple means of expression and 3) multiple means of engagement. All of which are principles of UDL.



In this section of the training, we are going to work with a student planning tool to help us consider the various access options we may need to use for our students.

STUDENT UDL PLANNING TOOL: PROVIDING ACCESS TO LEARNING

Sample Lesson Plan	Lesson Characteristics	Presentation Options	Response Options	Engagement Options
<p>1. In small groups, have students work on a variety of problems, using different given dimensions such as:</p> <p><i>Alex has 140 feet of fencing to place around a rectangular garden he is making. He wants the area of the garden to be as large as possible. What should the length and width of the garden be?</i></p> <p>Give each student the chart below. Students may use models to explore the various possibilities and complete the chart.</p>	<ul style="list-style-type: none"> Lecture set-up for providing information about the activity Background knowledge required - area Writing to complete chart 	<ul style="list-style-type: none"> Provide problem in digital format with text reader; use picture or tactile representations of salient vocabulary; Provide background knowledge by giving a brief digital example that area encompasses the whole inside of a figure. Provide graph paper and manipulatives or templates such as small unit squares, a length of string representing the fence 	<ul style="list-style-type: none"> Provide background knowledge by giving a brief digital example that area encompasses the whole inside of a figure. Provide graphic representation of vocabulary Provide graph paper and manipulatives such as small unit squares, a length of string representing the fence 	<ul style="list-style-type: none"> Supplement written problem/situation in digital format with a text reader to allow student to re-visit the problem Include pictures and objects of interest to allow student to guess what will happen in the story



We will use a planning tool to review one lesson within the unit that addresses the high school geometry standard. The lesson we are reviewing is listed in the first column. Let's look at and consider some of the lesson characteristics. At the start of the lesson, some lecture may be needed that will describe and set-up the activity. Background knowledge is required: for instance, for area. Students must read a word problem and students must write to complete a chart. Based on these varied lesson characteristics, we can consider several options for representation, expression and engagement.

When considering representation options think about the lesson characteristics, if a lecture is used, you can provide the salient vocabulary to the students in picture format, tactilely or by using object cues as they listen to the lecture. When providing background knowledge, you can use a brief digital example for area demonstrating how it encompasses the whole inside of a figure. For reading a word problem, you can provide digital format, text-to-reader or picture representations. For writing to complete the chart, the student may use a template or formulas.

Based on the lesson characteristics, let us consider the expression (or response) options. Students may use graph paper and manipulatives such as small unit squares or a length of string representing the fence area which is part of the word

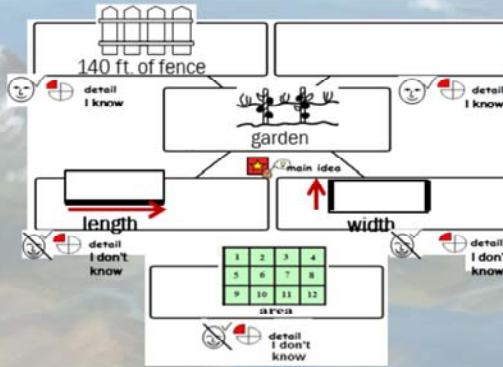
problem. Students may complete the table using given picture representations of numbers, using a stamp or complete the table electronically.

Engagement options might include: supplementing the problem or situation with a digital format that includes a text reader to allow students to re-visit the problem. You may also base mathematical problem(s) on student areas of interest.

Pictures and labels provide an opportunity for students to work on IEP skills

**PRESENT RELEVANT VOCABULARY FROM PROBLEM.
STUDENT ORGANIZES INFORMATION IN SECTIONS OF
WHAT IS KNOWN AND WHAT THEY NEED TO SOLVE**

Alex has 140 feet of fencing to place around a rectangular garden he is making. He wants the area of the garden to be as large as possible. What should the length and width of the garden be?



Here are a few examples of what this lesson might look like. What might be an option for the representation of this problem? One option might be to use a graphic organizer. As students read the information, they can be given picture symbol representations to place in the specific portions of the graphic organizer so they can see what is known. They can see from the pictures in the graphic organizer that they are working with a garden, and they can see that they only have 140 feet of fence. The graphic organizer also shows students that they need to know the length and the width of the rectangle to determine the largest area. Another representation option is to have the word problem presented using text readers. As the student listens to the electronic text, the words are highlighted within the sentence being read.

REPRESENTATION OPTIONS

	1	2	3	4									
14	1	2	3	4	5								
13	5	6	7	8	6								
12	9	10	11	12	7		1	2					
	11	10	9	8		14	1	2	3				
						13	3	4	4				
						12	5	6	5				
						11	7	8	6				
						10	9	10	7				
							9	8					

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Students might use manipulatives and graph paper to demonstrate their understanding of rectangles that have the same perimeters but different areas. In this case the perimeter is 14 for both rectangles.

ENGAGEMENT OPTIONS

		13	14					9	10	11	12		
1				7				1				5	
2	2	8		8				2	2	6	10	14	6
3				9		4 ft		3					7
4	4	10		10				4	4	8	12	16	8
5				11					13	14	15	16	
6	6	12		12						4 ft			
		15	16										
			2 ft										

Verify the perimeter is 16 ft.

Then determine the area and record it in the table.

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For an engagement option, we might use animation to demonstrate a concept. We might count the units to determine area and/or perimeter. In this case, the student must determine the perimeter which is 16 feet. Then the student can determine the area to complete a chart. In comparing two different rectangles with the same perimeter, the student must verify the perimeter and then determine the area to see if they are different. This activity also shows the student how to complete the chart

STUDENT PLANNING TOOL: PROVIDING ACCESS TO LEARNING, CONTINUED

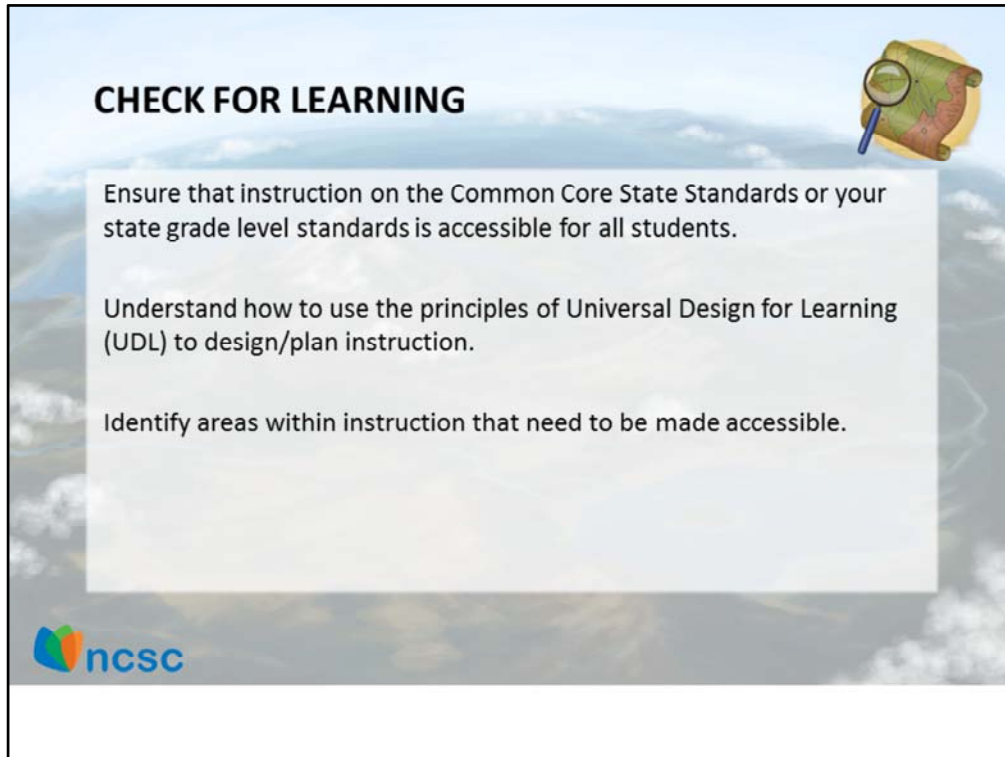


Sample Lesson Plan	Lesson Characteristics	Presentation Options	Response Options	Engagement Options
<p>In small groups, have students work on a variety of problems, using different given dimensions such as:</p> <p>Alex has 140 feet of fencing to place around a rectangular garden he is making. He wants the area of the garden to be as large as possible. What should the length and width of the garden be?</p>				



Let's review the first activity of lesson 1. The lesson comes from the H.S. Mathematics Unit of Study Geometry and Measurement that is on the NCSS Wiki. The Common Core State Standard that is addressed in this lesson is, *Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot)*. Remember, this is the first lesson, so we are just beginning to teach the students about the concepts.

Let's practice thinking about what we still need to provide to ensure learning occurs for all students. Pause the module and use the student planning tool found on this slide to consider the representation, expression and engagement options needed by students **you know** to ensure access to and involvement in this lesson. When you are finished, continue the module.




CHECK FOR LEARNING

Ensure that instruction on the Common Core State Standards or your state grade level standards is accessible for all students.

Understand how to use the principles of Universal Design for Learning (UDL) to design/plan instruction.

Identify areas within instruction that need to be made accessible.



Remember our goals for this module. You should have an understanding of how to:

Ensure that instruction on the Common Core State Standards is accessible for all students.

Understand how to use the principles of Universal Design for Learning (UDL) to design/plan instruction.

Identify areas within instruction that need to be made accessible.

ENSURING ACCESS TO GENERAL EDUCATION LESSONS



This concludes the Making General Education Instruction in Mathematics Accessible module

What to do next?

- Review the resources in the next section.
- Review the information on the Self Assessment Summary slide.
- Claim your badge




This concludes the NCSC Making General Education Instruction in Mathematics Accessible module. The next couple of slides include recommendations for materials that you should review and a list of resources that will provide more in depth information about concepts discussed in this module. The Self Assessment summary slide provides feedback on your response selections for self assessment items 1 through 5. Once you have attained a score of 80% or better on the items you will be able to claim your badge. The link for claiming the badge is on the last slide of this module.

NEXT STEPS

For more information and examples, review these:

Center for Applied Special Technology (2005). *UDL Guidelines*. Retrieved from www.cast.org.

Denham, A. (2004). *Pathways to Learning for Students with Cognitive Challenges: Reading, Writing and Presenting*. Interdisciplinary Human Development Institute, University of Kentucky. [Online] Available: <http://www.ihdi.uky.edu/IEI/>



These 2 resources are key to understanding how to plan access to general education lessons.

The first one is the website to CAST – which includes all the examples and explanation concerning Universal Design for Learning. The second resource is the Pathways document developed by Anne Denham. This document has hundreds of assistive technology suggestions for presenting material and student responses.

REFERENCES

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Denham, A. (2004). *Pathways to Learning for Students with Cognitive Challenges: Reading, Writing and Presenting*. Interdisciplinary Human Development Institute, University of Kentucky. [Online] Available: <http://www.ihdi.uky.edu/IEI/>



If you would like more information on the concepts we have presented today, here is a list of references.

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- Denham, A. & Lewis, P. (2006). *The Application of Universal Design for Learning in the Classroom for students with the most significant disabilities*. SPLASH Training. Human Development Institute, University of Kentucky. Lexington, KY.
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This is a continuation of the list of references.