Three Dimensional Shapes

Grade: Kindergarten

Math Unit for 10 days with 30 minutes a day

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Overview and Rationale

In this unit we will be teaching students about three-dimensional shapes. At first we will review some of the two-dimensional shapes that the students have previously learned and discuss what "dimension" actually means. This will allow the students to understand the relationship and differences between two dimensional shapes to the various attributes of some of the faces or different aspects of three-dimensional shapes. Each day the students will learn what a cylinder, sphere, cone, sphere, rectangular prism, triangular prism, and pyramid are. The students will be able to identify the attributes of each shape which include number of faces, edges, corners, and so forth. Students should be able to apply their knowledge of the shapes in order to find these shapes in their everyday life, as well as how to create these shapes in their own way (whether that is in a drawing, a model, finding an example, etc).

This unit is related to the following common core standards:

CCSS.Math.Content.K.G.A.2 Correctly name shapes regardless of their orientations or overall size.

CCSS.Math.Content.K.G.A.3 Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").

CCSS.Math.Content.K.G.B.4 Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).

CCSS.Math.Content.K.G.B.5 Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.

There will be a gradual introduction of the new shapes to the students each day, and the lessons provide students with multiple means of learning, exploring, creating, and experimenting with the different three-dimensional shapes.

Unpacking Standards

"What do these standards mean a child will know and be able to do?

K.G.1 Students locate and identify shapes in their environment. For example, a student may look at the tile pattern arrangement on the hall floor and say, "Look! I see squares! They are next to the triangle." At first students may use informal names e.g., "balls," "boxes," "cans". Eventually students refine their informal language by learning mathematical concepts and vocabulary and identify, compare, and sort shapes based on geometric attributes.

Students also use positional words (such as those italicized in the standard) to describe objects in the environment, developing their spatial reasoning competencies. Kindergarten students need numerous experiences identifying the location and position of actual two-and-three-dimensional objects in their classroom/school prior to describing location and position of two-and-three-dimension representations on paper.

K.G.2 Through numerous experiences exploring and discussing shapes, students begin to understand that certain attributes define what a shape is called (number of sides, number of angles, etc.) and that other attributes do not (color, size, orientation). As the teacher facilitates discussions about shapes ("Is it still a triangle if I turn it like this?"), children question what they "see" and begin to focus on the geometric attributes.

Kindergarten students typically do not yet recognize triangles that are turned upside down as triangles, since they don't "look like" triangles. Students need ample experiences manipulating shapes and looking at shapes with various typical and atypical orientations. Through these experiences, students will begin to move beyond what a shape "looks like" to identifying particular geometric attributes that define a shape.

K.G.3 Students identify objects as flat (2 dimensional) or solid (3 dimensional). As the teacher embeds the vocabulary into students' exploration of various shapes, students use the terms two-dimensional and three-dimensional as they discuss the properties of various shapes."

Differentiated instruction to provide all students with the tools they need to be successful in learning this topic is very important. Through the use of visual charts, students can see the explanation of the different parts of a three-dimensional shape (face,

edge, point, etc). Using a scavenger hunt to find shapes around the classroom and the school, students are able to connect their learning of the shapes to the environment around them. Another way to engage and adapt the lessons to student needs is to have them choose either to physically model their shape with clay or other substance or choose to draw examples of different shapes using their prior knowledge as well as what they have recently learned. Making connections between two-dimensional shapes and the three-dimensional shapes will allow students to better understand how these shapes are also readily available and seen in their everyday life. In future grades students will be able to apply the knowledge they learn from this unit to identify new shapes, graph shapes, and also to be able to describe different objects they encounter in their everyday lives.

Guiding Questions and Vocabulary

What is a three dimensional shape?
What are the different kinds of three dimensional shapes?
Where do I see three dimensional shapes in my everyday life?
How can I use three dimensional shapes to make a product?

Vocabulary List

Three dimensional, two dimensional, shape, fat, flat, shape, length, width, height, attribute, side, face, edge, corner, cube, sphere, cylinder, cone, rectangular prism, triangular prism, product

Calendar and Lesson Log

DAY 1:	DAY 2:	DAY 3:	DAY 4:	DAY 5:
"What is a 3-Dimensional Shape?"	"Exploring Cubes"	"Exploring Spheres"	"Exploring Cylinders"	"Exploring Rectangular Prisms"
DAY 6:	DAY 7:	DAY 8:	DAY 9:	DAY 10:
"Exploring Cones"	"Exploring Pyramids"	"We're Going on a Shape Hunt"	"Making 3D Models"	"My 3D Shape Book"

Day 1

Initiating Investigation: "What is a 3-Dimensional Shape?"

As a class, students will define what 3-Dimensional means. Students will engage prior knowledge in order to compare 3-Dimensional shapes to 2-Dimensional shapes that they learned about earlier in the year. Students will be introduced to key vocabulary that will be reiterated and built upon throughout the remainder of the unit. The majority of this lesson will be in a whole class discussion format with opportunities for students to turn and talk to a partner about observations they are making about 3D shapes. This lesson will be described in more detail in one of the following edTPA plans.

Assessment: Students will be informally assessed as the teacher observes their partner discussions during the introductory lesson. The way in which this assessment will be enacted is described in the assessment section of this unit plan.

Day 2

"Exploring Cubes"

Students will be introduced to their first 3-Dimensional shape, the cube. Defining attributes will be discussed and listed as students hold, manipulate and observe a cube. In order to facilitate this discussion a laminated version of the "cube shape description" (attached in appendix section) will be displayed at the front of the room and the teacher will write down attributes as the students investigate the shape. Students will then be asked to complete a "cube page" (attached in appendix section) that describes the attributes of a cube along with a real world example of a cube. This page will be combined with all the other shape pages and at the end of the unit, students will each have a 3D shape book. If students finish early they can work on the carpet and complete a shape sort, or a cube book (attached in appendix section)

Assessment: By completing their "cube page" and/or extension activities, with limited difficulty, students will demonstrate their mastery of understanding cubes as well as the defining attributes of cubes.

Day 3

"Exploring Spheres"

Students will be introduced to another 3-Dimensional shape, the sphere. Defining attributes will be discussed and listed as students hold, manipulate and observe a sphere. In order to facilitate this discussion a laminated version of the "sphere shape description" (attached in appendix section) will be displayed at the front of the room and the teacher will write down attributes as the students investigate the shape. Students will then be asked to complete a "sphere page" (attached in appendix section) that describes the attributes of a sphere along with a real world example of a sphere. This page will be combined with all the other shape pages and at the end of the unit, students will each have a 3D shape book. If students finish early they can work on the carpet and complete a shape sort, or a sphere book (attached in appendix section).

Assessment: By completing their "sphere page" and/or extension activities, with limited difficulty, students will demonstrate their mastery of understanding spheres as well as the defining attributes of spheres.

Day 4

"Exploring Cylinders"

Students will be introduced to another 3-Dimensional, a cylinder. Defining attributes will be discussed and listed as students hold, manipulate and observe a cylinder. In order to facilitate this discussion a laminated version of the "cylinder shape description" (attached in appendix section) will be displayed at the front of the room and the teacher will write down attributes as the students investigate the shape. Students will then be asked to complete a "cylinder page" (attached in appendix section) that describes the attributes of a cylinder along with a real world example of a cylinder. This page will be combined with all the other shape pages and at the end of the unit, students will each have a 3D cylinder book. If students finish early they can work on the carpet and complete a shape sort, or a cylinder book (attached in appendix section).

Assessment: By completing their "cylinder page" and/or extension activities, with limited difficulty, students will demonstrate their mastery of understanding cylinders as well as the defining attributes of cylinders.

Day 5

"Exploring Rectangular Prisms"

Students will be introduced to another 3-Dimensional shape, the rectangular prism. Defining attributes will be discussed and listed as students hold, manipulate and observe a rectangular prism. In order to facilitate this discussion a laminated version of the "rectangular prism shape description" (attached in appendix section) will be displayed at the front of the room and the teacher will write down attributes as the students investigate the shape. Students will then be asked to complete a "rectangular prism page" (attached in appendix section) that describes the attributes of a rectangular prism along with a real world example of a rectangular prism. This page will be combined with all the other shape pages and at the end of the unit, students will each have a 3D shape book. If students finish early they can work on the carpet and complete a shape sort, or a rectangular prism book (attached in appendix section).

Assessment: By completing their "rectangular prism page" and/or extension activities, with limited difficulty, students will demonstrate their mastery of understanding rectangular prisms as well as the defining attributes of rectangular prisms.

Day 6

"Exploring Cones"

Students will be introduced to another 3-Dimensional shape, the cone. Defining attributes will be discussed and listed as students hold, manipulate and observe a cone. In order to facilitate this discussion a laminated version of the "cone shape description" (attached in appendix section) will be displayed at the front of the room and the teacher will write down attributes as the students investigate the shape. Students will then be asked to complete a "cone page" (attached in appendix section) that describes the attributes of a cone along with a real world example of a cone. This page will be combined with all the other shape pages and at the end of the unit, students will each have a 3D shape book. If students finish early they can work on the carpet and complete a shape sort, or a cone book (attached in appendix section).

Assessment: By completing their "cone page" and/or extension activities, with limited difficulty, students will demonstrate their mastery of understanding cones as well as the defining attributes of cones.

Day 7

"Exploring Pyramids"

Students will be introduced to another 3-Dimensional shape, the pyramid. Defining attributes will be discussed and listed as students hold, manipulate and observe a pyramid. In order to facilitate this discussion a laminated version of the "pyramid shape description" (attached in appendix section) will be displayed at the front of the room and the teacher will write down attributes as the students investigate the shape. Students will then be asked to complete a "pyramid page" (attached in appendix section) that describes the attributes of a pyramid along with a real world example of a pyramid. This page will be combined with all the other shape pages and at the end of the unit, students will each have a 3D shape book. If students finish early they can work on the carpet and complete a shape sort, or a pyramid book (attached in appendix section).

Assessment: By completing their "pyramid page" and/or extension activities, with limited difficulty, students will demonstrate their mastery of understanding pyramids as well as the defining attributes of pyramids.

Day 8

"We're Going on a Shape Hunt"

Students will review the pyramid by the teacher using the blank "pyramid shape description" and asking students to list attributes again. Students will use their knowledge of the above listed 3D shapes to find real world examples of 3D shapes around the classroom and the school. Students will walk around the room/school with a partner and write down and draw real world examples of 3D shapes that they find. A more detailed description of this lesson is given in an edTPA attached to this unit.

Assessment: Their "3D Shape Hunt Recording Sheet" (attached in appendix) will be used as an assessment of their knowledge and recollection of 3D shapes throughout the unit.

Day 9

"Making 3D Models"

Students will be asked to make different models (using pretzels and marshmallows) of 3D shapes. Students will have to recall from memory what each shape looks like, using the manipulatives in the middle of their table, and other defining attributes in order to create these models. Students will complete a chart about what each shape looks like and their defining attributes seen in these student created models. This lesson will be described in more detail in one of the following edTPA plans.

Assessment: Students will be assessed on whether or not they can create these models with little to no assistance from the teacher and/or TA. Students will also be informally assessed as they discuss and explain the models they have created to their peers.

Day 10

"Wrapping Up 3D Shapes"

The culminating activity of this unit will be completing a flip book that defines 3D shapes and summarizes the defining attributes of each shape. Students will but examples of real world examples of these shapes and glue it to the top of the flip chart. The will be expected to write the name of the shape underneath the example. Students will then be asked to fill in the remainder of the

chart by summarizing the defining attributes of each shape. If students finish early, they can read their 3D shape book that will be complete by this time.

Assessment: Students will be assessed based on whether or not they can successfully complete their flip book independently.

Planning		
Teacher Candidate: **Julie Doran, Christina Marsicano, Kate Simpson**	**Unit/Subject:** **Mathematics: 3D shapes**	**Date:** **TBD**
1. Lesson overview or summary: In a few sentences, summarize this lesson.	In this lesson, we will introduce students to 3D shapes. We will explain what dimensions are, and explain and show students the difference between 2D and 3D shapes.	
2. Focus Question: What is the big idea or focus question of the lesson? **3. Connection:** What is the big idea that connects this lesson with the other 3-5 lessons in the learning segment? **4. Student Accomplishment:** What will the final summative assessment expect students to do? (see end of lesson)	2.) What is a 3D shape? 3.) In the next nine days, students will be learning about all different kinds of 3D shapes; building with 3D shapes, and going on scavenger hunts to find 3D shapes in the school. 4.) Students should be able to explain what a 3D shape is.	
5. Class characteristics: Describe the important characteristics of the students in the class that need to be considered in planning and teaching to facilitate learning for all students. • Consider students' prior knowledge, language development, social and emotional developments, family, and interests. • Include how you will <u>use</u> your knowledge of students to plan the lesson activities, pacing, choices, etc. (this can be a portion of the commentary instead).	-One student has trouble staying on task, and is at a different ability level than his peers. I will have to provide him with many PBIS comments to keep him focused. My TA will be with him for the lesson to help maintain good behavior. - One student is an English language learner. When I am talking about the shapes, I will make sure I am pointing to the shape so he will know what I am talking about. I will also make sure to visit with him during turn and talk to check for his understanding. I will pair him with another student who speaks fluent Spanish, but is not an English Language Learner so that she may discuss with him in Spanish if they need. - One student has an IEP for a speech impediment. I will make sure to visit him during the lesson, and make sure that he is articulating his ideas clearly to his partner. I will encourage him to share his ideas with the whole class during turn and talk. - Four students need an extra challenge. During whole class discussions, I will ask these students “How did you know that?” or “Why do you think that?” to challenge them to articulate their reasoning for their answers.	

Teacher Candidate: **Julie Doran, Kate Simpson, Christina Marsicano** **Grade Level:** **Kindergarten**	**Unit/Subject:** **Mathematics- 3D shapes** **Instructional Plan Title/Focus:**	**Time: 10AM** **Date: TBD**

State Learning Standards: *Identify relevant grade level standards from NCSCS and the CCSSM.*

CCSS.Math.Content.K.G.A.3 Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").

Learning Targets: *What should the students know or be able to do after the instruction? Use a common format with a measurable verb that matches the cognitive domain of the standard(s) (see **Assessment** below). Consider including language targets as well.*
Students should know what a three dimensional shape is.
Students should be able to tell if a shape is three dimensional or two dimensional.

Academic Language: *List the academic language/ language demands for the lesson (consider both form and function).*
Three dimensional shapes, two dimensional shapes

Key Vocabulary: *List the key content vocabulary that will be covered.*
Three dimensional, two dimensional,

Grouping: *Describe how and why students will be divided into groups, if applicable (random, ability, interest, social purposes, etc.).*
This is a whole class lesson. All of the students need this instruction because they have had little prior experience with three dimensional shapes. This lesson will set the background for the rest of the unit. During turn and talk, students will be paired randomly depending on where they are seated on the carpet. The questions they will be discussing will be beneficial for all students.
Materials needed: *List all tools and/or materials that will be needed to implement the task(s). Attach a copy of ALL materials the teacher and students will use during the lesson; e.g., handouts, questions to answer, overheads, PowerPoint slides, worksheets. List equipment or technology that needs to be available*
Cut outs of two dimensional shapes; 3 dimensional shape blocks

Adaptations for Diverse Learners: *How will you adapt the task for diverse learners? List:*
a. Describe how and why students will be divided into groups, if applicable (random, ability, interest, social purposes, etc.).
This is a whole class lesson. All of the students need this instruction because they have had little prior experience with three dimensional shapes. This lesson will set the background for the rest of the unit. During turn and talk, students will be paired randomly depending on where they are seated on the carpet. The questions they will be discussing will be beneficial for all students.

b. *Multiple means of access: List ways the teacher will present the materials.*
We will tell students what dimensions are, show students examples of three and two dimensional shapes, and allow students to explore the similarities and differences between two and three dimensional shapes and discuss with partners and whole class.

c. *Multiple means of engagement: List ways the students will participate in the learning.*
They will talk with their partners about the similarities and differences between two and three dimensional shapes, discuss these ideas whole class, and determine if a given shape is two or three dimensional after we have determined as a class what a three dimensional shape is.

d. *Multiple means of expression: List ways the students can show their learning.*
Students can show their learning by explaining the similarities and differences between two and three dimensional shapes; they can talk with their turn and talk partners to show what they have learned about shapes; and share with the whole class about whether they had a two or three dimensional shape.

e. *Methods of differentiation: List accommodation or differentiation strategies.*
For our ELL students, we will make sure that we use hand motions and point to the shapes when introducing key vocabulary. For my student with a speech impediment, I will visit him during turn and talk to ensure he can clearly articulate his ideas to the class and encourage him to share during the whole class discussion if he is comfortable. For my student who has trouble staying on task, I will ask my TA to focus on him during the lesson and also provide extra PBIS

f. *Language learning objectives: Where will you integrate these?*
Students will be expected to be able to articulate the similarities and differences between 2D and 3D shapes; students will also be expected to tell if a shape is 2D or 3D and how they know this information. To integrate these language learning objectives, we will give students the opportunity to turn and talk. We will also have short whole class discussions so that students can accomplish these language learning objectives. We will scaffold language in as necessary, such as height, width, length, and three dimensional.

g. *Remedial activities: List a review sheet, scaffolding worksheet or plan.*
If we notice that certain students do not understand what two and three dimensional are, we will pull them for an additional fifteen minute lesson during free choice centers or another free time later that day or shortly after. In this lesson, we will present the content differently depending on what the student needs. For example, for an English Language Learner, they may simply need more practice using the vocabulary in order to demonstrate that they understand the concept. Others may not understand what makes an object three or two dimensional. For these students, we will provide individual attention with more manipulatives to demonstrate the difference between two and three dimensional. We will then assess to determine whether or not these students have an understanding of dimensions.

h. *Extension activities: What will students who finish early do?*

If I notice that students have finished early during turn and talk, I will go over to their group and ask them "What did you talk about? Why do you think that?" If students finish early during the last turn and talk session, I will give them another shape to describe and then determine whether it is two or three dimensional.

Learning Activities: *Give detailed, step-by-step instructions on how you will implement the instructional plan. Describe exactly what students will say or do during the lesson. Please use a numbered list.*

1.) We will say "We have learned a lot about 2D shapes, but today we are going to learn about 3D shapes. Does anyone know what a 3D shape is?"
2.) One or two students will probably indicate that a 3D shape is a "fat" shape. We will respond "Yes, 3D shapes, or three dimensional shapes, have three dimensions which make them 'fat'".
3.) We will say, "Now, I am going to pass around two objects (a square and a cube). I want you to hold each one in your hand and notice what is the SAME about both of these objects."
4.) Pass around the objects quickly.
5.) We will say, "Now, turn and talk with a partner about what is the same about these two objects." We will circulate through the pairs for approximately 2-3 minutes.
6.) We will say, "Who wants to share what they talked about in their pairs?" (Have 3-4 students share). Students will say, "They are both shapes," "They both have sides", "They both are squares" etc. We will model a discussion around what the students say leading them to see that they have similarities.
7.) We will say, "Now I want you to turn and talk about what is different about the two shapes." We will circulate through the pairs for approximately 2-3 minutes.
8.) We will say, "Who wants to share what they talked about with their partner?" (We will have 3-4 students share). Students will say "One is fat and one is flat" (where we would scaffold the vocabulary in that the square is two dimensional and the cube is three dimensional); "One is only one square and one has many squares" (where we would scaffold in the vocabulary that the cube has six square faces) etc.
9.) We will say, "We have noticed many similarities and differences between this square, which is a two dimensional shape, and this cube, which is a three dimensional shape. So, what makes a shape three dimensional?" We will have a few students share. Students will most likely say, "3D shapes are fat." We will then say, "Yes, three dimensional shapes are fat. Now, you are going to practice with a partner to determine whether shapes are two or three dimensional. I'm going to give each pair a shape. First, I want you to describe your shape. Then, I want you to decide if it is two or three dimensional. Everyone will share when you are done." (Circulate during turn and talk asking students to describe their shape in more detail, or how they know it is a two or three dimensional shape."
10.) Have each pair share with the whole class. Ask one student to describe the shape, and the other student to say if it is two or three dimensional and how they know. Students should say something like "My shape is round. It rolls and looks like a ball. I know it is three dimensional because it is fat and not flat" (describing a sphere). This will be a good time to start scaffolding in the

vocabulary of the names of 3D shapes (for example, "The shape you have is a sphere. You did an excellent job of describing the sphere, and telling us that spheres are three dimensional because they are fat.")

11.) Conclude lesson with: "We did a lot in math today. Can someone tell me what the difference is between two and three dimensional shapes?" Students will say "Two dimensional shapes are flat, and three dimensional shapes are fat."

Organization of Lesson

In planning your lesson, think about:

- Transition statements you make throughout your lesson and write them out "We have learned a lot about 2D shapes. Today, we are going to talk about three dimensional shapes"; "Now I want you to turn and talk with your neighbor about…"
- Write down the questions you want to ask: "How did you know that was a two or three dimensional shape?" "How would you describe that shape?" "Can someone repeat what _____ said?"; "What is the difference between a two and three dimensional shape?"

Engage (Before)

Description: Introductory lessons should stimulate curiosity and activate prior student knowledge. The activity should be a problem or an event that raises questions and motivates students to discover more about the concept.

We will introduce the lesson by connecting students' prior knowledge of two dimensional shapes to what we will be talking about in class today.

Link to cognition: Students bring knowledge about how the world works but it is sometimes based on limited experiences and sometimes on misconceptions.

Guiding Questions:

- How will the teacher capture students' interest? We will connect the content to prior knowledge about two dimensional shapes. We will also ask students to describe what a three dimensional shape is. This will capture students' interest because they will want to learn more about three dimensional shapes, and will feel

What will students be saying or doing?

Make two columns:

I do	*Students do*
(See end for discussion) I ask questions to guide the discussion. I circulate during turn and talk sessions to push student thinking further. I assess student responses during whole class and turn and talk discussions. I look for misconceptions and misunderstandings. I guide students to come to an understanding of two dimensional and three dimensional shapes. I ask students to	*((See end for discussion)* Students formulate a definition of 3D shapes. Student discuss to determine similarities and differences between 2 and 3 dimensional shapes. Students describe shapes with a partner, and determine whether it is two or three dimensional. Students share with their partners and the entire class. Students come to an understanding of the difference between two and three dimensional

	motivated because they will know that they already have some background knowledge. • What kind of questions should the students ask themselves after the engagement? What is a three dimensional shape? How is a three dimensional shape the same and different from a two dimensional shape?	describe the similarities and differences between two and three dimensional shapes.	shapes. . • *What errors might students make?*
Explore (During)	Description: Students need the opportunity to actively explore the concept in a 'make sense' activity. This establishes a commonly shared classroom experience and allows students to share ideas about the concept. Link to cognition: Experiences occur before the explanations! Students are actively engaged with little explanation from the teachers. Students acquire a common set of concrete experiences allowing them to help each other understand the concept through social interaction. We will not specifically be giving explanations at first. The conversation will be student driven allowing students to explore the similarities and differences between two and three dimensional shapes. Then, as a class, we will construct a definition of three dimensional shapes. Students will then be given another opportunity to practice describing and determining how many dimensions a given shape has. Guiding Questions: What 'make sense' activities will students be doing? Students will be engaging in two "make sense" activities. First, they will be describing the similarities and differences between two and three dimensional shapes. We will have a whole class discussion to determine what constitutes a three dimensional shape based on their observations. Then, students will describe a given shape with a partner and determine		

	whether the shape is two or three dimensional. • What are the "big idea" conceptual questions that the teacher will use to encourage and/or focus students' exploration? "What makes a shape three dimensional?"; "What is the difference between a three dimensional and a two dimensional shape?"	
Explain (Summarize)	**EXPLAIN** Description: Teachers use questioning strategies to lead students' discussion of information discovered during the Explore stage. Teachers introduce new terms and explanations at appropriate times during the discussion. Link to cognition: When students engage in meaningful discussions with other students and the teacher, they can pool their explanations based on observations, construct new understandings, and have a clear focus for additional learning. Guiding Questions: • What questions or techniques will the teacher use to help students connect their exploration to the concept under examination? We will scaffold in vocabulary as necessary. For example, if a student comments that a shape is fat, we will say "yes, that is a fat, or three dimensional shape." We could have the students practice as a group saying the word "dimensional" so that they will feel more comfortable using it. We will also start scaffolding in the vocabulary of the shape names. Although this is not the point of the lesson, it will be useful to start introducing these terms to students. Throughout class discussions, we will help students come to an understanding of what a three dimensional	

	shape is. • What are the higher order thinking questions which teachers will use to solicit *student* explanations and help them to justify their explanations? "How did you know that is a three dimensional shape?"; "What makes a shape three dimensional?"; "How are these two shapes the same or different?"	
Elaborate (Extend)	Description: Students are encouraged to apply, extend, and enhance the new concept and related terms during interaction with the teacher and other students. Link to cognition: Providing additional active learning opportunities for students to incorporate into their mental construct of the concept allows them to confirm and expand their understanding. Guiding Questions: • How will students develop a more sophisticated understanding of the concept? They will have the opportunity to describe a given shape with a partner, determine if it is two or three dimensional, and then share with the class. • What vocabulary will be introduced and how will it connect to students' observations? We will introduce the vocabulary "three dimensional". This will be connected to student observations that 3D shapes are flat. We will also begin introducing the vocabulary of shape names when students are describing their given shapes. This will be helpful in future lessons.	

	• How is this knowledge applied in our daily lives? Three dimensional shapes are all around us. Students will be able to identify three dimensional shapes in their surroundings after this unit.	
Evaluate (After)	Description: Students demonstrate their understanding of the concept. Link to cognition: In learner-centered instruction, it is important for students to be aware of their own progress as an outcome of instruction. Students construct knowledge over time and may need additional experiences to refine their understanding of the concept. Guiding Questions: o How will students demonstrate that they have achieved the lesson objective? They will demonstrate that they have achieved the lesson objective by describing their two or three dimensional shape to the class and to their partner, and also by telling whether the shape is two or three dimensional and how they know. o How will evaluation be embedded throughout the lesson as well as at the end of the lesson? We will be listening to student responses during turn and talk sessions and during whole class discussions. We will be assessing student thinking in order to understand if students have a solid understanding of the difference between two and three dimensional shapes.	
Next Steps	*Based on the above, what you will do in your next lesson to ensure students' learning.* By the end of this lesson, all students should have a solid understanding of three dimensional shapes. If most students do not	

	have this understanding, we will present the content the next day in a different way. If most students understand the content, but a few need extra support, we will meet with these students to instruct them further.	

Assessment		
Assessment Strategies Attach questions, worksheets, tests or any additional documentation related to your assessment strategies. Also attach appropriate marking rubrics, criteria lists, expectations, answer keys, etc. • **Formative:** measures process/progress toward mastery of target(s) • **Summative**: measures outcomes/achievement of target(s)	**Target-Assessment Alignment Table**	
	Learning Targets	**Assessment Strategies**
	Students should know what a three dimensional shape is.	**Formative**: We will assess student understanding from the responses they give during turn and talk and during whole class discussions. They should be able to articulate that a three dimensional shape is "fat". **Summative**: There is not summative assessment. Each student will need to accomplish this learning target before proceeding with the unit.
	Students should be able to tell if a shape is three dimensional or two dimensional and how they know this.	**Formative**: During the whole class discussion, students should be able to describe their shape, tell if it is three or two dimensional and explain how they know. **Summative**: Again, there is not a summative assessment for this target as it is essential that students can do this before proceeding with the unit.

- *What understandings and misunderstandings will I look for?*

  We will be looking for students to understand the difference between three and two dimensional shapes. Students may not understand the difference, and may also not be able to articulate the difference.

- *What are all the ways the task(s) can be solved?*
  There are many different ways to describe the similarities and difference between the two and three dimensional shapes. Students will be given the opportunity to talk to their partners, and also listen to me and their classmates during whole class discussions.
- *What misconceptions might students have?*
  Students may not understand the difference between 2D and 3D shapes.
- *What errors might students make?*
  Students may confuse some of the vocabulary. For example they may confuse "two dimensional" and "three dimensional", even if they understand the concept. Students may not be able to explain how they know that a shape is 2D or 3D.

Prepared 8-06-12 - Adapted from TPA planning structure, the *Connected Mathematics Instructional Model* (http://connectedmath.msu.edu/components/teacher.shtml#cmp), and from Bahr, D.L. & DeGarcia, L.A. (2008), Van de Walle, J. A. & Lovin, L.A.H. (2008 – Volumes I & II).

Planning		
Teacher Candidate: **Julie Doran, Christina Marsicano & Kate Simpson**	**Unit/Subject:** **Math-Geometry Unit**	**Date:** **December 3, 2013**
1. **Lesson overview or summary**: In a few sentences, summarize this lesson.	**1.** This lesson focuses on students being able to identify 3D objects in the classroom and around the school. Throughout this unit, students have been learning about defining attributes of 3D shapes throughout this unit and will demonstrate their knowledge of these shapes during this hunt.	
2. Focus Question: What is the big idea or focus question of the lesson? **3. Connection:** What is the big idea that connects this lesson with the other 3-5 lessons in the learning segment? **4. Student Accomplishment:** What will the final summative assessment expect students to do? (see end of lesson)	**2.** The focus question of this lesson is: What do 3D shapes look like in and around the school? How can you take what you learned about 3D shapes and use that to identify shapes in your environment? **3.** 3D Shapes 4. Students will be expected to complete a chart (attached below) that describes their findings and observations during the shape hunt. This chart and graph will demonstrate their understanding of the topic of 3D shapes and their defining attributes.	

5. Class characteristics: Describe the important characteristics of the students in the class that need to be considered in planning and teaching to facilitate learning for all students. **a.a.** Consider students' prior knowledge, language development, social and emotional developments, family, and interests. a.b. Include how you will <u>use</u> your knowledge of students to plan the lesson activities, pacing, choices, etc. (this can be a portion of the commentary instead).	• This is the 8th day of the unit and students have been introduced to all the shapes they are expected to find on the Shape Hunt. Students have reviewed and completed a shape each day, focusing on their defining attributes. o There will most likely still be some varying degrees of misconceptions and misunderstandings about some aspects of 3D shapes. This is the first time that students will be asked to identify shapes outside of the manipulatives and visuals used in class. This being the case, I will need to reinforce some ideas about 3D shapes as we adventure on our shape hunt. This means that I will be floating around assisting students who main need extra help identifying shapes based on the attributes discussed in class. Because there is partner work involved, I will model the kind of language to use when working with partners and how to respect one another while working with a partner you may not be best friends with. There are a number of ELL students in this class. Because this lesson is largely based on communication in groups as well as some culturally sensitive objects I will provide extra support for these students during partner work and group discussion. o With the main activity being a hands on one, students will most likely have a peaked interest in this activity and the discussion that follows. o The student who has an IEP for a speech impediment will benefit from working with a partner because it will allow him to develop his speech in a comfortable environment with only one peer. This will also allow him to practice what he will say before commenting in a whole class discussion. Additionally, I will need to give him extra encouragement to participate in the whole class discussion. o One student needs extra reminders to stay on task during lessons. It will be important to pair him with a partner who is likely to stay on task during the hunt, and to also provide him with multiple PBIS comments throughout the lesson. o Four students need an extra challenge during math lessons. Having the extension activity readily available for these students will be important to keep them engaged if they finish the task before most students.

Teacher Candidate: Julie Doran, Christina Marsicano & Kate Simpson **Grade Level:** Kindergarten	**Unit/Subject:** Math - Geometry Unit **Instructional Plan Title/Focus:** We're Going on a Shape Hunt	**Time:** N/A **Date:** December 3, 2013

State Learning Standards: *Identify relevant grade level standards from NCSCS and the CCSSM.*

CCSS.Math.Content.K.G.A.2 Correctly name shapes regardless of their orientations or overall size.

CCSS.Math.Content.K.G.A.3 Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").

Learning Targets: *What should the students know or be able to do after the instruction? Use a common format with a measurable verb that matches the cognitive domain of the standard(s) (see **Assessment** below). Consider including language targets as well.*

Students should be able to identify 3D objects by name as they appear in their environment. Students will demonstrate this knowledge by discussing, explaining, describing, identifying, recognizing and restating during whole class discussion and partner work. Students will also demonstrate their knowledge by applying newly acquired information and completing their worksheet that identifies the objects that they found on the hunt and graphs them based on the quantity of each shape.

Academic Language: *List the academic language/ language demands for the lesson (consider both form and function).*

Observations, Explain, Alike/Different (Compare/Contrast), Graph, Count, Name/Identify

Key Vocabulary: *List the key content vocabulary that will be covered.*

3D Shapes, Pyramid, Rectangular Prism, Cone, Sphere, Cube, Cylinder, Face, Edge, Vertex (Corner), Objects, Environment

Grouping: *Describe how and why students will be divided into groups, if applicable (random, ability, interest, social purposes, etc.).*

During the shape hunt students will be placed into pairs based on who will work well together and stay on task during the hunt. I will try my best to pair students together so they are comfortable enough to talk to each other and share observations they are making about the shapes that they find but are not with someone that causes behavioral problems while on the shape hunt.

Materials needed: *List all tools and/or materials that will be needed to implement the task(s). Attach a copy of ALL materials the teacher and students will use during the lesson; e.g., handouts, questions to answer, overheads, PowerPoint slides, worksheets. List equipment or technology that needs to be available*

Copies of the Extension Worksheet, Clipboards, Pencils, Crayons

Adaptations for Diverse Learners: *How will you adapt the task for diverse learners? List:*

a. Describe how and why students will be divided into groups, if applicable (random, ability, interest, social purposes, etc.).

During the shape hunt students will be placed into pairs based on who will work well together and stay on task during the hunt. I will try my best to pair students together so they are comfortable enough to talk to each other and share observations they are making about the shapes that they find but are not with someone that causes behavioral problems while on the shape hunt.

b. Multiple means of access: List ways the teacher will present the materials.

The teacher will present materials by the objects found in and outside the school, a student's environment, as well as through the worksheet and verbally-group discussion. The hunt will start in the classroom where there are multiple examples of each shape on the word wall and around the room. This will help the teacher scaffold students and check for understanding before 'hunting' outside of the classroom.

c. Multiple means of engagement: List ways the students will participate in the learning.

Students will participate in the learning by working with their partner on the shape hunt as well as independently on the extension worksheet and graph.

d. Multiple means of expression: List ways the students can show their learning.

Students can show their learning by participating in group and partner discussion, actively participating in the shape hunt, and through the extension worksheet.

e. Methods of differentiation: List accommodation or differentiation strategies.

I will put partners together thoughtfully to help accommodate for different learning skills and abilities to encourage cooperative learning. We will use visual aids to aid in student comprehension. For the partner activity, students of similar language proficiency levels will be paired together. The more advanced learners will be expected to express more detailed ideas (spoken and written), using more complex vocabulary and language structures, than the students at lower proficiency levels. The teacher will encourage this by subtly probing these students for additional information if necessary during the oral and written activities.

f. Language learning objectives: Where will you integrate these?

Language learning objectives will be integrated by students identifying word wall words on the extension worksheet while I model how to complete the graph. Students will also be prompted to find the name of the shapes they are looking for on the word wall by matching the corresponding shape or finding an object in the room and matching that to the word form of the shape on the word wall. I will help facilitate productive partner and whole class work, encouraging all students to share their opinions, and remind them to be respectful to every student.

g. Remedial activities: List a review sheet, scaffolding worksheet or plan.

Multiple visual aids and real world examples will be used to scaffold learning throughout the lesson. (As stated above: The hunt will start in the classroom where there are multiple examples of each shape on the word wall and around the room. This will help the teacher scaffold students and check for understanding before 'hunting' outside of the classroom.)

h. Extension activities: What will students who finish early do?

Students who finish early will have the choice to either read the class book created on 3D shapes from the book bin or complete a matching card game that matches the 3D shapes to the corresponding written word and a real world example of that shape.

Learning Activities: *Give detailed, step-by-step instructions on how you will implement the instructional plan. Describe exactly what students will say or do during the lesson. Please use a numbered list.*

1. 3D Shape Review:
    - 1.1. Whole Class Question and Answer using:
        - •Who can name one 3D shape that we have learned about?
        - •Who can come up here and pick out the ____ (the shape named after the first question) from my box of shapes?
        - •How do you know this is a _____ (the shape named after the first question)?

2. YouTube Video: In order to engage students even further into the lesson to come, we will watch a familiar video called "3D Shapes That I Know": http://www.youtube.com/watch?v=K9L9l86N-xM
    - 2.1.Students will be prompted to think about the objects that the see in the video and whether they have seen them around the school or if they think they can find them around the school.

2.2.Students will have seen and heard this song before and are now able to sing along with it. This video explains 4 of the more common 3D shapes; sphere, cylinder, cube and cone.

2.3.Students should ask themselves questions such as: What do each of these shapes look like in the examples seen in the video? Have I ever seen any of these examples at my house or around my school? What other 3D shapes have we talked about that are not in this video? Can I think of any examples of the shapes that weren't on the video? Where else have I seen any of these shapes?

3.3D Shape Hunt

3.1.Students will be directed to get their materials in order to go on our shape hunt around the classroom, school and around the perimeter of the school.

3.1.1.Students will be instructed to each pick up a clipboard and a pencil and sit back down on the carpet.

3.1.2.Students will be given the extension worksheet and directed to clip it to the clipboard with the "Let's Find Shapes" side showing.

3.1.3.After students look around the room for these shapes individually, students will be instructed to leave their clipboards and pencils on their tables and sit back down on the carpet.

3.2.Students will then be divided into pairs, their shape hunt partner.

3.3.We will line up at the front door, two by two, and walk out the front door, staying in line to start our shape hunt.

3.4.We will stay in line and walk around the inside of the school and around the perimeter to hunt for these 3D shapes.

3.5.While on our shape hunt students will be prompted to think about the shapes that we have learned about so far and each shapes defining attributes.

3.6.Students will be asked to find these attributes in shapes in and around the school.

4. Making Observations/Whole Class Discussion

4.1.After the shape hunt students will be instructed to sit on the carpet with their partner.

4.2.Students will be asked to share some of the observations they made with their partner with the rest of the class.

4.3.There will be a chart displayed on the white board that lists all the 3D shapes at the top and as students share their observations

4.3.1.The teacher will write down the objects they observed under the column in which the students say it fits.

4.3.2.The teacher should use questions such as those listed below in order to probe for understanding as well as which column each object should fall under. Some guiding/probing questions:

- What did you and your partner find on your shape hunt?
- Does this object fit in our chart?
- Where would you put this object on our chart?
- How do you know this object is a ___ (sphere, cube, cylinder, pyramid, rectangular prism, or cone)?
- What kind of *attributes* of the shape made you think it was a _____ (sphere, cube, cylinder, pyramid, rectangular prism or cone)?

5. Extension Activity and Worksheet

5.1. Students will complete/finish the extension activity (attached) that reinforces the concepts, uses formal labels for the 3D shapes as well as explanations provided previously in the lesson.

5.1.1. Students will label the shapes that they found on the shape hunt and divide them into each shape category.

5.1.2. Students will then use their knowledge of graphing to graph the number of each shape that they found.

5.1.3. Students will then be asked to draw conclusions and make observations about the graph and what they observed on the shape hunt.

5.2. Students will then be asked to write and draw these observations on a page that will be combined with all the other students' pages to create a class book.

5.3. The teacher will model filling out the graph and the class book page before asking students to do so.

5.4. While modeling the teacher will ask students to identify each shape on the graph and any other word wall words they see on the worksheet and class page.

5.5. The book created from the extension activity will stay in the classroom for students to read after they finish their work throughout the unit.

Organization of Lesson In planning your lesson, think about: · Transition statements you make throughout your lesson and write them out - "Find a seat on the carpet where you can see the board and sit on your bottom" - 2 mins - "We have been learning about 3D shapes a lot lately, can anyone remind me of a 3D shape?" - review 5-7 mins - "We are going to watch our 3D shapes song, I want to see and hear everyone singing along so that I know you know these shapes that we are going to hunt for in just a few minutes!" - 8 mins - "You will need a clipboard and a pencil for this activity. When I call your table name, get your materials quickly and quietly and have a seat back on the carpet" - 3 mins - "We are going to start our hunt around the room first. You will take your clipboard with your worksheet on it and try to find each shape around the room. When I call your table name, you can start hunting." - 1 min - "You have 2 more minutes to find the shapes around the room. If you can't find them all, that is ok. In a minute you are going to be given a partner and maybe that partner found some shapes that you didn't and maybe you found some shapes that he/she didn't and you can share those findings with each other!" - 2 mins - "I am going to call you and your partner's name and I want you to put your materials at your table, you won't need them for this part of the hunt, and line up side by side at the front door" - 3 mins - "We are going to stay in line with your partner as we walk in and around the school on our shape hunt." - 1 min - "Please come in quietly and have a seat on the carpet with your partner" - 2 mins - "Please take just a couple of minutes to talk to your partner about some observations you two made during our shape hunt."-2 mins - "Now, you and your partner can share some of your observations with the rest of the class and tell me where to put these observations on the chart" - 8/10 mins - "Now we are going to fill in the back of the worksheet with how many of each shape we found as a class. You may have found more shapes than this with your partner, but we are going to do a class graph so please count only what we wrote on the chart. I am going to show you how this should look and then you will go and do it on your own." - 5 mins - "Once you finish your graph you can place it in my rocking chair and I will give you your page for your class book. On this page I just want you to write down 5 observations about 3D shapes that you noticed on our hunt and draw 5 of the objects you found." -2 mins · Write down the questions you want to ask - Who can name one 3D shape that we have learned about? - Who can come up here and pick out the ____ (the shape named after the first question) from my box of shapes? - How do you know this is a _____ (the shape named after the first question)? - What did you and your partner find on your shape hunt?	**I Do** *Engage:* · Create interest by showing a YouTube video about 3D shapes · Generate curiosity · Raise questions · Elicit responses that uncover what students know or think about 3D objects *Explore:* · Encourage students to work together in pairs during the shape hunt. · Observe and listen to students as they interact on the carpet and on the shape hunt · Ask probing questions to redirect students' thinking when necessary · Provide time for students to work through any issues that arise (wait time) · Act as a consultant for students if they get frustrated or stuck *Explain:* • Encourages students to explain concepts and definitions in their own words (Talk Moves) • Asks for justification (evidence) and clarification from students • Formally provides definitions, explanations, and new labels • Uses students' previous experiences as the basis for explaining concepts	**Students Do** *Engage:* · Asks questions such as ○ "What do I already know about 3D objects?" ○ "What can I find out about 3D objects by going on a shape hunt?" · Shows interest in the topic *Explore:* · Think freely, within the limits of the activity · Try alternatives and discusses them with others · Records/Discusses observations and ideas · Asks related questions *Explain:* · Explains possible solutions or answers to others · Listens critically to others' explanations · Listens to and tries to comprehend explanations that the teacher offers · Refers to previous activities · Uses recorded observations in explanations · Assesses own understanding *Elaborate:* · Applies new labels, definitions, explanations, and skills in new but similar situations · Uses previous information to ask questions, propose solutions, make decisions, and design experiments (participate in talk moves) · Draws reasonable conclusions from evidence · Records observations and explanations · Checks for understanding among peers *Evaluate:* · Answers open-ended questions by using observations, evidence, and previously accepted explanations · Demonstrates an understanding or knowledge of the concept or skill · Evaluates his or her own progress and knowledge · Asks related questions that would encourage future investigations

- Does this object fit in our chart? - Where would you put this object on our chart? - How do you know this object is a ___ (sphere, cube, cylinder, pyramid, rectangular prism, or cone)? - What kind of *attributes* of the shape made you think it was a _____ (sphere, cube, cylinder, pyramid, rectangular prism or cone)?		• Assesses students' growing understanding (finding shapes that we haven't studied and putting them in their own category) •*Elaborate:* • Expects students to use formal labels, definitions and explanations provided previously • Encourages students to apply or extend concepts and skills in new situations • Reminds students of alternate explanations • Refers students to existing data and evidence and asks "What do you already know?" "Why do you think.....?" *Evaluate:* · Observes students as they apply new concepts and skills · Assesses students' knowledge and/or skills · Looks for evidence that students have challenged their thinking or behaviors · Asks open-ended questions, such as "Why do you think...? "What do you know about x?" "How would you explain x?"	
Engage (Before)	Description: Introductory lessons should stimulate curiosity and activate prior student knowledge. The activity should be a problem or an event that raises questions and motivates students to discover more about the concept. Link to cognition: Students bring knowledge about how the world works but it is sometimes based on limited experiences and sometimes on misconceptions. Guiding Questions: · How will the teacher capture students' interest? · What kind of questions should the students ask themselves after the engagement?		

	I will launch this lesson by reviewing the 3D shapes we have covered so far in the unit. We will begin by having a question and answer session as a whole class. I will ask questions such as: - Who can name one 3D shape that we have learned about? - Who can come up here and pick out the ____ (the shape named after the first question) from my box of shapes? - How do you know this is a _____ (the shape named after the first question)? In order to engage students even further into the lesson to come, we will watch a familiar video called "3D Shapes That I Know": http://www.youtube.com/watch?v=K9L9l86N-xM Students will be prompted to think about the objects that the see in the video and whether they have seen them around the school or if they think they can find them around the school. Students will have seen and heard this song before and are now able to sing along with it. This video explains 4 of the more common 3D shapes; sphere, cylinder, cube and cone. The students love this song and it acts as a way for students to get excited about working with this mathematical concept. Students should ask themselves questions such as: What do each of these shapes look like in the examples seen in the video? Have I ever seen any of these examples at my house or around my school? What other 3D shapes have we talked about that are not in this video? Can I think of any examples of the shapes that weren't on the video? Where else have I seen any of these shapes?		

Explore (During)	Description: Students need the opportunity to actively explore the concept in a 'make sense' activity. This establishes a commonly shared classroom experience and allows students to share ideas about the concept. Link to cognition: Experiences occur before the explanations! Students are actively engaged with little explanation from the teachers. Students acquire a common set of concrete experiences allowing them to help each other understand the concept through social interaction. Guiding Questions: · What 'make sense' activities will students be doing? · What are the "big idea" conceptual questions that the teacher will use to encourage and/or focus students' exploration? We're Going on a 3D Shape Hunt! Students will be directed to get their materials in order to go on our shape hunt around the classroom, school and around the perimeter of the school. Students will be instructed to each pick up a clipboard and a pencil and sit back down on the carpet. Students will be given the extension worksheet and directed to clip it to the clipboard with the "Let's Find Shapes" side showing. After students look around the room for these shapes individually, students will be instructed to leave their clipboards and pencils on their tables and sit back down on the carpet. Students will then be divided into pairs, their shape hunt partner. We will line up at the front door, two by two, and walk out the front door, staying in		

	line to start our shape hunt. We will stay in line and walk around the inside of the school and around the perimeter to hunt for these 3D shapes. While on our shape hunt students will be prompted to think about the shapes that we have learned about so far and each shapes defining attributes. Students will be asked to find these attributes in shapes in and around the school. Students are placed into pairs so that they can discuss their findings and observations with one another in the hopes that those struggling to understand these concepts will have a better understanding after this activity and those who seemingly have mastered the shapes and their defining attributes will be given an opportunity to put what they have learned into practice.		
Explain (Summarize)	Description: Teachers use questioning strategies to lead students' discussion of information discovered during the Explore stage. Teachers introduce new terms and explanations at appropriate times during the discussion. Link to cognition: When students engage in meaningful discussions with other students and the teacher, they can pool their explanations based on observations, construct new understandings, and have a clear focus for additional learning. Guiding Questions: · What questions or techniques will the teacher use to help students connect their exploration to the concept under examination? · What are the higher order thinking questions which teachers will use to		

	solicit *student* explanations and help them to justify their explanations? After the shape hunt students will be instructed to sit on the carpet with their partner. Students will be asked to share some of the observations they made with their partner with the rest of the class. There will be a chart displayed on the white board that lists all the 3D shapes at the top and as students share their observations, the teacher will write down the objects they observed under the column in which the students say it fits. The teacher should use questions such as those listed below in order to probe for understanding as well as which column each object should fall under. Some guiding/probing questions: - What did you and your partner find on your shape hunt? - Does this object fit in our chart? - Where would you put this object on our chart? - How do you know this object is a ___ (sphere, cube, cylinder, pyramid, rectangular prism, or cone)? - What kind of *attributes* of the shape made you think it was a _____ (sphere, cube, cylinder, pyramid, rectangular prism or cone)?		

Elaborate (Extend)	Description: Students are encouraged to apply, extend, and enhance the new concept and related terms during interaction with the teacher and other students. Link to cognition: Providing additional active learning opportunities for students to incorporate into their mental construct of the concept allows them to confirm and expand their understanding. Guiding Questions: · How will students develop a more sophisticated understanding of the concept? · What vocabulary will be introduced and how will it connect to students' observations? · How is this knowledge applied in our daily lives? Students will complete/finish the extension activity (attached) that reinforces the concepts, uses formal labels for the 3D shapes as well as explanations provided previously in the lesson. Students will label the shapes that they found on the shape hunt and divide them into each shape category. Students will then use their knowledge of graphing to graph the number of each shape that they found. Students will then be asked to draw conclusions and make observations about the graph and what they observed on the shape hunt. Students will then be asked to write and draw these observations on a page that will be combined with all the other students' pages to create a class book. The teacher will model filling out		

	the graph and the class book page before asking students to do so. While modeling I will ask students to identify each shape on the graph and any other word wall words they see on the worksheet and class page. The book created from the extension activity will stay in the classroom for students to read after they finish their work throughout the unit. By identifying objects around the school, students can then relate the shapes and the proper name of these 3D shapes to what they see in their environment at home in their everyday lives.		
Evaluate (After)	Description: Students demonstrate their understanding of the concept. Link to cognition: In learner-centered instruction, it is important for students to be aware of their own progress as an outcome of instruction. Students construct knowledge over time and may need additional experiences to refine their understanding of the concept. Guiding Questions: · How will students demonstrate that they have achieved the lesson objective? · How will evaluation be embedded throughout the lesson as well as at the end of the lesson? Evaluation will be embedded throughout the lesson by asking probing questions to better understand student understanding and misunderstanding. Students will demonstrate that they have achieved the lesson objective by completing the extension activity and page for the class book and by actively participating in whole class discussion.		

Next Steps	*Based on the above, what you will do in your next lesson to ensure students' learning.* I will read the class book we created from the extension activity and ask clarifying questions to be discussed as a whole class. The next day of this lesson will be devoted to making 3D models of these shapes and therefore it will be important to review the defining attributes of these shapes before students are asked to create them on their own.	*What understandings and misunderstandings will I look for?* - Misunderstandings: - Difference between 2D and 3D shapes that look alike (square/cube, circle/sphere) - All objects that we find will be either a sphere, cube, cone, cylinder, rectangular prism, or pyramid - Understandings: - Objects are 3D shapes - Some defining attributes of each shape. *What are all the ways the task(s) can be solved?* Students can complete the extension activity worksheet and page for the class book by finding objects on the shape hunt and recording their observations. *What misconceptions might students have?* - Students might not have a full understanding about the difference between 2D and 3D shapes. - Students may not fully understand the difference between defining and non-defining attributes of these 3D shapes. *What errors might students make?* - Students might make the mistake of naming a 3D object a 2D shape name (i.e. this box is a square instead of this box is a cube) - Students may name a shape that isn't one of the 6 that we discussed as one of those shapes (i.e. if students find a triangular prism they may call it a pyramid or cone because we haven't categorized that shape.)

Assessment

Assessment Strategies Attach questions, worksheets, tests or any additional	**Target-Assessment Alignment Table**	
	Learning Targets	**Assessment Strategies**

documentation related to your assessment strategies. Also attach appropriate marking rubrics, criteria lists, expectations, answer keys, etc. • **Formative:** measures process/progress toward mastery of target(s) • **Summative**: measures outcomes/achievement of target(s)	Students should be able to identify 3D objects by name as they appear in their environment. Students will demonstrate this knowledge by discussing, explaining, describing, identifying, recognizing and restating during whole class discussion and partner work. Students will also demonstrate their knowledge by applying newly acquired information and completing their worksheet that identifies the objects that they found on the hunt and graphs them based on the quantity of each shape.	**Formative**: I will move around the classroom, observing student discussions during the partner activity and individual work. I will informally check progress of students by comparing their current work on the worksheet with prior work earlier in the unit. **Summative**: Students will be assessed after they complete their page in the class book. If students correctly followed directions and mastered the ideas that each 3D shape has defining attributes which make each shape different as well as the fact that in their environment there are all different types of shapes that appear in all different colors and sizes (non defining attributes). These understandings will be displayed on their classroom book page as well as the extension activity worksheet.

Additional Requirements

a. **Acknowledgements:** Acknowledge your sources. Give credit to the person who created the idea for the instructional plan, including yourself. You might use language such as "Instructional Plan adapted from _____"; "Instructional Plan Consultants (not responsible for the content of this instructional plan): _____"; and/or "Instructional Plan Created by _____." Cite scripted materials/curriculum if appropriate.
   - 3D Object Graph Created by Sarah Burk, 2012.
   - Let's Find Shapes created by "easy peasy lemon squeezy- teacherspayteachers.com

b. **References:** List in APA format references for both learning strategies and content.

Adapted from: The BSCS 5E Instructional Model: Origins, Effectiveness, and Applications, July 2006, Bybee, et.al, pp. 33-34, and http://www.unc.edu/destiny/5Es.htm

Prepared 8-06-12 - Adapted from TPA planning structure, the *Connected Mathematics Instructional Model* (http://connectedmath.msu.edu/components/teacher.shtml#cmp), and from Bahr, D.L. & DeGarcia, L.A. (2008), Van de Walle, J. A. & Lovin, L.A.H. (2008 – Volumes I & II).

Planning		
Teacher Candidate: **Christina Marsicano, Julie Doran, and Kate Simpson**	**Unit/Subject:** **3D Shapes/ Math**	**Date:** **TBD**
6. Lesson overview or summary: In a few sentences, summarize this lesson.	This lesson will be used to review three-dimensional shapes to the students. It will provide a basic understanding of the vocabulary associated with three-dimensional shapes. It will also provide experiential learning experiences for the students in their encounter with these unfamiliar shapes through the use of modeling and creating a shapes book.	
7. Focus Question: What is the big idea or focus question of the lesson? **8. Connection:** What is the big idea that connects this lesson with the other 3-5 lessons in the learning segment? **9. Student Accomplishment:** What will the final summative assessment expect students to do? (see end of lesson)	What are some different three-dimensional geometric shapes and what makes them three-dimensional? It connects to the learning of what makes up a three-dimensional shape and what some common three-dimensional shapes include with how to model them using different material. Students should be able to create a model of the three-dimensional shapes discussed in the lesson, as well as create their three-dimensional shape booklet.	
10. Class characteristics: Describe the important characteristics of the students in the class that need to be considered in planning and teaching to facilitate learning for all students. • Consider students' prior knowledge, language development, social and emotional developments, family, and interests. • Include how you will <u>use</u> your knowledge of students to plan the lesson activities, pacing, choices, etc. (this can be a portion of the	• In the classroom there are many ELLs so that will have to be taken into consideration when describing the shapes. It will be important to scaffold their learning of each vocabulary term with a visual aid to assist in explaining what a "face" is or an "edge" and so forth. I will need to take into consideration the English proficiency of each child in order to see where more support and guidance will be necessary. It will be important to pair them up so that they can talk through the lesson's activities with each other in their first language as well as in English. Considering this, it may take several lessons to get the content covered, but I could also work with the ELL teacher to teach the same types of lessons with them when they work with her, since they get pulled out. It would be better if she could come into the classroom and help translate some of the vocabulary with me and do more of a co-teaching style for the lesson. • Autism is also present in the classroom. It will be important to provide these	

commentary instead).	students with enough room on the carpet during the whole class teaching in order for them to be able to move around if necessary. It will also be important to really focus on transitions from one activity to the next because it is likely that transitions may be more difficult if these students are not given a warning. A three minute warning gives enough time for students to finish up what they are working on and get ready to transition to the next thing. It will also be important to allow them to do the activities at their own pace rather than having them rush to get things finished on time. Pictures will be the main focus of the output as opposed to writing the names of the shapes, I will write the names down on their booklets for them if they do not finish in time. • Another thing to consider will be the students with limited sitting and attention skills in order to make sure that they are able to be mobile around the classroom if they need to get their wiggles out. I will need to pace my lesson based on all of my students and how well they understand each part of the lesson. If I feel that these students are really enjoying the hands on activity of making the models of the shapes then I will allow more time for this part of the lesson. • The student who has an IEP for a speech impediment will benefit from working in a group because it will allow him to develop his speech in a comfortable environment with only a few peers. This will also provide him with an opportunity to practice what he will say before commenting in a whole class discussion. Additionally, it will be important to give him extra encouragement to participate in the whole class discussion during his group work. For example, it may be beneficial to say "That is a great idea. You should share that with the whole class." • One student needs extra reminders to stay on task during lessons. It will be important to group him with a few students who are likely to stay on task while modeling, and to also provide him with multiple PBIS comments throughout the lesson. It will also be important for the teacher and TA to check in with his group a few times to ensure he is staying on task and participating cooperatively with his group members. • Four students need an extra challenge during math lessons. Having the extension activity readily available for these students will be important to keep

	them engaged if they finish the task before most students.	
Teacher Candidate: Christina Marsicano, Julie Doran, and Kate Simpson **Grade Level: Kindergarten**	**Unit/Subject: Three Dimensional Shapes/ Math** **Instructional Plan Title/Focus: Modeling Three Dimensional Shapes**	**Time: 12pm** **Date:** TBD
State Learning Standards: **<u>Kindergarten</u>** Geometry ▪ K.G.2Correctly name shapes regardless of their orientations or overall size. ▪ K.G.5Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.		
Learning Targets: *Students should be able to identify and explain what makes up different three-dimensional shapes, through explaining their knowledge verbally, in a drawing, and/or in their physical model of the shapes. They should be able to use appropriate vocabulary and language to describe and explain how they identify different shapes which can also be done through a physical output.*		
Academic Language: *create, manipulate, compare, and real world connection* **Key Vocabulary:** *face, base, point, edge, cone, cylinder, sphere, cube, pyramid, and rectangular prism*		
Grouping: *Students will be on the carpet as a whole class during the beginning of the lesson to review the different shapes through the use of blocks and manipulatives. Then they will be sent to their tables to work on creating their own three-dimensional shapes. The way I will group them will be so that each ELL has at least one other ELL in his/her group to discuss the task at hand so that they can use both English and their first language. I will also group students who will need more support in their learning (ADHD, visual*		

impairment, hearing impairment, Autism, and so forth) together into two different groups with other learners as well, so that the TA and I can walk around and provide them with any assistance or guidance they may need. I would not separate them based on performance because this is an activity that can be used for all learners, which will be used as a way to apply their knowledge of the shapes to how to create a physical representation of the shapes. It would be important to provide detailed instructions on how to create the shapes so that all students can be successful.

Materials needed:

For this lesson I will need:

- Blocks (cylinder, cone, rectangular prism, cube, sphere, and pyramid) (multiples of each to pass around for the kids to look at and describe)
- Other real-world examples of the shapes (ice cream cone, can, legos, ball, picture of Egyptian pyramids, and tissue box)
- Chart paper
- Markers
- Mini marshmallows
- Toothpicks/pretzel sticks
- Cookies (for cylinder)
- Clay (for sphere and to use to make it easier to create other shapes for some students)

Adaptations for Diverse Learners: *How will you adapt the task for diverse learners? List:*

i. Students will be divided into groups simply based on the table they sit at on a regular basis. Their table groups contain more than one ELL per table if an ELL exists at the table in order to allow them to talk through their assignments. Students will be divided in a way that all students will benefit from discussions with other members of their group. Students who will need more support to fulfill their needs will be a group that either myself or the TA will be a part of. This allows for all learners to have their needs met and the opportunity to be successful and learn from their peers.

j. Multiple means of access: I will present the materials to the students using the visual stimulus of the blocks, passing the blocks around the carpet to have all students feel the shapes, have a visual chart in order to record what the students notice about the shapes, discuss each part of the shape in detail during which the students with a visual impairment can feel the different parts as they are described, and have students create their own shapes using the marshmallows and toothpicks/pretzel sticks.

k. Multiple means of engagement: Students will be the active participants in describing the shapes, explaining what they see and their parts, having them help create the chart as a whole class, then individually having them create their own models of the shapes. I want them to understand the vocabulary in their own words so that even students with limited vocabulary can understand the topic of discussion.

l. Multiple means of expression: Students will be able to express their understanding verbally (when creating the chart and talking out how to make their models of the shapes with their groups), they can express their understanding through labeling pictures of

the shapes, and through their physical model of the shapes with the marshmallows and sticks. For some I will have the expectation of all three forms of expression, while for others it is more appropriate for them to have one form of expression that they use to explain their understanding of three-dimensional shapes.

m. *Methods of differentiation: Having multiple means of showing the shapes, through drawings, physical blocks, pictures, and real world objects will allow different student needs to be met. Using both formal language to describe the different parts that make up the shape, as well as putting it into simpler terms or allowing the students to put it into their own language will provide a more easily understood way of explaining the different shapes. Another differentiation of the lesson is the output, some will simply create the models of the shapes with marshmallows and toothpicks/pretzels, while others will do this and draw shapes in their booklet based on the name at the top of the page, and lastly for those that have been exposed to these shapes before and could use another extension activity, they will label each part of each shape in their booklets by writing the words rather than simply pasting the words in the designated box.*

n. *Extension activities: For those students who finish early, they can find the shapes that we have learned around the classroom. They can either draw what they find on a sheet that has a column under each shape for them to write in, or they can write the different objects' names, and so forth so that is like a shape scavenger hunt if they finish everything else early. (good for the gifted students who may finish early because they will do a similar scavenger hunt in the next lesson).*

Learning Activities: *Give detailed, step-by-step instructions on how you will implement the instructional plan. Describe exactly what students will say or do during the lesson. Please use a numbered list.*

1. Students will sit on the carpet.
2. The teacher will pull out one block and record the students' responses of how to describe that shape on chart paper.
3. Pass the blocks around.
4. Set the blocks on each table and set out the materials to create the models.
5. Go through how to create a cube using the pretzels and the marshmallows, then allow the students to do this one step by step with you.
6. Have the students go on their own at their tables and create the other shapes using the available materials (cone, cylinder, pyramid, rectangular prism, and sphere).
7. Write down on the charts what they can tell me about each shape that they created.
8. Have students discuss with their table the shapes and what they have learned through creating the models.

Organization of Lesson In planning your lesson, think about: • Transition statements you make throughout your lesson and write them out • Write down the questions you want to ask		**What will students be saying or doing?** *-For the before, students will have been assessed on their knowledge of 2D shapes, which can inform how I plan my lessons for 3D shapes.*
Engage (Before)	• Before the actual lesson we will have already discussed two-dimensional shapes. Through this they will know some	

	examples, how to draw them, what makes them two-dimensional, some real-world examples of two dimensional shapes in their life, as well as how to make one shape out of other shapes. • Through this prior knowledge I will know what vocabulary students are unfamiliar with, what needs my students have, and what their misconceptions may be about 2D shapes that can translate into misconceptions with 3D shapes. • I will prepare all of the materials and have them separated by table so that there is less wait time for the students. • As another before activity, I will ask students what they believe a three-dimensional shape is since this will be an easy way to review what they have been learning. Their responses will be recorded on the board, for those who may have a hearing impairment, I will write the question on the SmartBoard for them to see and follow. During this time I will allow them to turn and talk to a friend about what they believe it is. For those with limited English they can speak in their 1st language, for those that have other needs we will allow them to write on a white board what they believe it is (they can write words or draw a picture), we will also allow them to use items around the room to help them explain their thinking (such as a block or other manipulative). Allowing students to get up and move around the room if necessary for them to find a way to express their thinking will help those students who need mobility to stay focused.	*- Students will be asked what they think a three-dimensional shape is. What are some examples of 3D shapes?* *-The students will be providing responses for what they believe a 3D shape is.* *-Students will be using their environment to inform their knowledge of what a three dimensional shape is.*
Explore (During)	• Once we have created a list of what the students think a three-dimensional shape is, then we will begin the lesson. To start I will create a chart that has the name of the shape	*-Students will be asked to use their senses to*

	and a picture of it in one column, then a description of the shape in the second column, and in the third column it will say "It looks like…" • For the each shape I will pass around a block that is that shape, they can feel the different aspects of the shape in order to contribute to the discussion. As the shape is being passed around I want students to describe what they see, feel, etc about the shape and I will record it on our chart. • If students with limited English language skills have an answer to my questions I will either try to translate their answers for the class, or have another student translate it so that all students are active participants. • I want to introduce them to the vocabulary so pointing out each part of the shape, having students point to that part on their own block, as well has having them read back what we write on the chart will make their learning more well rounded and attend to all learners' needs. • Once we have completed the first two columns of our chart, I will ask the students to think of items in their everyday life that is the same shape as the shapes we have just discussed. This is a way we can build upon our prior knowledge and repeat what we have recently learned to refresh our memory. After I feel that we have a good understanding of the different shapes the students will be sent table by table back to their seats. • Once they are at their seats they will see the materials to make their models on their tables. I will go through each shape and how to make it in a step by step way for the students to easily follow. For those who do not need the explanation they can move forward after the first example, but for other students who need that extra guidance and support to stay focused and such I will be there to help	*describe the shape in their own words, and also use the formal vocabulary we have learned over the past few weeks. This will help students with limited vocabulary to understand the shapes in their own language skills before putting it into more formal language.* *-I will direct them to the different features of the shapes in order to get them to tell me what are the defining features of specific shapes.*

	them. This activity is great because it is hands on experiential learning that will help those students who need to be able to manipulate what they are learning. Students will be able to take as much time as they need during out math hour to complete these models in order to accommodate for those who need extra time to process the assignment. Those with a learning disability that may cause the student to have difficulty making multiple models in a one hour time frame will not be expected to have as much of a product as other students, but will be expected to be able to explain what shapes they did make and its parts.	
Explain (Summarize)	• I will connect what how the shape of the models that we make relate to the shapes on the chart that we created as a class. Explaining what part makes up one of the faces in our food models, and what parts are the edges and so forth. It would be great to have each table or group of students at the tables turn to each other and explain what they have created with their models. This allows the students to use their own language and make connections with each other. For some students it will allow them to physically point out what they created as they explain it, while for others than can point to the vocabulary on our chart if it is unfamiliar to them to explain what they created, as well as have students verbally explain what they did and what the different parts created as a whole. It also allows for me to see where student misconceptions are so that I can guide student explanations in the right direction	

	if I feel they are straying from what I am looking for.	
Elaborate (Extend)	In their groups I would like them to pair up and explain where they have seen some of these shapes in their everyday life. If they cannot verbally express their answer they can write it down on a piece of paper/ draw it on a piece of paper, they can find a physical object in the room to explain it, they can relate it to the two-dimensional shapes they have already learned, and so forth. All of these questions will be verbally discussed, as well as written on the board for all students to see and use in their discussions. Then we will have each pair share something they learned from their partner with the class at the end of the discussion (in any form that fits their needs.)	
Evaluate (After)	My evaluation will be to see how the students can explain to their partner, table, and me what they have learned. I want them to express this in any way that will be most beneficial for them. They can draw, write a sentence, verbally explain what they know, find a physical object in the classroom, explain what they created (their model), and so forth. This allows for variety and for all student needs to be met. Their final product may be any of the above, but I would also like them to be able to begin to use the vocabulary and language that we discussed in the lesson. Their language can be as simplified as necessary as long as	

	they understand the overall concept of the shapes and the features of the shapes. For example if instead of "edge" a child says the place where the two squares are together, I would consider that a basic but reasonable understanding of what we learned.	
Next Steps	In the next lesson students will review the shapes by creating their 3D shapes booklet based on the manipulative placed on their table.	

Assessment

Assessment Strategies

Attach questions, worksheets, tests or any additional documentation related to your assessment strategies. Also attach appropriate marking rubrics, criteria lists, expectations, answer keys, etc.

- **Formative:** measures process/progress toward mastery of target(s)
- **Summative**: measures outcomes/achievement of target(s)

Target-Assessment Alignment Table

Learning Targets	Assessment Strategies
•***Students should be able to describe what makes up three dimensional shapes.***	**Formative:** Are students able to describe the shapes in a whole class discussion. **Summative:** Can students explain why the model, drawing or other output they created is a three dimensional shape using the vocabulary they have been learning and reviewing?
•***Students should be able to describe the shapes that they have created in their models.***	**Formative**: Were they able to create models based on what they learned in the lesson about the different features of the shapes? **Summative**: Can they explain the models that they created and why they created them in a certain way to a friend?

Additional Requirements

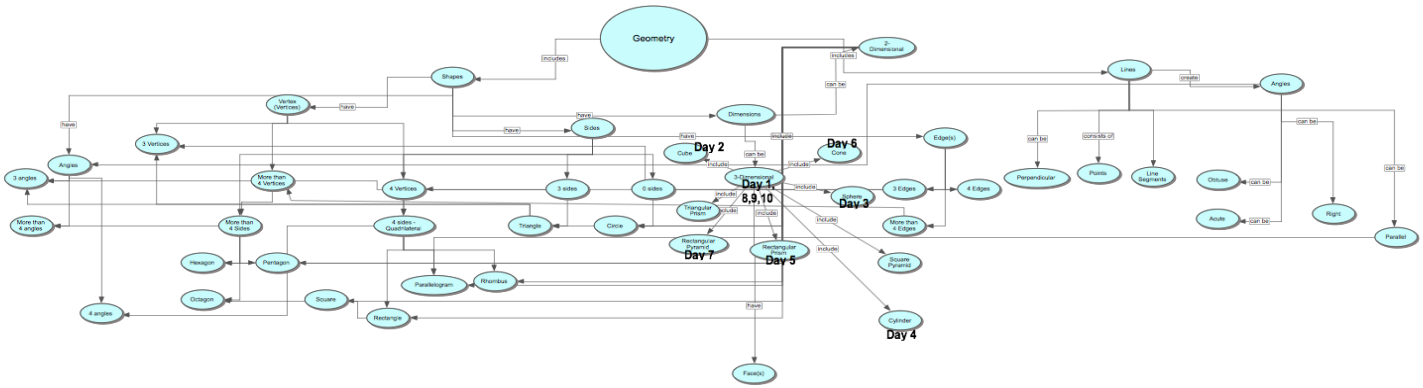
a. **Acknowledgements:** Part of the Instructional Plan adapted from *Kindergarten…Kindergarten…Blog* and Part of the Instructional Plan created by Christina Marsicano, Julie Doran, and Kate Simpson.

b. **References:**

(2012). Retrieved from http://www.kindergartenkindergarten.com/2012/03/math-problem-solving-week-8-3-dimensional-shapes.html

Prepared 8-06-12 - Adapted from TPA planning structure, the *Connected Mathematics Instructional Model* (http://connectedmath.msu.edu/components/teacher.shtml#cmp), and from Bahr, D.L. & DeGarcia, L.A. (2008), Van de Walle, J. A. & Lovin, L.A.H. (2008 – Volumes I & II).

Concept Map With Corresponding Lesson Log Days



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Assessment Plan

How will you gather evidence and make sense of what students have learned?

We will gather evidence and make sense of what students learned by observing during turn and talk sessions and whole class discussion throughout the unit. We will record our observations on individual students in a notebook, which will have several pages with the roster and blank space to take notes on student learning. A copy of a page in this notebook appears at the end of this section. We will review these notes frequently to monitor student learning. Additionally, we will have the students complete worksheets on the different shapes that we learn about. We will gather these worksheets each day to look for misconceptions, errors, or misunderstandings that we may need to address in the next day's lesson. Also, we have attached a copy of the 3D shape hunt worksheet and graph that students will be filling out after they have gone on a scavenger hunt for 3D shapes in the school. We will examine these worksheets as well to look for anything we may need to address. Formative assessment is embedded throughout our unit through observations of student discussion and responses, as well as collections of student work that we will compile and analyze for trends and misconceptions. On the final day of the unit, students will complete a "My 3D Shapes" flip book, which is attached at the end of the unit. We will use this as a summative assessment to see what students have learned throughout our unit. This will also serve as evidence for things that we could focus on or improve on in the next year.

How will you provide meaningful feedback to your students?

In order to provide meaningful feedback to our students, we will constantly be circulating while students are working in groups or in pairs. We will use specific feedback to encourage students to continue working, or ask questions to engage students or guide them in a different direction if they are off task. For example, we could say "I like how you described many attributes of the cube. Can you please share during our group share?" to encourage the kinds of discussions that we are looking for. After examining worksheets and other work that students will create throughout the unit, we can give feedback on the work by telling the individual student what we like about their work, and then even present the work to the whole class in order for every student to learn from the student's effort.

How will you use evidence of what students know and are able to do to plan next steps in instruction?

We will use the chart with our daily observations to plan the next steps in our instruction. For example, if we review our notes, and find that many students do not seem to grasp a concept or have a misconception about the topic, we will spend another day discussing and instructing students to address the misconception.

For example, if we realized that many students were having difficulty at the beginning of the unit understanding the concept of a three dimensional shape, we will spend an extra day covering this topic. Also, if only a certain group of students are struggling to grasp a

concept, we will pull them for an intervention group during free time to reinforce the concept as it would not be beneficial to lead a whole class lesson on the topic if most students understand the content. However, it is necessary that all students grasp the content we are teaching, and intervention groups may be an efficient strategy to target individual or groups of students.

How will you identify evidence and explain students' use of language that demonstrates the development of content understanding?

We will use our observational notes to identify evidence of students' use of language that demonstrates the development of content understanding. We will listen closely to conversations between groups of students, turn and talk sessions, and whole class discussions to determine whether students are using language that demonstrates their understanding of three dimensional shapes. We will be looking for students to articulate their thinking clearly, accurately describe the attributes of three dimensional shapes, and using the appropriate vocabulary associated with three dimensional shapes. We will need to scaffold this language into our discussions in order for students to be able to use the appropriate language. We will also be looking for students to be able to complete worksheets and other class work without adult assistance. It is important that students are able to write and think collaboratively about the tasks we give them, and we will be looking for independence when writing about and discussing three dimensional shapes.

Determine what will be the assessments from your learning segment (3-5 lesson plans) you will use to evaluate your students' developing knowledge and skills including:

- conceptual understanding
- procedural fluency
- reasoning/problem solving skills

On day one, students will be working with their classmates to develop a definition of a three dimensional shape, and then using this knowledge (in pairs) to describe a given shape and then determine whether the shape is two or three dimensional. We will be formatively assessing students during this lesson during turn and talk sessions and whole class discussions to identify which students do and do not have a conceptual understanding of the similarities and differences between three dimensional shapes. Specifically, we will be looking for students to have a conceptual understanding of three dimensional shapes. Further, we will be assessing students' procedural fluency in describing shapes (in terms of attributes that they have previously learned while exploring two dimensional shapes), and also their ability to determine if a shape is two or three dimensional. We will be assessing whether or not this is an appropriate task, if they need more work with this, or if we can move on to specific three dimensional shapes. We will also be formatively assessing their ability to explain their reasoning in relation to if a shape is three or two dimensional.

On day eight, students will be going on a shape hunt for different three dimensional shapes. In order to assess students' conceptual understanding of three dimensional shapes, we will be looking for students to be able to explain the defining attributes of a given three dimensional shape. Additionally, we will be looking for students to understand that many three dimensional shapes appear in our environment of various colors, sizes, and orientations. Therefore, students need to understand that there are defining and non-

defining attributes of three dimensional shapes. This activity will allow us to assess students' understanding of this concept. Additionally, students' procedural fluency will be assessed during whole class discussions and partner work. We will be looking for students to be able to correctly identify and describe the attributes of three dimensional shapes in their environment. Furthermore, we will be assessing their problem solving ability in that they will have to use their prior knowledge of three dimensional shapes to find them in our natural classroom environment. This will be a great opportunity to see if students can apply their knowledge of three dimensional shapes to solve a problem.

On day nine, students will create models of three dimensional shapes using marshmallows and pretzels. We will be looking for students' conceptual understanding of the three dimensional shape they choose to model. Students should have a conceptual understanding of how they created their model of the three dimensional shape to include its defining attributes. We will be assessing students' procedural fluency when they explain the models to the whole class. We will be looking for students' ability to use the appropriate vocabulary we have been reviewing to describe the attributes of the shape. Finally, we will be assessing students' problem solving ability in that students will need to choose one three dimensional shape to model in groups. We will be assessing their ability to create a way to model the chosen shape with marshmallows and pretzels. It will be important to listen to individual student responses during group work in order to assess each student's problem solving ability.

Date: **Subject: Math** **Unit: 3D Shapes**

Student	Observations
Student A	
Student B	
Student C	
Student D	
Student E	
Student F	
Student G	
Student H	
Student I	
Student J	
Student K	
Student L	
Student M	
Student N	

Addressing Academic Language

We chose to use the academic language of "Describing" the shapes. We felt that this was integrated throughout all of the lessons in our Unit Plan. In our Unit we have students "describe" beginning in Day One with describing the difference between a two dimensional and a three dimensional shape. Day Two through Day Seven students are learning about one specific shape per day and describe its attributes, what it looks like, how it relates to two dimensional shapes, and make real world connections based on the description of the shapes. Day Eight requires students to understand how to describe shapes and objects in their everyday lives around the school using the vocabulary they have been learning concerning three dimensional shapes (edge, vertex, sides, faces, and so forth). On Day Nine students are to describe in groups as well as with the teacher the models they created and why they are three dimensional shapes as opposed to two dimensional shapes. Lastly, on Day Ten students should be able to describe the different three dimensional shapes in their "My 3D Shapes" Flip Book that they will have to complete.

In the above lessons students need to understand the vocabulary associated with three dimensional shapes in order to be able to describe them verbally to a friend during turn and talk, in whole class discussions, and in one on one discussions with a teacher. Students also need to understand and use the vocabulary associated with three dimensional shapes when completing their shape worksheets each day and their overall 3D shapes flip book on the last day of the unit. The vocabulary that is associated with describing three dimensional shapes includes face, vertices or corners, side, round, flat, circle, square, pyramid, cylinder, cone, triangle, rectangle, rectangular prism, cube, sphere, solid, curved lines, and straight lines. Through students' prior knowledge of two dimensional shapes and their learning of vocabulary associated with three dimensional shapes students can improve their involvement in the discourse of the classroom. Students can contribute more to the discussion of each shape, how to describe that shape in terms of what shapes it relates to, what shape its faces are, how they know it is three dimensional rather than two dimensional and much more. This can be done in whole class discussions, or through turn and talk discussions with a partner. The learning of the vocabulary can easily be scaffolded to different learners within the classroom. Students can be taught how to determine if a shape is two dimensional or three dimensional first, then move onto each specific shape and its attributes. For students with limited English Proficiency it may be expected that they describe the shapes to a partner in their first language, and then relate it to their learning of the English

vocabulary words. Discourse is a way of addressing student misconceptions, as well as a way for students to express their knowledge and ideas in a way that is most comfortable for them so that all students are provided with the opportunity to be successful.

Through classroom discussions each day the teacher will model with the class how to describe each shape. This is a way to scaffold student learning and provide an example that students can mimic in their own discussions of three dimensional shapes. As the teacher it would be important to allow the students to have input in describing the shapes, but teach them the correct terminology as they describe the shapes. For example if a student explains that a cube has six squares, the teacher can then repeat back and explain that the cube does have six square faces that help to make it three dimensional. This connects student prior knowledge of two dimensional shapes to the new vocabulary of three dimensional shapes and brings them together in a discussion. It will be important to monitor student discussions of the shapes when they are in small groups or during turn and talk times in the lessons in order to see where more instruction of the vocabulary is needed and what concepts the students understand well. Through "Describing" students are comparing and contrasting new knowledge with prior knowledge, and are also enhancing the discourse of the classroom through meaningful discussions of the shapes by using the new vocabulary in their everyday language.