

CURRICULUM CRATE

A curriculum crate allows for a "teacher to apply a current and comprehensive repertoire of effective planning, instruction, and assessment practices to meet the learning needs of every student" (TQS 3). We start by **dissecting a learning outcome** to examine what students need to know, experience, and demonstrate in their learning journey for that outcome during this timeframe. We then use this to **plan an appropriate lesson(s)**. This crate is an example moment in time that can showcase possibility to educators. Ideally you will customize this lesson to meet the needs of your students and know that learning outcomes are returned to many times throughout the year as we layer on our knowledge, understandings, skills, and procedures of each learner outcome. Thank you to teacher working groups who worked side by side with consultants to create these.



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CREATED BY



Thank you to teacher working groups who worked side by side with consultants to create this crate including:

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GRADE

K

SUBJECT(S)

Mathematics

DATE

October

Dissecting a Learning Outcome for Teacher Understanding

Why dissect a learning outcome? A learning outcome describes what students are required to know, understand, and be able to do by the end of a grade. For teachers, having a clear understanding of the anatomy of an outcome drives instruction and ensures that assessments hit the intended target of the learning outcome.

LEARNING OUTCOME(S)

Please note the nouns and verbs to help focus on concepts and skills as part of the learning outcome

Children investigate shape.

(Note: children will focus on two-dimensional shapes in October and November.)

LEARNING EXPERIENCES & LESSONS

Consider how the verbs within the outcomes provide direction for the instruction. What are the ways students will acquire knowledge and skills? How will they "learn it"? Consider the instructional steps (acquire, build, consolidate) along the way. Think about the thoughtful sequence of learning experiences throughout the timeframe of learning (such as October). Remember [Universal Design for Learning](#): anticipate & plan for a wide range of student needs. ONE of these learning experiences will be planned as a lesson below.

Acquire

"I am being introduced to a new topic or skill."

activate prior knowledge and engage students' attention, motivation, and interest

Build

"I am building upon my understanding of the concept/skill."

expand, delve, practice, apply

Consolidate

"I am getting ready to demonstrate my proficiency with the concept/skill."

make connections, analyze, synthesize, evaluate, extend practice

Acquire

- Children will participate in a transition routine using shapes to locate a table area and;
- Children will listen to and talk about a mentor text.

Build

- Children will relate shapes in their environment with two-dimensional shapes on shape walks in the classroom, and around the school, inside and outside, and;
- Children will investigate shapes through playful centre activities.

Consolidate

- Children will apply their knowledge and skills in creating collage and;
- Experience a shape scavenger hunt.

EVIDENCE OF LEARNING

These are the collection of assessments for the learning outcome(s) during this time frame. Consider how the verbs within the outcomes provide direction for the assessment. What are the ways students will show their learning? How will students demonstrate their newly acquired knowledge and skills? Remember to triangulate evidence, that is, collect evidence from multiple sources of student demonstration

Observations	Conversations	Products
<p>Observe children when asked to find specific shapes in their environment, such as part of a transition routine or collecting photos of shapes in nature on an iPad during a shape walk. Which shapes are they able to find or match? How much scaffolding do they need to identify shapes in their environment?</p> <p>In the kitchen, use shape placemats for children to set the table. Are they able to match the 3D objects to the 2D representation?</p>	<p>During storytime, draw children's attention to shapes. Can they point to shapes? Name shapes?</p> <p>Ask children to talk about the shapes they are using to draw or put together a shape puzzle.</p> <p>What stories live in these shapes? (*After reading the mentor text, invite children to construct stories using and manipulating various shapes.)</p>	<p>After collecting images during a shape walk, using PicCollage Edu or similar app to record children's words as they describe the shapes they see in the photos they took.</p> <p>Children will create a shape collage inspired by mentor text. Consider how much support children need to select shapes to create their design. Is it random? Intentional? Are they copying an image from the mentor text? Are they creating an original design? Can they talk about the shapes and why they selected them?</p>

MAKING CONNECTIONS WITH COMPETENCIES

Literacy & Numeracy

Student Competencies

Literacy:

- Children use familiar, high-frequency vocabulary and begin to acquire new vocabulary related to learning experiences (e.g., school-related words).

Numeracy:

- Children recognize that quantitative and spatial information is all around them.
- Children participate in activities that develop spatial thinking (e.g., puzzles, building with blocks, drawing).
- Children interpret simple diagrams that represent spatial information (e.g., identify the real object represented by a drawing).
- Children use basic vocabulary, gestures, objects, or symbols when communicating about quantitative or spatial information.

Critical Thinking

- I wonder about the world around me.

Research and Managing Information

- I connect new information with things I already know.

Communication

- I communicate verbally or nonverbally.
- I describe or represent my experiences, ideas, or feelings.

Lesson Plan - A Potential Learning Experience

Below you will see a potential learning experience for a learner outcome in the new curriculum. You will be able to use this lesson as a strong pedagogical example as well as have the freedom to customize it based on your student needs. This can be part of a thoughtful sequence of learning experiences for students as part of ongoing teaching and assessment within the learning outcome.

LESSON TITLE

Shapes, Shapes Everywhere!

LEARNING GOALS

Learning goals are written in kid-friendly language. What are the learning goals for THIS LESSON a single outcome may be too large for a single intention -- write multiple learning intentions as necessary

I am learning what makes something a shape.
(*two-dimensional*)

I am learning to find these shapes all around me.

STUDENT CRITERIA FOR SUCCESS

What will I see or hear students do or say DURING THIS LESSON that tells me they understand? Use the KUSPs to guide you. All KUSPs of the learning outcome must be addressed by the end of the year. Remember the verbs from [Bloom's Taxonomy](#)

I can point to and name shapes in pictures including circle, square, triangle and rectangle.

I can point to and name these shapes in my classroom and school.

I can explain how I know what shape it is using words like straight, curved, round and flat.

EVIDENCE OF LEARNING

This is the assessment(s) for THIS LESSON. What are the ways students will show their learning? How will students demonstrate their newly acquired knowledge and skills? How will you gather this evidence? Remember to triangulate evidence, that is, collect evidence from multiple sources of student demonstration

Observation: Checklist or anecdotal notes to indicate whether children are able to identify shapes during transition routines.

Conversation: Video/audio recording of children identifying and explaining how they know what a shape is during book talks or when exploring shapes through play.

Product: Document children's work and words when creating shape art.

TO DO BEFORE THE LESSON

- Explore shape books, songs and rhymes.
- Offer explorations with shapes using provocation cards as an inspiration, such as cards 5 and 6 (Identifying and describing 3-D objects and 2-D shapes).
- Prepare large shapes to manipulate and recreate mentor text illustrations.
- Prepare smaller shapes to set up table groupings and hand out for transition to table groups
- Add materials to centers that support shape exploration. (See resources list and lesson for ideas.)

RESOURCES NEEDED

Books:

- [Mouse Shape](#) by Ellen Stoll Walsh
- [The Secret Birthday Message](#) by Eric Carle

Manipulatives:

- Large pre-made shapes to go with Mouse Shape
- Smaller pre-cut shapes for transitions
- iPad or other camera or whiteboards/clipboards
- Pre-cut shapes, paper, glue
- Secret message clues prepared

Other Suggested Materials:

- Collections of two-dimensional shapes (pattern blocks, shape blocks, cut out shapes)
- Puzzles including tangram images
- Magnatiles
- Playdough and variety of household items



- Placemats for kitchen centre
- Flannel board with various felt shapes
- Pre-cut shapes and pumpkin cutouts

CONSIDERATION FOR LEARNER NEEDS

Need	Universal Support (GOOD for ALL students)	Targeted Support (CHOICE for ALL students)	Essential Support (Good for One)
Reading comprehension	<ul style="list-style-type: none"> • Introduce key vocab before reading • Offer read aloud as an option • Sticky notes for vocab challenges 	<ul style="list-style-type: none"> • Paired reading for pacing • Noise canceling headphones • Time to re-read for clarity • Drawing option to map out ideas throughout 	In addition to other supports, <ul style="list-style-type: none"> • Give reading in advance • Read with teacher in small group - stop and explain, draw connections, etc.

Offer opportunities to demonstrate learning both verbally and non-verbally, such as pointing or holding up fingers (a triangle has 3 sides).

When representing shapes, offer multiple modes - drawing, bending pipe cleaners, arranging popsicle sticks, gluing paper shapes, etc. to assist children with fine motor needs.

Consider the geometry learning trajectories in My Math Path. Some children may need experiences with matching shapes before finding or naming shapes, while other children may benefit from the challenge of trying to create various shapes using loose parts or blocks.

TEACHER INSTRUCTION / STUDENT EXPERIENCE & PRACTICE

*Many children begin kindergarten with some knowledge related to shapes, such as being able to name some simple shapes like 'circle' or 'square'. While this knowledge is useful when communicating (I see a triangle) or categorizing (these are all circles), alone this knowledge is superficial. Children need to understand the properties of shapes, not just how to sort or name them. They need to learn to **analyze** shapes, **identify** their defining properties and **talk** about them. They need to learn what makes a triangle a triangle, and what makes a triangle different from a square. They need exposure to shapes in a variety of forms so that size, colour and orientation do not matter when identifying shapes that are the same type. Ginsburg and Oppenzato, "What Children Know and Need to Learn about Shape and Space" DREME, <https://prek-math-te.stanford.edu/spatial-relations/what-children-know-and-need-learn-about-shape-and-space> accessed September 4, 2022.*

The following activities can be used to supplement My Math Path, our primary kindergarten resource. Activities in this lesson can be repeated in new contexts over the course of the year. Such repetition provides children with the recurring exposure required to develop deep understanding of the concept(s). By revisiting the same concepts throughout the year, children amplify their mathematical thinking as they practice, maintain and build on what they know, understand and can do. Dacey and Eston, Growing Mathematical Ideas in Kindergarten, 1999, p. 199

A transition to table grouping could be introduced in October to support children in transitioning to focused practice activities. Set up the areas in advance with a shape set out in the middle of each table/area. As you send children to their focused practice area, hand each child a shape and ask them to find the table with the matching shape. If children are still acquiring shape name vocabulary, you could name the shape for the child. "Here is a circle. Can you find the circle table?" As time progresses or with children who are confident in naming shapes, you can hand the child the shape and ask, "What shape do you need to find?" As children progress, you could replace offering a shape with a verbal attribute clue. "Go to the table with a shape that has three sides."



Quality children's literature is another resource that will support children in acquiring an understanding of two-dimensional shapes. (For more information on choosing texts to support mathematics, see this [article](#).) Engage the children in a math storybook talk with the mentor text, [Mouse Shape](#) by Ellen Stoll Walsh. You could begin with a picture walk to determine what features children attend to as they observe the action of the story unfold as shapes are manipulated to create new images. You could then read the story, providing time for children to check their understanding and talk about what they see, leveraging the children's comments and your own ideas to highlight mathematical concepts. Consider asking some of the following questions that vary in complexity to elicit thinking about shapes:

- What shape is this? (label)
- What can you tell me about this shape? (describe)
- How are these shapes the same? How are they different? (compare)
- If I added one more side to this triangle, would it still be a triangle? (reason)
- Can you think of another place where you might see a triangle? (relate)

Note: You do not need to ask all of these questions in one reading - considering rereading this selection over several days to elicit more mathematical discourse. You can also elaborate on children's responses by following up with open ended questions. For example, the cat constructed in this story shows triangles in different orientations. If the children notice that the ears are triangles but not the nose, then you might say, "Yes, I think the ears are triangles! What do you notice about the nose?" Following the reading and to set the stage for future independent exploration, you could have some large shapes in the middle of the circle and invite children to help reconstruct some of the images in the story. For additional ideas or to share this resource with families, [visit this link](https://dreme.stanford.edu/) to a printable math storybook guide from <https://dreme.stanford.edu/>.



Once children have had some time to acquire an understanding of what defines some basic shapes, it may be time to go on a shape walk! This can be done in small groups within the classroom or when exploring the playground, or even taking the whole class on a walk in or around the school. To capture the learning you could bring tools to document such as an iPad or Chromebook to take pictures/video. You might also consider providing children with small whiteboards or clipboards with paper so that they can record what they find by drawing. Can the children find circles, squares, triangles and rectangles? How do they know what shape they have found? This documentation can be revisited later to continue the conversation in the classroom, or even to create a classroom book of shapes! Capture what children know and understand about shapes by captioning their picture with a quote or two.

Children can further investigate shapes through playful explorations during centre time such as the following provocations:

- Include real world objects and plastic cutters in a playdough or kinetic sand center. As you slide in beside to join the play, you could notice out loud that you can make a circle when you push the plastic cup into the flattened playdough. Invite children to explore the various tools to see what shapes they can make, too.
- In the kitchen/restaurant centre you could provide placemats to support attending to shape and size as they set the table. Draw shapes (circles, squares, rectangles, etc.) roughly the size of dishes and cutlery in your center. When you join in the play, model attending to the shapes as you choose how to set the table.

- Loose part play could be introduced with pre-cut shapes, allowing children to explore a variety of ways to create images. For example, you could offer a felt board with felt shapes, mice and a cat along with the mentor text, and join children in retelling the story.
- Alternatively children could be offered a variety of pre-cut paper shapes to construct jack-o-lantern faces. Can they make a face that is Silly? Sad? Scary? Angry?



After children have had the opportunity to engage in multiple experiences with investigating shapes and their attributes, children could be invited to create a permanent work of art - their own collage in the style of Ellen Stoll Walsh. Using pre-cut shapes in a variety of sizes and colours, invite children to either recreate an image from the story or create an image of their own. This would be a good time to capture what children know and understand about shapes by captioning their work with a quote or two, and analyzing this to observe growth over time.

To further extend children's ability to relate shapes in their environment (nature) to two-dimensional shapes, enjoy a shape scavenger hunt inspired by [The Secret Birthday Message](#) by Eric Carle. Before reading the story, prepare for your own [secret message treasure hunt](#). After introducing the story, focus on the secret message page, inviting lots of predictions about what the shapes in the secret message might mean. Can the children think of something that has that shape? As you read, have children confirm whether or not their predictions were correct. When you reach the end of the book, surprise! There is a secret message waiting for the class. Read the message aloud, and let the adventure unfold, providing scaffolding if needed. After the children find the surprise at the end, wonder together whether the children could make a shape scavenger hunt for their friends, or even another class!

TEACHER REFLECTION / NEXT STEPS

Additional resources to consider for book talks, playful investigations or transitions:

- [Round is a Tortilla](#) by Roseanne Geenfield Thong
- [When a Line Bends](#), a Shape Begins by Rhonda Gowler Greene
- [Which One Doesn't Belong](#): Playing with Shapes by Christopher Danielson
- Tangram and other puzzles (invites children to attend to shape and orientation as they manipulate and slide)
- 2-D images of buildings with clearly defined shape outlines placed in block play or Magnatile areas
- [Building Foundations: Mathematics in Play-Based Contexts](#), 2021, Edmonton Catholic Schools, by Amy Swinkels and Stephanie Power
- [Jump Math](#): Unit 3 - Geometry GK lessons 2, 3 and 4

Note, you will need to create a free account to access these lessons in the [teacher resource](#) section of the [Jump Math website](#).



