THOMPSON RIVERS UNIVERSITY | Education & Social Work

Bachelor of Education (Elementary) & Bachelor of Education (Secondary) STEM/BETT Lesson Plan

Lesson Title: Building 3D Objects Lesson # 7 Date: April 10, 2026

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Rationale:

This lesson engages students in hands-on exploration of 3D objects using tangible materials. By constructing shapes with playdough and marshmallows with toothpicks, students actively apply their learning in a concrete and meaningful way. Experiencing 3D shapes physically, after learning about them conceptually, helps bridge the gap between theory and real-world understanding. This approach supports deeper comprehension and strengthens memory retention by connecting new knowledge to students' prior experiences.

Core Competencies:

Communication	Thinking	Personal & Social
	Critical Thinking and Reflective Thinking *Reflecting and assessing* • Students apply critical, metacognitive, and reflective thinking in given situations, and relate this thinking to other experiences, using this process to identify ways to improve or adapt their approach to learning. They reflect on and assess their experiences, thinking, learning processes, work, and progress in relation to their purposes. Students give, receive, and act on feedback and set goals individually and collaboratively. They determine the extent to which they have met their goals and can set new ones.	Personal Awareness & Responsibility *Self-advocating* • Students who are personally aware and responsible have a sense of self-worth and a growing confidence in a variety of situations. They value themselves, their ideas, and their accomplishments. They are able to express their needs and seek help when needed, find purpose and motivation, act on decisions, and advocate for themselves.

Big Ideas (Understand)

Objects and shapes have attributes that can be described, measured, and compared.

Learning Standards

(DO)	(KNOW)
Learning Standards - Curricular Competencies	**Learning Standards - Content**
Reasoning & Analyzing • Model mathematics in contextualized experiences Understanding & Solving • Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving • Visualize to explore mathematical concepts	• comparison of 2D shapes and 3D objects

Instructional Objectives & Assessment

Instructional Objectives (students will be able to…)	Assessment
• Students will be able to name some 3D objects that they use • Students will be able to state some attributes that some 3D objects have • Students will be able to build some 3D objects using manipulatives • Students will be able to name the 3D objects that they build	• Creating and building some 3D shapes with tangible materials (i.e. mini marshmallows and toothpicks + Play-Doh) • Naming the shapes that they build (i.e. sphere, cube, etc.)

Prerequisite Concepts and Skills:

Students will need to know:

- Simple positional words such as above, below, beside, and next to
- Recognize simple patterns and grouping of like objects
- Be able to count, sort, and classify objects by colour, size, or type
- Be able to use basic mathematical terminology such as big, small, same, different, more, and less

Indigenous Connections/ First Peoples Principles of Learning:

Learning is holistic, reflexive, reflective, experiential, and relational (focused on connectiveness, on reciprocal relationships, and a sense of place): Mathematics is all around us in the environment and in nature. The digital world is 2D for the most part, but we live in a 3D world where objects have substance, shape, and depth, so it is important for students to become familiar with this field of mathematics to better understand the world around them.

Learning involves patience and time: Mathematics for most people requires time and practice to learn. Often it takes a lot of patience as well because people often consider math to be “hard”. With time and perseverance, mathematics can be interesting and allow people to further understand the world that they live in. Learning and exploring 2D shapes and 3D objects, students will get a strong knowledge base of which to build upon in their future mathematics journey.

Universal Design for Learning (UDL):

Multiple Means of Representation

- Visuals will be used through pictures, and tangible items
- Real-life examples will be used where possible (natural items, pictures, things that are relatable to the students age and interests)
- There will be a lot of tactile 3D shapes to explore and build

Multiple Means of Action & Expression

- Students will use manipulatives, and Playdoh to build 3D shapes
- Students will be given choice to verbally share their ideas with the class
- Students will see real-world examples via pictures

Multiple Means of Engagement

- Students will get a choice of materials to use for their activities when possible
- Activities and the lesson is based on real-world connections, making it relatable

Differentiate Instruction (DI):

- Extra activities and other projects will be available for early finishers and those that need a challenge (Baldev, Emma P.)
- Tiered assessment strategies will be available for students that need more time and guidance (Bowen, Silas, Nico, Emma K. Harrison)
- Objects in 3D will be connected to real-world experiences, art, construction, nature, and technology so that students can relate to them for further understanding and clarification
- Visual supports will be used throughout the lesson and activities
- Modelling will be utilized for all lesson activities where needed
- Oral explanations will be used (Bowen & Baldev)

Materials and Resources

- Projector
- Laptop
- Magnifier
- Playdoh
- Toothpicks
- Mini marshmallows
- 3D shapes for instruction
- Pencils
- Erasers
- Picture of playgrounds
- Checklist for activities (marshmallow/toothpick & Play-Doh shapes)

Lesson Activities:

Teacher Activities	Student Activities	Time
"HOOK": The teacher will: • Show a picture of a few playgrounds and its equipment • Discuss with the students what shapes they see in the picture • How do they know what shapes they are? Are the shapes 2D or 3D? *Introduction:* The teacher will: • Explain that they will be making a few different 3D shapes today out of fun stuff like marshmallows and Playdoh!	• Students will listen to the teacher • Students will raise their hand if they want to speak • Students will listen to the teacher	5 min
Body: Activity: Marshmallow & Play-Doh 3D Shapes		5 min

The teacher will: • Talk a bit about the 3D objects that we have looked at so far • Show the students how to make a triangular prism out of toothpicks and mini marshmallows on the magnifier • Ask students how they think they could make an oval out of Playdoh • Working with the class, make an oval out of Playdoh guiding questions as you go	• Students will listen to the teacher • Students will raise their hand if they want to speak • Students will listen to the teacher • Students will raise their hand if they want to speak	

Closure:
Independent Practice:
• The students will make out of mini marshmallows
  ○ Cube
  ○ Pyramid
  ○ Rectangular prism
• The students will then make out of Playdoh
  ○ Sphere
  ○ Cylinder
  ○ Cone
 	
Clean-up time
• Tell students that it's time to clean up
• Let students know that their marshmallow structures can go in their lockers if they want to keep them or into the garbage if not
• Let students know that the Play-Doh must be returned to bags/containers to be reused
• Ask students to clean up their area and put away supplies
	• Students will attempt to make the 3D objects
	• Students will raise their hand if they have a question or need help
	
	• Students will put their creations away and return supplies to their containers
	
	• Students will clean up their area
		15 min

Organizational Strategies:

- When students want to add to the class discussions or ask questions, they will raise their hand and wait to be called on by the teacher
- Materials will not be distributed until after the instruction when they need them
- Students that are talking without raising their hand will be reminded to raise their hand if they want to contribute
- Students that continue to talk after the reminder will be separated if needed
- The teacher will use strategies to gain attention and hold it (i.e. If you can hear me touch your nose… etc.)
- Early finishers will be provided with quiet activities (i.e. Finish work that is not complete)

Proactive, Positive Classroom Learning Environment Strategies:

- The teacher will engage students' prior knowledge by using items that they are familiar with (activate their schemas)
- The teacher will engage students by different activities in which they get to create their own 3D shapes and take part in helping with their own learning
- There will be a lot of practice together as a class and this lesson will ease the students into exploring 3D objects with tangible items
- The teacher will make behaviour expectations clear – sit quietly and listen attentively without distracting other students, only speak if the teacher calls on you – by stating them before and during the lesson
- The teacher will verbally acknowledge and thank students that are on task and will verbally address the students who continue to distract others – moving them when necessary

Extensions:

- More time to explore and make their own 3D objects would be ideal so the students can build more shapes to learn about them from a physical sense.

Reflections (if necessary, continue on separate sheet):