

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

Lesson Title:	Estimating and Measuring Height Using Classroom Objects	Lesson #	1	Date:	February 11, 2025	
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Rationale:

This lesson focuses on the concepts of estimation and measurement. By engaging students with a hands-on activity, they will better understand the difference between making educated guesses and using tools for accurate measurement. These skills are important for everyday life and form a foundation for more complex math concepts.

Core Competencies:

Communication	Thinking	Personal & Social
Students will share their ideas	Students will use critical	Students will work
and reasoning, both orally and	thinking to estimate and	collaboratively, building
in writing, as they work	then measure their group	their teamwork and
through the estimation and	members' heights,	problem-solving skills as
measurement activity.	developing a better	they share results and
	understanding of the	discuss the outcomes.
	relationship between	
	estimation and	
	measurement.	

Big Ideas (Understand)

- Measurement is a way of comparing the attributes of objects.
- We can estimate and measure using a variety of tools and strategies.

Learning Standards

(DO)	(KNOW)
Learning Standards - Curricular Competencies	Learning Standards - Content
 Estimate and measure the height of 	 Understand the difference between
objects people using familiar classroom	estimation and measurement.
resources.	 Recognize that measurement requires
 Communicate their results, providing an 	specific units and tools for accuracy.
explanation of the differences between	 Understand the difference between
their estimations and actual	standard and non-standard units.
measurements.	

Instructional Objectives & Assessment

Instructional Objectives (students will be able to)	Assessment
 SWBAT make estimations using everyday classroom items to measure. SWBAT measure using appropriate measurement tools. SWBAT compare their estimates with the actual measurement to see how close they were. 	 Monitor students during the activity to see if they can estimate and measure accurately. Review the activity sheet to ensure students understand the estimation process and measurement comparison.

- SWBAT work collaboratively with peers to engage in the activity.
- Observe group collaboration and communication during the activity.

Prerequisite Concepts and Skills:

Students should have a basic understanding of measurement concepts, the ability to make estimations and compare them with actual outcomes, and the ability to collaborate and share findings in a group setting.

Indigenous Connections/ First Peoples Principles of Learning:

Learning is holistic, reflective, experiential, and relational. Estimation and measurement are valuable skills that can be learned through hands-on experience and reflection in a group setting, where students learn together and learn from each other. This lesson shows the importance of experiential learning, encouraging students to observe, being aware of your surroundings and measuring the world around them.

Learning involves patience and time. The ability to estimate accurately takes practice. While students' first guesses may be far from the exact measurement, it's important to understand that developing a good sense of measurement is a skill that grows over time. With more experience, students will become better at making closer estimations as they learn to recognize patterns and relationships between objects and measurements.

Universal Design for Learning (UDL):

Provide students with different measurement tools such as rulers, measuring tapes, and non-standard units like blocks, and use visual examples to demonstrate the activity, such as the stacking of markers. Encourage active participation through group work, allowing students to contribute in different ways. This allows students to be engaged in the activity and provides opportunities for them to express their understanding in multiple ways such as through verbal explanations, written data, or visual representations. This provides support to diverse learning styles and encourages collaboration, critical thinking, and further understanding.

Differentiate Instruction (DI):

During activity, provide extra support and guidance to students by suggesting classroom objects they can use for measurement, such as books, pencils, erasers, or even paper. Guide them in recording their estimations and exact measurements, making sure they understand the process and feel confident in their work overall. For more advanced students, encourage them to think critically about different methods of measurement, such as converting between units like inches and centimeters, or exploring how different measurement tools can provide better accuracy.

Materials and Resources

- Markers
- Classroom items for measurement
- Measuring tape or ruler
- Whiteboard and markers
- Paper and pencils for recording results

Lesson Activities:

	Teacher Activities	Student Activities	Time
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Introdu	uction (anticipatory set – "HOOK"):		
-	Grab students' attention and once		10 mins
	students are settled		
	ask them to "guess how many markers		
	we would have to stack vertically to	- Listen to the teacher's	
	match my height "	instructions and guess how	
_	Show a visual example of what	many markers would be needed	
	stacking markers look like starting	to match the teacher's height	
	from the floor up	- Write their quesses on the board	
	Introduce the concent of estimation	next to their names when called	
-			
	and measurement, discussing when we	- Watch the teacher stack the	
	need to estimate (when we re planning	- Watch the teacher stack the	
	to buy something, or when we don t		
	have a tool to measure).	process. Deflect on the ensuremy of their	
-	Unce students have developed a guess,		
	invite them to come up and write their	guesses.	
	name and guess on the board.		
-	After everyone has shared their		
	guesses, demonstrate the stacking		
	process. Stack the markers on the floor,		
	one by one, until they match your		
	height, allowing students to follow		
	along.		
-	On the board, write, "Mrs. Ferster is		
	markers tall," filling in the		
	blank with the number of markers used		
	to reach your height.	- Listen to the teacher's	
-	Ask the class to share whose guess	explanation of estimation and	
	was the closest to the actual number of	measurement and take note of	
	markers. This has students thinking	the differences.	
	about how their estimations compare		
	to the actual measurement.		
Body:			20 mino
			30 mins
-	Explain now estimation and	- Listen to the teacher's	
	measurement are related but not the	explanation of estimation and	
	same. Estimation is about making a	measurement and take note of	
	thoughtful and educated guess, while	the differences.	
	measurement uses tools or items to		
	determine the exact amount.		
-	Ask students "when do you think		
	estimation is used in real life		
	situations."	- Students share their thoughts	
-	Give students time to critically think and	about when we use estimation in	
	discuss their thoughts and provide time	real life situations.	
	for sharing.		
-	Respond respectfully to students		
	sharing their ideas and provide		
	examples when estimation is useful if		
	need be.		

- - -	Prompt: "Estimation is useful when we go shopping. Can you think of reasons why it is useful for cooking?" Allow students to share their thoughts. Ask students "when do you think measurement is used in real life situations." Give students time to critically think and discuss their thoughts and provide time for sharing. Prompt: "Why might measurement be important if we were working in construction?"	-	Students share their thoughts about when we use measurements in real life situations.	
-	Allow students to share their thoughts. When students respond, agree	-	Engage in critical thinking and thoughtful sharing.	
-	After this discussion, explain to students that they will now work in small groups to measure the height of their group members using items they can find around the classroom. Items could include books, pencils, paper, or even their shoes. Create groups by numbering students off 1 to 3.			
Provie verball	de activity information on the board and y explain the activity			
In thei	r groups, students will:	-	Listen to the instructions for the	
1.	Choose an object in the classroom to		group activity and prepare to	
2	use for measurement. Estimate how many of those objects it	-	In their groups, choose an object	
۷.	will take to measure the height of one		to use for measurement.	
3.	of their group members. Write down their estimation along with the actual measurement they find using their chosen object.	-	Estimate how many of the chosen items will be needed to measure the height of one group member.	
4.	Repeat the process for each group member.	-	then measure the actual height using the chosen item.	
-	Create groups by numbering students	-	Repeat the process for each	
	off 1 to 3.	-	group member. Work together in groups to	
-	Encourage students to work together to estimate first and then measure accurately.		estimate and measure accurately, recording both the estimations and the actual	
-	Remind them that they should keep track of both their estimations and measurements		measurements.	
-	Circulate the classroom and offer help			

questions and things to consider/think		
 Ask students to put away the classroom objects and return to their seats. Review key points, such as, "what is the difference between estimation and measurement? When might we use each?" Ask students how their estimations compared to their actual measurements. Were they close? What did they learn about the accuracy of their guesses? Allow time for students to share their results with the class. They can compare their estimations to their measurements and discuss the different items they used. Ask questions such as: "Was there an item that was especially useful for measuring?" Review that estimation helps us make quick decisions when exact measurement gives us more precision when it's important to be exact. End with this statement: "Both estimation and measurement are important skills we use every day, whether we're deciding how much of something we need or ensuring we have the right amount." 	 Share their results with the class, comparing their estimations to the actual measurements. Discuss the different items they used for measurement and share any interesting findings. Listen to the teacher and reflect on the importance of both skills in everyday situations. 	10 mins

Organizational Strategies:

Use clear verbal and written instructions of the activity.

Ensure all materials are prepared in advance.

Express the importance of putting classroom items back.

Tell students the time remaining for the activity to help students stay on task.

Proactive, Positive Classroom Learning Environment Strategies:

Encourage sharing and respond positively to their thoughts and ideas.

Use prompts to spark ideas.

Ensure that all students feel included and heard during the discussion and the activity.

Show appreciation for effort and creativity throughout the activity.

Show appreciation to students for putting items away.

Extensions:

This lesson can become a daily/weekly game that allows students to practice estimation using standard and non-standard objects. For example, the teacher can ask "estimate how many (insert item) would it take to measure the height of (insert object). The student whose estimation is closest gets a good job! This simple activity encourages students to think critically about how to use everyday items to make an estimation and compare their guesses with actual measurements. It also helps them practice applying measurement concepts to objects they encounter in the classroom.

Extending this lesson further can include filtering it into another subject. For example, extending the concepts of estimation and measurement to science by discussing the importance of measurement in scientific experiments. Have students try simple science experiments where they measure liquids or solids. This allows them to apply what they've learned about measurements in real-world scientific settings and emphasizes the importance of accuracy in scientific inquiry.

Reflections (if necessary, continue on separate sheet):

Reflecting on my lesson plan, I chose the topic of estimating and measuring height because I believed it would be a fun and engaging activity for grade 3 students. Personally, I've always enjoyed learning measurements in both elementary and high school, and I remember one memorable experience where my teacher had us measure the entire classroom and calculate the surface area. That was a fun and interactive way to learn, and I wanted to bring that same excitement into my lesson.

I originally struggled coming up with a solid idea for my lesson plan. It wasn't until I had a conversation with my roommate, who shared a story about how she learned measurement in elementary school, that I felt inspired. Sometimes, it takes a little spark from someone else's experience to encourage my mind to flood with ideas. Once I found some inspiration, everything clicked, and the activity portion of my lesson plan flowed out with ease. It's moments like these that remind me how important it is to stay open to ideas from others, it often brings fresh perspectives and makes the planning process more enjoyable.

However, one challenge I consistently face is the first page of the lesson plan. I find myself jumping back and forth from the BC curriculum to my word document, which can be extremely distracting. It's a bit of a struggle to find the right balance between aligning the lesson with the curriculum and staying on task while write. It's something I need to work on in terms of my thought process and staying organized.

When it comes to delivering the lesson, I think one of the challenges might be having each student engaged. You never know how a lesson will go until you're teaching it, and there's always a chance that some students may struggle to find the fun in the activity. I hope I can keep their interest and make sure they are fully engaged in the learning process. This is something to be mindful of, and I'll need to be flexible and ready to change my lesson if I sense that students aren't as engaged as I'd hoped.

I'm excited and hopeful that I get to implement this lesson into my own classroom, and I'm looking forward to seeing how students engage with the activity. I'm confident that once they experience the hands- on activity freedom of measuring and estimating classroom items, they'll find it enjoyable.