THOMPSON RIVERS UNIVERSITY | Education & Social Work

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

Lesson Title: Exploring Fractions with Visual Model Lesson # 1 Date: Feb 14th, 2025

Name: Jonah Hector

Subject: Math Grade(s): 4

Rationale:

This lesson provides students with a deeper understanding of fractions, focusing on comparing fractions, equivalent fractions, and simplifying fractions. By engaging students through hands-on activities, visual models (fraction circles and bares), and a game, the lesson will foster students' conceptual understanding of fractions as parts of a whole

Core Competencies:

Communication	Thinking	Personal & Social
-Students will discuss their reasoning and share strategies for comparing and simplifying fractions	Students will develop strategies to represent, compare, and simplify fractions using visual tools	Students will collaborate and engage respectfully with peers while problemsolving

Big Ideas (Understand)

Fractions and decimals are types of numbers that can represent quantities

Learning Standards

(DO)	(KNOW)
Learning Standards - Curricular Competencies	Learning Standards - Content
• Represent and compare fractions using models and visual representations • Simplify fractions and identify equivalent fractions • Demonstrate and apply the understanding of fractions to solve problems	• Number concepts: Fractions (ie. Halves, thirds. Forths) and equivalence of fractions (ie. 2/4=1/2) • Mathematical reasoning: Using visual tools and strategies to compare and represent fractions

Instructional Objectives & Assessment

Instructional Objectives (students will be able to…)	Assessment
• Students will be able to compare and represent fractions using visual models, simplify fractions and identify equivalent fractions, work collaboratively to solve fraction-based tasks.	• Formative: Observation during group activities, participation in discussions, and responses during the exit ticket. • Summative: A brief quiz or reflection on comparing and simplifying fractions at the end of the lesson.

Prerequisite Concepts and Skills:

A basic understanding of division and equal parts (i.e., dividing a whole into parts), familiarity with fractions such as ½, ¼. 1/3, etc.

Indigenous Connections/ First Peoples Principles of Learning:

Learning is holistic, reflective, experiential, and relational: students will engage with hands-on visual tools to explore fractions and connect the learning to real-world examples

Learning is embedded in memory, history, and story: Collaborative group discussions and problemsolving will honor students' diverse perspectives, reinforcing learning through shared experiences.

Universal Design for Learning (UDL):

Representation: visual models, such as fraction circles and bars, will support students in understanding fractions Expression: Students will have multiple ways to demonstrate their understanding, including through visual models and verbal explanations Engagement: The interactive game and group tasks will motivate students and provide opportunities for active participation

Differentiate Instruction (DI):

Provides students who need additional support fraction circles or fraction bars as manipulative to help visualize fraction comparison or a laptop or tablet to help students with attention disorders Provide students who excel fraction problems that require finding common denominators and comparing fractions with different denominators

Materials and Resources

- Fraction circles and bars (physical manipulatives)
- Whiteboard and markers
- Printed fraction comparison cards
- Computer/tablets (optional) with fraction games (ie. Online fraction war games)
- Fraction practice worksheets

Lesson Activities:

Teacher Activities	Student Activities	Time
Introduction (anticipatory set – "HOOK"): -Show a picture of a pizza with slices. Ask "How many parts make up a whole pizza?" -Introduce the concept of fractions using the pizza image (plan a pizza party based off of how many pies are needed for the amount of students in class)	-Students share how many parts they think make up a whole pizza -Students listen and discuss fractions in terms of parts of a whole	5 mins

Body: -Introduce fraction circles to represent different fractions (ie. ½, ¼, 1/3) relate it to pizza and then bring in bars to compare -Demonstrate comparing fractions with the same denominator using visual models (ie "this pizza is half eaten while this pizza is a quarter eaten, what do you notice about the number of pieces?) -Show how to simplify pizza by showing that 4/8's of pizza is the same as ½ pizza -Divide students into small groups for a fraction game (fraction wars) split the deck of fraction cards between partners with fractions and a symbolic pizza on them and get them to play war against each other to practice fraction value. Students flip over the cards at the same time and compare the fractions and the	-Students use fraction circles/bars to identify and compare fractions in the context of pizza -Students practice comparing fractions and discuss their reasoning. -Students simplify fractions using manipulatives and explain their answers -Students play the game "Fraction War," comparing fractions in a fun and interactive way	10 mins 10 Mins' 10 mins

student with the greater fraction keeps the pair of cards, the student with the most cards at the end wins. Be sure to use the language of what number is greater since fractions are still numbers. Go around during the activity and ask students to prove to me how they knew they had the greater fraction. Be sure to pay attention to common fallacy such as mistaking a larger denominator to mean a greater number (ie. ¼ > 1/3)		
Closure: Review key concepts, ask: "What is a fraction? How do we compare fractions?" Potential Exit Ticket would be to write down one fraction you compared and explain how you did it	-Students summarize their learning, share strategies, and ask questions -Students write down their exit ticket response	5 mins 5 mins

Organizational Strategies:

-Group students into pairs or small groups for the game to encourage peer collaboration and discussion
-Set clear expectations for game rules and participation

Proactive, Positive Classroom Learning Environment Strategies:

-Use positive reinforcement to encourage collaboration and participation during group activities
-Model respectful communication and peer interaction during the game and discussions

Extensions:

-Could Extend into an art lesson on drawing portraits using different fractions of the page to split up the work
-Allow students to explore real-life scenarios involving fractions like cooking and sharing food

Reflections (if necessary, continue on separate sheet):

I ultimately chose this topic because I remember the difficulty I had in learning fractions as my teacher had a very cut-and-dry approach to teaching it. When I was unable to associate decimals to fractions my teacher grew frustrated with me and kept throwing homework at me converting decimals to fractions and vice versa without assessing my learning and seeing it was purely an issue of me not being able to visualize it. Once a TA was able to help me visualize it by relating it to food and hockey I was able to grasp the concepts easier and move forward. Thus, I plan to make a lesson that is interactive and exciting in a way that will make students want to learn how to use fractions. In making this lesson plan I had a hard time inserting myself into the lesson to implement rich tasks and number talks. I have to run through an activity to find out where the good talking points are and what I can do to influence students to engage in the rich tasks. To remedy this I ran through the actual activity with a friend roleplaying as a student to get a better idea of how I can tweak the lesson activities to best support the students learning. I plan to implement this technique in my future practice to ensure that my lessons are polished and ready to influence rich learning in my class. Overall, I think the lesson should have minimal difficulties in delivery, however, I could see there being issues during the war game if two students are paired up who don't really understand the concepts since their would be lots of arguing over who they think is right. Thus, I plan to pair up the students who have difficulty with a advanced student to minimize any frustration between pairs.