Integrating Computing Across the Curriculum

Title: Equivalent Fractions / Comparing Fractions
Grade(s): 4th Grade
Subject(s): Math
Author: Moorer, Moss, Harris, and Parker
Overview: The class will watch a Prezi and a Scratch animation presentation, and discuss (as a class and in small groups) fraction equivalence and ordering. After reviewing fractions and how to compare fractions, students will work in groups to create their own poster board project to demonstrate understanding of the lesson.

Content Standards:

MA(4) [4-NF1] Number and Operations – Fractions
Extend understanding of fraction equivalence and ordering.

12. Explain why a fraction $^{a}/_{b}$ is equivalent to a fraction $^{nxa}/_{nxb}$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

MA(4) [4-NF2] Number and Operations – Fractions
Extend understanding of fraction equivalence and ordering.

13. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators or by comparing to a benchmark fraction such as $^{1}/_{2}$.

Recognize that comparisons are valid only when the two fractions refer to the same whole.
Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Local/National Standards:

Primary Learning Objectives:

1. Students will be able to identify and write / illustrate equivalent fractions and explain why the fractions are equivalent.
2. Students will be able to compare two fractions with different numerators and record comparisons using the symbols <, =, and >.

Additional Learning Objectives:

Approximate Duration of Lesson: 3 days / 1 hour each day

Materials and Equipment:	Poster board, construction paper, markers, crayons, glue stick, and scissors for each group.
Technology Resources Needed:	Desktop or laptop computer, Scratch lesson presentation *"Pizza Fractions"*
Background/ Preparation:	Students should have basic understanding of fractions; numerator, denominator, and comparing numerical values.
Procedures/Activities:	Step 1 Teacher will ask the students: "What do you know about fractions?" "Are all fractions equal?" "Which is larger, ½ or ¼?" "How do you know?" "If one group has 2 people and they share a pizza and another group has 4 people and they share the same size pizza, which group will get more slices of pizza per person?" "How do you know?" Record information on the board. Step 2 Show students a Prezi that defines fractions, explains equivalent fractions, and compares fractions with different numerators and denominators. Following the Prezi, students will watch a Scratch animation that reviews what they had just learned. Step 3 Divide students into groups. Ask questions about the animation. Students discuss what they have learned in small groups. Refer back to the Scratch animation if necessary. Step 4 Students work in groups to create their own poster project. Projects should include pictures with written explanations of at least two pairs of equivalent fractions and compare 3 pairs of fractions as greater or less than one another (< or >). Step 5 Students present their posters to the class.
Attachments:	Prezi on Fractions Scratch animation: *"Pizza Fractions"* Rubric for *Comparing Fractions* Poster
Assessment Strategies:	Rubric assessing whether directions were followed for poster project, accuracy of fractions presented, and clarity of poster presentation.
Extension:	Students demonstrate understanding of fractions by creating a foldable to display on bulletin board. Students create their own Scratch presentation to demonstrate understanding of fractions.
Remediation:	Students could each be given a bag of M&Ms and asked to model fractions by separating different colored M&Ms from the rest of the M&Ms. Students could write fractions based on the number of a specific color M&Ms to the total number of M&Ms in the bag. Students will draw pictures to represent each fraction.

Rubric for *Comparing Fractions* Poster
15 points possible

	1	2	3
Equivalent Fraction Illustrations	Pictures are missing or do not illustrate equivalent fractions.	Contains pictures illustrating one pair of equivalent fractions (two fractions total).	Contains pictures illustrating two pairs of equivalent fractions (four fractions total).
Equivalent Fraction Explanations	Explanations are missing or are incorrect.	Correctly explains how one pair of fractions is equivalent.	Correctly explains how each pair of fractions is equivalent.
Comparison of Unequal Fractions	Does not use < or > signs or incorrectly compares each fraction pair.	Correctly compares one pair of fractions (two fractions total) using < and > signs.	Correctly compares two pairs of fractions (four fractions total) using < and > signs.
Group Work	Does not work well with group.	Works well with group, but does not contribute much to project.	Works well with group to contribute to successful project.
Presentation	Needs to work on presentation skills.	Uses good, developing presentation skills most of the time.	Uses exemplary presentation skills throughout presentation (eye contact, facing front, speaking audibly).