

Project Rationale

Based on a Design by Sally

**all names and identifiers have been masked/changed to retain anonymity*

Abstract

In the following pages, I will be describing in detail my design for a new math manipulative. Using rings, I will be creating a Sally Circles that helps students understand and compare fractions. Each ring will represent a different fraction, from halves to eighths, and will create a visual representation of the difference and similarities between different fractions. I created this project with a third grade student I tutor in mind, and I am hoping that it will help him understand fractions a bit better. I will also be discussing the rationale, design, and results I hope to achieve with this design. I aim to create a project that will help students everywhere.

Sally Circles

This Sally Circles is going to be called Sally Circles (like Katie Cubes, but Sally Circles sounds better). Each circle will have grooves that divide it up into different, unmarked fractions. There will be 8 rings, for a whole, halves, thirds, fourths, fifths, sixths, sevenths, and eighths. The rings will all encircle a center spoke. The rings will be unmarked so students can put together the rings in any order they so choose. I believe that, by using the grooves, kids can compare different fractions. They could put a half on top of a fifth and see how much bigger a half is than a fifth. They can compare two fifths to three sixths. They can compare as many fractions as they want. The point is that these fractions are able to be looked at from all sides and compared in many different ways, so that way students can visualize fraction comparison.

What is the user going to learn?

The main goal of this manipulative is to help students learn how to compare fractions. For many students, they understand numbers, but fractions are tricky because they require students to visualize that bigger numbers are actually smaller, and smaller numbers are bigger. Additionally, when its a fraction that doesn't necessarily match up without making a common

denominator, like halves and fifths, students can have difficulty comparing these fractions. This Sally Circles will give them a visualization of what the basic fractions look like, from halves to eighths. These rings will be mobile, and able to be assembled in any way a student wants, so they can compare many different fractions, allowing them to create comparisons before students reach the point in their math careers where fractions come easier to them.

Mathematical Learning

One of the main things that I've learned about learning is that everyone learns the same way, which is intaking information, coming up with a strategy to figure out the problem asked of you, and then creating an explanation. Our job as math teachers is to give students the problems and help them develop their own ways of solving them, and then confirming their solutions to be either correct or incorrect. I am providing a Sally Circles that gives students multiple ways of application, shows several different aspects of fractions, and creates a way to compare. All Sally Circless need to be able to function in multiple ways, and provide different services, and Sally Circles provides that. It also gives students room to interpret and that is the main point of a Sally Circles. I hope that students utilize it the ways that I want them to.

Parameters of Success

The Sally Circles will be a success if students can use it to help them understand fractions. The first student that helped me come up with this idea was a third grade boy I tutor named P. P gets frustrated easily by math because he doesn't like to show his work, nor does he like to spend a lot of time on math. However, when he has multiple Sally Circless, he uses them together and finds his answer. Any way that he can do things quickly, he'll do it. So, for me, if this Sally Circles can help P even slightly, then the Sally Circles are a success. If the Sally Circles helps him visualize fractions to the extent that he can then answer problems quickly and

fluently, they're a success. All Sally Circles should be a stepping stone to children being able to work independently in their minds, and if Sally Circles work as a stepping stone, they are a success. Also, if I can sell it and make money off of them, then they're definitely a success, though I'm not sure if that's a success based on learning or based on me needing money.

Parameters of Failure

For Sally Circles, the only parameter of failure will be if not a single child can gain a benefit from them. I do not believe that this will happen, but nothing is a failure if it can help someone. As an educator, it's my job to understand that not all students visualize the same way. Each student comes up with their own strategies, and so if my tool does not work to help students create strategies then it is not working properly.

Testing

I will test multiple versions of this project. One will have the rings all the same size. Another will have them sized in ranking order. I will see which version helps students understand fractions and comparisons easier. I'd like to take Sally Circles into several third grade classrooms, where fractional instruction begins, and have students use them to answer problems. Several classes will get the circles of the same size, several will get the circles of differing sizes, and I will take copious notes on a graded scale to see which format of the circles works best for them. I will then mass produce this product and become very rich.

Conclusion

I believe that tools are necessary for children who are developing math skills to create strategies. The tools they use can become mental tools that they simply visualize. They need to use multiple tools to create these mental strategies. Sally Circles will be another tool that can

help students learn. I hope to create a way for students to understand fractions, and I hope that these Sally Circles are that way.