Developing Fraction Proficiency in Fourth Grade Mathematics
Alexis Perno, Salisbury University & Andrea Widdowson, Wor-Wic Community College
Mentor: Dr. Jathan Austin, Salisbury University

Empirical Teaching and Learning Trajectory:

Mathematical proficiency, as defined in the Common Core State Standards Initiative (CCSSI, 2010), elaborates the concept as: "an understanding of the mathematical facts and procedures, a range of appropriate tools, and a variety of problem-solving strategies. The proficient student does much more than simply recall information or engage in rote procedures; instead, the student processes information flexibly and strategically in solving a wide variety of problems." This definition concurs with the National Council of Teachers of Mathematics (NCTM) in their 2000 position statement: "To be mathematically proficient, all students must develop a strong foundation in understanding the concepts and operations of mathematics in order to solve problems, to reason, and to communicate effectively within mathematics and in other disciplines." This definition is consistent with河南学会的共识：发展数学专业性, must develop a strong foundation in understanding the concepts and operations of mathematics in order to solve problems, to reason, and to communicate effectively within mathematics and in other disciplines.

In order to work with fractions in the pizza context, the children exercised skills in counting, measuring, and creating the correct fractions to represent the amount of driveway paved. It was challenging, however, for them to associate the activity with truly being realistic. In addition to being able to see the pizza, students especially, visual aids proved to be very useful when solving problems. When students were given the opportunity to see the results of their actions, it gave them a chance to consolidate the information they were receiving. After putting the tasks into practice, the students were able to see the benefits of the visual aids. The visual aids allowed them to use the fractions they were learning in a practical way that made sense to them.

The children were then able to apply the skills they had developed to a variety of activities, including creating bar graphs and using bar style manipulatives. This allowed us to see where each child stood in terms of understanding and reacting to students' current cognitive structures. (p. 7)

As the children worked on the pizza context, they became more comfortable with using fractions. They were able to use the fractions they were learning in a practical way that made sense to them. This helped them to see the benefits of the visual aids. The visual aids allowed them to use the fractions they were learning in a practical way that made sense to them.

Throughout the project, the students were encouraged to work in pairs, as this helped them to consolidate the information they were receiving. After putting the tasks into practice, the students were able to see the benefits of the visual aids. The visual aids allowed them to use the fractions they were learning in a practical way that made sense to them.

Teaching with the use of the visual aids involved allowing the students to reason about relative sizes of fractions and fraction equivalence. This was helpful in identifying misconceptions and promoting understanding. The visual aids allowed the students to reason about relative sizes of fractions and fraction equivalence. This was helpful in identifying misconceptions and promoting understanding.

Throughout the project, the students were encouraged to work in pairs, as this helped them to consolidate the information they were receiving. After putting the tasks into practice, the students were able to see the benefits of the visual aids. The visual aids allowed them to use the fractions they were learning in a practical way that made sense to them.

Teaching with the use of the visual aids involved allowing the students to reason about relative sizes of fractions and fraction equivalence. This was helpful in identifying misconceptions and promoting understanding. The visual aids allowed the students to reason about relative sizes of fractions and fraction equivalence. This was helpful in identifying misconceptions and promoting understanding.

Teaching with the use of the visual aids involved allowing the students to reason about relative sizes of fractions and fraction equivalence. This was helpful in identifying misconceptions and promoting understanding. The visual aids allowed the students to reason about relative sizes of fractions and fraction equivalence. This was helpful in identifying misconceptions and promoting understanding.