
Reflection on 6th grade public research lesson on January 12, 2004 at the St. Josaphat School

In preparation for the lesson on area and perimeter there were several concepts that we wished to include. Our team wanted to encourage critical thinking, and wanted the students to apply geometric properties they had learned to the task at hand. Upon observation of the lesson, we felt encouraged in relation to both of these aspects. Students seemed well aware of the shapes presented to them, as well as how these shapes related to one another. In the days following the research lesson, students demonstrated proficient competency in the application of geometric properties in generating formulas for finding area.

In addition, the lesson and the problem created for the lesson proved to be a successful thought-revealing task. By watching how students approached the problem as individuals, and how they collaborated with one another, the teacher, as well as observers, were allowed an “inside look” as to how the students were thinking. We were able to see students drawing shapes within shapes, which further demonstrated their understanding of relations among the shapes with which they were working. Not all students who solved the problem correctly approached the problem in the same way, and by sharing how they came to their individual answers, students were encouraged that there is more than one way to solve a problem.

During lesson observation and the debriefing session certain parts of the lesson were mentioned as possible areas for revision and improvement.

These areas were as follows:

Students each worked on their own individual polygon. Should they have worked in pairs or small groups?

We chose to create our own manipulatives. Do the shapes need to be fine-tuned?

Certain students displayed highly erroneous thinking. Should students have had additional experience with area and “square units?”

Individual vs. Cooperative Group Learning

Initially, the team thought that each individual students should have ownership of and responsibility for his/her own project. In addition, the comparative nature of the problem lent itself to students working individually as opposed to collaboratively. Upon reflection and observation, this line of thinking may have led students to see the problem solving activity as a competition rather than as a shared learning experience. Some students seemed reluctant to share and build upon each other's ideas, which may have hindered the problem solving at certain tables. An alternative strategy may be to allow students to work in pairs to create a polygon, as well as to encourage students to work together as a table. Each table would consist of four students, two polygons. This method could provide students with a common task, and, therefore, a shared experience with which to encourage discussion.

Fine-Tuning the Manipulatives

In establishing the lesson, we knew that we wanted to create our own set of manipulatives in order to include all the shapes with which we wanted the students to experience area and perimeter. Upon reflection and observation of student performance, we may have chosen to adjust some of the measurements of those shapes. Certain shapes seemed troublesome for students, and this could be alleviated by changing some of the dimensions and proportions between different shapes. For example, the base of the

trapezoid (3") and the hypotenuse of the large triangle (approx. 2.8") led to students making incorrect assumptions about those particular sides; namely, that they were equal. This led to difficulty not only in finding area and perimeter, but also in creating their original polygons. If the basic measure was 2", rather than 1", the differentiation between sides would be greater, and student measurement would be done more quickly and accurately.

Erroneous Student Thinking

By allowing students several days of experience with the shapes included in the polygon lesson, our hope was that they would call upon this previous knowledge (much of which was recorded in their math notebooks) during the lesson. What we found, however, was that many students, while they recognized the shapes, did not seek out their own recorded information. If students had repeated experience in which recalling previously recorded knowledge (i.e. notetaking) was advantageous to their learning, they may have been more inclined to refer to those notes in this situation. This strategy is a long-term schoolwide goal. In relation to this lesson, students did not most effectively use all of the resources available to them. In some cases, students failed to recall information from previous years relating to area and perimeter. Perhaps the inclusion of another lesson before the research lesson in which students informally work with square units with manipulatives such as geoboards would alleviate some of their confusion.

An examination of the shapes, numbers, and strategies used in this lesson should be made by the individual teacher. Considerations should include students' previous knowledge, past opportunities to work collaboratively, and length of each individual lesson in the unit, as well as students' computational abilities. As always, the lesson should be modified to meet the needs of the individual class to which it is being presented.