**Thematic Unit: Perimeter, Area, and Volume**

**Erika Bradshaw**

# Evaluation Document

## Learner Reaction

1. Lesson 1
   1. The beginning review went quickly and smoothly. Most students could easily name the shapes that were reviewed.
   2. Introduction of vocabulary for 3D shapes went pretty smoothly too. There were only three new vocabulary words: face, edge, and vertex. The students seemed to enjoy touching the 3D shapes and determining the faces, edges, and vertices of each shape.
2. Lesson 2
   1. The students really liked this lesson. They had a great time building their shapes, drawing them, and determining the perimeter.
   2. Students did get a bit confused when I encouraged them to create unconventional shapes instead of straight squares or rectangles. They could no longer simply use base and height, they had to add up the measurements of each edge.
3. Lesson 3
   1. Students seemed to enjoy determining the perimeter and area by counting the edges and squares. They had a harder time relating perimeter and area to each other.

## Meeting Objectives

1. Lesson 1
   1. The objective was to establish vocabulary for the unit. The students met the objective as demonstrated by their task sheet completed in class.
2. Lesson 2
   1. The objective was partially achieved as demonstrated through their homework scores. The students seemed to understand perimeter with squares and rectangles, but not in irregular shapes. As a designer, I think irregular shapes should be included in a separate lesson with a different objective.
3. Lesson 3
   1. Students met the objective of understanding area of 2D figures, limited to squares and rectangles. This was demonstrated through students work in class and their completion of the computation portion of the task sheet. They were less successful in discovering the relationship between perimeter and area on their own, the second objective.

## Facilitator Evaluation

1. Lesson 1
   1. The lesson went smoothly. The students worked well in the cooperative groups to identify the faces, edges, and vertices of each 3D shape.
2. Lesson 2
   1. The students did a great job of building squares and rectangles.
   2. I don’t think I should have encouraged them to create unconventional shapes. They couldn’t use just base and height any more and they became confused. I think I should have saved unconventional shapes for a separate lesson since the objective of this lesson was to understand perimeter. I could have concentrated more on just base and height, then in a subsequent lesson, I could have correlated edge with base/height.
3. Lesson 3
   1. Students did well counting the squares and finding the perimeter and area. They had a harder time relating perimeter and area to each other. They needed a lot of prompting to verbalize the relationship (i.e. that both use the same measurements, perimeter adds base + base + height + height, but area multiplies base x height.)
   2. I think they had a more difficult time with the relating part of the lesson because they aren’t used to relating one mathematical idea with another, even when they are similar. For instance, students still have a difficult time relating fractions and ratios and often need reminding when we review these concepts.
   3. I also think I needed to do a better job of stating perimeter and area as what they were finding (even though it was listed on their task sheets). I should have explored the idea of perimeter being a linear measurement more and that area was actually determining how many squares could fit inside a figure.

## Materials and Technology

1. Lesson 1
   1. The supplies and technology listed were sufficient for the lesson. The 3D shapes were great for students to handle and meet the objective.
2. Lesson 2
   1. The centimeter blocks that we used were easy to assemble and disassemble.
3. Lesson 3
   1. The task sheets should have included more leading questions to help students discover the relationship in the objective.

## Environment

The environment for the lesson implementation functioned well. The student desks were already set up in cooperative groupings. The students are used to cooperative tasks and work well in group settings. The room had the technology listed available with easy access.

## Continuity and Conformity

1. Evaluation of the development document process:
   1. I noticed that I had used two terms for the same thing: rhombus and parallelogram. Since a parallelogram is more encompassing than a rhombus. I decided to switch all verbage to parallelogram.
   2. I removed the social studies connection from lesson 2. It was not very relevant to the topic and I was stretching to make a connection. Instead, I moved it to lesson 4, where we discuss the idea of a knight with a task of solving math puzzles. This fits better with the context of the language arts connection, the reading of *Sir Cumference and the Isle of Immeter.* Also, in lesson 1, we can discuss the Greek root of “poly” and “hedra”.
   3. I extended lesson 8 into two different class periods. Prior to the final unit test, I wanted to have students demonstrate:
      * 1. How to differentiate between perimeter, area, surface area, and volume by giving examples, illustrations, and scenarios.
        2. How to differentiate between perimeter, area, surface area, and volume through provided scenarios.
      1. I felt this provided a more comprehensive review for the unit test.
2. Evaluation of the implementation/trial phase:
   1. Lesson 2 could have been broken into two parts: (1) the construct a concept where students build shapes and count edges for perimeter using the vocabulary of base and height, and (2) a construct a concept lesson where students build unconventional shapes and count edges for perimeter, substituting edges for base/height. This would have prevented some confusion and helped the struggling students solidify the concept.
   2. Lesson 3:
      1. This lesson could have included more leading questions to help students determine that perimeter is linear and that area was finding the number of squares that could fit inside a figure. I assumed that students would infer this from the task sheet and I think I needed to be more explicit. I also could have included more leading questions to help students determine the relationship between perimeter and area.
      2. The Design document also listed that students would understand area of 2D figures that included parallelograms and triangles. As a facilitator, I noticed it actually only included squares and rectangles. The parallelograms and triangles weren’t included on the task sheet.
      3. A separate lesson was inserted after this to help students develop formulas for triangle and parallelogram areas. Students were asked to decompose triangles and parallelograms into rectangles. They were successful fitting the triangles and parallelograms into the rectangle, but needed a lot of prompting to create formulas. Again, the task sheet needed more leading questions to help students create the formula.