**SLED Implementation Plan**

|  |  |
| --- | --- |
| **Your Name(s**): Stephanie Beiswenger | **Unit BIG IDEAS:** Volume, Surface Area |
| **Grade Level**: 5th Grade Math | **Key vocabulary**: surface area, volume, nanotechnology, billionth, scale |
| **School**: Riverside Intermediate | **Unit prior to and following this unit**:Skills taught prior to this activity are: area of rectangles and triangles to find the area of complex shapes by dividing them into basic shapes.  Skill taught following this activity are: interpret percents as part of a hundred. Find decimal and percent equivalents for common fractions and explain why they represent the same value. |
| **Total time (hours or class sessions):**  Two class periods @ 80 minutes each | **Estimated starting date in the school year:**  The week of December 7, 2011 |

|  |
| --- |
| **Unit Objectives**:  By the end of this unit, students will be able to:   1. Find the surface area and volume of rectangular solids using appropriate tools. 2. Design a red ice cube that will still have some solid form for ten minutes. |
| **Core Indiana Academic Standard to be addressed**: **5: Measurement**  Standard Indicator(s) to be addressed:  5.5.1  Understand and apply the formulas for the area of a triangle, parallelogram and trapezoid  5.5.3  Use formulas for the areas of rectangles and triangles to find the area of complex shapes by dividing them into basic shapes  5.5.4  Find the surface area and volume of rectangular solids using appropriate units |
| **Materials and Resources (available in school and/or will need to get):**  At Home:  12 envelopes of Knox unflavored gelatin  9 boxes of Jello (red)  Boiling water  8 x 12 pans  Pam cooking oil spray  Knife  Spatula  For School:  (Jello)  Small paper plates  Plastic knives  Rulers with centimeters  Design notebooks  (Sugarnano)   |  | | --- | | **Overview of Lesson Activities:**  ***How will you introduce the unit? What kinds of questions will you ask to engage students?***   * Brain Pop: Metric Units and Nanotechnology * Have students take notes on the algorithm for calculating surface are (clown face) showing an example problem and its solution using 6 single tab foldable   ***What kinds of hands-on activities will students engage in?***   * Measuring Jello rectangular solids to calculate the surface area, cutting Jello into halves then re-measure and calculate surface area of smaller pieces, if time permits, then cut into fourths re-measure and calculate surface area.   ***How/when will you use the engineering design process?***   * After students have an understanding of surface area and the relationship with dissolvability the design challenge of Rodrigo’s Lemonade/Ice Cube design challenge will be introduced.   ***How/when will you introduce the science concepts and vocabulary?***   * Using Brain Pop, Design Notebooks, and clicker vocabulary the day before the Design Activity begins.   ***How will you connect science concepts and vocabulary to what students are doing?***   * Using the words in the context of classroom instruction, review using flash cards (in design notebook envelope: Know/Don’t Know), clickers   ***How will the lesson build on your existing curriculum?***   * This lesson will give hands on experience and real world application of volume and surface area.   ***How will you conclude the unit?***   * The lesson will conclude by using the Jello as a model of Rodrigo’s red ice cubes to see which cubes will last 10 minutes   ***Outline the day by day timeline of activities.***   * The day before the activity is to begin I will introduce the vocabulary to the students using a layered book foldable in their Design Notebook. * First Day: In students’ design notebook students will use one tab foldable (using 6 one tabs) to introduce the algorithm for surface area.   ***What handouts, worksheets, or other classroom materials will you create and/or use?***   * Promethean slide show that corresponds with the surface area foldable | | **Cross-curricular connections:**  Language Arts: Write an ad campaign for Rodrigo’s Lemonade Stand that highlights his ice cubes.  Science: Describe the weight and volume and measure the weight and volume of various objects  Determine if matter has been added or lost by comparing weights when melting, freezing or dissolving  a sample of a substance | | **Assessment:**  Common Assessment for fifth grade math students: Standard 5.5.4: The learner will be able to find the surface area and volume of rectangular solids using appropriate units.  Students who score 85% or above on the common assessment will have mastered the concept.  Vocabulary check. Let students choose 2 of the 5 vocabulary words to draw and define.  Check Design Notebooks with a 0,1,2,3, Rubric according to completeness taking personal best into consideration. |   Clear plastic cups  Plastic spoons  Table sugar  10X sugar  Sanding sugar  Timing device  Design notebooks  Aluminum foil  Griddle from home |