Fun with Measurements and Conversions.

A Collaboration between T.G. Smith Elementary School, Springdale, AR
and
NWACC Math Structures II, EMPACTS Math Reasoning and Physical Science Courses

Stacy Espinosa and Martin Keith
NWACC Math Structures II, pre-service teachers collaborate with Elementary School faculty as they develop activities for K-6 learners.
Project Overview

Pre-service teachers gain professional experience as they developed K-6 learning activities, based on Arkansas State Math Frameworks, and administrated the activities with 2nd grade learners.
How did our project serve the community?

Our project served the community by teaching young children about measurements. Also, information we learned will help us to teach other children in the future.
What is the college level Structures II content that I learned?

- We learned about density.
- Area, volume, and length.
- We used this to create a measurement activity with 2nd graders.
What technology was used?

- Computers
- Microsoft Word
- Microsoft Excel
- Camera.
How did we prepare for this project?

- Stacy Espinosa
  1. Contacted School.
  2. Created proposal.
  3. Created Power point.

- Martin Keith
  1. Created permission slip.
  2. Gathered materials.
  3. Worked on website.

- We went to the school on March 5\textsuperscript{th}, 12\textsuperscript{th}, & 19\textsuperscript{th} from 1:00-1:45pm.

- I collaborated with Kim Simco principle of T.G. Smith and Mrs. Mackey 2\textsuperscript{nd} grade teacher.
Math Outreach Project
A collaboration with T.G. Smith Elementary School

- We went to T.G. Smith Elementary
- We taught 2nd grade students the importance of using a standard unit to measure items.
- We did an activity measuring with non-standard items like Starburst, noodles, and popsicle sticks.
Math Learning Objectives

- The goal of our project was to teach the children about

  - Standard and non-standard units of measurement.
  - Estimation
  - Approximation
  - And conversions.
Arkansas 2nd grade Math Learning Objectives

- M.13.2.11 Estimate and measure length, capacity/volume and mass with nonstandard units to recognize the need for standard units
- DAP.16.2.1 Make simple predictions for a given set of data
- M.13.2.10 Select appropriate customary measurement tools (rulers, balance scale, cup and thermometer) for situations involving length, capacity, and mass
Week One

- The first week we took three different types of noodles.
  - Ziti
  - Elbow
  - Spiral.
- Students made three lines using rulers.
  - 2 1/2 in
  - 4 1/2 in
  - 6 in
• Students used 3 different noodles to measure each line.
• We did this to introduce students to nonstandard instruments for measuring.
• Students enjoyed using the noodles to measure.
• We displayed results on the board to show students that each person could have a different answer.
• This led to an explanation of approximate values.
Week 2 Measuring with popsicle sticks and Starburst.

- We had students estimate number of sticks and starburst to measure items around the room.
- Students then measured items using the sticks and starburst.
- Wrote down all answers and discussed approximation.
**Week 3 Conversions.**

- We explained conversions with students.
- Students converted the popsicle sticks to inches.
- Tested children on standard and non-standard units of measurement.
Charts from Noodle Measurements.

Student Response: Number of Noodles It Took To Measure 2 1/2 in Line

- Elbow
- Long
- Curly
4 ½ in Line.

Student Response: Number of Noodles it Took to Measure 4 1/2 in Line.
6in line.

Student Response: Number of Noodles It Took To Measure 6in. Line.
Children’s estimations for desk.

**Estimation # of popsicle sticks to measure desk.**

**Estimation # of Starburst to measure desk.**
# Tables

<table>
<thead>
<tr>
<th>Item being measured</th>
<th>Unit</th>
<th>Estimation</th>
<th>Actual</th>
<th>Conversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desk</td>
<td>stick</td>
<td>3</td>
<td>4</td>
<td>24 inch</td>
</tr>
<tr>
<td>Mrs. hockey desk</td>
<td>stick</td>
<td>6</td>
<td>8</td>
<td>48 inch</td>
</tr>
<tr>
<td>Reading Desk</td>
<td>stick</td>
<td>2</td>
<td>2</td>
<td>12 inch</td>
</tr>
<tr>
<td>Starburst</td>
<td>stick</td>
<td>17</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Starburs</td>
<td>stick</td>
<td>14</td>
<td>28</td>
<td></td>
</tr>
</tbody>
</table>

- 3 elbow noodles
- 2 long noodles
- 2 curly noodles

- 6 elbow noodles
- 5 long noodles
- 5 curly noodles

- 4 dang noodles
- 5 elbow noodles
- 4 curly noodles
What did the children learn?

Assessment

- Students learned and understood standard and non-standard measurement.
- They learned the importance of having a standard measurement.
- Learned more about estimation and approximation.
- Learned how to use a chart to keep information.
Assessment Results

- We tested the students on standard and non-standard units of measurement.
- Here is a sample of the test we gave them.
What did we learn from the experience?

- How to create lesson plans.
- How to create and plan activities.
- How to assess the students understanding.
- How to work as a group.
- How to teach the children.
References

- Dianne Phillips - EMPACTS coordinator
- William Hammock - Math Structures Instructor
- Kim Simco - Principle T.G. Smith Elementary
- Mrs. Mackey - 2nd Grade Teacher.