



DOMESTIC DEPENDENT ELEMENTARY AND SECONDARY SCHOOLS

School Improvement Action Plan

School: Richard G. Wilson Elementary School

Date: Revised Oct. 2009

<p>Goal #1 Statement: All students will increase their ability in problem solving.</p>		
<p>Type of Goal: (Mark as appropriate) <input type="checkbox"/> Knowledge <input checked="" type="checkbox"/> Application <input type="checkbox"/> Behavior <input type="checkbox"/> Attitude</p>		
<p>Essence: Students will clearly demonstrate their mathematical thinking and reasoning using by a variety of problem-solving strategies.</p>		
<p>Support Data (used to select the goal):</p> <ol style="list-style-type: none"> 1. <i>Terra Nova Multiple Assessment 2nd Edition</i>; National Percentile Trend Ranges from SY 2004-2009; Grades 3rd-5th. 2. <i>Terra Nova Multiple Assessment 2nd Edition</i>; Trends from SY 2006-2008; Grades 3rd-5th.High Mastery 3. <i>Terra Nova Multiple Assessment 2nd Edition</i>; Trends from SY 2006-2008; Grades 3rd-5th.Objective Performance Indicators 4. <i>NCTM Principles and Standards of School Mathematics</i>; 2000 5. “ Mathematical Thinking and Problem Solving”, 1994 	<p>Standardized Assessment(s):</p> <ol style="list-style-type: none"> 1. <i>Terra Nova Multiple Assessment, 3rd Edition</i>, (Grades 3rd -5th) 	<p>Local Assessment(s):</p> <ol style="list-style-type: none"> 1. Teacher-made Assessment Grades K-5th (Protocol-Same day, same length of administration by grade level, no teacher prompts) 2. Student work samples will be assessed quarterly using analytic or holistic scoring guides (rubrics). Grade levels will administer the same week and use the same grade level exemplars.
<p>Strategy/Intervention:</p> <p>Students will solve mathematical tasks and demonstrate their mathematical thinking and reasoning by using the following [problem-solving strategies:</p>		<p>Research supporting this strategy/intervention:</p> <p>“Mathematical Communication in the Classroom”, <i>Early Childhood Education Journal</i>; June 2005. Summary: Students’ mathematical reasoning, thinking, and problem solving are improved by having a classroom rich in mathematical discourse. Teachers should foster math communication in</p>

<p>Act Out or Use Objects Make a Picture or Diagram Use or Make a Table Make an Organized List Guess and Check Use or Look for a Pattern Work Backwards Use Logical Reasoning Make it Simpler Brainstorm</p>	<p>their classrooms. Students, especially at the primary level, build more conceptual understanding through the use of discourse.</p> <p><i>Elementary and Middle School Mathematics Teaching Developmentally</i>, by John A. Van De Walle. Summary: For mathematical instruction to be effective, teachers need to emphasize the importance of working on problems, not merely on getting the right answers (Burns). The Three-Part Problem Solving instructional model allows students to clarify, explore, and summarize mathematical concepts through peer interaction and discourse (Van de Walle, 2007).</p> <p><i>Principles and Standards for School Mathematics</i>, NCTM; 2000. Summary: The NCTM standards emphasize the importance of teachers maintaining an environment in which all students develop mathematical thinking through monitoring, reflection, and adjustment. Communication and Reflection are the essential elements in the process of mathematical thinking. Teachers should build connections through challenging and engaging problem solving situations. Students should be guided and promoted to trust their abilities to make sense of mathematical concepts NCTM, (2003).</p> <p>“Mathematical Thinking and Problem Solving”, 1994. Summary: The focus is on teaching mathematical topics through problem-solving contexts and inquiry-oriented environments to help students construct a deep understanding of mathematical ideas and processes by engaging them in doing mathematics: creating, conjecturing, exploring, testing, and verifying.</p>

Activities to implement the intervention:	Person(s) Accountable	<u>Timeline</u> Begin End	Resources
<p>Teachers will model and provide practice using a variety of problem-solving strategies to solve mathematical tasks by introducing two new strategies each month.</p> <p>November: Act Out or Use Objects (PreK-5) Make a Picture or Diagram (PreK-5)</p> <p>December: Use or Make a Table (K-5) Make an Organized List (K-5)</p> <p>January: Guess and Check (K-5) Use or Look for a Pattern (K-5)</p> <p>February: Work Backwards (2-5) Use Logical Reasoning (2-5)</p> <p>Embedded in all of the above strategies: Make it Simpler Brainstorm</p>	Classroom teachers	Nov- 2009-May 2010	Problem solving strategies Manipulatives
<p>Teachers will model and provide opportunities for students to apply the following guide when using problem-solving strategies weekly:</p> <p>Beginning: Read and clarify the problem and draw on prior learning Middle: Apply problem solving strategies to find the solution End: Check answers, share and reflect, and discuss alternative problem solving strategies.</p>	Classroom teachers	Nov 2009-May 2010	Exemplars
<p>Teachers will select, model, and assess mathematical tasks using the appropriate problem solving strategies a minimum of once a week.</p>	Classroom teachers	Nov 2009-May 2010	Exemplar rubrics
<p>Teachers will model and practice using the Exemplar rubric to evaluate the task a minimum of once a week.</p>	Classroom teachers	Nov 2009-May 2010	Exemplar rubrics
<p>Teachers will use the problem solving rubric to assess student work. Data will be collected quarterly</p>	Classroom teachers	Nov 2009-May 2010	Exemplar rubrics
<p>Students will solve mathematical tasks using the problem solving guide and strategies a minimum of once a week.</p>	Students Classroom teachers	Nov 2009-May 2010	Exemplars Problem solving strategies

<p>Students will practice alone and in pairs solving mathematical tasks using the problem solving guide and strategies a minimum of once a week.</p>	<p>Students Classroom teachers</p>	<p>Nov 2009-May 2010</p>	<p>Exemplars Problem solving strategies</p>
<p>Students will model and demonstrate mathematical problem solving strategies to peers and teachers.</p>	<p>Students Classroom teachers</p>	<p>Nov 2009-May 2010</p>	<p>Elmo/LCD projectors</p>
<p>Students will use the Exemplar rubric to analyze their own work and the work of their peers a minimum of once a month.</p>	<p>Students Classroom teachers</p>	<p>Nov 2009-May 2010</p>	<p>Exemplar rubrics</p>
<p>Students will select and apply appropriate problem solving strategies to solve a variety of mathematical tasks, including Exemplars.</p>	<p>Students Classroom teachers</p>	<p>Nov 2009-May 2010</p>	<p>Exemplars Problem solving strategies</p>
<p>Students will assess their own performance by using the problem solving rubric monthly</p>	<p>Students Classroom teachers</p>	<p>Nov 2009-May 2010</p>	<p>Exemplar rubrics</p>