

School Improvement Action Plan

Dexter Elementary School

School Vision: Dexter School – where we learn from the past to create our own future.

DoDEA/School Mission: To provide an Exemplary Education that Inspires and Prepares All DoDEA Students for Success in a Dynamic, Global Environment.

<p>Goal Statement #1: All students at Dexter Elementary School will improve their ability to communicate mathematical ideas across the curriculum.</p> <p>Type of Goal: Application</p> <p>Essence: Students will be able to use mathematical vocabulary, models, diagrams and pictures to communicate mathematical thinking.</p>		
<p>Support Data (used to select the goal):</p> <p>Terra Nova 2nd Edition 2005-2008, NCE and NPR Math Terra Nova 2nd Edition 2005-2008, Math OPI: Objective 18: Communication Terra Nova 3rd Edition 2009, NCE and NPR Math Terra Nova 3rd Edition 2009 Math OPI: Objective 18: Communication Former Student Survey Fall 2009 DoDEA Student Customer Satisfaction Survey Spring 2009</p>	<p>Standardized Assessment(s): Terra Nova 3rd Edition 2010, Multiple Assessments NCE Math Multiple Assessments: Objective 18: Communication Grades 3-5 Terra Nova 3rd Edition 2010, Multiple Assessments OPI Math Multiple Assessments: Objective 18: Communication Grades 3-5</p>	<p>Local Assessment(s): Teacher-selected open-ended math problem (Exemplars) administered;</p> <ul style="list-style-type: none"> • Pre-test and post-test • Mid-year formative assessment (Sept. 2009, Jan. 2010, May 2010) <p>Protocol for all assessments are established and can be found in the appendix</p>
<p>Strategy/Intervention: Students will use a 4 step method to communicate mathematical thinking in solving open-ended problems.</p> <p>Polya's 4 step method:</p> <ol style="list-style-type: none"> 1. Understanding the problem. (<i>Recognizing what is asked for.</i>) State the problem in own words. What are you trying to find or do? What are the unknowns? What information is obtained from the problem? What information is needed? 2. Devising a plan. (<i>Responding to what is asked for.</i>) Plan strategies to solve the problem. (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) 3. Carrying out the plan. (<i>Developing the result of the response.</i>) 		<p>Research supporting this strategy/intervention: <u>Polya's Four Step Problem Solving</u></p> <p>Problem solving is one of the five Process Standards of the NCTM's Principles and Standards for School Mathematics, 2000. Students are engaged in problem solving when the solution method is not known in advance. Using problem solving in mathematics allows students to learn new ways of thinking and build new mathematical knowledge. G. Polya's method offers 4 steps:</p> <ul style="list-style-type: none"> Understand the Problem, Devise a Plan, Carry out the Plan Look Back. <p>The communication standard points to being able to talk about, write about, describe, and explain mathematical ideas. Learning to communicate in mathematics fosters interaction and exploration of ideas in the classroom as students learn in an interactive, verbal, environment.</p>

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<p>Implement the strategies selected in Step 2. Check each step as you proceed - intuitively or formal proof. Keep accurate records of work.</p> <p>4. Looking back. (<i>Checking. What does the result tell me?</i>) Check results in the original problem. Does the answer make sense? Is it reasonable? Determine if there is another method to find the solution.</p>	<p style="text-align: center;"><u>Principles and Standards for School Mathematics:</u></p> <p>Communication is an integral part of mathematics. Mathematics is often thought about in terms of numbers and symbols, and students do not necessarily discuss math orally. Teachers need to cultivate the thinking and reasoning that goes on with problem solving to develop coherent mathematical thinking. Listening to others allows students to communicate to learn mathematics and they learn to communicate mathematically.</p>
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Activities to implement the intervention	Person(s) Accountable	Timeline		Resources Needed
		Begin	End	
1. All teachers will model and teach the use of mathematical vocabulary, strategies, models, diagrams and pictures across each academic discipline. This practice will occur bi-weekly using Polya's 4 step method to solve open-ended problems in mathematics.	Dr. Kravevich	Oct. 2009	May 2010	Mel Vaillant to provide staff training for using mathematical vocabulary, diagrams and pictures to communicate mathematical ideas in open-ended responses.
2. Teachers will practice with students using Polya's 4- step method to solve open-ended problems..	Dr. Kravevich	Oct. 2009	May 2010	
3. Classroom teachers will use open-ended questions (Exemplars) to assess students' progress in communicating mathematical ideas while solving open-ended tasks three times a year.	Dr. Kravevich Michelle Allen Mary Barnette Kathryn Van Horn	Sept. 2009, Jan. 2010, May 2010	May 2010	1. Bank of Exemplar questions
4. Teachers will work in collaboration groups to assess samples and evaluate the students' open-ended responses	Dr. Kravevich	Oct. 2009, Jan. 2010, May 2010		1. Open-ended rubric 2. Early release days 3. Google Docs Data Collection

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using the Exemplars assessment rubric.				tool
5. All teachers will modify their instructional practice to include differentiated instruction for students who need challenge, reinforcement or re-teaching in communicating mathematical ideas.	Kraleovich Math Committee Chair	Sept. 2009	May 2010	Mel Vaillant
Student Activities				
1. The students will practice in whole group, alone and with others, the use of the Polya's 4-step problems solving method to solve open-ended questions.	Classroom Teachers	Sept. 2009	May 2010	1. Classroom posters of 4 step method 2. Open-ended problems
2. The students will learn to use Polya's problem solving method and apply the knowledge to solve open-ended tasks.	Classroom Teachers	Sept. 2009	May 2010	1. Classroom posters of 4 step method 2. Open-ended problems
3. Students will communicate and display their problem solving work in and around the classroom environment.	Classroom Teachers	Sept. 2009	May 2010	1. Student work samples
4. Students will experience differentiated activities to ensure all students are served appropriately in achieving the goal.	Kraleovich/Math Committee Chair	Sept. 2009	May 2010	1. Leveled questions