

# 2009-2014 School Improvement Action Plan – Gates Elementary School

## Solve Problems

### SIP Goals, Rationale, Strategies

#### **Solve Problems Improvement Goal:**

Gates students will show growth in math, reaching 80% proficiency by May of 2016, as measured by district formative and summative assessments, as well as the Nebraska State Math Assessment. By using best practices, students will learn math content, make sense of authentic problems, and persevere in solving them in order to reach a final goal of 85% mastery by May 2019. Although many of our district scores were well into 80% proficient and improving from the previous years, our norm testing were not all so promising. Our K-5 District Math Benchmarks assessments saw an increase from 82% proficient or higher to 86% proficient or higher and our monthly 2 pt and 4 pt problem solving assessments increased from 79% to 84% proficient or higher. It was the first year we implemented MAPS and CPPA testing for K-5. Our K-2 CPAA Math results yielded 79% proficient and our 3-5 MAPS Math resulted a mere 56% proficient. NeSA Math scores decreased significantly in fifth grade from 77% proficient to 55% proficient creating a not met across the board for all 3-5 Math students in all demographic areas. Third grade had increased their scores from 76% to 81% proficient and fourth grade maintained 91% proficient both years.

Gates students will also show growth in solving authentic problems through the application of communication, collaboration, creativity, and critical thinking in other curricular areas by moving from proficient to advanced by May of 2016, as measured by Clarity data, and a building solving problems rubric used across curricular areas.

#### **Rationale and Supporting Data** (3 sources used to select the goal):

Gates Elementary 1st-5th grade students have maintained a stable proficiency level on the district math assessments. When looking at the data, Gates Elementary students did not score as well on the critical problem-solving questions that demonstrate our ability to tell our line of thinking. As staff members reviewed district testing results in Mathematics, they felt that the Gates students needed to better express their reasoning both orally and in written expression. By adding that as a goal, it was felt that we would focus more on the way we communicate our understanding. It became more apparent from assessment information that separated 2pt/4pt tasks from structured responses.

It is our hope that by increasing methods of providing feedback to students both on their communication and computation skills, they will gain greater success and be able to track clear goals.

New learnings in impacting student success occurs by giving students clear targets, effective feedback, checking for understanding, and differentiating curriculum within the world of the formative assessment process. Gates has reworked our strategies to address these needs and to embed a deeper college and career ready thinking into our math. We are concerned with the strange drop in our most recent district and state results and hope that with a refocus on individuals through the formative assessment process, we will rebound quickly.

We are concerned with the strange drop in our most recent state results in NeSA Math scores of proficient fifth graders and feel that our heightened use of District Maps to look carefully at standards will assist us to have significant gains.

#### **Improvement Strategies/Interventions**

Establish and communicate learning goals, track student progress, and celebrate success (targets, checks for understanding, differentiation).

Utilize strategies to help students effectively interact with new knowledge in math problem solving.

Provide opportunities in mathematics for students to practice and deepen their understanding of new knowledge in math.

Provide opportunities for solving authentic problems through the application of the 4 Cs across curricular areas.

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### Research

#### Research Supporting Strategies/Interventions

**Strategy 1:** Goal setting is the beginning step in establishing and communicating learning goals, track student progress, and celebrate success. Clear goals establish and initial target. Feedback provides students with information regarding their progress toward that target. Goal setting and feedback uses in tandem are probably more powerful than either one in isolation. In fact, without clear goals it might be difficult to provide effective feedback. Marzano (2007).

Good feedback contains information a student can use. That means, first, that the student has to be able to hear and understand it. A student can't hear something that's beyond his comprehension, nor can a student hear something if she's not listening or if she feels like it's useless to listen. The most useful feedback focuses on the qualities of student work or the processes or strategies used to do the work. Feedback that draws students' attention to their self-regulation strategies or their abilities as learners is potent if students hear it in a way that makes them realize they will get results by expending effort and attention.

From Educational Leadership, December 2007/January 2008, [Feedback That Fits](#) by Susan M. Brookhart: Setting Objectives and Providing Feedback is one of the nine most effective instructional strategies according to McREL meta-analysis. It supports all three stages of backward design and is integral in the formative assessment process. Effective feedback is essential in the formative assessment process.

A third critical component is the area of research on reinforcing effort and providing recognition for accomplishments. Reinforcing effort means that students see a direct link between how hard they try at a particular task and their success at that task. *The Art and Science of Teaching: A Comprehensive Framework for Effective Instruction*, Robert J. Marzano (2007), p. 14.

**Strategy 2:** Over the years there have been many discussions regarding the need for students to process new information in ways that make personal sense. Under such banners as constructivism and brain research, books have discussed the need for active processing on the part of students (Berman, 2001; Brandt, 1998; Brooks & Brooks, 1999, 2001; Caine & Caine, 1991, 1997; Jensen, 2005; Sousa, 2001, Sylwester & Margulies, 1998; Wolfe, 2001). These works have provided useful insights into the nature of learning. The basic generalization has been that learners must be actively engaged in the processing of information and that the teaching and learning process involves an interaction among the teacher the students, and the content. Researchers Cobb, Yackel, and Wood (1992) describe the process in the following way: "The teaching-learning process in interactive in nature and involves the implicit and explicit negotiation of ..meanings" (p. 5). However, knowledge construction or the negotiation of meaning is not done in isolation. Indeed, a number of cognitive psychologists offer support for the position that teachers must provide guidance as to the important aspects of the new content as well as facilitate the processing of that content by students (Anderson, Greeno, Reder, & Simon, 2000; Anderson, Reder, & simon, 1995, 1996; Bruer, 1993, 1997). What is needed then is a comprehensive approach that allows for student construction of meaning while interacting with the content, the teacher, and other students. Fortunately, research and theory provide guidance as to the components of such an approach. *The Art and Science of Teaching: A Comprehensive Framework for Effective Instruction*, Robert J. Marzano (2007), pp. 30-31.

**Strategy 3:** Actively processing information is the beginning point of learning. Students must have a sound foundation on which to build new awareness. New awareness is forged through repeated exposure to knowledge. Exposures involving practice and knowledge-deepening activities are the focus of helping students practice and deepen their understanding of new knowledge. The research and theory underlying this come from a variety of areas that might appear disparate on the surface. Some areas are: schema development, development of procedural knowledge, and development of declarative knowledge. *The Art and Science of Teaching: A Comprehensive Framework for Effective Instruction*, Robert J. Marzano (2007), p. 59.

**Strategy 4: Teacher Use of the 4Cs** The 4Cs (Communication, Collaboration, Critical Thinking, and Creativity) are essential for developing the knowledge and skills needed for college and career readiness. Teachers who ask students to solve authentic problems and engage with others using the Internet can increase student engagement and effectively prepare students for 21st century learning. Retrieved from: [https://clarity.brightbytes.net/insights/modules/case/insights/21\\_century\\_learning/factors/teacher\\_use\\_of\\_the\\_4cs/sections/about](https://clarity.brightbytes.net/insights/modules/case/insights/21_century_learning/factors/teacher_use_of_the_4cs/sections/about) 1/1/16

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### Indicators of Improved Learning

Norm-Referenced and Non Norm-Referenced Assessments	2014-2015 Results	2015-2016 Results	2016-2017 Results	2017-2018 Results	2018-2019 Results
NeSA Math Scores	(2013-2014) Baseline: Overall: 81% Prof 3rd 76% Prof 4th 91% Prof 5th 77% Prof	(2014-2015) Baseline: Overall: 77% 3rd 81% Prof 4th 91% Prof 5th 55% Prof	Baseline:	Baseline:	Baseline:
	Post: Overall: 77% 3rd 81% Prof 4th 91% Prof 5th 55% Prof	Post:	Post:	Post:	Post:
MAPS RIT Scores for Math (3-5)	Fall 2014 Baseline: Overall: 56% Prof 3rd 45% Prof 4th 57% Prof 5th 46% Prof	Fall 2015 Baseline: Overall: 69% Prof 3rd 44% Prof 4th 60% Prof 5th 63% Prof	Baseline:	Baseline:	Baseline:
	Spring 2015 Post: Overall: 56% Prof 3rd 60% Prof 4th 61% Prof 5th 46% Prof	Post:	Post:	Post:	Post:
CPAA Math Scores (K-2)	2014 Fall Baseline: Overall: Not Available	2015 Fall Baseline: Overall: 39.7 Measurement: 39.7% Prof. Numeracy: 42.4% Prof. Operations: 43% Prof. Patterns/Functions: 42.6% Prof K Measurement: 39.7% Prof. Numeracy: 42.4% Prof. Operations: 43% Prof. Patterns/Functions: 42.5% Prof 1st Measurement: 37.5% Prof. Numeracy: 43.7% Prof. Operations: 45.1% Prof. Patterns/Functions: 44.6% Prof 2nd Measurement: 27% Prof. Numeracy: 37.4% Prof. Operations: 34.4% Prof. Patterns/Functions: 31.7% Prof	Baseline:	Baseline:	Baseline:
	Post: Overall: 79% Prof Measurement: 85% Prof. Numeracy: 76% Prof. Operations: 71% Prof. Patterns/Functions: 83% Pr K Measurement: 88% Prof. Numeracy: 73% Prof. Operations: 75% Prof. Patterns/Functions: 92% Pr 1st Measurement: 83% Prof. Numeracy: 73% Prof.	Post:	Post:	Post:	Post:

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	Operations: 66% Prof. Patterns/Functions: 75% Pr 2nd Measurement: 84% Prof. Numeracy: 82% Prof. Operations: 73% Prof. Patterns/Functions: 82% Pr				
District Math DIBS (K-5)	(2013-2014) Baseline: Overall 82% Prof K 93% Prof 1st 77% Prof 2nd 91% Prof 3rd: 79% Prof 4th 84% Prof 5th 67% Prof	2014-2015 Baseline Overall: 86% Prof K 93% Prof 1st 100% Prof 2nd 98% Prof 3rd: 79% Prof 4th 80% Prof 5th 71% Prof	Baseline:	Baseline:	Baseline:
	Post: 86% Prof K 93% Prof 1st 100% Prof 2nd 98% Prof 3rd: 79% Prof 4th 80% Prof 5th 71% Prof	Post:	Post:	Post:	Post:
Gates 2pt/4pt Problem Solving Monthly Prompts (K-5)	(2013-2014) Baseline: 79% Prof K 87% Prof 1st 75% Prof 2nd 82% Prof 3rd 70% Prof 4th 89% Prof 5th 71% Prof	2014-2015 Baseline Post: 84% Prof K 83% Prof 1st 92% Prof 2nd 89% Prof 3rd 73% Prof 4th 88% Prof 5th 81% Prof	Baseline:	Baseline:	Baseline:
	Post: 84% Prof K 83% Prof 1st 92% Prof 2nd 89% Prof 3rd 73% Prof 4th 88% Prof 5th 81% Prof	Post:	Post:	Post:	Post:
Clarity Data	Baseline: 2013-2014 NA	Baseline:	Baseline:	Baseline:	Baseline:
	Post: 1086 Prof (1000-1099) Classroom 1011 Prof Access 1211 Exemplary Skills 1108 Advanced Environment 1130 Advanced	Post:	Post:	Post:	Post:
Solving Problem Rubric	Baseline: NA	Baseline: NA in Fall 2015	Baseline:	Baseline:	Baseline:
	Post: NA	Post:	Post:	Post:	Post:

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### 2015-2016 Implementation Plan

<b>Overall Understanding of Becoming a Reflective Teacher</b>					
<b>Activities to Implement Strategy/Intervention</b>	<b>Person(s) Accountable</b>	<b>Timeline Beg</b>	<b>Timeline End</b>	<b>Resources</b>	<b>Outcome</b>
<i>Becoming a Reflective Teacher</i> Marzano Teacher Training Model	Julie Martin, Jill Bernal, Whitney Martin, Sara Robinson	August 26	August 26	Training Materials	*Training Gates Staff in <i>Becoming a Reflective Teacher</i>
<i>Becoming a Reflective Teacher</i> Book Talk Design Questions: 1, 2, 3	All Staff	Fall 2014	Spring 2015	<i>Becoming a Reflective Teacher</i>	*Teachers dialoguing together about best practices *Teachers collaborating and planning together *Teachers modeling lifelong learning
Further investigate <i>Becoming a Reflective Teacher</i> during professional development and/or staff meetings. Design Questions: 1, 2, 3	All Staff	Fall 2014	Ongoing	<i>Becoming a Reflective Teacher</i> Supporting Materials and Activities	*Teachers dialoguing together about best practices *Teachers collaborating and planning together *Teachers modeling lifelong learning
Implement <i>Becoming a Reflective Teacher</i> Design Questions: 1, 2, 3 in the Reading Classroom	All Staff	Fall 2014	Ongoing	<i>Becoming a Reflective Teacher</i> Lesson Plans Marzano Administrative WalkThroughs & Dialogues	*Teachers communicating targets with scales *Students tracking Reading & Writing Progress *Teachers differentiating for student needs *Teachers celebrating student success *Students interacting with new knowledge *Students deepening their reading and writing knowledge
<b>DQ 1-Establish and communicate learning goals, track student progress, and celebrate success (targets, checks for understanding, differentiation)</b>					
<i>Investigate and implement how to establish and communicate learning goals (targets) in a standards based math classroom using Curricuplan</i>	All Staff	Fall 2015	Ongoing	<i>Becoming a Reflective Teacher</i> <a href="#">GIPS Intranet-Learning Targets</a> <a href="#">Nebraska State Standards Curricuplan</a>	*Teachers dialoguing together about best practices *Teachers collaborating and planning together *Teachers developing appropriate targets
<i>Investigate scales to communicate success of goals (targets) in Math</i>	All Staff	Spring 2016	Ongoing	GIPS Dialogues	*Teachers dialoguing together about appropriate goals (targets) *Teachers collaborating and planning together based on student need *Teachers using Curricuplan to learn District ELA Standards

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<i>Establish scales to use with goals (targets)</i>	???	Spring 2016	Ongoing	GIPS Dialogues	*Teachers creating scales that match appropriate goals (targets) *Teachers collaborating and planning together based on student need *Students reflecting on learning based on scales
<i>Explore ways to track growth in a standards based classroom.</i>	All Staff	Fall 2015	Ongoing	Resources TBD	*Teachers dialoguing together about appropriate tracking growth *Teachers collaborating and creating Student Tracking Forms
<i>Provide opportunities for students to track growth in Math.</i>	All Staff All Students	Fall 2015	Ongoing	Created Growth Forms	*Students tracking growth in Math
<i>Utilize collaborative dialogues on assessment to create flex groups in Math.</i>	All Staff	Fall 2015	Ongoing	Formative Assessment RtI Documents Google Grade Books	*Teachers dialoguing together about best practices *Teachers collaborating and planning together
<i>Utilize Instructional Rounds</i>	All Staff	Fall 2015	Ongoing	Observational Form and Schedules	*Teachers dialoguing together about best practices *Teachers collaborating and planning together
<b>DQ 2- Utilize strategies to help students effectively interact with new knowledge in math problem solving.</b>					
<i>Investigate how to develop stronger problem solving techniques through using Polya's Four-Step Problem Solving Process</i>	All Staff	Fall 2015	Ongoing	District Professional Development and Staff Reinforcing Professional Learning	*Teachers dialoguing together about investigating and implementing Polya's Model *Teachers collaborating and planning ways to implement problem solving strategies
<i>Implement developing stronger problem solving techniques through using Polya's Four-Step Problem Solving Process</i>	All Staff	Fall 2015	Ongoing	Lesson plans created that reinforce Polya's Model	*Students make connections to Polya's Four-step Model
<i>Review Student Structured Interactions that engage students with new knowledge</i>	All Staff	Fall 2015	Ongoing	<a href="#">GIPS Intranet-Structured Interaction</a>	*Teachers learning and practicing new structures to embed for effectively interacting with new knowledge
<i>Implement Student Structured Interactions to engage students with new knowledge</i>	All Staff All Students	Fall 2015	Ongoing	<a href="#">GIPS Intranet-Structured Interaction</a>	*Students interact in groups about new content

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<b>DQ 3-Provide opportunities in math for students to practice and deepen their understanding of new knowledge.</b>					
<i>Investigate and Implement effective instructional math strategies through a stronger use of Math Talk</i>	All Staff All Students	Fall 2015	Ongoing	Math Talk Posters Math Talk Bookmarks	<ul style="list-style-type: none"> <li>*Teachers utilizing all components of Math Talk</li> <li>*Students choosing appropriate strategies to solve problems</li> <li>*Students journaling to answer math questions</li> <li>*Teachers systematically choose students to share how they became smarter in Math</li> <li>*Students applying strategies shared by others on future problems that are more efficient or make more sense</li> </ul>
<i>Implement ways to help students examine their reasoning through self reflection techniques</i>	All Staff All Students	Fall 2015	Ongoing	TBA	<ul style="list-style-type: none"> <li>*Teachers utilizing ways for students to reflect on their reasoning</li> <li>*Students self reflecting on work</li> <li>*Teachers conferring with students about misconceptions</li> <li>*Teachers using flex groups to reinforce strategies where misconceptions occur</li> </ul>
<b>Provide opportunities for solving authentic problems through the application of the 4 Cs across curricular areas.</b>					
<i>Investigate and Implement Inquiry Circles to be used in Social Studies and Science to give students opportunities to communicate, collaborate, create, and critically think to solve problems of their choice</i>	All Staff All Students	Spring 2016	Ongoing	Inquiry Circles Harvey & Daniels	<ul style="list-style-type: none"> <li>*Students communicating, collaborating, creating, and critically thinking to answer own questions</li> <li>*Teachers conferring with groups of students</li> <li>*Teachers systematically choose students to share how they became smarter through their work together</li> </ul>
<i>Utilize technology to provide opportunities for students to communicate, collaborate, create, and critically think across the curriculum</i>	All Staff All Students	Ongoing	Ongoing	NETA Participants Technology Fair (Summers)	<ul style="list-style-type: none"> <li>*Teachers learning from others ways to use technology to solve authentic problems</li> <li>*Students utilizing technology to communicate their critically thinking</li> <li>*Students using technology to answer own questions</li> </ul>
<i>Create a rubric to be used with students during authentic solving problem opportunities</i>	Small group of teachers	Spring 2016	Reviewed	Online Resources Josh McDowell	<ul style="list-style-type: none"> <li>*Teachers using rubrics that match appropriate goals (targets)</li> <li>*Teachers collaborating and planning together based on student need</li> <li>*Students reflecting on learning based on scales</li> </ul>

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