



Introduction to Problem-Solving Cycles

Sierra Preparatory Academy 2022-2023

Overview



What is it?

What is it?



Rationale

Why are we doing this?



Big Picture

What does the PDSA cycle look like in practice?



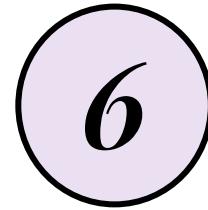
Getting Started

How are we starting this here at Sierra?



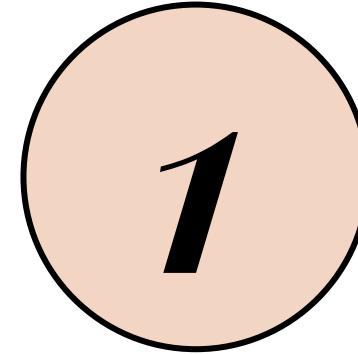
Next Steps

What comes next?



Questions?

Questions, comments, concerns...



What is a Problem-Solving Cycle?

An introduction to the process

PLAN-DO-STUDY-ACT

- It is a way of applying the scientific method to teaching.
- It is a way of testing a change that's implemented to a classroom or a school.
- It is related to Lesson Study, but not as involved. You can think of it as “Lesson Study Lite”.
- It is also known as “Improvement Science”, “Change Science” or the “Inquiry Cycle.”
- If you have participated in the TIPS/BTSA program as either a mentor or new teacher, the ILP process is based on this cycle.



PLAN-DO-STUDY-ACT

PLAN-Determine a new strategy or procedure that you want to implement in your school or classroom. Figure out the “Who, what, when, where, how” of implementing the new strategy or procedure.

DO-Implement your new strategy or procedure. Collect data and work samples.

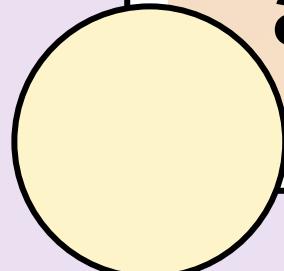
STUDY-Analyze the data. Look at the work samples. Determine what was effective and what needed improvement. Will you keep using the new strategy or procedure? How will you change it if you decide to utilize it again?

ACT-Try the new strategy or procedure after you’ve made modifications to it. If what you tried was completely ineffective, adopt a new plan to try.



If this cycle sounds familiar to you, it should! This is what effective teachers already do in their classrooms!

A problem-solving cycle or “PDSA” is about making this process explicit.





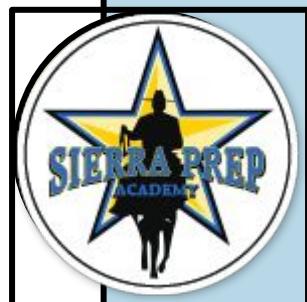
Rationale

Why are we doing this?

Rationale

If good teachers already do this, why are we doing it? We're good teachers!

- How many times have you planned a collaboration with your colleague only to have to put it aside because one of you has to sub? Or you start collaborating only to have another colleague come in and start venting and everyone gets distracted? Or how many times have you and your colleagues decided to implement a new strategy, but you never get around to discussing the results or student work?
- The Problem-Solving Cycle needs to be explicit and made a priority...otherwise changes may not be fully implemented or some colleagues/departments get left behind. With proper planning and communication, departments can make action plans that complement each other.



Rationale

PDSA is documented to work in academic studies and in several fields-not just education!

- For those of you would would like the extra reading:
 - Learning to Improve
 - Continuous Improvement in Schools
 - Improvement Science and Beginning Teachers
 - Research on Continuous Improvement in Schools
 - How to Plan and Implement Continuous Improvement in Schools

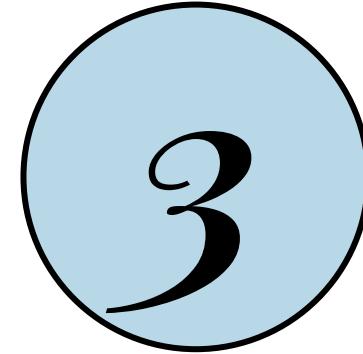


Rationale

“I don’t want to read all that. Tell me what it says, Vern.”

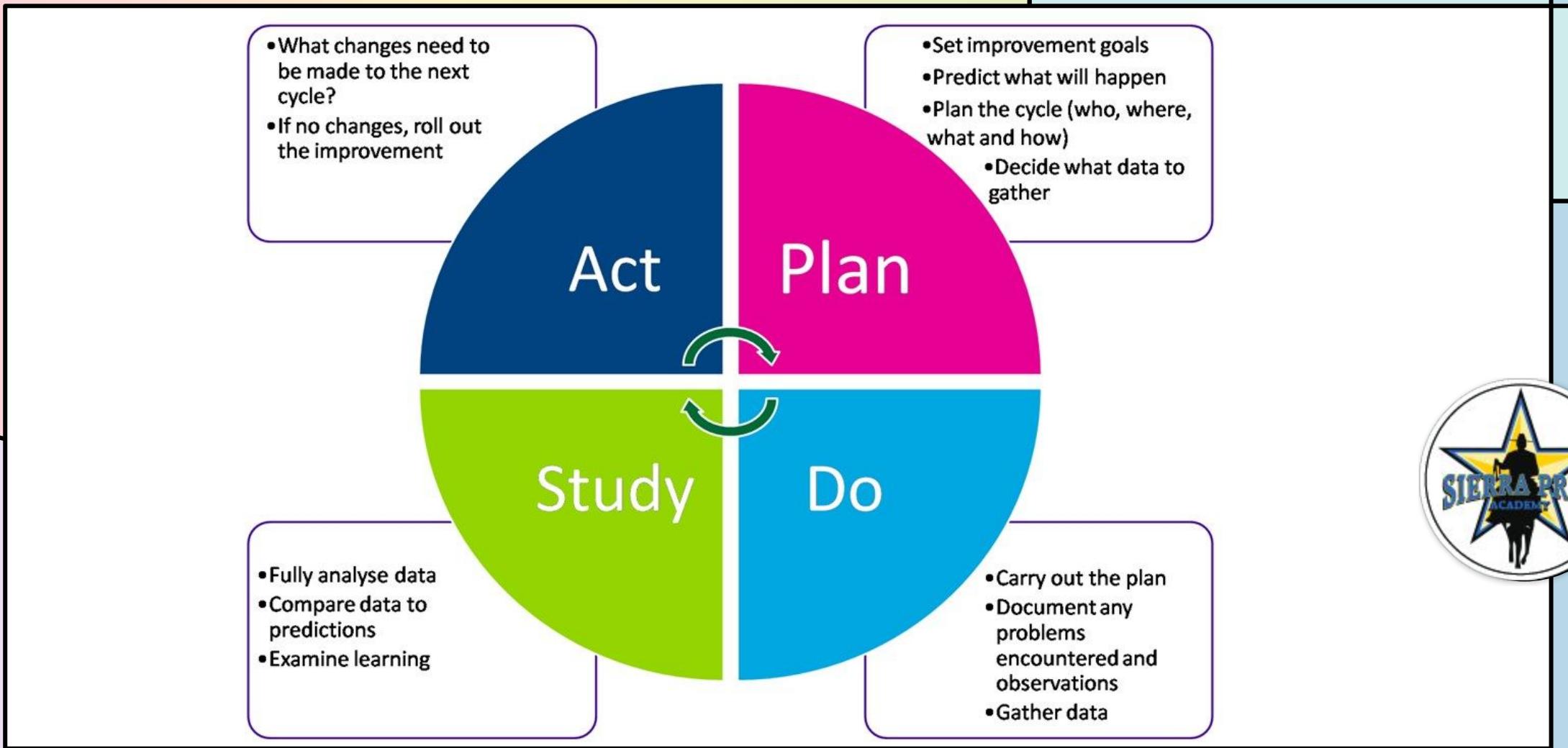
- You get out of it what you put into it. Schools and districts that embraced the process saw more positive gains.
- PDSA works if there is buy-in. Trying new things is hard for some people.
- Administration and colleagues must be supportive of the change ideas and give each other flexibility to try new things.
- Team members must be willing to measure outcomes—even if the outcomes are negative. Negative outcomes can still be positive; we know what doesn’t work!
- Many schools and districts plan and implement, but never study before moving on to something new.





Big Picture

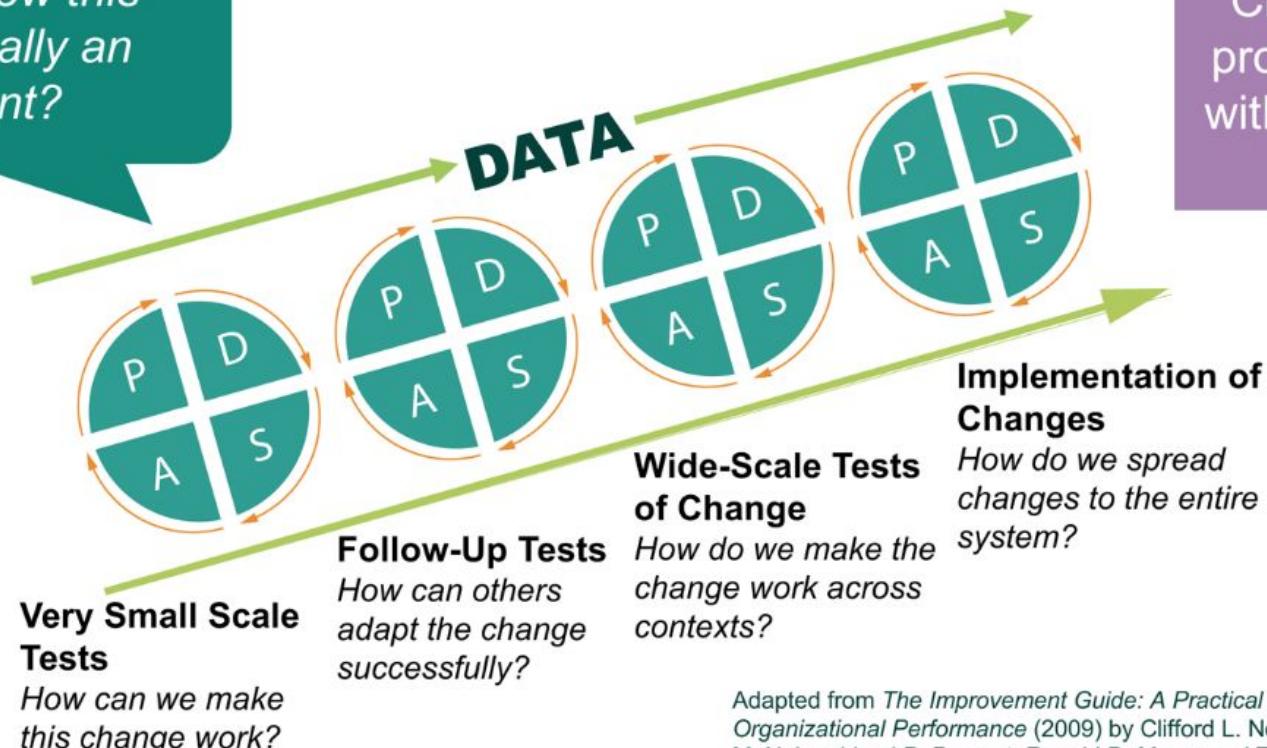
What does this process look like?



Building Evidence for a Change

How will we know this change is actually an improvement?

Theory-informed change ideas

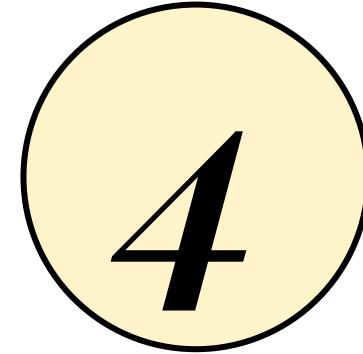


Adapted from *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance* (2009) by Clifford L. Norman, Gerald J. Langley, Kevin M. Nolan, Lloyd P. Provost, Ronald D. Moen, and Thomas W. Nolan

Courtesy of Carnegie Foundation

Break Time!

When you return, please make sure you have your laptop and sit with your grade level or department.



Getting Started

What do we need to do first?

Please go to: **bit.ly/SIERRAPSC**

MEET YOUR TEAM

- Who's on my team?
- Groups:
 - Elementary will team up by grade level.
 - Elementary SpEd teachers will join their grade level teams.
 - Secondary will team up by department.
 - Secondary SpEd teachers will join their subject matter department.



BEFORE WE START “P”

- Before we start the Plan stage, we have to do an extra “S”. We have to study the data that we have so far and see what our problems are.
- Some of you may know from experience last year where our problems lie. Others may want to check out MAP data or other test scores from last year to make a decision. Both are fine.



IDENTIFYING YOUR PROBLEM

Grade Level	Area(s) of Weakness	Area(s) of Strength
1	Math–Geometry; ELA–Vocabulary	Math–Algebraic Thinking, ELA–Lang. and Writing
2	Math–Geometry; ELA–Vocabulary	Math–Algebraic Thinking, ELA–Literature & Info Text
3	Math–Operations; ELA–Informational Text	Math–Algebraic Thinking, ELA–Literature
4	Math–Operations & Geometry, ELA–Vocab	Math–Algebraic Thinking, ELA–Literature
5	Math–Operations & Measurement, ELA–Vocab	Math–Geometry, ELA–Literature
6	Math–Stats & Probability, ELA–Info Text, Vocab	Math–Operations, ELA–Literature
7	Math–Operations, Alg. Thinking, ELA–Info Text	Math–all other areas tied, ELA–Literature & Info Text
8	Math–Stats & Probability, ELA–all areas tied	Math–Number Systems, ELA–all areas tied



IDENTIFY YOUR PROBLEM

- 1. Brainstorm! What were the academic problems or areas of concern in your grade level or content area before you left on summer break?**
 - a. You can use assessment data from last year.
 - b. You can use your experiences from last year.
- 2. Which of these do you foresee still being a problem during the first month of school?**
- 3. Select one problem or area of concern that your team will focus on for this problem-solving cycle.**



SHARE OUT

SELECT A SPEAKER. Share your focus problems/areas:

- Kinder:
- First Grade:
- Second Grade:
- Third Grade:
- Fourth Grade
- Fifth Grade:
- ELA:
- History:
- Math:
- Science:
- Admin:





Next Steps

How do we move on to “Plan”?

STARTING “PLAN”

- By now, you should have identified a problem or area of concern and selected colleagues who want to work on the same problem to be on your team.
- **Timing:** Is this a problem we will encounter within the next unit? If not, select a problem that will occur within the next few weeks.
- Now it is time to choose a strategy. What strategies could you try to solve the problem?
- **Hold a brainstorming session of possible strategies.**
 - It's okay to look online, talk to a curriculum specialist or get other help to brainstorm.
- **Come to a consensus or take a vote:** Choose a strategy your team wants to try.



HELPFUL HINTS

As you discuss or come to a vote, keep in mind:

- *Choose one or two strategies to try. Three strategies MAX.*
- Remember, you are trying to test the effectiveness of the strategy in solving your problem. In order to test a strategy, you need to hold as many of the other variables as constant as possible.
- Check out the strategies on the next three slides if you need more ideas.



Text Strategies

Preparing for the Text	Interacting with Text	Extending the Text
<ul style="list-style-type: none">• <u>Quickwrite</u>• <u>Anticipatory Guide</u>• Preview Vocab—<u>Frayer Model</u>• Activate Prior Knowledge through <u>Visuals</u>• Preview with <u>Visual Imagery</u>• <u>Preview of the Text</u>• <u>Text Walkthrough</u>• Making a Prediction• <u>Goal Setting for Reading</u>• <u>KWL Chart</u>• <u>Think-Pair-Share</u>• <u>Concept Sort</u>• <u>First Lines</u>• <u>Possible Sentences</u>• <u>THEIVES Pre-Reading</u>	<ul style="list-style-type: none">• <u>Graphic Organizers/Concept Maps</u>• <u>Thinking Maps</u>• <u>Cornell Notes</u>• <u>Say-Mean-Matter Chart</u>• <u>Viewing with a Purpose (video/film)</u>• <u>Jigsaw</u>• <u>Inquiry Chart</u>• <u>Annotating the Text</u>• <u>Think Aloud</u>• <u>Making Inferences</u>• <u>Developing Questions</u>• <u>Drawing/Visual Notes</u>• <u>Comprehension Questions/Text-Dependent Questions</u>• <u>Think-Pair-Share</u>• <u>Text Chunking</u>• <u>Analyze the Author's Craft</u>• <u>Choral Reading</u>• <u>HAPPY or CAPS (Context, Audience, Author, Significance)</u>• <u>SOAPSTONE</u>• <u>Author's Purpose Chart</u>• <u>Deconstruct a Math Word Problem</u>	<ul style="list-style-type: none">• <u>Critical Thinking Questions</u>• <u>Academic Conversations</u>• <u>Exit Slips</u>• <u>Sum It Up (As You Go)</u>• Writing:<ul style="list-style-type: none">◦ <u>Informational Essay</u>◦ <u>Argumentative Essay</u>◦ <u>Reflection</u>◦ <u>Storyboard/Comic Strip</u>◦ <u>Narrative Story/Essay</u>◦ <u>Poems</u>◦ <u>Editorial/Video Review</u>• Projects:<ul style="list-style-type: none">◦ <u>Presentations (slides or poster)</u>◦ <u>One-pager</u>◦ <u>DBQ</u>◦ Adopting a Persona: <u>Poem</u> or <u>creative writing/journal entry</u>◦ <u>Create a Political Cartoon or Meme</u>• <u>Debates/Philosophical Chairs</u>• <u>Socratic Seminars</u>• <u>Describing a Historical Event</u>• <u>QAR</u>

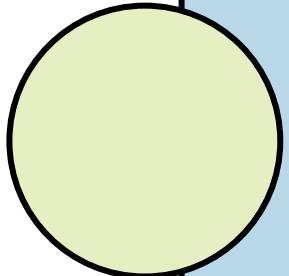
AVID WICOR Strategies

Writing	Inquiry	Collaboration	Organization	Reading
<ul style="list-style-type: none"> • <u>Reciprocal Teaching</u> • <u>Double-Entry Journals</u> • Reflection Writing • <u>3-2-1 Assignment</u> • <u>Quickwrite</u> • <u>Learning Logs</u> • <u>Graphic Organizers</u> • <u>Thinking Maps</u> • <u>Exit Slips</u> • <u>Sum It Up (As You Go)</u> • Informational Essay • Argumentative Essay • <u>Storyboard/Comic Strip</u> • Narrative Story/Essay • Poems • <u>Editorial/Video Review</u> • <u>One-pager</u> • <u>DBQ Essay</u> • <u>Describing a Historical Event</u> 	<ul style="list-style-type: none"> • <u>DBQ Process</u> • <u>Viewing with a Purpose (video/film)</u> • <u>Jigsaw</u> • <u>Inquiry Chart</u> • <u>Think Aloud</u> • <u>Making Inferences</u> • Science Labs • <u>Math Table Talks</u> • <u>Debates/Philosophical Chairs</u> • <u>Socratic Seminars</u> • QAR • SQ5R • <u>Critical Thinking Questions</u> • <u>Webquest or Internet Scavenger Hunt (extra info here)</u> • <u>Virtual Reality Field Trip in Nearpod</u> 	<ul style="list-style-type: none"> • DBQ “Thrash-Out” • <u>Math Table Talks</u> • <u>Debates/Philosophical Chairs</u> • <u>Socratic Seminars</u> • Science Labs with partners/groups • <u>Four Corners</u> • <u>Gallery Walk</u> • <u>Peer-Editing Checklist</u> • <u>Parallel Problem Solving in Math</u> • <u>Group work protocols</u> • <u>Academic Conversations</u> 	<ul style="list-style-type: none"> • <u>Graphic Organizers/Concept Maps</u> • <u>Thinking Maps</u> • <u>Cornell Notes</u> • <u>Say-Mean-Matter Chart</u> • <u>RAFT</u> • T-Charts • <u>3-Column Notes</u> • KWL + A (apply) for Math • <u>Foldables</u> • Interactive Notebooks: paper or digital • <u>Binder Organization</u> • <u>GRAPES for World History</u> 	<ul style="list-style-type: none"> • <u>Anticipatory Guide</u> • <u>Say-Mean-Matter Chart</u> • <u>Comprehension Questions/Text-Dependent Questions</u> • <u>Text Chunking</u> • <u>Analyze the Author's Craft</u> • <u>Choral Reading</u> • <u>HAPPY or CAPS (Context, Audience, Author, Significance)</u> • <u>SOAPSTONE</u> • <u>Author's Purpose Chart</u> • <u>Deconstruct a Math Word Problem</u> • <u>Math Dictionary</u> • <u>Annotating the Text</u> • <u>THIEVES Pre-Reading</u> • <u>SSR</u>

Vocab Development Strategies

Preparing for the Text	Interacting with the Text	Extending the Text
<ul style="list-style-type: none">● Frayer Model● Semantic Mapping● Word Wall● Flash Cards● Concept Sort● Nearpod● Possible Sentences● Wordless Story● Total Physical Response● Vocabulary Bingo● Vocabulary Cards● Vocabulary.com	<ul style="list-style-type: none">● Frayer Model● Vocabulary Notebook● Semantic Mapping● Word Map/Tree Map● Nearpod● Cornell Notes● Say/Mean/Matter● Cloze Reading● Wordless Story● Vocabulary Bookmarks● 3-2-1 Vocab Assignment● Math Dictionary	<ul style="list-style-type: none">● Semantic Mapping● Flash Cards● Exit Slips● Quizlet● Kahoot● Word Box● Word Reflection● Word Map/Tree Map● Nearpod● Cornell Notes● Homonym Riddles● Analogies/Bridge Map● Synonym Map/Bubble Map● Vocabulary Bingo● Vocabulary Race● 3-2-1 Vocab Assignment● Vocabulary.com

Break Time!



STARTING “PLAN”

- After you choose your strategy, your team needs to come up with a *measurable goal*.
- In other words, how will you determine that your strategy has worked?
 - Examples: test scores, rubric scores, unit scores, performance, writing sample, etc.
- Put your strategy and goal into an AIM STATEMENT.
 - Example: We hope to see an improvement in _____ (problem area) by _____ (date) using _____ (strategies) as measured by _____ (goal).



Example “Plan”

- 1) Area of concern: Vocabulary Development. MAP scores show this is the lowest area across all 5 of my classes.
- 2) Brainstorm: Frayer chart, quizlet, Nearpod activities, See/mean/matter, word wall, 3-2-1
- 3) Discussion by team members: Consensus: Students need vocab activities BEFORE and DURING the read for “To Build A Fire” (story in next unit)
- 4) Strategy: Frayer Model chart to prepare for the read, See/Mean/Matter during the read.



Example AIM Statement

6) We hope to see an improvement in vocabulary acquisition by the end of the theme unit (12/01) using the Frayer Model and See/Mean/Matter chart for the story “To Build a Fire” as measured by the correct usage of five vocabulary words in each student essay.

*Use this template if you need extra help writing your AIM Statement.

*Is your goal measurable? See video here for help.



SHARE OUT

Please share your AIM STATEMENT when called upon:

- Kinder:
- First Grade:
- Second Grade:
- Third Grade:
- Fourth Grade
- Fifth Grade:
- ELA:
- History:
- Math:
- Science:
- Admin:



SOLIDIFYING “PLAN”

- Create the lesson/assignments/ancillary materials needed to carry out your plan.
 - Example: Frayer Model Slides students will use before the first read and the See/Mean/Matter chart students will use during the second read.
- Choose the time in the unit or lesson when the strategy will be used.
 - Examples: Before reading a text, after reading a text, before unit test, during bell work, etc.



WORK TIME!

SOLIDIFYING “PLAN”

- Select the student work and data that will be collected to analyze.
 - Examples: MAP scores, unit test scores, essays, rubrics, class assignments, etc.



Example “Plan”

- 6) Frayer Model students will use. See/Mean/Matter
- 7) Time in unit: Frayer Model will be used before the first read of “To Build a Fire.” See/Mean/Matter chart will be used in-between the first and second read of “To Build a Fire”.
- 8) Teachers will collect Frayer Model Charts, See/Mean/Matter charts, and have grades completed for “To Build A Fire” essays.



REVIEW: Steps in PLAN

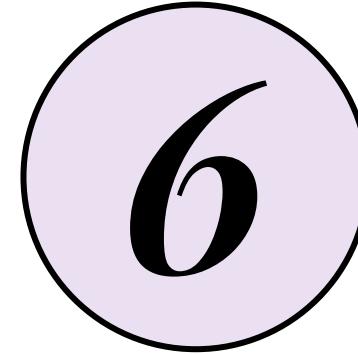
1. Identify problem or area of concern.
2. Brainstorm strategies to address problem.
3. Team member discussion or vote.
4. Select strategy(ies) to try.
5. Write an AIM Statement
6. Create student assignments or ancillary materials.
7. Select a time frame for implementation.
8. Choose student work and data to collect.
9. Complete “PLAN” section in graphic organizer.



SOLIDIFYING “PLAN”

- Last, complete the “PLAN” portion of this graphic organizer.
 - Link to graphic organizer
- Share the graphic organizer with Vern at
veronica.reinhart@sausdlearns.net





Questions?

Help!!

Tips for Implementing Problem-Solving Cycles