...the vast majority of differences in student achievement can be attributed to factors like the student's natural ability or aptitude, the socioeconomic status of the student, and the student's home environment. Unfortunately, these are all things that cannot be changed by schools. (Marzano, 2001)
What do teachers have control over?

**Marzano's High-Yield Instructional Strategies**

In *Classroom Instruction that Works: Research-based Strategies for Increasing Student Achievement*, Robert Marzano (2001) and his colleagues identify nine high-yield instructional strategies through a meta-analysis of over 100 independent studies. They determined that these nine strategies have the greatest positive affect on student achievement for all students, in all subject areas, at all grade levels. Marzano's nine high-yield instructional strategies are summarized in the table that follows.

<table>
<thead>
<tr>
<th>High Yield Instructional Strategies</th>
<th>What the Research Says</th>
<th>How it looks in the Classroom</th>
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</thead>
<tbody>
<tr>
<td>Identifying similarities and differences</td>
<td>Students should compare, classify, and create analogies and non-linguistic or graphic representations. This allows students to think about the content and relationships in the content.</td>
<td>T-Charts, Venn diagrams, Thinking maps, classifying, analogies, cause and effect links, compare and contrast organizers QAR (Question/Answer/Relationship), sketch to stretch, affinity diagrams, Frayer Model</td>
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<td>(Yields a 45 percentile gain)</td>
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<td>Effect size of 1.0 standard deviation = percent gain of 34 points.</td>
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<td>Summarizing and note taking</td>
<td>Students should learn to eliminate unnecessary information, substitute some information, keep important information, write/rewrite, and analyze information. Students should be encouraged to put some information into own words. Facilitates deeper understanding of academic content.</td>
<td>Model summarization techniques such as: identifying key concepts, bullets, outlines, clustering, narrative organizers, journal summaries. Scaffold assignments, create simple reports, quick writes, graphic organizers, column notes, affinity diagrams, reciprocal teaching</td>
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<td>(Yields a 34 percentile gain)</td>
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<td>Reinforcing effort and providing recognition</td>
<td>Teachers should reward based on standards of performance; use symbolic recognition rather than just tangible rewards. Use to empower students to learn and to help students see the connection between their effort and achievement.</td>
<td>Hold high expectations, display finished products, praise students' effort, encourage students to share ideas and express their thoughts, honor individual learning styles, conference individually with students, authentic portfolios, stress-free environment, high-fives, etc.</td>
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<tr>
<td>(Yields a 29 percentile gain)</td>
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<td>Addresses students' attitudes and beliefs rather than engaging cognitive skills.</td>
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<td>Homework and practice</td>
<td>Teachers should vary the amount of homework based on student grade level, keep parent involvement in homework to a minimum, state purpose, and when assigned, written feedback results in largest gain.</td>
<td>Retell, recite, and review learning for the day at home, reflective journals. Parents are informed of the goals and objectives.</td>
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<td>(Yields a 28 percentile gain)</td>
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<td>Nonlinguistic representations (Yields a 27 percentile gain)</td>
<td>Students should create graphic representations, models, mental pictures, drawings, pictographs, and participate in kinesthetic (hands-on) activities in order to assimilate knowledge. Students store and represent knowledge in both forms the best when they are able to think about, recall, and elaborate on the knowledge.</td>
<td>Visual tools and manipulatives, problem-solution organizers, spider webs, diagrams, concept maps, drawings, charts, thinking maps, graphic organizers, sketch to stretch, storyboards, foldables, act out content, make physical models, etc.</td>
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<td>Knowledge is stored in two forms: linguistic (language-based) and nonlinguistic (image-based)</td>
<td>Cooperatives learning (Yields a 23 percentile gain)</td>
<td>Teachers should use flexible groupings; keep groups small; use cooperative learning with well structured activities and continue to allow for independent practice. Assign roles and responsibilities in groups. Additional benefits of cooperative learning include improved communication, decision making and conflict resolution.</td>
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<td>Cooperative learning (Yields a 23 percentile gain)</td>
<td>Setting objectives and providing feedback (Yields a 23 percentile gain)</td>
<td>Teachers should create specific but flexible goals, allowing some student choice. Teacher feedback should be corrective, timely, and specific to a criterion. The more specific the feedback is, the better.</td>
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<td>Setting objectives and providing feedback (Yields a 23 percentile gain)</td>
<td>Generating and testing hypothesis (Yields a 23 percentile gain)</td>
<td>Students should generate, explain, test, and defend hypotheses using both inductive and deductive strategies through problem solving.</td>
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<td>Generating and testing hypothesis (Yields a 23 percentile gain)</td>
<td>Questions, cues, and advance organizers (Yields a 22 percentile gain)</td>
<td>Teachers should use cues and questions that focus on what is important. Use ample wait time before accepting responses particularly with higher level thinking questions. Advance organizers should focus on what is important and they are useful in organizing complex information.</td>
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<tr>
<td>Questions, cues, and advance organizers (Yields a 22 percentile gain)</td>
<td><strong>No instructional strategy works equally well in all situations. Teachers should rely on their knowledge of their students, their subject matter, and their situation to identify the most appropriate instructional strategies.</strong></td>
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**No instructional strategy works equally well in all situations. Teachers should rely on their knowledge of their students, their subject matter, and their situation to identify the most appropriate instructional strategies.**
Sketch to Stretch
1. Students listen as a story, article, or poem is read to them.
2. Students draw a picture that expresses:
   - How the story, article or poem makes them feel
   - What they think story, article, or poem story means
   - What they think the author looks like
   - Anything that comes to mind during the reading
3. Students explain their drawing to a partner/small group.

Affinity Diagrams
Creating an Affinity Diagram:
Step 1 - Generate ideas
Step 2 - Display ideas
Step 3 - Sort ideas into groups
Step 4 - Create header cards
Step 5 - Draw finished diagram
Hidden Panel Foldable

Students can put practice questions, problems or diagrams on the front and hide the answer key inside the hidden panel!

**STEP ONE** - Take one 8.5 X 11 piece of cardstock. Fold into twelve squares.

**STEP TWO** - Cut two column strips out of 1/2 page of 8.5 X 11 cardstock

**STEP THREE** - Fold the 8.5 X 11 piece of cardstock in half. Make 2 cuts on the fold side as shown.

**STEP FOUR** - Weave strips into slits in large paper.

**STEP FIVE** - Hidden panel will show up on reverse side. Bend the paper in to form a W. Pull hidden panel apart in the center split of the back side of the foldable. Students can put any practice questions or diagrams on the front and answers inside the hidden panel.

**During Reading Strategies:**

**“Think Aloud”**

Teachers model metacognitive skills for students as they read a text.

Steps:

- Select a passage to read aloud that contains sections that could be hard to understand.
- Teacher reads aloud while students follow silently. As the teacher reads, she/he verbalizes own questions and models how to create meaning from the text.
  - Talk about what you “see” as you read.
  - Make predictions about what you think will happen next: chronologically or conceptually
  - Show how you connect new information with prior knowledge.
  - Create analogies
  - Talk about trouble spots including difficult vocabulary words that you have to know. Talk students through strategies like re-reading the passage.

**Study Guides for Difficult Text**

*Cornell Notes, Graphic Organizers, or Thinking Maps for taking notes from text*

**Generating/Testing Hypotheses**

**Systems Analysis:**

1. Explain the purpose of the system, the parts of the system, and the function of each part.
2. Describe how the parts affect each other.
3. Identify a part of the system, describe a change in that part, and then hypothesize what would happen as a result of this change.
4. When possible, test your hypothesis by actually changing the part or by using a simulation to change the part.