…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.

High Yield Instructional Strategies	What the Research Says	How it looks in the Classroom
Identifying similarities and differences (Yields a 45 percentile gain) *Effect size of 1.0 standard deviation = percent gain of 34 points.*	Students should compare, classify, and create metaphors, analogies and non-linguistic or graphic representations. This allows students to think about the content and relationships in the content.	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**
Summarizing and note taking (Yields a 34 percentile gain)	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.	**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**
Reinforcing effort and providing recognition (Yields a 29 percentile gain) *Addresses students' attitudes and beliefs rather than engaging cognitive skills.*	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.	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.
Homework and practice (Yields a 28 percentile gain) *******Purpose should be to practice, review, and apply knowledge********	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.	Retell, recite, and review learning for the day at home, reflective journals. Parents are informed of the goals and objectives.

Nonlinguistic representations (Yields a 27 percentile gain) *Knowledge is stored in two forms: linguistic (language-based) and nonlinguistic (image-based)*	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.	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.
Cooperative learning (Yields a 23 percentile gain)	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.	Integrate content and language through group engagement; reader's theatre, pass the pencil, circle of friends, cube it, radio reading, shared reading and writing, plays, science projects, debates, **jigsaw**, group reports, choral reading, **affinity diagrams**. Students tackle problems in groups and explain their answers.
Setting objectives and providing feedback (Yields a 23 percentile gain)	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.	Articulating and displaying learning goals, KWL, contract learning goals, etc. Teacher can display objectives and follow-up on the mastery of the objective at the end of the lesson.
Generating and testing hypothesis (Yields a 23 percentile gain) *Requires students to apply their knowledge and use high level thinking skills.*	Students should generate, explain, test, and defend hypotheses using both inductive and deductive strategies through problem solving.	Hypothesis generation and testing practiced in tasks such as systems analysis, problem solving, historical investigation, invention, experimental inquiry, and decision making. **Ex: questioning the author of book, finding other ways to solve same math problem.**
Questions, cues, and advance organizers (Yields a 22 percentile gain) *Help students activate prior knowledge and relate new knowledge to what they already know.*	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.	**Graphic organizers**, provide guiding questions before each lesson, **think alouds**, inferencing, predicting, drawing conclusions, skimming the chapter to identify key vocabulary and concepts, **foldables**, **anticipation guide.**

**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.