December 1, 2011 • 4 min

Art and Science of Teaching / It's How You Use a Strategy

Robert J. Marzano

At the *applying* and *innovative* levels, we find the catalysts for large gains in student learning.

Over the years, researchers have reported the effects on student learning of various instructional strategies. However, these commonly vary from year to year and from researcher to researcher. For example, in 1984, Benjamin Bloom reported that one-to-one tutoring typically produced a 48 percentile point gain in student achievement. But in 2000, Elbaum, Vaughn, Hughes, and Moody reported that the strategy was associated with a 16 percentile point gain. By 2009, Ritter, Barnett, Denny, and Albin reported that one-to-one tutoring was associated with only a 12 percentile point gain in reading.

Similarly, in 2001, my colleagues and I found that the strategy of identifying similarities and differences was associated with a 45 percentile point gain (Marzano, Pickering, & Pollock, 2001). However, in 2009, I conducted a study with another colleague that found an 18 percentile point gain for the strategy (Haystead & Marzano, 2009). And in 2010, Beele and Apthorp reported a 25 percentile point gain. Why the differences, and what do they mean?

Four Levels of Implementation

While analyzing video recordings of teachers using strategies, I noticed four levels of implementation that might help explain some of the variation in research findings (Marzano, Frontier, & Livingston, 2011). I have found that how a teacher uses a strategy is key to how effective the strategy is. Let's look at the strategy of identifying similarities and differences using a comparison matrix.

Beginning Level
Here, a teacher has little fluency with the strategy and is prone to errors using it. At this level, the strategy probably has little effect on student learning. Consider how a teacher might use a comparison matrix at this level. The columns of the matrix show the elements to compare; the rows list various characteristics. For example, in a social studies class, a teacher might effectively use such a matrix by recording two forms of government in the columns—monarchy and dictatorship. In the rows, the teacher might record two characteristics—how decisions are made and the frequency of this form of government in the major countries of the world.
Operating at the beginning level, a teacher might make the mistake of expecting students to compare too many elements. Recording four types of governments in the columns (for example, monarchy, dictatorship, democracy, and republic) would render the strategy too complex. Another common error is neglecting to ensure that students identify how the compared elements are both similar and different on each characteristic. Students need to record both in the matrix. If they don't, they miss the main point.

ANALYZE ...	DEMOCRACY	MONARCHY	DICTATORSHIP
What defines this form of government?			
How are the people governed (freedoms)? (**Who** has the power, **how** do they get it, and **how** is it used?)			
Why is this government so effective? (Why is it appropriate?)			

Developing Level
At this level, the teacher does not make such mistakes. He or she doesn't list too many elements or characteristics and clarifies that students are to indicate both similarities and differences for each characteristic. In the studies I've conducted with classroom teachers, this seems to be the typical level of strategy use in the classroom—teachers use a strategy without significant error and with relative ease. However, this level of use does *not* produce the large gains in student learning reported in some studies.

Applying Level
Starting at this level, we find the catalysts for large gains in student learning. Here, the teacher not only makes no mistakes in using the strategy and uses it with relative ease, but also monitors students' reactions to see whether the strategy has had the desired effect. For example, after completing the comparison matrix involving monarchies and dictatorships, students might realize that neither a monarchy nor a dictatorship is a very representative form of government. To monitor this type of awareness, the teacher may probe students by asking questions like, What do you see now about monarchies and dictatorships that you didn't see before? At this level, the teacher continually interacts with students to tease out finer distinctions regarding the elements being compared.

Innovating Level
At this level, the teacher is so familiar with the strategy that he or she has adapted it to meet specific student needs. For example, I have seen teachers add elements to the comparison matrix that you typically wouldn't find in the professional literature. In one class in which the comparison matrix had a particularly powerful effect on student learning, the teacher looked for differences of opinion among students regarding similarities and differences. For example, if some students concluded that dictatorships are always detrimental to the citizens of a country and other students disagreed, the teacher would use these differences of opinion as a springboard for asking students to collect information from the Internet and other sources to support their points of view.

Just a Tool
The research on instructional strategies will continue to provide teachers with guidance concerning the types of instructional strategies they might use in their classrooms. However, a strategy is just a tool that teachers can use at different levels of effectiveness. At a minimum, teachers should strive to use strategies at the *applying* level, continually monitoring students to see whether the strategy is having its intended effect on student learning. Ideally, over time, teachers should move toward the *innovating* level, adapting strategies to meet student needs and maximize learning.

References

Beele, A. D., & Apthorp, H. S. (2010). *Classroom instruction that works: Second edition research report*. Denver, CO: McREL.

Bloom, B. S. (1984). The 2 sigma problem: The search for methods of group instruction as effective as one-to-one tutoring. *Educational Researcher*, *13*(6), 4–16.

Elbaum, B., Vaughn, S., Hughes, M. T., & Moody, S. W. (2000). How effective are one-to-one tutoring programs in reading for elementary students at risk for reading failure? A meta-analysis of the intervention research. *Journal of Educational Psychology, 92*(4), 605–619.

Haystead, M. S., & Marzano, R. J. (2009). *Meta-analytic synthesis of studies conducted at Marzano Research Laboratory on instructional strategies*. Englewood, CO: Marzano Research Laboratory.

Marzano, R. J., Frontier, T., & Livingston, D. (2011). *Effective supervision: Supporting the art and science of teaching*. Alexandria, VA: ASCD.

Marzano, R. J., Pickering, D. J., & Pollock, J. E. (2001). *Classroom instruction that works: Research-based strategies for increasing student achievement*. Alexandria, VA: ASCD.

Ritter, G. W., Barnett, J. H., Denny, G. S., & Albin, G. R. (2009). The effectiveness of volunteer tutoring programs for elementary and middle school students: A meta-analysis. *Review of Educational Research*, *79*(3), 3–38.

Robert Marzano is the CEO of Marzano Research Laboratory in Centennial, CO, which provides research-based, partner-centered support for educators and education agencies—with the goal of helping teachers improve educational practice. As strategic advisor, Robert brings over 50 years of experience in action-based education research, professional development, and curriculum design to Marzano Research. He has expertise in standards-based assessment, cognition, school leadership, and competency-based education, among a host of areas. He is the author of 30 books, 150 articles and chapters in books, and 100 sets of curriculum materials for teachers and students in grades K–12.