# **Using Instructional Strategies to Enhance Student Achievement**

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## Abstract

There has been a recent upsurge of interest in the use of instructional strategies by classroom teachers and how the use of those strategies affects the academic achievement of students. The authors of this article reviewed the use of Marzano's 21 research-based instructional strategies by classroom teachers in schools classified as Achieving and Needs Improvement. This article reports the frequency in which teachers in both types of schools perceived that they used the strategies and the extent to which there was a difference in the use of the strategies in the two types of schools. The findings support the need for teachers to be situational in their application of instructional strategies. First, they need to assess the instructional needs of each student, then, align the appropriate strategy with the assessed needs.

*Keywords*: instructional strategies, student achievement, achieving schools, school improvement

Over the past century, American public educators have engaged in a number of reform movements. Notwithstanding the number of educational reforms that have been implemented, a large number of students remain classified as underperforming. Consequently, in America's schools, achievement gaps between groups of students continue to exist. Even in the highest performing schools, achievement gaps exist, and the challenge of closing those gaps remains problematic. 2\_\_\_\_

Schools, one of the major institutions in society, are faced with the challenge of preparing students to obtain the knowledge, skills, and character for success in adult years (Lieberman & Miller, 2004). However, many of the students are not gaining adequate knowledge and skills needed to assist them in making promising career choices (Hess, 2009). For example, a national news report indicated that American students, in comparison to other industrialized countries, ranked fifteenth in reading, twenty-third in science, and thirty-first in math (Bakshi, 2012). Also, it was reported by the Alliance for Excellent Education (2012) that our country is plagued with millions of students who are at risk of not completing school due to low achievement and lack of success in the classroom. Low achievement, although used interchangeably with other term such as underachievement, at- risk, and low performance, is defined as the discrepancy between capability and performance that occurs over time (Rathvon, 1996). Therefore, the demands and pressures to improve academic achievement and produce well-educated adults have heightened the attention of educators on student learning (Rothman, 2009).

#### The Importance of Teacher Leadership to Student Learning

Despite the dismal picture described above, many students are achieving, and classroom teachers play a vital role in the process. They assume a leadership role that defines them as the individuals who follow a systematic approach which includes observation, problem identification, and problem solving to address the needs of students (Helterbran, 2004). In essence, they are expected to respond to the changing needs of all students (Allen, 2010). Their leadership roles have an impact on students' performance, and they are in a position to help ensure that all students reach challenging standards (Rothman, 2009). The two questions that must be answered are stated as the following: First, what strategies do classroom teachers use to make a difference in student learning? Second, when do they apply these strategies?

### **Choosing the Appropriate Strategies to Address Student Needs**

Teacher leadership is a critical component in preparing and shaping the minds of students (Ludlow, 2011). Although this concept has existed for many years, according to Can (2009), "It can only be constituted as a result of the interaction between a teacher and his/her students" (p. 437). Teachers' knowledge and understanding of students' academic levels and prior knowledge are paramount in deciding the most appropriate strategies for students (McLeod, Fisher, & Hoover, 2003). For example, the U. S. Department of Education (2011) reported that at the basic level, a fourth grader is only able to "interpret a character's statement to describe a character trait" (p. 2). However, a student at the proficient level is able to utilize events in a story to support his or her view of the story type (U. S. Department of Education, 2011). Teachers have to assess student needs and then align strategies to address those needs.

Marzano (2003) stated that the major independent impact on student achievement is instructional strategies. According to McLeod et al. (2003), teachers have a sole responsibility to decide how to utilize their resources and choose strategies that will advance their students to the appropriate depth. For instance, assigning students who have low reading levels difficult and

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lengthy chapters to read silently would not be an appropriate strategy because they have yet to attain acceptable levels of comprehension. Therefore, Hewitt (2008) proposed two questions in responding to the needs of students: What level of skills do students bring to the learning process, and how do teachers respond to that level? These questions help the teacher identify the type of learning experiences for her or his students, and how she or he selects the strategy depends on the desired learning outcome (Gustafson & Tillman, 1991).

## The Use of Instructional Strategies to Address Student Needs

Instructional strategies are rooted in the academic goals of all students which take precedence over other dynamics in a classroom (Matczynski, Rogus, & Lasley, 2000). They are part of an instructional program that helps students build cognitive and problem-solving skills (Ridnouer, 2011). Some examples of research-proven instructional strategies that aid in the teaching and learning process are: 1) Teacher-centered Instruction, 2) Scaffolding, 3) Concept Mapping, and 4) Prior Knowledge. A brief description of each of these strategies is discussed in the following section.

## **Teacher-Centered Instruction**

Teacher-centered instruction which is sometimes referred to as direct instruction is a strategy where the teacher takes reins over how students learn material through organization of instructional groups, presentation of examples, delivery of concepts, review of material covered, mastery of skills, and constructive feedback (Stockard & Engelmann, 2011). Fisher and Frey (2010) declared that direct instruction is at the central core of interaction between teachers and students, therefore guiding their learning. This type of guidance speaks to another instructional strategy called scaffolding.

### Scaffolding

Scaffolding is defined as the assistance and direction given by teachers that is necessary for students to acquire new skills (Stein, Carnine, & Dixon, 1998). Since it is only necessary when students learn new information, it is important for teachers to be aware of how students deposit and retrieve information (Fisher & Frey, 2010). At the lowest level, teachers have an opportunity to help students store knowledge in their working memory and then work to move it to their long-term memory (Fisher & Frey, 2010).

## **Concept Mapping**

Concept Mapping is a way teachers help students transfer their knowledge from short-term memory to long-term memory. Concept maps have distinct features; they can help students see how information such as ideas and concepts are structured and connected (Knipper, 2003). Guastello, Beasley, and Sinatra (2000) believe that concept mapping is important for low achievers because many of them lack prior knowledge on content topics.

## **Prior Knowledge**

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Prior Knowledge sometimes called background knowledge, is defined as the learning and experiences that a student has accrued in the past (Arleen, 2010). Students gain these experiences in many ways, such as on field trips, conducting experiments, viewing objects, watching television or demonstrations, reading, or taking part in a discussion (Arleen, 2010). Even though factors such as teachers' interaction, students' interests, and the difficulty of content play roles in how students learn material, it is helpful for them to have prior knowledge. It is prior knowledge that will determine how well they make connections to new material (Marzano, 2004). Therefore, it is important for teachers to understand that many low achieving students have not gained certain experiences that would give them background knowledge needed for learning some new material (Chall, 2000). Consequently, teachers need to assess the needs of students and use instructional strategies that align with the assessed needs. This process will enhance instructional practices and student learning of new materials.

## **Instructional Strategies Used to Enhance Student Achievement**

Marzano, Pickering, and Pollock (2001) focused their attention on successful instruction and found twenty-one instructional strategies that can be useful and beneficial in enhancing student achievement. Their purpose for conducting the study was to recognize instructional strategies that have a high probability of producing the desired learning outcome for all students. The instructional strategies identified were extracted from nine instructional categories with similar characteristics (Marzano, 2003). The nine instructional categories that were broken down into specific instructional practices are: (1) identifying similarities and differences; (2) summarizing and note taking; (3) reinforcing effort and providing recognition; (4) homework and practice; (5) nonlinguistic representations; (6) cooperative learning; (7) setting objectives and providing feedback; (8) generating and testing hypotheses; and (9) questions, cues and advance organizers (Marzano, 2003, p. 83). From many studies using these strategies, Marzano (2006) concluded that, under controlled conditions, a successful teacher has the ability to enhance student learning more than any other school factor. However, it is important for teachers to not only know the subject matter, but they must also become knowledgeable of appropriate strategies that will help produce learning outcomes for each student (Erickson, 2008).

### **Description of Study**

### **Methodology and Analysis**

The primary goal of this study was to test two research questions: 1) How frequently do teachers perceive that they use Marzano's 21 research-based instructional strategies in their teaching and learning process? 2) Is there a significant difference between the frequency in which teachers in Achieving Schools perceive that they use Marzano's 21 research-based instructional strategies and the frequency in which teachers in Needs Improvement Schools perceive that they use Marzano's 21 research-based instructional strategies? A survey

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instrument was used to measure the variable, teacher perceived frequency in which they use Marzano's 21 research-based instructional strategies in their classroom instruction. It was also used to measure the difference, if any; between the perceptions of the frequency which teachers use Marzano's 21 research-based instructional strategies in Achieving Schools and Needs Improvement Schools.

## **Selection of Participants**

The participants in the study consisted of teachers in seven schools in a school district located in the Southeastern section of the United States. According to the 2011-2012 ESEA Accountable Status Report, five of the schools were identified as Achieving, and two of the schools were identified as Needs Improvement (Arkansas Department of Education, 2014). The participants were certified teachers (male and female) who taught language arts, mathematics, or both. Surveys were sent to166 teachers. Ninety of the teachers returned a completed survey for a return rate of 54%. Purposeful sampling was used because the participants selected were helpful in providing pertinent information about the topic. A graphic depiction of the participants appears in Table 1.

Table 1Participants in the Study: Demographics

Grade Level	Gender	Content Area	Years of Teaching	Educational Attainment
K-2 (31.2%)	Female (95.6%)	Lang. Arts (41.1%)	0-3 yrs (11.1%)	Bachelor's Degree (71.1%)
3rd-6th (67.9%)	Male (4.4%)	Math (26.7%)	3-6 yrs (23.3%)	Master's Degree (24.4%) Master's Degree + 45
		Both (32.2%)	6-10 yrs (21.1%) 10 yrs or more (44.4%)	(4.4%)

## **Data Collection**

The researchers used a quantitative methodology of data collection. A Troops to Teachers Program Completer Questionnaire was administered to participants. The instrument was constructed by Dr. William Owings, a professor at Old Dominion University, and Dr. Robert Marzano, author of *What Works in School: Translating Research into Action*, and used in a 2005 National Study entitled Supervisor Perceptions of the Quality of Troops to Teachers Program Completers and Program Completer Perceptions of their Preparation to Teach, (Owings et al., 2005). The questionnaire included Marzano's 21 research-based instructional strategies and a demographic section. The format of the questionnaire followed a Likert-type scale that recorded the frequency that teachers perceived they used each of the 21 instructional strategies (e.g., 5-all the time, 4-most of the time, 3-sometimes, 2-rarely, and 1- not at all). Ninety of the 166 teachers returned a completed survey for a return rate of fifty-four percent. These data were used to answer the two research questions.

## **Data Analysis**

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The study was conducted to examine the frequency that teachers perceived they used Marzano's 21 research-based instructional strategies in their classrooms, and to examine the difference in the frequency that teachers perceived they used Marzano's 21 research-based instructional strategies in both school types, Achieving and Needs Improvement. Quantitative analysis of the data included numerical ratings obtained from the 21 strategies on the Troops to Teachers Program Completer Questionnaire. The responses ranging from 1 to 5 were entered into SPSS program for each of the 90 responses. The data were analyzed by using SPSS to run statistical tests. The frequency and percentage of each of the 21 strategies from each respondent were displayed using descriptive statistics and tables. These results are reported in Table 2.

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# Table 2

Frequencies and Percentages for Each Item-Level

		1=Never	2=Rarely	3=Some	4= Most	5 =Always
Strategy	Ν	F (%)	F (%)	F (%)	F (%)	F (%)
1. I begin my instructional units by presenting students with clear learning goals.	90	0 (0)	1 (1.1%)	2 (2.2%)	31 (34.4%)	56 (62.2%)
2. I provide students with specific feedback on the extent to which they are						41
accomplishing learning goals. 3. I ask students to keep track of their own	90	0 (0)	1 (1.1%)	3 (3.3%)	45 (50%)	(45.6%) 14
performance on learning goals. 4. I recognize students who are making	89	5 (5.6%)	12 (13.3%)	27 (30.0%)	31 (34.4%)	(15.6%) 52
observable progress toward learning goals. 5. I emphasize the importance of effort with	89	0 (0)	0 (0)	8 (8.9%)	30 (33.3%)	(56.7%) 69
students. 6. I organize students into groups based on	90	0 (0)	0 (0)	4 (4.4%)	17 (18.9%)	(76.7%)
their understanding of the content when appropriate.	90	2 (2.2%)	3 (3.3%)	13 (14.4%)	33 (36.7%)	39 (43.3%)
7. I organize students into cooperative groups				× ,		47
when appropriate. 8. I provide specific feedback on the	90	0 (0)	0 (0)	9 (10.0%)	34 (37.8%)	(52.2%) 25
homework assigned to students. 9. I end my units by providing students with	90	0 (0)	7 (7.8%)	30 (33.3%)	28 (31.1%)	(27.8%) 31
clear feedback on the learning goals. 10. I end units by asking students to assess	90	0 (0)	5 (5.6%)	11 (12.2%)	43 (47.8%)	(34.4%) 13
themselves relative to the learning goals. 11. I end my units by recognizing and	90	9 (10%)	15 (16.7%)	28 (31.1%)	25 (27.8%)	(14.4%) 41
celebrating progress on the learning goals. 12. Prior to presenting new content, I provide	88	0 (0)	6 (6.7%)	14 (15.6%)	27 (30.0%)	(45.6%)
students with direct links with previous knowledge or studies. 13. Prior to presenting new content, I ask	90	2 (2.2%)	3 (3.3%)	7 (7.8%)	44 (48.9%)	34 (37.8%)
students questions that help them recall what they might already know about the content.	90	0(0)	3 (3.3%)	3 (3.3%)	29 (32.2%)	55 (61.1%)
14. Prior to presenting new content, I provide ways for students to organize or think about						26
the content (e.g. advance organizers).	90	4 (4%)	2 (2.2%)	26 (28.9%)	32 (35.6%)	(28.9%)
<ul><li>15. I ask students to construct verbal or written summaries of new content.</li><li>16. I ask students to take notes on new</li></ul>	90	12 (6.7%) 12	12 (13.3%)	27 (30.0%)	28 (31.1%)	17 (18.9%) 28
content. 17. I ask students to represent new content in	90	(13.3%)	12 (13.3%)	15 (16.7%)	23 (25.6%)	28 (31.1%) 28
nonlinguistic ways (e.g., graphic organizers). 18. I assign tasks that require students to	89	5 (5.6%)	3 (3.3%)	17 (18.9%)	36 (40.0%)	28 (31.1%) 47
practice important skills and procedures. 19. I prescribe assignments that require	90	0 (0)	3 (3.3%)	2 (2.2%)	38 (42.2%)	(52.2%) 25
students to compare and classify content.	90	3 (3.3%)	3 (3.3%)	26 (28.9%)	34 (37.8%)	(26.7%)
20. I prescribe assignments that require	86	17	17 (18.9%)	25 (27.8%)	21 (23.3%)	6 (6.7%)

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students to construct metaphors and		(18.9 %)				
analogies.						
21. I prescribe assignments that require		15				11
students to generate and test hypotheses.	88	(16.7%)	14 (15.6%)	24 (26.7%)	24 26.7%)	(12.2%)

A Mann Whitney U test was run to analyze the rank data for each strategy of the two types of participating schools. The test showed the mean rank of the 21 research-based instructional strategies within the two school types and the statistics across the school types. The test was also used to determine if there was a significant difference between teachers' perceived frequency in which they use Marzano's 21 research-based instructional strategies in Achieving and Needs Improvement Schools. This difference was determined by whether or not the z value was equal or exceeded 1.96 and whether or not the p value exceeded the p<=.05 (MacFarland, 1998). These results are reported in Table 3.

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# Table 3

Mean Ranks and Mann-Whitney Statistics Across School Types

Strategy	Groups A/B	A= Achieving	B= Needs Improvement	U	Z	<i>p</i> =	-
1. I begin my instructional units by presenting students	55/35	43.7	48.4	862.5	-1	0.33	-
with clear learning goals.							
2. I provide students with specific feedback on the extent	55/35	44.4	47.2	903	-0.6	0.58	
<ul><li>to which they are accomplishing learning goals.</li><li>3. I ask students to keep track of their own performance</li></ul>	54/35	45.4	44.3	921	-0.2	0.83	
on learning goals.	54/55	43.4	44.3	921	-0.2	0.85	
4. I recognize students who are making observable	55/34	41	51.5	713	-2.1	0.03	
progress toward learning goals.							
5. I emphasize the importance of effort with students.	55/35	46	44.6	932.5	-0.3	0.74	
6. I organize students into groups based on their	55/35	44	47.8	882	-0.7	0.47	
understanding of the content when appropriate.							
7. I organize students into cooperative groups when	55/35	46.6	43.8	902.5	-0.6	0.58	
appropriate.			10 6		0.0		
8. I provide specific feedback on the homework assigned	55/35	47.4	42.6	859.5	-0.9	0.37	
to students. 9. I end my units by providing students with clear	55/35	43.2	49.1	838	-1.1	0.26	
feedback on the learning goals.	55/55	43.2	42.1	050	-1.1	0.20	
10. I end units by asking students to assess themselves	55/35	46.2	44.4	923	-0.3	0.74	
relative to the learning goals.							
11. I end my units by recognizing and celebrating	54/34	46.3	41.7	823	-0.9	0.38	
progress on the learning goals.							
12. Prior to presenting new content, I provide students	55/35	46	44.7	933.5	-0.3	0.79	
with direct links with previous knowledge or studies.	55/25	45 1	16.2	029	0.2	0.81	
13. Prior to presenting new content, I ask students questions that help them recall what they might already	55/35	45.1	46.2	938	-0.2	0.81	
know about the content.							
14. Prior to presenting new content, I provide ways for	55/35	44.1	47.7	886.5	-0.7	0.51	
students to organize or think about the content (e.g.							
advance organizers).							
15. I ask students to construct verbal or written	55/35	45.3	45.8	953.5	-0.1	0.94	
summaries of new content.		45.0	45.0	0 5 1	0.1	0.00	
16. I ask students to take notes on new content.	55/35	45.3	45.8	951	-0.1	0.92	
17. I ask students to represent new content in	55/34	45.5	44.3	909.5	-0.2	0.82	
nonlinguistic ways (e.g., graphic organizers).	EE 12 A	165	12.0	007 5	0.5	0.61	
18. I assign tasks that require students to practice important skills and procedures.	55/34	46.5	43.9	907.5	-0.5	0.61	
19. I prescribe assignments that require students to	55/35	45.5	45.4	960	0	0.98	
compare and classify content.	00/00	15.5	13.1	200	Ū	0.70	
20. I prescribe assignments that require students to	52/34	41	47.4	751.5	-1.2	0.23	
construct metaphors and analogies.							
21. I prescribe assignments that require students to	54/34	42.9	47.1	829	-0.8	0.43	
generate and test hypotheses.							

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## Results

The purpose of the study was achieved by presenting the frequency and percentage of each strategy for each school type and by comparing the mean ranks of both school types for each strategy to determine if there was a significant difference in the frequency of how teachers perceived they use Marzano's research-based instructional strategies in Achieving and Needs Improvement Schools.

## **Testing the Research Questions**

## **Research Question 1**

The first research question examined the extent to which teachers perceived their use of Marzano's 21 research-based instructional strategies in their classroom instruction. Nine of the strategies were perceived by varying percentages of teachers as being used all of the time (see Table 4). Eight of the strategies were perceived by varying percentages of teachers as being used most of the time (see Table 5), and three of the strategies were perceived by varying percentages of teachers as being used sometimes (see Table 6).

Table 4

Strategies Reported as Being Used All the Time

Strategy	Percentages
#5=I emphasize the importance of effort with students.	76.70%
#1= I begin my instructional units by presenting students with clear	
learning goals.	62.20%
#13 = Prior to presenting new content, I ask students questions that help	
them recall what they might already know about the content.	61.10%
#4 = I recognize students who are making observable progress toward	
learning goals.	56.70%
#7 = I organize students into cooperative groups when appropriate.	52.20%
#18 = I assign tasks that require students to practice important skills and	
procedures.	52.20%
#11 = I end my units by recognizing and celebrating progress on the	
learning goals.	45.60%
#6 = I organize students into groups based on their understanding of the	
content when appropriate.	43.30%
#16 = I ask students to take notes on new content.	31.10%

Table 5

Strategies Reported as Being Used Most of the Time

Strategy	Percentages
2# = I provide students with specific feedback on the extent to which they are	
accomplishing learning goals.	50%
#12 = Prior to presenting new content, I provide students with direct links with	
previous knowledge or studies.	48.90%
#9 = I end my units by providing students with clear feedback on the learning	
goals.	47.80%
#17 = I ask students to represent new content in	
nonlinguistic ways (e.g., graphic organizers).	40%
#19 = I prescribe assignments that require students to compare and classify	
content.	37.80%
#14 = Prior to presenting new content, I provide ways for students to organize or	
think about the content (e.g., advance organizers).	35.60%
#3 = I ask students to keep track of their own performance on learning goals.	34.40%
#15 = I ask students to construct verbal or written summaries of new content.	31.10%

# Table 6

	Strategies Re	ported as	Being	Used	Sometimes
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Strategy	Percentages
#8 = I provide specific feedback on the homework assigned to students.	33.30%
#10 = I end units by asking students to assess	
themselves relative to the learning goals.	31.10%
#20 = I prescribe assignments that require students to construct	
metaphors and analogies.	27.80%

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One strategy was reported by 26.7% of the teachers as being used most of the time and sometimes. That strategy was "I prescribe assignments that require students to generate and test hypotheses."

Five instructional strategies were reported by 76.7% to 52.5% of the teachers as being used more frequently than any other strategy. Those strategies appear in Table 7.

## Table 7

### Top Five Instructional Strategies

Strategy	Ν	5=Always F (%)
#5= I emphasize the importance of effort with students.	90	69 (76.7%)
#1= I begin my instructional units by presenting students with		
clear learning goals.	90	56 (62.2%)
#13= Prior to presenting new content, I ask students questions		
that help them recall what they might already know about the		
content.	90	55 (61.1%)
#4=I recognize students who are making observable progress		
toward learning goals.	89	52 (56.7%)
#7= I organize students into cooperative groups when		
appropriate.	90	47 (52.2%)

The above strategies fall under the instructional categories of reinforcing effort and providing recognition, setting objectives and providing feedback, cooperative learning, and homework & practice. Five instructional strategies were reported by 18.9% to 6.7% of teachers as being used less frequently than other instructional strategies. Those strategies appear in Table 8.

## Table 8

Lowest Five Instructional Strategies

		5=Always
Item	Ν	F (%)
#15= I ask students to construct verbal or written summaries of new		17
content.	90	(18.9%)
#3= I ask students to keep track of their own performance on learning		14
goals.	89	(15.6%)
#10= I end units by asking students to assess themselves relative to the		13
learning goals.	90	(14.4%)
#21= I prescribe assignments that require students to generate and test		11
hypotheses.	88	(12.2%)
#20= I prescribe assignments that require students to construct		
metaphors and analogies.	86	6 (6.7%)

These strategies fall under the instructional categories of summarizing and note taking, setting objectives and providing feedback, identifying similarities and differences, and generating and testing hypotheses. Setting objectives and providing feedback was the only instructional category that had instructional strategies from both the top five and the lowest five lists of instructional strategies.

## **Research Question 2**

The second research question was designed to determine if a significant difference exists between the frequency in which teachers in Achieving Schools perceive that they use Marzano's 21 research-based instructional strategies and the frequency in which teachers in Needs Improvement Schools perceive that they use Marzano's 21 research-based instructional strategies. The researchers continued a quantitative approach using the statistical test, Mann Whitney U Test. Using the Mann Whitney U test, the mean rank, U value, Z value, and the p value were generated for each strategy in this study and displayed on Table 3. If we observed the z value or p value to interpret the significance, 20 out of the 21 items' z values did not equal or exceed z= 1.96, and 20 out of the 21 items' p values exceeded the p<=.05. Strategy 4, "I recognize students who are making observable progress toward learning goals", received a z value of -2.1 which exceeded z=1.96 and a p value of .033 which does not exceed the p<= 0.05. These results indicated a significant difference between the frequency teachers in the two school types perceived they use this research-based instructional strategy.

The Needs Improvement Schools' mean rank was 51.5, and Achieving Schools' mean rank was 41.0 which indicate that the teachers in the Needs Improvement Schools perceived that they used this strategy more frequently than the teachers in the Achieving Schools. For the other 20 items, there was no significant difference in the frequency in which teachers perceived that they use Marzano's 21 research-based instructional strategies in the Achieving and Needs Improvement Schools.

### Discussion

The intent of the study was to determine the frequency which teachers perceive that they use Marzano's 21 research-based instructional strategies in the teaching and learning process and to determine if teachers in the Achieving Schools use them more frequently than teachers in the Needs Improvement Schools. The results from the study revealed how frequent each strategy was perceived to be used by teachers in both school types and how a strategy ranked based on the frequency of its use. The results also revealed instructional strategies that were perceived to be used by teachers all the time, most of the time, and sometimes. Additionally, the findings speak to strategies that teachers in the school district under study felt were most important or most relevant to their instruction and the needs of their students. For example, three of the nine instructional strategies (5, 4, and 11) were ranked as being used all the time. These strategies fell under Marzano's instructional category of reinforcing effort and recognition. These students who met teachers' expectations and standards of working hard and achieving learning goals were celebrated and recognized for their achievements on a regular basis. Surprisingly, strategy 5, which states, "I emphasize the importance of effort with students," was reported by 76.7% of

teachers as being used all the time and ranked the number one strategy used in classroom instruction. This strategy, regardless of the school type, was valued by teachers more than any other strategies in the teaching and learning process. It was surprising that this strategy addresses no specific instructional need. It is a concern especially for students in Needs Improvement Schools.

The other instructional strategies where the majority of the teachers used them either all the time, most of the time, or sometimes, fell under the instructional categories; a) setting objectives and providing feedback, strategies 1, 2, 3, 8, 9, and 10; b) question, cues, and advance organizers, strategies 12, 13, and 14; c) cooperative learning, strategies 6 and 7; d) homework and practice, strategy 18; e) generate/testing hypotheses, strategy 21; f) identifying similarities and differences, strategies 19 and 20; g) summarizing and note taking, strategy 15, and h) nonlinguistic representation, strategies 14 and 17.

## The Top Five Instructional Strategies

The top five instructional strategies were reported as being frequently used by 76.7% to 52.5% of the teachers. These strategies fell under the categories of setting objectives and providing feedback; reinforcing effort and providing feedback; cooperative learning, and homework and practice. According to Marzano (2003), strategies within these categories allow teachers to establish and communicate clear learning goals to students; monitor their progress; allow group work; reinforce effort; celebrate success, and practice, review, and apply content materials.

Given that in the top five instructional strategies, teachers did not fall in the instructional categories that promote cognitive thinking skills, it can be reasoned that teachers likely believed in promoting a nurturing school environment. This finding is a positive one in that students are likely to experience academic success in an environment that encourages them to achieve, become actively engaged, and feel a sense of belonging (Finnan, 2009). It causes one to question why the strategies, such as: a) identifying similarities/differences; b) generating/testing hypotheses, and c) summarizing and note taking, were not among the top five, especially in the Needs Improvement Schools.

Teachers in both school types reported that strategies focusing on cognitive skills building were not used as frequently as other strategies. While the importance of other strategies is not in question, the absence of strategies that build strong cognitive skills is questionable. For example, teachers prescribing assignments where students have to construct metaphors and analogies or generate and test hypotheses were reported to be used 27.8% or less by teachers. The implications here are that: a) teachers may not know how to properly implement these strategies, or b) they do not feel that students are developmentally ready to understand those concepts.

Supporting the need for the teaching of cognitive strategies are the positive results reported by the National Assessment of Educational Progress which tested students' cognitive ability, looking at student's ability to make comparisons, give explanation on character motivation, or to analyze the relations of ideas (U. S. Department of Education, 2011). Further, Marzano et al. (2001) addressed several advantages to using cognitive strategies; two worthy of note are strategies that involve identifying similarities and differences and those that focus on generating and testing hypotheses. In regard to strategies that involve identifying similarities and

differences, they offered that students engage in vigorous mental activity. They also referenced generating and testing hypotheses as a process that requires students to explain and draw conclusions about their hypotheses. This strategy enables students to demonstrate a deeper understanding and knowledge of information. Whether teachers use a direct-instruction or student-centered approach, cognitive instructional strategies are instrumental in improving students' ability to understand and use knowledge (Marzano et al., 2001).

### **The Lowest Five Instructional Strategies**

The lowest five instructional strategies were reported as being frequently used by 18.9% to 6.7% of the teachers. These strategies fell under the categories of: a) summarizing and note taking; b) setting objectives and providing feedback; c) identifying similarities and differences, and d) generating and testing hypotheses. Strategies used by these teachers did not focus on getting students to acquire new information.

Based on the frequencies and percentages of how often the different instructional strategies were perceived to be used by the teachers, it can be implied that teachers felt it was important to provide constant guidance, direction, and feedback to their students. It can also be concluded that teachers understood the importance of teaching students to connect new information to previous experiences and to be accountable for their learning goals.

### **Findings for Research Question 2**

The findings for research question two revealed that there was no significant difference between the frequency which teachers perceive they used Marzano's 21 research-based instructional strategies in Achieving and Needs Improvement Schools. The mean ranks for each strategy for both school types were close in value which further confirmed no significant difference between the use of strategies in the two school types. The only strategy that showed observable difference between teachers in both school types was strategy 4, "I recognize students who are making observable progress toward learning goals." Teachers in Needs Improvement Schools used this strategy more frequently than teachers in the Achieving Schools.

### Conclusion

There is much interest at present in enhancing student achievement. Nationally, this will require support and contributions from a number of areas. As standards, competencies, and accountability measures are reviewed and refined, emphases will necessarily have to be placed on assessing students' needs, aligning instructional strategies with those needs, engaging students in their own learning, and focusing professional development on the instructional needs of teachers. School leaders will need to develop a framework to inform the teaching and learning process, one that addresses the needs of individual students. Teachers are in a position to make sure that all students, including low performing students, have an opportunity to experience academic success. However, instructional strategies alone will not accomplish the task. Even though they are important tools, teachers need to be attuned to their students to not only know

how to implement the strategies but when to use appropriate strategies in the instructional process (Marzano, 2009).

The findings from this study support the need for teachers to be situational in their application of instructional strategies. They should employ a combination of leadership styles and strategies, and these styles and strategies should focus on assessing needs of their students, giving directions, and providing support (Northouse, 2010). As stated earlier in the research, they should be proficient in knowing the developmental levels of all students and be willing to adapt their instruction to the assessed needs of students (Rowe, 2007). If educational practices are renewed to eliminate the kinds of discrepancies found in this study, enhanced academic achievement should be possible.

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