



## Fact Sheet #5 - Performance Standard 3: Instructional Strategies

### INSTRUCTIONAL STRATEGIES

*The teacher promotes student learning by using research-based instructional strategies relevant to the content to engage students in active learning and to facilitate the students' acquisition of key knowledge and skills.*

Instruction is a process in which teachers apply a repertoire of instructional strategies to communicate and interact with students around academic content, and to support student engagement. An array of studies reveals that teachers who have similar professional qualifications (e.g., degree, certification, years of experience) instruct differently in their classroom and vary significantly in their ability to help students grow academically.<sup>1</sup> However, the primary difference between effective and ineffective teachers does not lie in the amount of knowledge they have about disciplinary content,<sup>2</sup> the type of certificate they hold,<sup>3</sup> the highest degree they earned,<sup>4</sup> or the years they have been in the teaching profession.<sup>5</sup> Rather, the difference lies more fundamentally in the manner in which they deliver their knowledge and skills while interacting with the students in their classrooms.<sup>6</sup> Numerous studies reveal that schools and teachers with the same resources yield strikingly different results in terms of student learning. Thus, it seems clear that these differences depend on how the resources are used by those who work in instruction.<sup>7</sup>

Based on a synthesis of over 500,000 studies of student achievement, Hattie suggested that teachers account for 30% of student achievement variance, with the rest attributable to school, family, and student variables.<sup>8</sup> It is estimated that only about 3% of the contribution teachers make to student learning is associated with teacher experience, educational level, certification status, and other readily observable characteristics. The remaining 97% of teachers' effects on student achievement is associated with intangible aspects of teacher quality that defy easy measurement, such as classroom practices.<sup>9</sup> Thus, teachers' practices inside classrooms have not only

statistical significance, but also practical significance in terms of student learning. Numerous studies and literature reviews have begun to focus upon identifying the classroom practices of effective teachers.<sup>10</sup> Figure 3 summarizes the findings of two literature reviews conducted by Hattie on a range of variables relating to student achievement.<sup>11</sup> The elements highlighted below are descriptors of classroom-level instructional practices and their corresponding effect sizes.

An essential aspect of effective instruction that helps build and sustain student engagement is relevance of the instruction. Making instruction relevant to real-world problems is among the most powerful instructional practices a teacher can use to increase student learning.<sup>12</sup> This kind of instruction allows students to explore, inquire, and meaningfully construct knowledge of real problems that are relevant to their lives. Moreover, students are motivated and engaged when their learning is authentic, especially when the real-world tasks performed have personalized results. Research indicates that students have higher achievement when the focus of instruction is on meaningful conceptualization, especially when it emphasizes their own knowledge of the world.<sup>13</sup>

Selected research-supported key elements of effective instructional delivery include:

Note: This list is not intended to be a comprehensive set of research-based instructional strategies, but rather an indicative set of those strategies for which there exists solid evidence of success.

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### *Key Elements of Effective Instructional Delivery*

Key Elements	Descriptions
Differentiation	The teacher uses multiple instructional materials, activities, strategies, and assessment techniques to meet students' needs and maximize the learning of all students. <sup>14</sup>
Variety	The teacher implements a variety of classroom techniques and strategies that enhance student motivation and decrease discipline problems. <sup>15</sup>
Cognitive challenge	The teacher provides in-depth explanations of academic content and covers higher-order concepts and skills thoroughly. <sup>16</sup>
Student engagement	The teacher is supportive and persistent in keeping students on task and encouraging them to actively integrate new information with prior learning. <sup>17</sup>
Recognizing patterns of student learning and adjusting	The teacher recognizes the schema or pattern in student learning, makes inferences about the situation (such as identifying the difficulties the students are having), and promptly adjusts the materials, learning activities, and assessment techniques to maximize student learning. <sup>18</sup>
Questioning	The teacher uses multiple levels (particularly higher cognitive levels) of questioning to stimulate student thinking and monitor student learning. <sup>19</sup>
Relevance	The learning process and the outcomes of learning have authentic relevance with students' lives. <sup>20</sup>

Students arrive at school with a variety of backgrounds, interests, and abilities. This means that a one-size-fits-all approach to instruction is

ineffective, probably counterproductive, and perhaps even unethical. If the goal of instruction is to provide an opportunity for all students to learn, then the instructional practices that teachers choose to employ in the classroom matter and matter greatly.<sup>21</sup> In an analysis of educational productivity in the United States and other countries, teachers' classroom instruction was identified as one of the most significant variables having a great effect on student affective, behavioral, and cognitive outcomes.<sup>22</sup> For instance, the instructional practice of reinforcement has a magnitude of 1.17 standard deviations on educational outcomes. The effect of cues, engagement, and corrective feedback is approximately one standard deviation each. Personalized and adaptive instruction, tutoring, and diagnostic-prescriptive methods also have strong effects on student learning, with effect sizes\* of .57 (i.e., 22 percentile gain), .45 (i.e., 17 percentile gain), .40 (i.e., 16 percentile gain), and .33 (i.e., 13 percentile gain), respectively.<sup>23</sup>

Questioning can be another highly effective instructional tool when used properly.<sup>24</sup> In particular, the types of questions asked, wait time, and types of responses play a role in the propitious use of questioning.<sup>25</sup> There are substantial differences in the adept use of questioning between effective teachers and ineffective teachers. On the negative side, in a study of mathematics classrooms, Craig and Cairo found that teachers asked more than 99% of the questions. They also found that teachers tended to provide little wait time, asked recall and use questions, and designated a particular student to answer a question.<sup>26</sup> On the positive

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\* *Effect size* is a measure of the magnitude of a treatment effect. Effect size helps us determine if the treatment effect is practically significant. The effect size can be interpreted as the average percentile standing of the students who received the treatment relative to the average untreated students. For instance, the strategy of mastery learning has an effect size of 0.58 on student achievement. An effect size of .58 would translate into a percentile gain of approximately 20 points.

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side, one case study found that teachers deemed effective asked approximately seven times higher cognitive-level questions than those considered ineffective.<sup>27</sup>

Effective teachers ask questions that are sensitive to students' differential levels of learning abilities, and that the questions are more closely aligned with learning outcomes and learning activities. Effective teachers try to accommodate their teaching to students of different levels. They take students' individual needs into account while differentiating the learning objectives, learning activities, and assessments, so that ALL students can engage with meaningful learning. Effective teachers have also been found to be more self-reflective and critical about their own classroom instruction. They are more adept in planning, evaluating, and modifying their instructional process, and more skillful in deploying strategies flexibly to attain their instructional goals.<sup>28</sup>

The complexities of teaching involve the focus on not only the breadth of content and skills that students should possess, but also the depth of the content and skills.<sup>29</sup> Effective teachers focus on meaningful connections rather than isolated facts and ideas.<sup>30</sup> A study of student performance on the NAEP found that when teachers emphasized facts over reasoning, students performed more poorly than those of teachers who emphasized reasoning.<sup>31</sup> Effective teachers emphasize meaning. They encourage students to respond to questions and activities that require them to discover and assimilate their own understanding, rather than to simply memorize material.<sup>32</sup> These teachers also present and engage students in content at various levels of complexity, using a broad range of objectives and activities and employing activities and questions that address higher and lower levels of cognitive complexity.

Techniques that have been found to substantially increase student achievement include direct instruction, simulated instruction, and integrated

instruction.<sup>33</sup> Integrating technology has also been associated with better academic achievement.<sup>34</sup> In addition, instruction that includes hands-on activities and cooperative groups has been associated with increased academic performance.<sup>35</sup> Furthermore, questioning as an instructional strategy has also been found to be effective among students.<sup>36</sup> A study of student reading growth revealed that the more teachers focused on higher level questions, the better students performed in reading.<sup>37</sup> Teachers also provided wait time for students to reflect on their answers.<sup>38</sup> Throughout instruction, effective teachers model and provide scaffolding to support student achievement.<sup>39</sup> While extant empirical studies focus on specific techniques and their impact on student achievement, the common thread among the studies is the focus on using a variety of instructional strategies.

Selected instructional practices exhibited by effective teachers are noted in the following list. The effective teacher:

- Stays involved with the lesson at all stages so that adjustments can be made based on feedback from the students.<sup>40</sup>
- Uses a variety of instructional strategies, as no one strategy is universally superior with all students.<sup>41</sup>
- Uses research-based strategies to enhance the time students spend with teachers by making instruction student-centered.<sup>42</sup>
- Involves students in appropriate and challenging learning activities, such as cooperative learning, to enhance higher order thinking skills.<sup>43</sup>
- Knows that instructional strategies that use students' prior knowledge in an inquiry-based, hands-on format facilitate student learning.<sup>44</sup>
- Uses remediation, skills-based instruction, and differentiated instruction to meet individual student's learning needs.<sup>45</sup>
- Uses multiple levels of questioning aligned with students' cognitive abilities.<sup>46</sup>

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There is no single classroom practice that is necessarily effective with all subject matter and all grade levels.<sup>47</sup> Effective teachers recognize that no single instructional strategy can be used in all situations. Rather, they develop and call on a broad repertoire of approaches that have proven successful for them with students of varying abilities, backgrounds, and interests.<sup>48</sup> Effective instruction involves a dynamic interplay among content to be learned, pedagogical methods applied, characteristics of individual learners, and the context in which the learning is to occur.<sup>49</sup> Ultimately, subject matter knowledge, pedagogical skills, and an inspiration for instructional innovation and development can liberate individual teachers to explore the diversification and richness of daily practice.

### *Impact of Teacher Instructional Strategies on Student Achievement*<sup>50</sup>

Variables	Effect Size	Source of Influence
Providing formative evaluation	.90	Teacher
Acceleration	.88	School
Teacher clarity	.75	Teacher
Feedback	.73	Teacher
Teacher-student relationships	.72	Teacher
Meta-cognitive strategies	.69	Teacher
Students' prior achievement	.67	Student
Not labeling students	.61	Teacher
Problem-solving instruction	.61	Teacher
Direct instruction	.59	Teacher
Mastery learning	.58	Teacher
Concept mapping	.57	Teacher
Socioeconomic status	.57	Home
Class environment	.56	Teacher
Challenge level of learning goals	.56	Teacher
Peer tutoring	.55	Teacher
Parental involvement	.51	Home
Expectations	.43	Teacher
Matching students' learning styles	.41	Teacher
Cooperative learning	.41	Teacher

Advance organizers	.41	Teacher
Higher cognitive questioning	.46	Teacher
Peer effects	.38	Student
Time on task	.38	Teacher
Computer-assisted instruction	.37	Teacher
Frequent testing/ Effects of testing	.34	Teacher
Homework	.29	Teacher
School aims and policies	.24	School
Affective attributes of students	.24	Student
Finances	.23	School
Individualization	.23	Teacher
Teaching test-taking and coaching	.22	Teacher
Physical attributes of students	.21	Student
Personality	.19	Student
Family structure	.17	Home
Ability grouping	.18	School
Reducing class size from 25 to 13	.13	School
Teacher subject matter knowledge	.09	Teacher
Student control over learning	.04	Teacher
Retention	-.16	School
Television	-.18	Home

### **Sample Performance Indicators for the Professional Knowledge of Teachers**

- Engages students in active learning and maintains interest.
- Builds upon students' existing knowledge and skills.
- Reinforces learning goals consistently throughout the lesson.
- Uses a variety of research-based instructional strategies and resources.
- Effectively uses appropriate instructional technology to enhance student learning.
- Communicates and presents material clearly, and checks for understanding.
- Develops higher-order thinking through questioning and problem-solving activities.

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- Engages students in authentic learning by providing real-life examples and interdisciplinary connections.

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### Sample Student Evidence that Teacher met the Criteria for Proficiency

- Make transitions from prior knowledge to new concepts with teacher support.
- Grasp meaning, not just facts.
- Create a range of products that provide evidence of learning in a unit.
- Use multiple strategies in learning new concepts.
- Take reasonable risks in responding, questioning, and/or producing products that reflect higher order thinking.
- Use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions.
- Demonstrate an ease of use with a wide variety of technology and software resources to complete assignments and show understanding of learning.
- Examine his/her own work and can explain how it relates to GPS/CCGPS.
- Describe learning expectations for which they are responsible, either in their own language or the language of the standard.
- Compare his/her work against standard-specific benchmarks and show evidence of the standards in their work.

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### Sample Conference Prompts

- What is an example of a research-based strategy you have used to successfully engage students?
- How do you learn about proven research-based strategies?
- How do you share what works with other colleagues?
- In what ways have you sought to keep instruction focused at a higher level of thinking?
- In what ways do you use technology and resources to promote higher-order thinking?

- How do you challenge special education students to use higher-order thinking skills?
- How have you worked with colleagues to locate and use technology tools and resources?
- What is an example of a lesson you developed that incorporated technology?
- How have you used benchmarks and exemplars this year as related to student mastery of standards?
- How have you worked with colleagues to develop exemplars and benchmarks?
- How have you created, modified, or used rubrics to communicate expectations?

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**Teacher Self-Assessment Checklist  
Performance Standard 3: Instructional Strategies**

Quality		Level IV	Level III	Level II	Level I
<b>Instructional strategies</b>	Employ a variety of techniques and instructional strategies to enhance student motivation and decrease discipline problems.				
	Use both direct instruction and indirect instruction flexibly to serve appropriate learning purposes.				
	Stress meaningful conceptualization, emphasizing the students' own knowledge of the world.				
	Match instruction on students' achievement levels and needs.				
	Think through likely misconceptions that may occur during instruction and monitor students for these misconceptions.				
	Connect the learning process and outcomes to the authentic contexts in students' real life.				
	Adjust the delivery and pacing of the lesson in response to student cues.				
<b>Content and Expectation</b>	Choose appropriate pedagogical strategies that can best present the content.				
	Give clear examples and offer guided practice.				
	Make the learning student-centered.				
	Stress student responsibility and accountability in mastery of content and skills.				
	Teach students to reflect on learning progress.				
<b>Cognitive Challenge</b>	Is concerned with having students learn and demonstrate higher-order thinking skills rather than memorization of facts.				
	Provide in-depth explanations of academic content and cover higher-order concepts and skills thoroughly.				
	Stress meaningful concept mapping to connect new knowledge with prior learning.				
<b>Questioning</b>	Ask questions that reflect type of content and goals of the lesson.				
	Ask questions of varying depths of knowledge.				
	Use wait time during questioning.				
	Recognize the pattern in student learning and promptly adjust instruction to maximize student learning.				