



Teaching Test Content: How the Evidence Supports PLATO® Exam Intervention

Technical Paper

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September 8, 2008

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Introduction

Improving high school student test performance is important because high-stakes testing has become an essential component of the U.S. educational landscape and has significant consequences for high school students.

- In many states, assessments help determine whether students graduate from high school. Even when this is not the case, high school graduation test results are used to both measure student performance and hold schools and districts accountable for instruction.
- College entrance exam results play a key role in which post-secondary institutions students can attend and what kind of financial support they may receive.
- The GED exam can unlock future advancement for adults who dropped out and did not graduate from high school.

How well students perform on these high-stakes exams has consequences for both students and the educational system that serves them. In addition to academic success, student consequences of high-stakes test performance range from impacting self-confidence to accessibility of future opportunities. The impact on schools and districts can be equally important—particularly in cases where rewards or punitive consequences are linked to accountability standards (Firestone & Schorr, 2004, p. 12). For example, more students passing state graduation exams can translate into retained and/or recovered funding. For all these reasons, improving test performance has clear and obvious benefits.

PLATO[®] Exam Intervention

PLATO[®] Exam Intervention has been designed specifically to address student needs related to high-stakes tests including high school graduation tests, college entrance exams, and the GED exam. It represents a solution to the challenge of improving student test scores on these high-stakes exams by focusing on effective and efficient learning.

Unlike standard test preparation programs, the focus of PLATO Exam Intervention is on teaching essential exam content. Key elements of the PLATO Exam Intervention solution include:

- Online, interactive instructional content—aligned to 48 state assessments and 6 national tests—that provides maximal coverage of learning objectives tested on specific high-stakes exams.
- Learning provided through instructionally sound, well-designed, sequenced learning paths.

- Instruction that can occur beyond a standard classroom setting.
- A flexible, focused approach that supports both targeted, in-depth instruction and long-term, comprehensive learning.
- Online teaching based on tested principles of effective instruction.

The remainder of this paper describes evidence supporting these key elements of the PLATO Exam Intervention solution.

The Value of Teaching Test Content

Improved Test Scores

Teaching test content has a high likelihood of improving test scores. As noted by Marzano (2003), opportunity to learn specific content “has the strongest relationship with student achievement of all school-level factors” (p. 22, citing Marzano, 2000). Put simply:

“One of the factors which may influence scores on an achievement examination is whether or not students have had an opportunity to study a particular topic or learn how to solve a particular type of problem presented by the test.”

(Husen, 1967, pp. 162–163, quoted in Marzano, 2003, p. 22)

Focus on Essential Content

Beyond simply improving test scores, research also supports the conclusion that there is educational value to focusing instruction on specific, key content. Based on an analysis of key findings related to teaching and learning, researchers from the National Research Council (2000) argued, “Teachers must teach some subject matter in-depth, providing many examples in which the same concept is at work and providing a firm foundation of factual knowledge” (p. 20). However, Marzano and other researchers concluded that there simply is not enough instructional time to cover all the expected content in U.S. classrooms. These researchers “identified some 200 standards and 3,093 benchmarks in national- and state-level documents for 14 different subject areas.” Then they had classroom teachers estimate “the amount of time it would take to adequately address the content articulated in these documents” (Marzano, 2003, p. 24, citing Kendall & Marzano, 2000; Marzano, Kendall, & Gaddy, 1999; emphasis in original). According to their calculations, the time required to carry out this instruction came to more than one and a half times the total amount of available instructional time across grades K–12 (Marzano, 2003, pp. 24–25; see also Ainsworth & Viegut, 2006, pp. 32–33).

In short, the sheer volume of educational standards requires that educators make a choice about which content is the most important. Ainsworth and others have recommended that educators identify specific key standards or “power” standards as a focus for instruction (Ainsworth, 2003, pp. 5–15; Popham, 2003, pp. 34–36; Reeves, 2001, p. 13).

One important source for making this identification is the content that states have chosen to evaluate as part of their high-stakes assessments (Ainsworth, 2003, p. 14; Kendall & Snyder, 2003, pp. 20–21; Popham, 2003, pp. 6–7).

Teach to the Content, Not to the Test

An important part of this instructional strategy is its focus not on “teaching to the test,” but rather on teaching the essential skills and content knowledge that tests are designed to measure. For example, Popham (2003) advised that instruction should be directed, not toward a specific set of test items, but toward the body of knowledge and skills that the test is supposed to address (pp. 27, 28, 135). The key underlying assumption of this strategy is that states, in designing and selecting their assessments, will focus on the content and skills they deem most important. To the extent that is true, instruction focused on those objectives will be geared toward important learning.

Beyond the Classroom Advantages

PLATO Exam Intervention has been designed for use outside a traditional classroom setting. This may take the form of supplemental instruction such as after-school programs and summer-school programs or separate, more specialized educational settings, such as alternative education, GED programs, or college entrance study programs.

Advantages for Students

Working outside the classroom setting offers several educational advantages. Such settings expand student learning time which can make a substantial difference in their academic success—particularly for struggling students. Describing how to help students who do not meet standards-based expectations, Reeves (2001) wrote,

“There are many students . . . who have no cognitive impairment, but who still do not meet state standards. These students need intensive intervention and, in many cases, they need more time.” (p. 22; see also Bennett et al., 2004, p. 16, Caliber Associates, 2005; Marzano, 2003, pp. 24, 26).

Research also suggests the value of a delayed review of instructional content (Pashler et al., 2007, pp. 5–6). The PLATO Exam Intervention online curriculum can provide such a delayed review for students who have already been taught concepts and skills in the classroom. One advantage of working beyond the classroom setting is that it invites students to learn at their own pace. Meta-analytic research related to teaching academically diverse students (Ben Ari & Shafir, 1988; Dahloff, 1971; Oakes, 1985) found that “Flexible pacing is important in addressing learner variance. When the instructional

pace is too rapid or too slow for a particular student, learning is impeded” (Tomlinson 2004 p. 240). Flexible pacing is often easier to accomplish outside the classroom setting and is supported with the individualized online instruction offered by PLATO Exam Intervention.

A second advantage related to instructional flexibility is the ability to deliver instruction at times and in places that match students’ individual circumstances. PLATO Exam Intervention can be accessed 24 hours a day, from home, the library, etc., enabling study to occur around athletics, work, child care schedules, etc., for students with atypical or non-traditional needs.

Advantages for Teachers

Pull-out programs offer advantages for classroom teachers as well. One of the main concerns about the impact of high-stakes testing has been its impact on instructional time in the classroom. An Education Week survey found, “66 percent of teachers thought state tests were forcing them to concentrate too much on what was tested to the detriment of other important topics, and nearly half said they spent ‘a great deal of time’ helping students prepare for tests” (Assessment, 2004, citing Quality Counts 2001). Providing students with high-stakes test study opportunities outside of classroom time frees up in-class time for the instructional priorities of the teacher. These can include “serendipitous instructional opportunities,” such as topics based in current events (Marzano, 2003, pp. 29–30), or chances to address district instructional goals that are not reflected on high-stakes assessments such as team collaboration on research projects.

Advantages of a Long-Term, Comprehensive Approach

PLATO Exam Intervention’s flexible design supports a variable timeframe for student learning, depending on the specific needs of students and their level of existing knowledge. In many cases, students who need help with high school graduation exams need—and can benefit from—a longer-term, more comprehensive approach. As Reeves (2001) noted:

“If students cannot read their 8th grade social studies textbook, must we wait until May to ...notice that there is a problem? Surely we can intervene now, providing intensive instruction in literacy early in the school year.” (p. 109)

As noted above, students learn better when they have enough time to absorb the material they are studying. This is especially important for students who are performing below expected levels. A long-term approach allows for needed instructional time.

Instructional Sequence

A long-term, comprehensive approach allows students to learn skills and strategies in the context of an instructional sequence, as opposed to remediating specific skills and knowledge in isolation. A common concern about “teaching to the test” is that such instruction is often decontextualized (Firestone & Schorr, 2004, p. 2). PLATO Exam Intervention learning paths avoid this by teaching skills and content in a sound instructional sequence that addresses the specific set of objectives evaluated on a particular high-stakes assessment.

Educational research supports the value of such a sequential approach. Based on research about school-level factors for effective student learning, Marzano (2003) specified that schools should “sequence and organize the essential content in such a way that students have ample opportunity to learn it” (p. 30).

Effectiveness of the PLATO® Curriculum for Teaching Content

The PLATO Exam Intervention learning paths have been constructed using elements from tested PLATO® curriculum, based on solid instructional principles.

Effectiveness Research

Since 1993, a body of research including 49 studies by independent evaluators has demonstrated the overall effectiveness of the PLATO® curriculum—including improvements of up to 60% on achievement of standards (PLATO Learning, 2004, pp. 6–7). PLATO Exam Intervention learning paths are built using updated forms of the original PLATO curriculum. PLATO Learning’s instructional-design standards and methodologies have evolved in ways that retain and build on the key features of the earlier curriculum.

Research-Supported Instructional Features

The PLATO Exam Intervention curriculum incorporates a variety of instructional features that are supported by research and expert opinion within the field of effective instruction. Specific examples include:

- Extensive practice with skills and procedures
(Kilpatrick et al., 2001, p. 351; Marzano, 2003, pp. 80, 86, 115; Rosenshine, 1995, pp. 265, 266)
- Guided student practice as a bridge to independent practice
(Fuson, 2003, p. 72; Rosenshine, 1995, pp. 264–266, 267)
- Skill and strategy modeling
(PLATO Learning, 2004, pp. 72–73; Rosenshine, 1995, p. 267)

- Challenging problems
(Pashler et al., 2007; Marzano, 2003, p. 119)
- Combination of conceptual understanding, factual knowledge, and procedural facility in math (NCTM, 2000, p. 20; PLATO, 2004, pp. 76–77)
- Graphical representations to illustrate key processes and procedures
(Pashler et al., 2007; Rosenshine, 1995, p. 263)
- Students creating varied, multiple representations of math content
(NCTM, 2000, pp. 67–70; PLATO, 2004, p. ix)
- Use of assessments (quizzes) for retrieval practice and spaced exposure, and to alert learners about content that has not been well learned
(Pashler et al., 2007)
- Corrective feedback in the tutorial phase for most PLATO Exam Intervention modules (Bennett et al., 2004, pp. 18–19; Black & Wiliam, 1998a, 1998b; Marzano, 2003, pp. 37, 80, 82; Rosenshine, 1995, p. 266)

Conclusion

PLATO Exam Intervention takes a research-supported approach to instruction by teaching test content through effective PLATO curriculum, using a flexible, focused approach, typically used outside the traditional classroom setting. PLATO Exam Intervention thus represents a solid solution for improving students' test scores, while at the same time supporting effective and worthwhile learning.

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