

(800) 822-1080

299 Market Street Saddle Brook, NJ 07663

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R E S E A R C H  
B A S E

FOR

 practice path™

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# practice path™



## INTRODUCTION

In January 2002, President George Bush signed into law the No Child Left Behind Act of 2001. Under this law, educational programs and materials paid for by federal funding must be based on sound, widely accepted educational research that supports the materials' design, thus increasing the likelihood that the materials will help students achieve the desired learning outcomes. This law, commonly known as NCLB, thus requires educators to be aware of the body of research that supports the design of any materials they are considering for use with their students.

Since its inception in 1990, Peoples Education has built and revised our student learning products based on continual review of the scientific research literature. The foundation of Peoples Education's Practice Path™ program is a set of principles derived from the soundest current theory and research on reading and language arts, mathematics, writing, science, social studies, assessment, and literacy. These principles are based specifically on the student learning standards of the state for which the materials are designed.

This document serves both to provide information about the Practice Path™ program for California and to explain the research on learning theory on which the system is based. Consequently, this document is organized in a way to be useful to educators who are considering the soundness and the practical uses of the materials in classrooms.

First, each principle underpinning the design of Practice Path™ is articulated. Second, a paragraph discussing the best-known and most respected educational research supporting the principle is given. Third, a discussion of the way Practice Path™ specifically embodies both the principle and its research-based foundation helps prospective educators see how the system can be used to help teachers collect information about their students' strengths and weaknesses and to help students explore their own understandings of the standards-based information they are likely to encounter on the CST.

## THE CHALLENGE

Today's educators, schools, and districts face a daunting challenge: how to raise student achievement in an increasingly rigorous, standards-based environment. This dilemma is particularly critical because the No Child Left Behind Act requires that:

- ❑ Each state adopt challenging academic content standards and challenging student academic achievement standards.
- ❑ Each state educational agency implement a set of high-quality, yearly student academic assessments that include, at a minimum, academic assessments in mathematics, reading or language arts, and science that will be used as the primary means of determining the yearly performance of children and discerning whether they meet the state's challenging academic standards.

## THE Practice Path™ PROGRAM

Practice Path™ provides ongoing practice and skill-building content delivered online via a student-based user experience. Students move through an intuitive strand/skills-based interface that provides both navigation and progress reporting in a single view. The strands and skills were created from the California Content Standards, offering short tests in traditional or game modes.

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[www.PeoplesEducation.com/epath](http://www.PeoplesEducation.com/epath).

## RESEARCH-BASED PEDAGOGY OF THE Practice Path™ PROGRAM

Practice Path™ is based on the state's mandated curriculum standards, performance objectives, and state tests, and is completely customized. Practice Path™ is designed to support and enhance best practices for effective teaching of California's mandated curriculum standards and performance objectives. There are some research-based unifying pedagogical principles that are common across California Content Standards and that form the foundation of the program's design.

## RESEARCH PRINCIPLE 1: Challenging Standards

Educational programs must be based on challenging academic content standards in academic subjects, the teaching of advanced skills, and challenging student academic achievement standards.

(PL 107–110, the No Child Left Behind Act of 2001)

### RESEARCH BASIS FOR PRINCIPLE 1

The most extensive and best-known research about the effects of expectations is addressed by Rhona S. Weinstein (2002) in her book, *Reaching Higher: The Power of Expectations in Schooling*, a landmark in support of the results that high standards and expectations can produce. Weinstein’s book takes as its thesis that “If . . . we are interested in the development of all children, we must link higher standards to effective teaching strategies for diverse learners. Our assessments of achievement must inform the next steps of instruction, rather than simply hold children accountable for what they may not have been taught.”

### RESEARCH PRINCIPLE 1 APPLIED

The implication of Weinstein’s statement is that assessment must help teachers understand what students know and need to know. Practice Path™ can be used with students to help teachers know in advance where gaps in student understanding lie. Teachers can then begin to think about filling in those

gaps for all learners. The California Content Standards demand high achievement for all learners, and Practice Path™ can be seen first as an aid to student learning toward those goals and second as a step toward positive assessment results. Practice Path™ can be used with all students of all abilities; it allows all teachers of all students to see where their students need help in approaching the California Content Standards and even allows teachers to work differently with different students to make necessary progress. In other words, using the program allows teachers to enact the principle that high standards can result in higher achievement for all students by using the assessment materials to inform the next steps of instruction.

## RESEARCH PRINCIPLE 2: Test preparation

Teachers are responsible for teaching the skills, knowledge, and behaviors essential to answering test questions, as well as preparing their pupils for the formal assessments.

### RESEARCH BASIS FOR PRINCIPLE 2

Gulek (2003) writes that adequate and appropriate test preparation plays an important role in helping students demonstrate their knowledge and skills in high-stakes testing situations. Becker (1990) conducted an extensive meta-analysis of the research and concluded that on average, helping students understand how to approach test questions can help increase SAT scores. Sloane & Kelly (2003) write that “Students can be effective instruments in their own learning if the teacher is clear on the learning goals and the students are informed of their current performance and given clear steps for remediation. . . . The task for teachers is to know and understand their state’s standards, and then translate this knowledge to continuously help students learn and self-assess to meet those standards.”

### RESEARCH PRINCIPLE 2 APPLIED

Working specifically through questions (“What, exactly, is the question asking?” “What kind of answer will you be looking for?” “Why did you choose the answer you chose?”) can be a fruitful practice in reasoning. The cognitive

skills required for understanding and answering test questions are higher-order thinking skills; making these skills overt for students can improve their understanding of the many tasks in their lives that will involve reading and answering questions, well beyond the demands of the CST.

To this end, Practice Path™ provides assessment activities embedded in the system to provide practice on applying curriculum standards in the format of the CST. Each strand and skill in Practice Path™ is linked to the California Content Standards, so the educator can provide targeted direct instruction for those areas that are weak. This means that teachers use Practice Path™ to help students become familiar with the California Content Standards and experience test questions that resemble those on the CST.

### RESEARCH PRINCIPLE 3: Formative assessment

“A major purpose of evaluation is to help teachers better understand what students know and make meaningful decisions about teaching and learning activities.”

#### RESEARCH BASIS FOR PRINCIPLE 3

Assessment comes in two forms: formative and summative.

Standardized tests like the CST are a summative assessment, or testing that occurs at the end of a given amount of instruction. Formative assessment occurs throughout a unit of instruction; because it occurs more frequently, and because its purpose is to inform further instruction, students receive more immediate feedback on their learning. “Formative assessments . . . are essential. They permit the teacher to grasp the students’ preconceptions, understand where the students are in the ‘developmental corridor’ from informal to formal thinking, and design instruction accordingly” (Bransford, et al., 2000).

#### RESEARCH PRINCIPLE 3 APPLIED

Together, teacher observation and Practice Path™ enable teachers to define and implement a P3®—**Personal Prescriptive Path®** of instruction for all students, no matter how diverse.

In addition, students’ approaches to and solutions of questions provide teachers with extra information about what their

students know and how they think. The Practice Path™ program can provide a great deal of information for teachers about their students. Practice Path™ includes teacher optional pre- and post-assessments to determine students’ initial areas of weakness and to measure overall effectiveness. Practice Path™ automatically adjusts the grade level and difficulty of content based on students’ performance.

**RESEARCH PRINCIPLE 4:**  
**Strengths of computerized  
technology, particularly  
in preparing for  
standardized testing**

**RESEARCH BASIS FOR PRINCIPLE 4**

According to Coley, Cradler, & Engel (1997) “studies show that computer based instruction can individualize instruction and give instant feedback to students, even explaining the correct answer. The computer is infinitely patient and nonjudgmental, thus motivating students to continue.” Meta-analyses of computer-based instruction by Kulik (1994) provide support for the effectiveness of technology across many applications. Given the research basis for the effectiveness of test preparation, the fact that technology can give as much feedback as the student needs, on the student’s time and at the student’s pace, it stands to reason that computer-based instruction based on the California Content Standards that prepares students for the format and content of the CST would provide many students—including those who need more time and may learn more slowly—with special learning opportunities.

**RESEARCH PRINCIPLE 4 APPLIED**

Practice Path™ allows all learners individualized instruction at their own pace, including explanations for answers to practice items. The questions are provided in the format of the CST, thus allowing students opportunities to become familiar with both standards-based content and test format. For many learners, especially those who learn better with more individualized opportunities to self-pace and practice, the online format is both more reinforcing and more motivating than a paper-and-pencil version would be. Practice Path™ is a way of increasing the opportunities for standards-based learning and practice for more learners in California.

## SOURCES CITED IN SUPPORT OF THE PRINCIPLES

- Becker, B. J. (1990). Coaching for the Scholastic Aptitude Test: Further Synthesis and Appraisal. *Review of Educational Research*, 60 (3) pp. 373–417.
- Bransford, J. D., Brown, A. L., & Cocking, R. R. (eds) (2000). *How People Learn*. Washington, DC: National Academy Press.
- Coley, R. J., Cradler, J. & Engel, P. K. (1997). Computers and Classrooms: The Status of Technology in U.S. Schools (Policy Information Report). Princeton, NJ: Educational Testing Service.
- Gulek, C. (2003). Preparing for high-stakes testing. *Theory into Practice*, 42 (1) pp. 42–50.
- Kulik, J. (1994). Meta-analytic studies of findings on computer-based instruction. In *Technology Assessment in Education and Training*, Baker, E. L. and O’Neil, H. F., Jr. (eds) (pp. 9–33). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Langer, J. A., “Beating the odds: teaching middle and high school students to read and write well,” *American Educational Research Journal*, Winter 2001, 38(4), pp. 837–880.
- Sloane, F. C., & Kelly, A. E. (2003). Issues in high-stakes testing programs. *Theory into Practice*, 42(1), pp. 12–17.
- Weinstein, R. S. (2002). *Reaching Higher: The Power of Expectations in Schooling*. Cambridge, MA: Harvard University Press.