

 Measuring Up.

Research-Based Pedagogy

of the *Measuring Up
Insight*® Online Program

Research

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INTRODUCTION

In June 2010, the Council of Chief State School Officers (CCSSO) and the National Governors Association (NGA) published the Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science & Technical Subjects and the Common Core State Standards for Mathematics. The CCSSO and NGA designed these new standards with the intent of better preparing students for both college and career. The standards themselves are based in research and evidence and are intended to be a “living work” that will evolve as new research and evidence emerges (Common Core State Standards, 2010).

Since its inception in 1990, Mastery Education (formerly Peoples Education) has built and revised student learning products based on continual review of scientific research literature. The foundation of the Mastery Education *Measuring Up Insight* program is a set of principles derived from the soundest current theory and research on literacy, language arts, writing, social studies, mathematics, science, differentiated instruction, and assessment. These principles are aligned with the research supporting the Common Core State Standards, and our assessment materials are aligned with the Common Core State Standards themselves. In addition, for our core states that are in the transition period to the Common Core State Standards, or that have chosen not to adopt the new standards, the *Measuring Up Insight* program continues to be aligned to the student learning standards of the state for which the materials are designed.

This document serves both to provide information about the *Measuring Up Insight* program 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 *Measuring Up Insight* 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

Measuring Up Insight specifically embodies both the principle and its research-based foundation illustrates how the system can be used to help teachers collect information about their students’ strengths and weaknesses and to help their students explore their own understanding of the standards-based information they are likely to encounter on the state test.

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 adopts challenging academic content standards and challenging student academic achievement standards.
- Each state educational agency implements a set of high-quality, yearly student academic assessments that include, at a minimum, academic assessments in mathematics, reading or language arts, and science in order to be used as the primary means of determining the yearly performance of children and of discerning whether they meet the state’s challenging academic standards (No Child Left Behind [NCLB], 2002).

For those states that have adopted the Common Core State Standards, the newly aligned assessments will require greater depth of learning and critical thinking skills than the assessments of the past. In addition to the increased rigor, the new assessments will also be administered via computer.

THE MEASURING UP INSIGHT PROGRAM

Measuring Up Core Success is a supplemental assessment and instructional program with lessons completely aligned to the Common Core State Standards and, for those states in transition or those that are not adopting the new standards, customized to that state’s standards.

The series includes *Measuring Up Insight*, an Internet-based benchmarking/diagnostic system that helps to assess students' standards knowledge, while also preparing them for their state's current state test and the assessments aligned to the Common Core.

***Measuring Up Insight* offers:**

- customized items and content for the Common Core State Standards and for each of our core states
- preconfigured full-length diagnostic practice assessments
- the ability to create and deliver ongoing formative assessments
- easy step-by-step assessment creation tools
- items in the idiom and format of the new Common Core assessments and each of our core state's high-stakes assessments (including technology enhanced items)
- online and paper-and-pencil delivery
- powerful, easy-to-use reporting identifying individual strengths and weaknesses for each student
- the ability to direct teachers to remediation resources in *Measuring Up* print and online products

RESEARCH-BASED PEDAGOGY OF THE MEASURING UP PROGRAM

The *Measuring Up* program, including *Measuring Up Insight*, is fully aligned to the Common Core State Standards and continues to support and enhance best practices for effective teaching of each state's mandated curriculum and performance objectives, particularly for those states that are in a period of transition to the new standards. The research-based, unifying pedagogical principles outlined below are common across state standards and the Common Core State Standards and form the foundation of the *Measuring Up* program's design. The principles listed on the following pages apply to the *Measuring Up Insight* component of the complete *Measuring Up* program.

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 (NCLB, 2002).

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 argues 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." Weinstein's argument lays the foundation for continual formative assessment as well as differentiated instruction based on the results of that assessment.

RESEARCH PRINCIPLE 1 APPLIED: The implication of Weinstein's statement is that assessment must help teachers understand what students know and need to know. The *Measuring Up* materials can be used with students to help teachers know in advance of instruction where gaps in their students' understandings lie. Teachers can then begin to think about filling in those gaps for all learners. The standards demand high achievement for all learners, and the *Measuring Up* program can be seen first as an aid to student learning toward those goals and second as a step toward positive assessment results. *Measuring Up Insight* can be used with all students of all abilities. It supports formative assessment in order to determine where students need help in approaching the standards, and it supports differentiated instruction so that all students can make necessary progress at their own pace. 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 for preparing their pupils for the formal assessments. Students too can be an essential factor in successful test preparation when given the tools and information to improve their performance.

RESEARCH BASIS FOR PRINCIPLE 2: There is considerable research about how much and what kind of test preparation is valuable. In one of the earlier studies, Becker (1990) conducted an extensive meta-analysis of the research on test preparation and concluded that on average, helping students understand how to approach test questions can help increase test scores. In a landmark meta-analysis of the National Education Longitudinal Study (NELS) database, Briggs (2001) concluded that, after rigorous coursework, the next most significant impact on test scores is the use of quality test-preparation materials that familiarize students with the test and the knowledge base they need to answer the questions. Briggs also noted that students who had taken a high-stakes test previously were most likely to improve their scores after interaction with test prep materials.

Other researchers have noted similar results, including Gulek (2003), who writes that adequate and appropriate test preparation plays an important role in helping students demonstrate their knowledge and skills in high-stakes testing situations. 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.”

It is critical that students’ ownership of their progress is an integral part of the test preparation process.

RESEARCH PRINCIPLE 2 APPLIED: *Measuring Up* to the Common Core provides assessment activities embedded in each lesson of the student worktexts to provide practice in applying curriculum standards in the format of standardized tests. Each question in *Measuring Up Insight* is linked to the Common Core State Standards, to the remaining state standards, and to each *Measuring Up* worktext lesson in the P3®—Personal Prescriptive Path® report, so that the teacher can provide targeted direct

instruction for those areas that are weak. As a result, teachers can use *Measuring Up Insight* to help individual students strengthen their skills and knowledge within the standards and experience test questions that resemble those on standardized tests. Moreover, a bank of *Measuring Up* to the Common Core Diagnostic Practice Tests for both the PARCC and Smarter Balanced assessment consortia provide additional ways to ensure that students are fully prepared for the rigors of the next generation of standards-based assessment. Each practice test incorporates blueprint test design to reflect released sample items.

RESEARCH PRINCIPLE 3: FORMATIVE ASSESSMENT

Formative assessments occur throughout a unit of instruction. Because they occur more frequently, and because their 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). Formative assessments “might be one of the more powerful weapons in a teacher’s arsenal” (Marzano, 2007).

RESEARCH BASIS FOR PRINCIPLE 3: In a seminal meta-analysis of research on formative assessment practices, Black & Wiliam (1998) concluded that there were critical gains in student achievement in classrooms where formative assessment was used to help inform instruction. Furthermore, they found that gains were particularly considerable for low-achieving students. Since this landmark body of research, much has been written about the benefits of formative assessment and its potential for benefiting learning. Oberdorf & Taylor-Cox (2012) write that “formative assessment allows teachers to provide the specific instruction that each student needs. The more we know about students’ levels of understanding, the more effective and targeted our instruction can be. Routine use of formative assessment enables teachers as they navigate instruction driven toward individual student success.” And, according to the National Mathematics Advisory Panel, “Teachers’ regular use of formative assessment improves their students’ learning, especially if teachers have additional guidance on using the assessment to design and individualize instruction” (2008).

The CCSSO (2008) describes the primary purpose of formative assessment as a process: “to provide evidence that is used by teachers and students to inform instruction and learning during the teaching/learning process. Effective formative assessment involves collecting evidence about how student learning is progressing during the course of instruction so that necessary instructional adjustments can be made to close the gap between students’ current understanding and the desired goals.” Once teachers identify individual student needs, they have the requisite information to initiate the process of individualizing, or differentiating, instruction (Stiggins, 2005). “It’s worth stressing that because the formative assessment process deals with ongoing instruction, any teacher-made modifications in instructional activities must focus on students’ mastery of the curricular aims currently being pursued” (Popham, 2008). This assumption is in direct opposition to moving on and choosing a different approach next time (Popham, 2008).

Finally, students too can take greater ownership of their own learning with the use of effective formative assessments and clear communication between teacher and student (Stiggins, 2005). “As teachers help students track their progress, students can tell exactly where they are. A student who knows he’s far from meeting a target will realize that he needs additional practice or more scaffolding. And a student who meets a target quickly can tell that she’s ready for an additional challenge” (Dobbertin, 2012).

RESEARCH PRINCIPLE 3 APPLIED: *Measuring Up Insight* provides the tools for conducting valuable and frequent formative assessments. In addition, students’ approaches and solutions to questions provide teachers with extra information about what their students know and how they think. Both *Measuring Up*–created tests and Teacher-created Benchmark Tests in the *Measuring Up Insight* system are designed to provide diagnostic information for teachers about their students. Viewed in this way, *Measuring Up Insight* is a powerful instructional tool for informing classroom instruction in ways more profound than simple test preparation.

RESEARCH PRINCIPLE 4 DIFFERENTIATED INSTRUCTION

Once teachers have ascertained their students’ individual strengths and weaknesses, a differentiated approach for each student is the most effective path to mastery of concepts and acquisition of understandings. “The intent of differentiating instruction is to maximize each student’s growth and individual success by meeting each student where he or she is and assisting in the learning process” (Hall et al., 2011).

RESEARCH BASIS FOR PRINCIPLE 4: There is a significant amount of research to support that students are more successful when they are taught to their individual levels of readiness. The foundation for this research begins with Vygotsky (1978) and his theory on the Zone of Proximal Development (ZPD), the range at which learning takes place. Fisher (1980, in Tomlinson & Allan, 2000) and other researchers have found that students tend to learn best, and feel best about their learning experience, when they are at about 80% accuracy with the material. In order to achieve this level of accuracy, many researchers have found that students need to be grouped flexibly and instruction should be focused on broad concepts so that students can learn at varying degrees of complexity within that concept (Hall et al., 2011).

Even with the heavy emphasis on mastery of standards, differentiation can be achieved to meet the needs of students. “Under the right conditions, personalized instruction and a standards-based curriculum can complement each other rather than exist at odds” (Powell & Kusuma-Powell, 2012).

RESEARCH PRINCIPLE 4 APPLIED: Together, teacher observation and constructive use of *Measuring Up Insight* enable teachers to define and implement a P3—Personal Prescriptive Path, an individualized plan of instruction and practice for all students, no matter how diverse. *Measuring Up Insight* automatically generates a targeted list of practice sessions called Quests, providing a standards-aligned tool that teachers can use to differentiate their students’ learning experiences.

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