mastery education

WHITE PAPER

Measuring Up

The Need for Quality Instruction and Practice

to Meet the Demands of the New Florida Math and ELA Standards

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INTRODUCTION

On February 18, 2014, both the Mathematics Florida Standards (MAFS) and the Language Arts Florida Standards (LAFS) were approved by the Florida State Board of Education. These new Florida standards were developed with the intent of providing all students with high-quality education at all levels and preparing all students for college and career. In order to implement rigorous standards and meet the needs of all students, Florida teachers need curriculum support with sound instruction and opportunities for students to practice applying concepts and new skills.

Such high-quality instruction will need to take into consideration a diverse student body and to include formative assessments before and after instruction to gauge student learning, so that teachers can tailor instruction and practice to individual student needs. Instruction that meets the demands of these new standards also must support developing depth of knowledge and must include rigorous materials so that when students are faced with an assessment, they are able to read diverse fiction and nonfiction materials and to answer a range of challenging questions.

Formal test preparation can be useful in preparing students for the format of an assessment and in helping to build test-taking stamina. However, extensive test preparation is not necessary if students are engaged with quality instructional materials and opportunities to practice using new skills and applying newly learned concepts on a daily basis. Students will be well prepared to respond to a range of questions about complex reading materials and mathematical problems with both selected responses and extended written responses, given the right set of learning opportunities.

INSTRUCTION THAT MEETS THE DEMANDS OF RIGOROUS STANDARDS

The notion that rigorous standards positively affect the implementation of better instruction is one that is well supported by academic research. The most extensive and best-known research about the effects of expectations is addressed by Rhona S. Weinstein 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" (Weinstein, 2002). If we agree with Weinstein's premise, then not only do rigorous standards demand strong instruction, but they also necessitate the use of formative assessments that can inform subsequent instruction.

The Florida standards demand high achievement for all learners, and the *Measuring Up* tools can be seen first as an aid to student learning toward those goals and second as a step toward positive assessment results. *Measuring Up* 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. *Measuring Up* provides teachers with pre-assesssments that are specifically targeted at identified learning goals and standards and, thus, can lay the foundation for quality instruction that is tailored to the needs of each learner in the classroom.

Expert educators, such as Robert Marzano, and developers of Florida's Multi-Tiered System of Supports (MTSS) tell us that quality instruction must embody specific core components. In *The Art and Science of Teaching*, Robert Marzano identifies three key components of quality instruction that are grounded in decades of educational research (Marzano, 2007):

- establish and communicate learning goals (Wise & Okey, 1983; Lipsey & Wilson, 1993; Walberg, 1999);
- track student progress with pre– and post–formative assessments (Bangert-Drowns et al. [as cited in Marzano, 2007]; Kulik & Kulik, 1991);

- provide feedback (Black & Wiliam, 1998), and;
- celebrate success (Deci, Koestner, & Ryan, 2001).

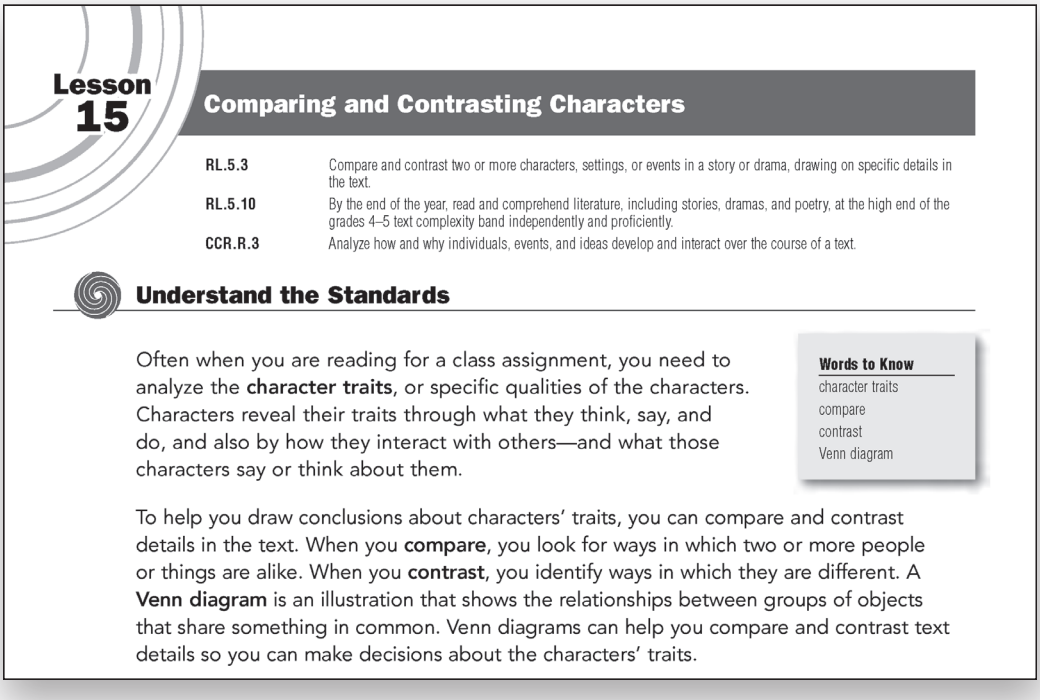
Florida's MTSS implementation resources describe the first tier of their instructional approach as ". . . what 'ALL' students get in the form of instruction (academic and behavior/social-emotional) and student supports" (Florida's MTSS, 2011). The goal of MTSS is to "ensure that all students reach and/or exceed state proficiency levels" (Florida's MTSS, 2011). According to Florida's MTSS guide, Tier 1 instruction and assessment (Florida's MTSS, 2011):

- is focused on grade level/subject area/behavior standards;
- includes effective large and small group strategies;
- incorporates differentiated instruction that is appropriate for the size and diverse learning abilities of the group and instructional skills of the teachers;
- includes both formative and summative measures that may occur as frequently as daily or weekly, or quarterly and/or end-of-year to assist with lesson planning.

In Marzano's *The Art and Science of Teaching*, we are also reminded that how students interact (critical input experiences) with the instructional materials is critical. Students must preview (Mayer, 1979; West & Fensham, 1976; Mayer, 2003) and process using macrostrategies, such as: summarizing (Kintsch, 1979; van Dijk, 1980), encountering nonlinguistic representations (Paivio, 1969, 1971, 1990; Sadoski & Paivio, 2001), questioning (Redfield & Rousseau, 1981), reflecting (Butler & Winne, 1995; Cross, 1998), and cooperative learning (Johnson & Johnson, 1999; Marzano, 2007).

The *Measuring Up* instructional materials are grounded in sound educational practices, meet the stringent requirements of Florida for cultural and linguistic sensitivity, are goal-oriented with explicit learning targets and standards, provide embedded guided instruction and essential engagement activities to support the material, and are student-driven with skill-building practice that can deliver a unique experience for all. For example, the following grade 5 ELA lesson, Comparing and Contrasting Characters (MUCC: ELA Level E, 2014), includes:

A **clear explanation of standards** (RL.5.3; RL.5.10; CCR.R.3; LAFS.5.RL.5.10; LAFS.5.RL.4.10) and an introduction to essential vocabulary:



Lesson 15

Comparing and Contrasting Characters

RL.5.3	Compare and contrast two or more characters, settings, or events in a story or drama, drawing on specific details in the text.
RL.5.10	By the end of the year, read and comprehend literature, including stories, dramas, and poetry, at the high end of the grades 4–5 text complexity band independently and proficiently.
CCR.R.3	Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

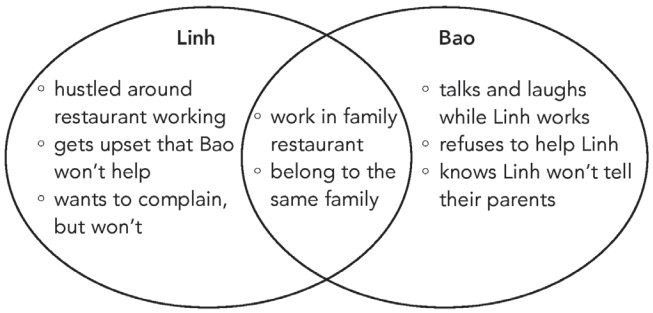
Understand the Standards

Often when you are reading for a class assignment, you need to analyze the **character traits**, or specific qualities of the characters. Characters reveal their traits through what they think, say, and do, and also by how they interact with others—and what those characters say or think about them.

Words to Know
character traits
compare
contrast
Venn diagram

To help you draw conclusions about characters' traits, you can compare and contrast details in the text. When you **compare**, you look for ways in which two or more people or things are alike. When you **contrast**, you identify ways in which they are different. A **Venn diagram** is an illustration that shows the relationships between groups of objects that share something in common. Venn diagrams can help you compare and contrast text details so you can make decisions about the characters' traits.

A **visual representation** of the concepts:



Guided Instruction with questions students can work through with support from the teacher in order to prompt thinking and promote comprehension:

Guided Instruction

Read the passage, paying close attention to the words and actions of each character. Then complete the exercises to the right.

Emergency!

(three fifth graders, Mel, Rico, and Greg, are walking down a sidewalk when an elderly man walking in front of them collapses to the ground)

MEL: *(sidesteps the man and looks aghast)* Ugh! Did you see that old guy? I wonder what *his* problem is.

RICO: *(concerned, kneels by the man)* Sir! Sir! Are you OK? *(yells)* Call 9-1-1. Someone, please call 9-1-1. This man needs help!

GREG: I'll call 9-1-1, but then I've got to go. Basketball practice, you know. *(pulls out his cell phone and dials as he walks away)* I'd like to help, but …

MEL: *(runs after Greg and calls back over her shoulder to Rico)* Come on, Rico! He'll be fine. Greg's calling 9-1-1 now.

RICO: *(shakes his head sadly at his friends before returning his attention to the man who is starting to stir)* It's OK, sir. Try to stay still. You've had a fall. I've called for an ambulance, and I'll wait with you until help arrives. *(The man nods and leans back down.)* My name's Rico, by the way. What's yours?

Guided Questions

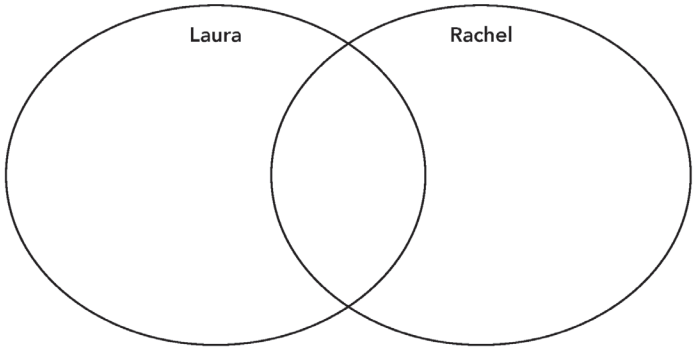
Who is most helpful in this situation? Who is least helpful? Why?

What are two things these three friends have in common?

On Your Own engagement activities and practice for students to work on individually and with classmates cooperatively (for more on the importance of practice, see the next section):

Complete the exercises based on the passage.

1 Work with a partner to complete the Venn diagram. List the similarities and differences between Laura and Rachel.



2 What traits do the two girls share? How do you know?

_____

3 How would you characterize Laura's first encounter with Rachel?

A Laura is clumsy.

B Laura is confident.

C Laura is skillful.

D Laura is exhausted.

4 When Laura bumps Rachel's chin,

A Rachel is apologetic.

B Rachel is rude.

C Rachel is accepting.

D Rachel is confident.

5 How will Rachel's offer to practice with her likely change Laura?

_____

_____

And **Kick It Up** activities at the end of a series of lessons (opportunities for differentiating instruction or creating a writing celebration in which students choose a writing activity and topic as their final piece to revise and share):

Talk About a Favorite Book

Go to the library with a group of classmates. Each student should choose a favorite work of fiction and summarize it briefly for the group. Then, collect data about your book choices by discussing these questions:

- What genre is the book? Do you generally read books in that genre?
- What character in this work grabs you? What makes this character intriguing?
- Did you choose your book because of its setting? Is it because you like science or social studies?
- Do you like books with a certain theme, such as the triumph of an underdog?

As a group, decide on the best way to record and present your data. Would a checklist, chart, or graph help organize your findings? What conclusions can you draw from your data? Present your results and recommendations to your teacher and the rest of the class.

Measuring Up 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 standards and even allows teachers to work differently with different students to make necessary progress. The *Measuring Up* program allows teachers to enact the principle that high standards can result in higher achievement for all students.

PRACTICE THAT ENSURES DEPTH OF KNOWLEDGE AND FLUENCY

In addition to good first instruction, students need exposure to opportunities for practice. In *The Art and Science of Teaching*, Robert Marzano explains that ". . . students must have opportunities to practice new skills and deepen their understanding of new information. Without this type of extended processing, knowledge that students initially understand might fade and be lost over time" (Marzano, 2007).

Research and theory underlying the need for practice are based in schema development (linking old knowledge to new and revising existing knowledge structures), development of procedural knowledge (skills, strategies, or processes), development of declarative knowledge (events, characteristics, or rules), and homework. Three types of schema development are typically identified: (1) accretion, (2) tuning, and (3) restructuring (Piaget, 1971; Anderson, 1995; Bransford & Johnson, 1973; and Winograd, 1975). The structure of the *Measuring Up* lessons supports schema development with each section: Understand the Standards (introduction, or accretion, of key words and concepts), Guided Instruction (developing, or tuning, understanding), and On Your Own (practicing and incorporating, or restructuring, knowledge).

Marzano notes that practice is most appropriate for the development of procedural knowledge (skills), rather than declarative knowledge (concepts), which is best developed through review and revision. "Procedural knowledge is oriented toward skills, strategies, or processes . . . Frequently, a number of procedures are embedded within a robust, complex macroprocedure" (Marzano & Kendall, 2007). For example, Marzano explains that the embedded procedures for writing, "planning, drafting, editing for overall logic, editing for mechanics, and so on . . . ," must be practiced repeatedly (Marzano & Kendall, 2007). Marzano reminds us that the well-accepted term guided practice (Rosenshine, 2002) communicates the idea that "the teacher does not simply turn students loose on practice activities but designs practice sessions that provide well-structured guidance. In short, effective practice is not unthinking execution of a set of steps or algorithms. Rather, it involves the gradual shaping of a procedure facilitated by teacher guidance

(Anderson, 1982, 1995; Fitts & Posner, 1967)" (Marzano, 2007).

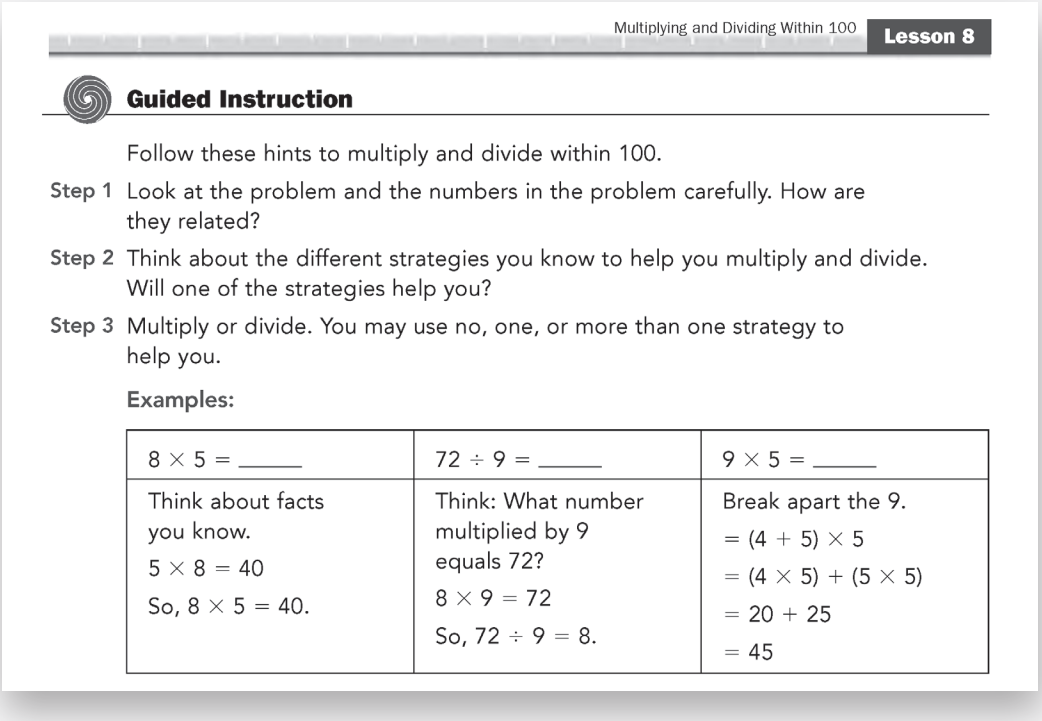
Over time, students begin to implement these skills with less and less conscious thought. Often the term fluency is used to describe such actions as multiplying single-digit numbers, selecting appropriate algorithms to solve complex mathematical problems, and editing for spelling, grammar, and punctuation. This fluency is the goal of practice. Once students have integrated the necessary skills and strategies, they can execute processes without significant conscious thought, and they can communicate their understandings clearly in assessments both formative and summative.

For example, in the following *Measuring Up* grade 3 mathematics lesson, Multiplying and Dividing Within 100 (MUCC: Mathematics Level C, 2014), students have the opportunity to practice multiplying (3.OA7; MAFS.3.OA.3.7):

"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). Students' approaches to and solutions of questions provide teachers with extra information about what their students know and how they think.

Measuring Up Diagnostic Practice Tests can provide a great deal of information for teachers about their students by including both pre- and post-instruction assessments to determine students' initial areas of weakness and to measure overall effectiveness. Furthermore, teachers can use the *Measuring Up* Diagnostic Practice Tests to follow up with formative assessments that help track student progress and prepare students for upcoming summative assessments.

With guidance:



Multiplying and Dividing Within 100 **Lesson 8**

Guided Instruction

Follow these hints to multiply and divide within 100.

Step 1 Look at the problem and the numbers in the problem carefully. How are they related?

Step 2 Think about the different strategies you know to help you multiply and divide. Will one of the strategies help you?

Step 3 Multiply or divide. You may use no, one, or more than one strategy to help you.

Examples:

$8 \times 5 =$ _____	$72 \div 9 =$ _____	$9 \times 5 =$ _____
Think about facts you know. $5 \times 8 = 40$ So, $8 \times 5 = 40$.	Think: What number multiplied by 9 equals 72? $8 \times 9 = 72$ So, $72 \div 9 = 8$.	Break apart the 9. $= (4 + 5) \times 5$ $= (4 \times 5) + (5 \times 5)$ $= 20 + 25$ $= 45$

On their own:

On Your Own

Multiply or divide. Use the different strategies to help you.

1. $42 \div 7 =$ _____
$6 \times 7 = 42$

2. $24 \div 6 =$ _____
$24 \div 4 = 6$

3. $0 \times 6 =$ _____
$0 \times 1 = 0$

4. $8 \times 7 =$ _____
$(8 \times 5) + (8 \times 2) = 40 + 16 = 56$

5. $9 \times 6 =$ _____
$(9 \times 5) + (9 \times 1) = 45 + 9 = 54$

With a classmate:

Answer the questions. Share your ideas with a classmate.

28. Julian has 48 crayons. There are 6 crayons in each box. How many boxes does he have? Explain how you found your answer.

_____

_____

Elevate **29.** Mae has 9 bags of stones. She has 7 stones in each bag. Show how to break apart the factor 7 to find out how many stones she has in all.

_____

CONCLUSION

All the *Measuring Up* tools can help students in grades 1–8 meet the challenges of the new Mathematics Florida Standards (MAFS) and Language Arts Florida Standards (LAFS). Teachers can rely on the assessment, instruction, and practice components to elucidate the comprehensive scope of the new Florida standards.

Measuring Up provides teachers and students with complex reading materials and a range of question types so that students can develop fully such skills as comparing and contrasting or analysis of solutions. *Measuring Up* supports recommended Lexile® levels and word counts at each grade level in order to challenge students with rigorous reading selections in a range of genres.

And, mathematics materials reflect the demands of the MAFS, including application of real-world mathematical challenges and an increased focus on algebraic concepts.

Finally, if teachers use the full complement of *Measuring Up* tools, they will find that the transition to the new Florida standards is a seamless one.

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