Research Foundation of McGraw-Hill My Math

CCSSM,TfDS(--)l-p B- l5amb the K-12 curriculum was then identified by the National Governors Association (NGA, 2007) as a contributing factor in the U.S. educational system failing to keep pace with our international competitors and to meet the needs of the American workforce. Moving away from the mile wide and inch deep format of previous curricula, ***McGraw-Hill My Math*** is written to meet the demands of the Common Core State Standards for Mathematics (CCSSM)

[1]. For any mathematics program to be effective, it must provide a consistent instructional format and design that creates a firm foundation upon which all students can be successful. In creating this new program, our authorship team took into consideration the needs of today's students who are familiar with the fast-paced digital world we live in. With the needs of those students in mind and a foundation with an instructional emphasis on focus, coherence, and rigor, ***McGraw-Hill My Math*** infuses strong deliberate content and a fresh, inviting style to engage students

The Standards for Mathematical Practices are embedded throughout ***McGraw-Hill My Math*** These are clearly labeled for easy teacher access and are especially evident in the hands-on modeling approach, the strong problem-solving emphasis in every lesson and in the higher-order thinking exercises found throughout the student pages. The teaching model includes formative assessment opportunities identified with the mathematical practices. The online training modules help teachers create the classroom environment to foster those 'habits of mind' that are core to the practices.

Based on the recommendations of the Math Publishers Criteria K-8, the teacher materials are organized to point out the elements of focus, coherence and rigor. [3]

Students will learn fewer math concepts in each grade, but they will focus on them in greater depth and detail. The overwhelming heart of the CCSSM in early grades is arithmetic, along with the components of measurement that support it. That includes the concepts underlying arithmetic, the skills of arithmetic computation, and the ability to apply arithmetic to solve problems and put arithmetic to engaging uses.

McGraw-Hill My Math follows the intended scope and conceptual development as prescribed by the CCSSM. With that in mind, the majority of lessons are devoted to the coverage of the standards with emphasis on the major and supporting clusters. This includes attention to supporting the goals of proficiency and fluency for computational skills while emphasizing real-world mathematical connections. The following is an overall break down of the content covered in each grade level:

Grade	Major Cluster Lessons	Total Number of Lessons	Percent of Lessons Devoted to Major Cluster
K	64	89	72%
1	70	95	74%
2	71	99	72%
3	81	110	74%
4	92	119	77%
5	97	129	75%

[3] From http://www.corestandards.org/assets/Math_Publishers_Criteria_K-8_Spring%202013_FINAL.pdf


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ownership over their learning, and keeping a living and changing document of their work/progress supports the process of meaning-making. ***McGraw-Hill My Math*** builds on the research supporting the use of interactive write-in texts by extending the personal student Interactive Write-in Texts from grades K through 5. Older students benefit from the format allowing them to read, write, answer, question, illustrate, graph, and self-assess all in one personalized place. For more research supporting the use of interactive student texts, see the white paper [7]

Academic vocabulary instruction is a key to academic success, especially for students from diverse backgrounds.[8] Therefore, teaching vocabulary in the math classroom is a critical area for effective instruction (Shostak, 2002). Students who are strong in conceptual skills may still need support with classroom vocabulary and with content specific vocabulary in order to be successful in school learning (Monroe, et al., 2002). ***McGraw-Hill My Math*** follows a strong language support philosophy for mathematics instruction including vocabulary support throughout and also the incorporation into the student interactive text with Foldables®-- three dimensional , interactive graphic organizers created by educator Dinah Zike. [9] Foldables®, for native English speakers and non-native English speakers alike, provide students with kinesthetic learning opportunities for vocabulary and key concepts, thus promoting long-term retention of knowledge. The notion that a picture is worth a thousand words is supported by research completed by the National Reading Panel (2000) concluding

She calls for a focus on differentiation guided by formative assessment, flexible grouping, targeted instruction, adjusted levels of cognitive demands, utilization of learning frameworks, and progress monitoring as ways to make sure that students have access to a deep understanding of math content. Formative assessment is crucial in targeting student needs and progress (Popham, 2008). Formative assessment opportunities are provided throughout ***McGraw-Hill My Math*** including Chapter diagnostics and pretests, Am I Ready? Assessments, Common Core Quick Checks, Check My Progress, and My Review & Reflect. Students are routinely engaged in assessment situations which allow them to verbally display what they know; give reasons that support their thinking; ask for evidence when something doesn't sound correct; and ask for clarification questions. For students who are excelling, options for extension are provided. Students who need more practice, or who need intervention, are provided with additional option suggestions in the Teacher Edition of the ***McGraw-Hill My Math*** program. Options for targeted instruction or different levels of cognitive demand were created using research on depth of knowledge levels (Webb, 1999) and suggestions for progress monitoring (Taylor-Cox, 2009).

Allowing for students to have a variety of learning options can include online options, individual or small group work. The ***McGraw-Hill My Math Learning Stations*** allow for student variation to meet the diverse needs of a classroom. Informal assessments, hands-on work, and collaborative conversations can be completed using these stations. For support in setting up effective classroom management of learning stations, see at mhmymath.com. Manipulatives and their effectiveness in helping students to bridge between the concrete and the abstract in mathematical learning can be completed in whole class or small group settings (NCTM, 2000). Explaining and critiquing mathematical reasoning are essential skills in demonstrating a deep understanding of mathematics. By using manipulatives and collaborative conversations, students can more easily express their comprehension of a math topic. Incorporating assessments using manipulatives or completing

suggestions for English Language Learner Instructional Strategies (ELLIS) and Differentiated English Language Learner Support (DELLS) to ensure that language development can be integrated with content instruction. Established methods of instructional suggestions include activating prior knowledge, identifying cognates, using modeled talk, providing tiered sentence frames and questions, and utilizing manipulatives, realia, and hands- } v š] À] š] • ~ , Œ Œ o o U 2008). These are evident in the teaching model for each lesson in ***McGraw-Hill My Math***. For more discussion on the research and approaches to providing support for English Language Learners, see ***McGraw-Hill My Math*** at mhmymath.com.

If students are to succeed in mathematics, they must be prepared in both the content being assessed and in the format of the assessment. The work of Jay McTighe and Grant Wiggins (1998, 2005) provides the Understanding by Design® planning framework for curriculum assessment. Using the seven key principles in UbD (Understanding by Design)[11] the ***McGraw-Hill My Math*** program has incorporated the concepts of Big Ideas in learning driven by Essential Questions. Students are involved in a variety of ongoing summative and formative assessment opportunities in an effort to better inform sound instruction. Students have the opportunity to respond to selected response, constructed response, or extended response in both

new pathway of testing, ***McGraw-Hill My Math*** has developed performance tasks during which students will be required to complete real-world situations with different problem-solving parts. The depth of student understanding will be demonstrated by their ability to solve multi-step problems through the assimilation of mastered concepts.

For a more complete description of the many other types of assessment included in the ***McGraw-Hill My Math*** program, refer to
on mhmymath.com.

Research has shown that focusing more clearly on fewer topics and providing more in-depth study with formative assessment informing the needs for instruction allows the teacher to better meet the needs of student learning. Accessing technology that has value and is closely tied to the current instruction allows students to more clearly see the connections in their learning. Providing options for fluency practice and rigorous applications encourages student application of mastered skills to real-world situations and ultimately leading them further on the path of college and career readiness. The teacher plays an essential role as facilitator and engages students in becoming thoughtful mathematicians. By using the targeted resources available in the ***McGraw-Hill My Math*** program, teachers will be able to support a learning environment that empowers teachers and students to meet the demands set out by the CCSSM.

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