



KCM Kentucky Center for Mathematics



Considerations for Selecting a Primary Grades Supplemental Mathematics Diagnostic Intervention Program

DESTINATION MATH™

Responses submitted by:

Houghton Mifflin Harcourt Learning Technology

KCM DISCLAIMER:

This document presents useful criteria along with publisher-responses regarding a particular diagnostic intervention program and may be used as an informal tool. It is important to note that these **publisher-responses may not necessarily reflect the educational positions of the Kentucky Center for Mathematics**. Towards this end, we encourage the reader to critically evaluate each response with respect to the particular consideration. *We strongly recommend consulting with a mathematics education specialist when making any decisions regarding mathematics curricula.*

KCM Definitions:

A supplemental mathematics diagnostic intervention program is a research/evidence-based program that is used in conjunction with a core curriculum. The essential components of such a program include dynamic diagnostic assessments that inform data-driven differentiated instruction.

A dynamic diagnostic assessment is a measure designed to precisely ascertain a student's level of readiness for learning mathematics. These assessments typically focus on interactions among student, teacher, and task with the intention of dynamically reforming the testing landscape to accommodate the individual. See explication here: [PDF](#).

1. To what extent is the program based on solid theories of teaching and learning which develop conceptual understanding of mathematics.

Vendor Response:

Mathematics is all about solving problems. But learning mathematics requires that students not only acquire the skills necessary to solve problems, but more importantly recognize what skills they must use to solve problems. Each of the Destination Math courses explains in great detail not only the “how” of mathematics (its skills), but the “why” (its concepts). Some of the most robust features of Destination Math are as follows:

- The substance of each tutorial lesson centers around one or more “powerful ideas,” such as what it means to count a set of objects (cardinality), and what place value means (powers of 10).*
- The content is presented as a series of connected ideas that starts with the prerequisite knowledge that students should have and moves on in a systematic and coherent way to introduce new concepts and skills.*
- Synchronized narratives and graphical animations reinforce the presentation of the content so that students grapple with mathematics within a highly visual, dynamic, and aural environment.*
- The content has a coherent structure with new terminology introduced as needed, defined using clear language, and reinforced in a consistent manner.*
- The content is spiraled: ideas introduced in one lesson often reappear in a subsequent, seemingly unrelated topic.*
- The context of many lessons emphasizes the importance of mathematics, demonstrates its applications, and reflects highlights of its history.*

2. To which levels of the program does the research apply?

Vendor Response:

It applies to all levels of the program.

3. Are there randomized trial experiments that prove positive effects on student achievement?

Vendor Response:

Multiple validation studies of Destination Math in Destination Math: White Paper and Research are found in the supplemental documentation.

The successes of Destination Math in helping students raise their levels of achievement are documented in Case Studies found in the supplemental documentation. Further

documentation of the success of Houghton Mifflin Harcourt Learning Technology's intervention and professional development services can be found in these Case Studies.

- San Antonio Districts Collaborative—Dr. Sandra Bloom, Director, San Antonio Urban Systemic Program

- Shadowlawn Elementary School, Collier County, FL, Tim Ferguson, Principal

- Palm Beach County, FL—Dr. Lisa Troute, ESOL Curriculum Specialist

In each of these cases, the quality of the instructional materials and focused professional development for the teachers implementing Houghton Mifflin Harcourt Learning Technology intervention software were critical in creating success for the teachers and their students.

4. To what extent do the program's theoretical framework, instructional design, and content development align with your school's current mathematics curriculum?

Vendor Response:

To be completed by individual schools/districts

Professional Development

5. To what extent does the program provide rigorous professional development that contributes to a teacher's robust understanding of program framework, instructional technique, and use of materials?

Vendor Response:

Professional Development is an integral part of all of Houghton Mifflin Harcourt Learning Technology (HMHLT) educational solutions. HMHLT partners with schools and districts to deliver research-based, hands-on professional development. It is our mission to ensure that educators are comfortable with and know how to incorporate our technology solutions into the classroom culture. Our training is customized to meet the needs and objectives of the educators, schools and district leaders. We will work with building and district leaders to create a customized professional development plan appropriate for each implementation. Our basic package includes 5 sessions:

Implementation Planning: HMHLT Project managers will work to building and curriculum leaders to scope and plan the implementation, including setting goals, timelines and measurable outcomes designed to ensure student achievement and program implementation success.

Administrative Workshop: This session is designed to provide the Principal and building leaders with an overview of the Destinations Math courses. It focuses on data driven decision-making and data management and emphasizes the reporting features of this solution. This session provides hand-on time with the software and

includes tools to assist building leaders with monitoring the program's usage and success.

Initial Implementation Training: These group sessions are designed to prepare teachers to implement the Destinations Math with confidence and ease. The training day includes discussion of instructional strategies and best practices, hands-on interaction with the Destinations software, review of content as well as management system and student materials, and discussion of scheduling and implementation goal setting.

Onsite Support: These sessions are customized to accommodate the schedule, goals and teacher availability and skill set. The purpose of these sessions is to provide customized, individualized support to classroom educators 1:1 or in small groups. The content of these sessions varies depending on the needs of the educator and school but can include Grade level team meetings, in-class coaching, in-class modeling, classroom observation, lab usage support, data analysis and interpretation, driving instruction using data and intervention support.

Curriculum Integrations/Lesson Plan Mapping: HMHLT Consultants will guide teachers through the process of creating assessments, lesson plans, and mapping Destinations Math instruction. This ensures that Destinations Math is supporting the instruction that is already in place in the classroom and is providing educators with a tool to facilitate individualized instruction for students.

Each HMHLT onsite professional development session includes collaboration with the building leaders and is follow-up with a written Site Visit report + Participant evaluation summary.

Our professional Development packages are customized to meet the needs of individual schools/districts. Recommended packages may include more or less sessions.

6. To what extent does the professional development aid teachers' growth to conduct formative assessment by deliberately reflecting daily on practice and student performance?

Vendor Response:

The Learning Management System of the Destination Math begins with student assessment. There are over 10,000 questions available from which to create custom assessments and there are ready made assessments for each unit as well. The cycle of assessment, prescriptive curriculum, and post-assessment provides ample quantitative data from which to make educational decisions. A number of real-time student reports that provide clear data for improving the program for each student are available to the teachers.

HMHLT professional development provides teacher with modeling and demonstration of best practices in the use and understanding of the data available within the Destination Math solutions. These programs are built on an assessment-prescriptive lessons-assessment model that includes real time reports on student progress. The required professional development services are designed to give teachers and administrators the information, practice, and confidence to fully implement Destination Math in their schools and begin to see improved achievement among their students.

7. To what extent does the professional development incorporate coaching visits?

Vendor Response:

HMHLT prides itself on delivering high quality, research-based coaching and mentoring sessions. These sessions are designed to meet the needs of the teacher and embed the professional development into daily instruction. Dependent upon the level of services purchased teachers may have individual coaching or small group coaching sessions. These sessions will include modeling, planning and needs analysis. They are designed exclusively to build essential skills, and to empower teachers to integrate technology seamlessly with low levels of frustration.

8. To what extent does the professional development facilitate establishment of an engaged learning community?

Vendor Response:

Through site based support and coaching sessions, teachers are brought together by content or grade level to discuss and build skills around the integration. Through the management system teachers may create, share and collaborate on assignments. Team building is an important part of HMHLT professional development. HMHLT Professional Development encourages the development of user groups to facilitate team building among participants, but specific company sponsored learning communities are outside the current scope of our professional development offerings at this time.

9. To what extent does the professional development prepare teachers to guide student attainment of number sense, including verbal, symbolic, and quantitative aspects of number?

Vendor Response:

HMHLT professional development uses the research-proven “Teach, Guided Practice and Apply” format, even during teacher training. This ensures that educators have exposure to and understand the specific concepts taught in the Destinations Math courses. Additionally, our professional development offerings include demonstration and discussion of valuable teaching strategies for specific math concepts.

10. To what extent does the professional development support teachers in becoming primary mathematics education leaders within their schools?

Vendor Response:

The rigorous Professional Development focuses on empowering teachers with research based best practices in mathematical instruction. Through modeled lessons, coaching, mentoring and in-depth content knowledge development, teachers will acquire the necessary knowledge and skills to provide leadership in mathematics within the school community.

11. To what extent does the professional development prepare teachers to advance student thinking from working with ones to performing mental computation using “chunks” of numbers?

Vendor Response:

Destinations Math naturally progresses students from working with ones to performing computations using chunks of numbers. Using technology for this type of instruction provides educators with a tool that makes the abstract more concrete. Educators can use the engaging visual graphics and exercises to demonstrate these concepts to students. Additionally, through tools like interactive white boards, Destinations Math becomes an integral part of whole and small group instruction. During HMHLT professional development opportunities, educators have the opportunity to work collaboratively with peer as well as observe HMHLT consultants deliver lessons to help foster these higher order thinking skills in students.

12. To what extent does the professional development foster a sense of purpose and commitment to the instructional mission?

Vendor Response:

Prior to any Professional Development session, a comprehensive implementation plan is developed. This plan, aligned with district/school goals, and objectives, is clearly articulated during the PD sessions and is monitored throughout the implementation. Benchmarks are established, revisited and revised as needed.

13. Does the professional development incorporate reading materials that provide teachers with rigorous exposure to current research in teaching and learning?

Vendor Response:

Destinations Math Initial Implementation includes a Participant Booklet that contains specific research and current trend references. Additionally, a bibliography of research cited is included.

14. To what extent will teachers enjoy and engage in the professional development?

Vendor Response:

HMHLT strives to deliver professional development opportunities that are engaging, interactive and relevant for educators. Each session includes a Participant survey/evaluation. We take this feedback very seriously and tweak our workshops to make them even stronger continually. Customer feedback to our professional development sessions is overwhelmingly and almost unanimously positive.

15. To what extent does the professional development align with KDE Professional Development Standards?

Vendor Response:

HMHLT provides on-going professional development for all of our product offerings. This support is job embedded, research-based and focuses on providing the highest quality instruction and best practices. The HMHLT offerings are closely aligned with the KDE Professional Development Standards.

Diagnostic and Formative Assessment
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16. To what extent does the program prepare teachers to diagnose, with precision, a student's level of readiness for learning early mathematics?

Vendor Response:

The Learning Management System includes three components teachers use to diagnose, prescribe and assess. Teachers successfully diagnose students' levels of readiness using the Assessment Management component, and the Analysis and Reporting component. The LMS prepares teachers to assess student skill levels with tests aligned to state standard, as well as providing teachers with the ability to create custom diagnostic assessments for each student. A key component provides teachers with the ability to assess students on specific learning objectives.

17. To what extent does the program provide systems for organizing student data for the purposes of instructional design and for anecdotal reporting of achievement progress?

Vendor Response:

The Analysis and Reporting tool enables teachers to generate real-time analysis of student progress. Using the Management System, instructors are able to access a variety of reports (see attachment Destination Math Reports) This system identifies gaps in skills and concepts and prescribes solutions to remedy them.

18. To what extent does the program prepare teachers to fully utilize formative assessment to design data-driven instruction targeted at each student's zone of proximal development?

Vendor Response:

The Assessment Management Tools allow teachers to use formative assessments to proactively gauge student readiness and inform the teaching process. Ongoing informal assessments keep teachers abreast of each student's progress, thus allowing teachers to assign instructional learning paths for each student.

19. To what extent do the formative assessment mechanisms allow a teacher to explore student progress in different domains of learning (i.e. conceptual/critical thinking as it relates to supporting procedural/skill performance)?

Vendor Response:

A key component of the Destination Management System is the ability to assess students on specific learning objectives. Teachers are able to examine a student's progress, correlate this data to the scope and sequence and determine the student's progress in each domain.

Instruction and Differentiation
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20. To what extent does the program require that students engage in sustained hard thinking in order to construct foundational concepts that build facility with mathematical skills?

Vendor Response:

Because of the nature of the medium, content comes alive in Destination Math. Students can manipulate mathematical objects and investigate what properties change and what properties stay the same. Each session is presented to students in the context of real-world examples. The substance of each tutorial lesson centers around one or more "powerful ideas". The content is presented as a series of connected ideas that moves in a systematic and coherent way to introduce new concepts and skills. Students must use these "skills" (the how) in a series of applications that flows from the using of problem solving skills to the ability to recognize which of these skills they must use to solve problems.

21. To what extent does the program allow students to experience and internalize the idea of *quantity* in a variety of settings presented by the teacher with a progression of diminishing support in order to guide thinking from concrete to abstract?

Vendor Response:

Destination Math provides over 53 activities in the K-1 course that allows students to experience manipulating, counting, sorting, naming, determining the sum, etc. of a variety of objects that fosters a student's grasp of quantity. Students move from the use of concrete objects to the symbolic stage in each session. The program provides a strong tutorial that scaffolds the support given a student. The student is assigned more responsibility with each correct response. The program assists with incorrect responses with a SHOW ME tutorial that students use only as needed. The 2-3 course has 69 sessions that allows students to manipulate objects and symbols to move from concrete to abstract. The supportive tutorial format continues to provide students with appropriate individual support.

22. To what extent can the program be flexibly adapted to meet the instructional needs of students who are at a variety of readiness levels?

Vendor Response:

Instructional Management tools offer the teacher complete control over integrating an individualized instructional approach. Instructional activities are assigned based upon assessment results and are easily assigned to an individual student.

23. To what extent can the program be flexibly adapted to meet the optimal instructional pace of the individual?

Vendor Response:

The management system assists teachers in moving students through the program in a flexible and responsive way. Test results signal new assignments, and student progress on assignments produces appropriate new assessments. Ongoing informal assessments keep teachers abreast of each student's progress. Failure to progress is identified almost immediately and can be addressed before the problem becomes worse and the student falls further behind. This ongoing assessment identifies gaps in skills and concepts and then prescribes solutions to remedy them and help the student progress to proficiency.

24. To what extent does the program provide specific remediation strategies for recognizing and addressing common student misconceptions?

Vendor Response:

Activities that ask students to select a correct response include guided feedback that limits choices after incorrect responses; this leads all children eventually to the correct answer. The program provides a "show-me" option that assists students in recognizing the next step of the process and address any misconception the student may have.

25. To what extent does the program encourage the development of students' abilities to communicate their mathematical ideas?

Vendor Response:

Destination Math includes multiple opportunities for students to learn to communicate through a variety of tools. Students communicate verbally during small group or whole class instruction, providing the answers for the various stages of the activities, often using the graphics of the program as visual tools enhancing their explanation. Printed resources aligned to the activities assists students in developing their written communication of their mathematical ideas, i.e., logbook responses, Your Turn, Workouts, all of which require written responses. The program tool Show Me, assists students in developing stages of communicating ideas. Show Me is a verbal as well as graphic tool. Students experience one of the Destination characters explaining or demonstrating the mathematical idea. They are able to use this model to develop their own communication skills.

26. To what extent is the mathematical content appropriately focused (according to the National Council of Teachers of Mathematics *Focal Points*) to deepen foundational number sense and computational fluency/flexibility?

Vendor Response:

Destination Math is a comprehensive mathematics curriculum that immerses students in the use of mathematics to solve problems. They choose, combine, and apply effective strategies in real-world examples. They interpret the physical world through visualizations of geometric objects. They multiply and divide fractions and decimals to solve multistep problems. Destination Math teaches basic skills, math reasoning, conceptual understanding, and problem solving using an instructional methodology that provides a lasting, real-world connection. It fully embraces the NCTM Focal Points to assist every student in becoming mathematically literate.

27. How can this program be used or expanded to accommodate all the tiers of intervention required in the federal requirements of RTI under IDEA 2004?

Vendor Response:

The strength of Destination Math is the ability to provide each student with effective, individualized, standards-based instruction. It provides ongoing progress monitoring, instruction and assessment, ensuring data-driven instruction.

- a. It can be engaging, multilevel instruction for all students for Tier 1 when correlated with the core curriculum.*

- b. *Destination Math increases the intensity of the instruction for students who are struggling with the core curriculum, with a focus on small group instruction targeted to area of need for Tier 2. Instruction can occur in the classroom, in the technology lab, or after school tutorials.*
- c. *Destinations Math provides the intensive and explicit intervention tailored to individual students who are continuing to struggle even with the strategic intervention provided in Tier 2. Destinations Tier 3 instruction is delivered in the classroom, in a lab, or after-school tutorials in a variety of educational settings.*

28. To what extent will teachers and students enjoy and engage in the teaching of this program?

Vendor Response:

Teachers are very pleased with the ease of use of Destinations Math. The engaging graphics and easy to use tutorials provide teachers with an effective technology tool for their instructional tool-belt. Whole group instruction comes alive as computer generated graphics engage and delight students. Active boards allow for the manipulation of objects during the lesson. Students are actively engaged throughout the lessons, with multi-sensory activities that facilitate all learning styles.

29. To what extent are the student materials and technology user-friendly and developmentally appropriate?

Vendor Response:

Student assessment data provided through Destination assessments allow for seamless integration of assessment and instruction. Assessment results automatically generate an individualized instructional pathway. Teachers are also able to create tests using state standards with four clicks of the mouse and easily assign these tests to students. Student materials are delivered on the computer through a simple login procedure. Each student's page has all of the assigned activities and they point and click. Activities have visual cues, auditory prompts, and engaging graphics designed according to the developmental stages of the child. The graphics and organizational patterns change from Courses I and II (grades pre-k to 3rd) and Courses IV-VI to reflect the needs of each age group.

Additional Considerations

30. What are the grade levels targeted by this program?

Vendor Response:

Kindergarten through 12th are the grade levels targeted by the Destination Math program.

31. What is the cost of training? (KCM provides free Math Recovery or Number Worlds training for MAF grant recipients, one program per teacher per school.)

Vendor Response:

The cost of Professional Development for the solution is \$1,700.00 per day.

32. What is the cost of materials?

Vendor Response:

There is no additional charge for the materials consumed during Professional Development.

33. What materials and/or software are included in the cost?

Vendor Response:

The materials included in the cost of Professional Development include Training Manuals and appropriate handouts.

34. What are the suggestions and costs for additional materials?

Vendor Response:

There are no additional materials required.

35. What is the recommended group size?

Vendor Response:

The recommended group size for maximum effectiveness is 20 participants.

36. How can this program be used to benefit additional struggling primary students not directly served by the intervention teacher?

Vendor Response:

See supplemental documentation

37. What is the recommended lesson length?

Vendor Response:

Session length of 30 minutes is optimal.

38. What is the total recommended pull-out time (missed regular class time) per student?

Vendor Response:

Three or more sessions per week on the curricular area of focus is recommended and is better than one long session.

39. Since mathematics intervention is intended to be supplemental to the core program of study, is the mathematical content of the program aligned to a *subset* of the *Kentucky Core Content for Assessment, Kentucky Program of Studies, and National Council of Teachers of Mathematics* standards, rather than being an attempt to cover all topics?

Vendor Response:

The Destination Math software solution is closely aligned to the Kentucky Math Core Content – End of Primary. Documentation of this alignment is available upon request.

“Learning Objectives” are the building blocks of each course and are based on recommendations from the NCTM. Each unit within the courses is organized as follows:

Lesson: explicit instruction

Practice: additional prescriptive exercises

Workout: guided and exploratory learning