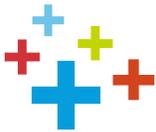




Mathematical Learning Systems' Correlations with
ACCELERATED MATH INSTRUCTION (AMI) REQUIREMENTS



Learning Solutions that are key to making a difference!™



Mathematical Learning Systems' Correlations with
ACCELERATED MATH INSTRUCTION (AMI) REQUIREMENTS
as per 2005-06 Accelerated Mathematics Instruction, Texas Education Agency

ACCELERATED MATH	MATHEMATICAL LEARNING SYSTEMS
<p>Identification of Struggling Students: Results from math diagnostic instruments are a primary criterion used to identify students in an AMI program. A district-wide mathematics assessment is recommended for students in Grades K-2. The <i>Texas Math Diagnostic System (TMDS)</i> is available for use with students in Grades 3-12.</p>	<p>CEI provides schools a third-party assessment, Slosson's <i>Diagnostic Screening Test: Mathematics (DST:M)</i>, to help determine whether or not to place a student in the MLS lab and to identify the student's individual and specific needs. Some schools also use either local or commercial supplemental assessments to inform decision-making.</p> <p>MLS also includes its own Pre-Tests to determine the appropriate phase and lesson in which each student should be working.</p>
<p>Additional Assessments: Additional assessments throughout the program should be used to measure progress and inform instruction.</p>	<p>Initial teacher training and follow-up/coaching focus on using the results of various assessments not only to make initial placement decisions, but also to inform instruction. In that respect, observations of students' performance and progress serve as form of assessment because they guide the teacher in adapting the lesson level and program settings, so students can be challenged, yet successful.</p> <p>Assessment continues throughout the program. Each task includes embedded assessments, and daily lesson reports indicate student progress. As students complete the phases in MLS, teachers may access a continuous progress monitoring report to review the skills progress for one student or for all students on the program. Color coding makes it easy to see if the performance is commendable, standard, or sub-standard.</p> <p>At the end of the year, teachers administer the DST:M as a post-test to measure grade-level gains.</p>
<p>Instructional Priorities: All students identified as struggling in grades K-6, on each campus, should receive needed instructional mathematics intervention. In addition, students who fail one or more of the state-mandated grade 5 mathematics assessments administered in spring 2006 may receive intervention with these funds.</p>	<p>CEI was established over 25 years ago with its niche being to design and market learning solutions for struggling learners, K-adult. CEI has documented evidence that MLS produces accelerated results for a variety of struggling learners, including those who are economically disadvantaged, English Language Learners, dyslexic students, and/or children identified as special education. Regardless of whether students struggle due to difficulties or disabilities, MLS is a proven effective intervention.</p>





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<p>Program Structure: Provision of AMI program instruction may reflect several program formats: during the regular school day, before/after school. Intervention provided during the regular school day is strongly recommended because of its timeliness and effectiveness.</p>	<p>CEI recommends that for maximal results, students engage in MLS instruction at least 45 minutes per day, five days per week. Once they have purchased the program, schools may use it in the lab with as many students per day as they wish. In addition to serving students during the regular school day, schools may use the program in before/after school programs and during summer school without additional licensing fees. CEI charges an annual service fee to cover the costs of software updates, testing materials and other supplies, training, technical support, and support from an educational consultant.</p>

<p>Program Funding: It is recommended that only a portion of these funds be utilized for summer school. Prioritization of AMI fund expenditures should focus an intervention for the students who need the most assistance first; then, provide additional assistance/funding to other students struggling in mathematics. Prompt provision of math intervention program with frequent monitoring of individual student's progress is strongly recommended.</p>	<p>MLS serves those students at the lowest levels of performance, regardless of whether they have difficulties with mathematics (including the struggle to learn mathematics and English at once) or whether they have disabilities.</p> <p>To ensure that intervention may begin as soon as possible, CEI ships software within 48 hours of receiving a school's purchase order. At that time, we also schedule training for lab teachers.</p>
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<p>Progress Monitoring: A locally-developed district wide math diagnostic assessment is the primary indicator for student placement in a math intervention program in grades K-2. The <i>Texas Math Diagnostic System</i> (TMDS) is recommended for use with grades 3-6 students along with grade 3, 4, and 5 TAKS math results, locally developed assessments and teacher observations.</p>	<p>CEI provides schools a third-party assessment, Slosson's <i>Diagnostic Screening Test: Mathematics</i> (DST:M), to help determine whether or not to place a student in the MLS lab and to identify the student's individual and specific needs. Teachers administer the DST:M twice per year — as a pre- and post-test. Some schools also use either local or commercial supplemental assessments to inform decision-making. MLS also includes its own Pre-Tests to determine the appropriate phase and lesson in which each student should be working.</p>
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ACCELERATED MATH	MATHEMATICAL LEARNING SYSTEMS
<p>Progress Monitoring, continued: Continuous monitoring of identified students with available math diagnostic tools is important.</p> <p>Programs should focus on conceptual development in mathematics content.</p>	<p>Continuous monitoring occurs daily throughout the program. Each task includes embedded assessments, and daily lesson reports indicate student progress. As students complete the phases in MLS, teachers may access a continuous progress monitoring report to review the skills progress for one student or for all students on the program. Color coding makes it easy to see if the performance is commendable, standard, or sub-standard. Observations of students' performance and progress serve as form of assessment because they guide the teacher in adapting the lesson level and program settings, so students can be challenged, yet successful.</p> <p>CEI recommends that for maximal conceptual development of mathematical content, students engage in MLS instruction at least 45 minutes per day, five days per week.</p> <p>The use of software allows one-on-one, direct instruction which is totally individualized and differentiated for each learner—more effective and more efficient than small-group instruction. The program relies on strategies that research has found effective with struggling learners: practice/repetition, chunking, time-on-task, and multisensory integration strategies.</p> <p>The Concept Building portion of MLS includes instruction in algorithms, lessons on problem solving, and steps for eliminating irrelevant information in a word problem. To teach concepts, students move from concrete representations (using physical manipulatives) to illustrations (seeing depictions of the manipulatives on the computer screen) to abstract symbols (using actual numbers in problem solving). During Concept Building, students also learn math vocabulary. (More information appears in the following Best Practices section.)</p>



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<p>Best Practices:</p> <ul style="list-style-type: none"> + A placement process that effectively identifies students at-risk for math difficulties, including dyslexia, and promptly triggers student placement in an intervention program. Note: Research verifies that almost all dyslexic students also struggle with mathematics — in understanding mathematical terms, in sequencing, in solving word problems, and in learning multiplication tables (see Kibel, 1992; Miles, 1992, Henderson, 1992; Chinn & Ashcroft, 1992; Pennington, 1991; Butterworth, 2005; Miller and Mercer, 1997; etc.) + A program instructional format that is consistently informed by assessment data and classroom data, and that provides repeated opportunities for students to engage in intensive, targeted learning. Note: TEA does not provide a list of “Best Practices” for mathematics interventions. CEI’s research, however, identifies the following content as critical in a math intervention: <ul style="list-style-type: none"> + Concept Development (Mercer & Mercer, 2005; Donovan & Bransford, 2005; Fuson, Kalchman, & Bransford, 2005; Geary * Hoard; Cawelti, 1999; Lochy, Domahs, & Delazer, 2005; Sousa, 2001); Siegler & Booth, 2005; Butterworth, 2005; etc.) + Fact Fluency (Mercer & Mercer, 2005; Donovan & Bransford, 2005; Fuson, Kahchman, & Bransford, 2005; Lochy, Domahs, & Delazer, 2005; LeFevre, DeStefano, Coleman, & Shanahan, 2005; etc.) 	<p>Placement Process and Assessment Data:</p> <p>MLS incorporates frequent, multiple assessments—including self-assessment — to allow for informed instruction and data-driven decision making. CEI provides schools a third-party assessment, Slosson’s <i>Diagnostic Screening Test: Mathematics</i> (DST:M), to help determine whether or not to place a student in the MLS lab and to identify the student’s individual and specific needs. (Some schools also use either local or commercial supplemental assessments to inform decision-making.) MLS also includes its own Pre-tests to determine the appropriate phase and lesson in which each student should be working.</p> <p>Initial teacher training and follow-up/coaching focus on using the results of various assessments not only to make initial placement decisions, but also to inform instruction. In that respect, observations of students’ performance and progress serve as form of assessment because they guide the teacher in adapting the lesson level and program settings, so students can be challenged, yet successful.</p> <p>Assessment continues throughout the program. Each task includes embedded assessments, and daily lesson reports indicate student progress. As students complete the phases in MLS, teachers may access a continuous progress monitoring report to review the skills progress for one student or for all students on the program. Color coding makes it easy to see if the performance is commendable, standard, or sub-standard.</p> <p>At the end of the year, teachers administer the DST:M as a post-test to measure grade-level gains. CEI will use the scores of the pre- and post-test to generate a statistical report of student progress throughout the school year. All CEI reports are available in a PDF format. The lab teacher can e-mail the lesson, CPM and statistical reports directly to the classroom teacher, or she can share hard copies of the reports.</p> <p>For more information regarding Assessment, please see pages 223-227 in <i>Why MLS Works: Its Scientific, Theoretical, and Evaluation Research Base</i>.</p> <p>Instructional Format:</p> <p>MLS’ primary emphasis, based on scientifically-based evidence of what is needed in a mathematics intervention program, is on concept development and fact fluency. It includes instruction in algorithms, and it includes many lessons on problem solving, including instruction in how to eliminate irrelevant information in a word problem.</p> <p>Instructional strategies are grounded in the research on the efficacy of direct instruction for struggling learners, use of manipulatives, concrete-semiconcrete-abstract sequence of lessons, computer-assisted instruction, practice/repetition, individualization/differentiation, chunking, time-on-task, and multisensory integration strategies.</p>



ACCELERATED MATH	MATHEMATICAL LEARNING SYSTEMS
<p>Best Practices, continued</p>	<p>Instructional Format, continued</p> <p>The active engagement of the MLS lab teacher is a signature component of the program. CEI trains teachers to use all available assessment data on a daily basis to ensure the most effective, challenging, yet appropriate instruction is provided to each individual student, based on individual needs. In addition to using assessment data to individualize the program for the students, teachers may choose to use it for corrective feedback. Corrective feedback is critical to struggling learners. For that reason, programmers included corrective feedback after each problem and at the end of each lesson. For more information regarding corrective feedback, please see pages 106-108 in <i>Why MLS Works: Its Scientific, Theoretical, and Evaluation Research Base</i>.</p> <p>Another important feature of MLS is its provision of many varied and engaging practice exercises for each lesson sequence and its mastery requirement of at least 80%. Most other remedial programs fail to provide enough practice for the students who struggle most. A major emphasis in MLS is "fact fluency," which research identifies as the area causing the most problems in students with mathematical difficulties or disabilities. For more information on why students struggle to learn mathematics, please see pages 103-113 in Chapter IV of <i>Why MLS Works: Its Scientific, Theoretical, and Evaluation Research Base</i>.</p> <p>MLS focuses on concept development and fact fluency. To teach concepts, the student moves from concrete (with use of physical manipulatives) to illustrative (depictions of the manipulatives on the computer screen) to abstract (use of numbers in problem solving). Learning concepts also means learning math vocabulary.</p> <p>To develop fluency, the student is engaged in multiple, varied, and adequate practice/repetition exercises sufficient to move the learning to long-term memory for recall, retrieval, and application.</p> <p>MLS also includes mathematics games and word problem applications embedded in the number operation unit. The web-enhanced activity center (WAC) includes an engaging math game to further develop expertise in math facts and fluent recall.</p> <p>For more information about how MLS adheres to recommended mathematical instruction guidelines, please see CEI's correlation of the MLS content with the DST:M and with the NCTM standards, plus the NCTM <i>Focal Points</i> alignment with the Common Core State Standards (CCSS).</p>