


# **The Ascend Math Solution Use Model: Tier II Intervention**

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### Background

In 2004, the Individuals with Disabilities Education Improvement Act (IDEA) emphasized the use of Response to Intervention (RTI) as a more accurate way of diagnosing students with learning disabilities. Both the IDEA and its counterpart, the No Child Left Behind Act (NCLB) sought to minimize the number of students incorrectly classified as learning disabled by providing a tiered system of diagnosis and intervention for students. If student learning deficiencies can be corrected through instructional intervention, then (according to IDEA and NCLB) those deficiencies had likely been the result of poor instruction rather than a true disability.

RTI provides a tiered model for student instruction and assessment. It assumes that the curriculum used in a school is research-based and that it is being implemented by highly qualified teachers. Based on diagnostic assessments delivered at key points during the school year (not just determined by previous year state achievement test scores), students who are found not to be responding to the curriculum are given focused intervention in one or more academic areas, and are monitored much more frequently (Tier II intervention). Typically, students will respond to this intervention and be returned to general classroom instruction. Students who do not respond to the initial intervention are given even more frequent, sustained, and intensive instructional intervention and are monitored even more frequently (Tier III Intervention). Those that do not respond to this more intensive intervention may be referred to special education (Lehigh University).

The law does not stipulate a particular configuration, number of hours, or delivery method for any intervention tier, leaving such decisions to individual schools and/or districts. This flexibility is important because each school may operate somewhat differently based on a variety of factors, such as state and local education regulations, class schedules, staff configuration, and administrative policies and procedures. While this flexibility is needed, it has also created some confusion as to the “optimal” configuration and frequency of assessment and intervention within a specific RTI framework.

The Ascend Math Solution is appropriate as a Tier II intervention—meaning that students lagging behind using the school’s “standard curriculum” can and will catch up to (and even surpass) their better-performing peers by utilizing Ascend. One of the important distinctions of Ascend—particularly in relation to RTI—is that it can be used extremely flexibly, depending on the needs and resources of individual schools and districts. This use model describes some of the ways the program can be used and the benefits it affords teachers, students, and administrators.

### Instructional Use

There is no prescribed number or frequency of intervention sessions, or total number of hours, that should be provided for students requiring Tier II intervention. In summarizing the RTI approach, Fuchs et al (frequently cited as the founders of the RTI approach) describe one study performed by Vellutino in which two thirds of the students receiving

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30-minute reading intervention sessions delivered by highly-trained teachers five days per week caught up to their better-performing peers within about a semester. While the gains described by Vellutino were impressive, the authors asked the question “how many schools have the resources to provide all their poor readers with 70–80 sessions of one-to-one tutorials conducted by highly trained personnel?” (Fuchs, et al 2003).

Therefore, it is up to school personnel to determine when, how, and for how long Tier II Intervention sessions should occur. The Ascend Math Solution makes developing an effective Tier II Intervention easy for educators by:

- Automatically directing students to instructional activities as prescribed by assessments.
- Providing anytime, anywhere access to instruction, which allows students to engage in instruction before, during, or after school; from a classroom, computer lab, or library; for as little or as much time as is available.
- Solving the “high quality instructor” problem by providing video-based instruction from award-winning math teachers such as Elayn Martin-Gay.
- Using multi-modality instructional approaches.
- Administering on-going formative assessments.
- Generating easy to read progress reports for teachers, administrators and parents.

### *Frequency & Duration*

Because of the incredible flexibility of The Ascend Math Solution, it can be used in any number of configurations. Optimally, students would receive approximately two to three hours per week of instruction in increments of 30 minutes to one hour. Because Ascend is fully self-contained and student-driven, the schedule on which each student receives the intervention can be different.

In a Florida middle school, for example, students used Ascend in the following configuration:

- Duration per session: 45 minutes
- Sessions per week: 5
- Total duration of intervention: 1 semester

Within a single semester of intervention, students performing approximately four years below grade level achieved the following results:

- 32% of students gained one to two grade levels;
- 45% of students gained two to three grade levels;

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- 13% of students gained three to four grade levels;
- 10% of students gained more than four grade levels.

### *Student Self-Monitoring*

One of the key benefits of the Ascend Math Solution is that students themselves are able to monitor their own progress throughout the program. The National Mathematics Advisory Panel noted in its final report, “When children believe that their efforts to learn make them “smarter,” they show greater persistence in mathematics learning” (NMAP 2008). At any given time when using Ascend, students can access achievement data and visualize the progress they have made. By putting control of learning in the hands of students, the Ascend Math Solution motivates them to continue in the program—a critical factor in the success of at-risk students.

This student-centered, technology-based learning experience is particularly beneficial when working with today’s generation of students. These “digital natives,” says Marc Prensky in his article *Digital Immigrants, Digital Natives*, simply think differently than students of previous generations. With daily and lifelong access to digital input, these students are used to receiving information immediately, to using on graphics as well as (or instead of) text to assimilate information, and to receiving immediate feedback (Prensky 2001). Instructional materials and methods must meet the particular needs of these students in order to be successful. The Ascend Math Solution is fully responsive to today’s generation of students, providing video-based instruction and high-interest graphics, providing immediate and private feedback on progress, and putting students in the “driver’s seat.”

### **Administrative Use**

Effectively implementing an RTI program can be time-consuming. Frequent assessment, and the frequent analysis of assessment results to determine student progress can tax teachers and take away from time they might otherwise spend on instruction. The Ascend Math Solution automates many of these tasks, minimizing teachers’ and administrators’ paper burden.

### *Diagnostic Assessment*

At the start of the program, students are given a diagnostic assessment keyed to the instructional content of the program to determine areas of mastery and gaps in skills. Aligning Ascend to local or state standards and/or assessment objectives enables teachers and administrators to view students’ proficiency status in terms of high-stakes assessments as well.

Based on the results of the diagnostic assessment, Ascend develops individualized learning pathways for each student. Students progress at their own pace through the program, and the learning pathways are adjusted automatically as skills and concepts are mastered.

### ***Periodic Assessment***

Using embedded, continual assessment, student progress can be captured virtually on demand at any point in the student's course plan. Since Ascend's scope and sequence are aligned to local and state standards, it enables teachers and administrators to quickly and easily view individual, group, and class progress in terms of mastery of high-stakes assessment objectives. Ascend offers both formative and summative assessments.

### ***Data-Driven Decision Making***

Perhaps one of the most important aspects of The Ascend Math Solution is its ability to empower teachers and administrators to engage in detailed analysis of student progress and make timely decisions about placement. State assessments are given yearly (and frequently, the results of those assessments are not available to schools until late in the first semester), and district assessments are typically given every six weeks. With Ascend, teachers and administrators can view student progress much more frequently and make decisions about which students may need more or less time on Ascend to fill in skill gaps or achieve desired progress goals. The automaticity of the reporting system significantly reduces the amount of time needed to view, analyze, and act on data, increasing response time to student progress and maximizing instructional resources.

### **NCTM's Mathematics Intervention Criteria**

In its publication, *Creating or Selecting an Intervention Program*, the National Council of Teachers of Mathematics (NCTM) describes the essential characteristics of an effective mathematics intervention program and provides questions educators should ask about an intervention program before selecting it. To demonstrate the Ascend Mathematics Solution's appropriateness for Tier II Intervention, we have provided responses below to each of the NCTM questions.

#### ***1. Diagnostic assessment***

1.1. Does the intervention program include diagnostic assessments that identify students' specific strengths and weaknesses with respect to both conceptual understanding and procedures?

*Ascend's student experience begins with a diagnostic assessment designed to identify skill gaps at or below grade level. This assessment is predicated upon state, local, or other standards to ensure that diagnostics are tied to what students will need to know and be able to do on high-stakes assessments.*

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1.2. Do the assessments investigate students' knowledge of key mathematics concepts that are grade appropriate?

*One of the distinguishing features of Ascend is that study plans are arranged in scope and sequence by grade level according to state standards. At the same time, the diagnostic and periodic assessments meet students at their skill level, making it immediately clear whether students are performing below, at, or above grade level. This ensures that students are given significant instruction in areas where they are below proficiency while preventing wasted time on grade-level concepts the student has already mastered.*

1.3. Does the content that is assessed align with the school's prescribed curriculum?

*Ascend's assessments and content can be aligned with state and/or local standards. In addition, Ascend can be aligned with the core instructional content—such as a mathematics textbook or syllabus—to ensure that both assessment and instruction are closely tied to the instructional priorities of the school.*

1.4. Do the assessments communicate students' strengths and weaknesses in ways that teachers and parents can understand?

*Ascend's reporting tools are clear and concise, facilitating frequent and focused communication among teachers, administrators, and parents. Further, students are able to access progress reports anytime, anywhere, putting them in control of their learning—a strategy that is proven effective in motivating students to achieve.*

### **2. Instructional activities**

2.1. Does the intervention program include a series of instructional activities that are carefully linked with the diagnostic assessments?

*The hallmark of Ascend's approach is the creation of automatically-prescribed, individualized learning pathways for each student based on the results of diagnostic and periodic assessments. From there, students are guided through instructional activities in a logical math sequence. Learning paths are adjusted through continual assessments ensuring that instructional activities are directly tied to diagnostics. This enables students to quickly close skill gaps without spending additional time on concepts they have already mastered.*

2.2. Do the program's instructional activities support and enhance, but not supplant or duplicate, regular classroom instruction?

*By aligning Ascend to the core curriculum while maintaining an independent, targeted assessment of skills, the Ascend Mathematics Solution provides intervention where needed. In addition, Ascend's use of rich technology to teach math concepts, and the use of video-based instruction delivered by an award-winning educator, provide*

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*opportunities to differentiate instruction for students who have skill gaps at previous grade levels or are unable to learn concepts through traditional pencil-and-paper instruction.*

2.3. Are tools for ongoing, formative assessment embedded in the instructional activities?

*Ascend uses embedded, frequent assessment to continually develop and adjust individualized instructional pathways. The program's reporting tools provide access to student assessment data in a "time is of the essence" manner—a critical ingredient of effective intervention.*

2.4. Is the mathematics in the instructional activities correct?

*Developed by some of the leading mathematics instructors in the country, **The Ascend Math Solution** provides accurate, well-crafted mathematics content. For example, the primary video presenter and author is award-winning instructor and best-selling author Elayn Martin-Gay. Martin-Gay has taught mathematics at the University of New Orleans for over 25 years. She has received the University Alumni Association's Award for Excellence in Teaching, and was named Outstanding Developmental Educator at University of New Orleans. Martin-Gay has authored dozens of best-selling mathematics textbooks and extensive professional development resources.*

2.5. Do the instructional activities advance the school's curriculum and promote reasoning and conceptual understanding?

***The Ascend Math Solution** scope and sequence is arranged according to state and national standards and can be tailored to the school's curriculum, ensuring seamless integration and advancements of the school's instructional priorities.*

2.6. Do the instructional activities contain challenging tasks that are appropriate for students' interests and backgrounds?

*Ascend's instructional activities are rich and varied, taking advantage of technology-based instruction to provide inherently-motivational learning opportunities. In addition, Ascend's use of technology and video instruction provides differentiated learning opportunities for a variety of learning styles and abilities, including visual learners, auditory learners, kinesthetic learners, and English Language Learners.*

### **3. Postassessment**

3.1. Does the intervention program contain postassessments that indicate whether the instructional activities have been effective?

*Ascend's ongoing assessments clearly and frequently illustrate student mastery of concepts. In addition, by aligning the system to state or local standards and assessments, teachers, administrators, and parents can clearly and consistently see how students are responding to the intervention in terms of high-stakes assessments.*

3.2. Are follow-up assessments administered in a timely fashion?

*Ascend uses ongoing, embedded assessments to continually track acquisition of concepts and skills and to adjust student learning pathways accordingly.*

3.3. Do the assessments communicate students' growth or need for further instruction in ways that teachers and parents can understand?

*Ascend's reporting tools are clear and easy to create and read, eliminating the need to grade and scan individual tests and papers or to compile time-consuming reports. Progress reports clearly demonstrate individual, group, and class mastery of learning objectives, and clearly identify objectives that need to be mastered.*

### **4. Organizational structure of the intervention**

4.1. Is the structure of the intervention program feasible, given the organizational structure of the school?

*Ascend's anytime, anywhere use model enables individual schools to tailor the intervention to available time and material resources. The program can be used before, during, and after school, or from home, in blocks of time from thirty minutes to several hours.*

4.2. Does the school have the necessary resources to implement the intervention program as designed?

*Ascend is a fully-automated, web-based, student-centered intervention solution. Diagnostic and periodic assessments are built in and individualized learning pathways are automatically created for each student based on his or her level of mastery. Reporting is automatic. Ascend requires no specialized equipment—such as scanners, printers, or other equipment.*



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4.3. Does the intervention program include adequate and ongoing professional development to ensure effective implementation?

*Ascend Education provides training with high-quality staff to ensure a quick, easy, and successful implementation.*

### **5. Research supporting the intervention**

5.1. Have rigorous and appropriate methods been used to evaluate the intervention program, and determine it to be successful?

*The Ascend Mathematics Solution is grounded in scientifically-based research. (See Ascend Mathematics Solution: Scientifically-Based Research Base.) In addition, Ascend Education is committed to evaluating the program in a variety of settings. To access case studies describing Ascend's research base, visit <http://www.ascendedu.com/research.html>.*

5.2. Does theoretical and empirical evidence support the efficacy of the intervention program in a setting that is similar to your school?

*The Ascend Mathematics Solution has been implemented in a variety of grade levels, school settings, and instructional configurations, including middle and high schools, regular schools and alternative education programs, and in intervention, remediation, before- and after-school, and other settings.*

### References

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### **About Strategic Education Solutions**

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- Scientifically-Based Research Practices;
- No Child Left Behind Policy and Compliance;
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Led by Cynthia Burrow, an education professional with over 15 years of experience, Strategic Education Solutions has completed large-scale research and evaluation projects for state and regional education agencies, and has provided market research and curriculum development support for educational publishers in a variety of content areas.