Tier 2 Reading and Math Interventions

The following report summarizes research-based interventions designed to increase reading and math achievement of K-12 students during Tier 2 intervention. A total of 15 interventions are reviewed.

Introduction and Key Findings

The following report consists of an overview of several of the most popular reading and math intervention products on the market. The list is not exhaustive. We primarily selected products for review based upon the amount of data available and the demonstrated efficacy of each product. The U.S. Department of Education's What Works Clearinghouse (WWC) was consulted in the selection of interventions. This report is intended to provide a summary of research on the efficacy of each intervention. The report is divided into the following sections:

- ❖ Definitions and Philosophy of RTI Assessments
- ❖ Literacy Intervention in the Elementary Grades
- ❖ Literacy Intervention in the Middle and High School Grades
- ❖ Math Intervention at all Grade Level
- ❖ Overview of Progress Monitoring in Interventions

In all, this report summarizes research-based evidence of effectiveness for 15 different reading and math interventions. The table on the following page summarizes evidence found for each.

Some products specifically state they are useful in Tier 2 interventions; however, many do not make this distinction. In these cases, we ensure that products cohere with guidelines established by the U.S. Department of Education's Institute for Education Science for most effective Tier 2 interventions. These guidelines stipulate features such as small group interactions, acting as a supplement to the core curriculum rather than replacing it, and meeting for a certain amount of time each week.

Finally, after these product reviews, we briefly look at progress monitoring in interventions. Specifically, we discuss common intervals for monitoring progress and tools which can be used to streamline the monitoring process.

Overview of Intervention Products Reviewed

Program	Subject	Grade Level	Evidence	Program Structure	Professional Development
Corrective Reading	Reading	3+	*Potentially positive effects* on alphabetic and fluency, and *no discernible effects* on comprehension	45-minute lessons, five times per week for groups of up to 20 students.	7 hours of staff development provided by the publisher
Early Intervention in Reading	Reading	K-4	*Potentially positive effects* on the learning areas of both alphabetic and comprehension	15 to 20 minutes of daily supplemental instruction to a whole class or small groups of five to seven	2-hour monthly Internet sessions over the span of nine months, with telephone support
Early Steps	Reading	1	Multiple reports of positive effects	30-minute tutoring sessions, led by a teacher and tutor in reading, word study, writing, and new reading	Meetings once a week in the first month of school and monthly meetings throughout the school year
STEEP Learning	Reading	1-5	Not available	Progress monitoring tool	1 hour of training
Kaplan SpellRead	Reading	2+	*Positive effects* on skills in alphabetic and *potentially positive effects* on fluency and comprehension skills	Small groups of five students for a 60 to 90 minute class	5 days of initial workshops, 2 follow-up workshops, regular on-site coaching visits, online instructor support system
PALS	Reading	1-5	Strong evidence of efficacy (WWC and other reports)	Structured activities and exercises lasting 30 to 35 minutes, occurring three times per week	Teacher training in an all-day workshop
Leveled Literacy Intervention	Reading	K-2	Strong evidence of improvements in student performance	Small-group, supplementary intervention program	On-site, off-site, and online professional development
READ 180	Reading	1-12	Currently prevalent in U.S. schools; large body of research support. *Potentially positive effects* according to WWC.	90 min sessions, containing 20 min of whole-group direct instruction, 60 min of small-group rotations, and a 10 min wrap-up as a whole class	1 day leadership orientation, 2 days of in-service training upon implementation, online course, 8 half-day seminars, reading courses within the software

Program	Subject	Grade Level	Evidence	Program Structure	Professional Development
Reading Apprenticeship	Reading	6-12	*Potentially positive effects* on student performance (WWC)	Small group and full classroom conversations, personal reflection on the cognitive process of reading	Long-term comprehensive district-wide training, leadership and teacher institutes, and other courses for teachers
SuccessMaker	Reading	K-8	*Potentially positive effects* on student performance (WWC)	Computer-based program designed to supplement regular reading instruction curriculum	On-site initial training session
Odyssey Math	Math	K-8	*Potentially positive effects* on math achievement (WWC)	Individual or small group work to build student mathematics ability in supplemental sessions	Virtual and in-person professional development for teachers
Cognitive Tutor	Math	6-12	*Potentially positive effects* on student performance (WWC)	Software-based program for developing mid-level math skills	Online and in-person training offered for math teachers
Accelerated Math	Math	1-12	*Mixed effects* on student performance (WWC)	Software-based program to support primary curriculum in math at all grade levels	Online materials and training, in-person events available
iPASS	Math	3-8	Some evidence of positive effects	Online program, features assessment, instruction, and reporting	3 hours of initial professional development, ongoing support
Momentum Math	Math	6-8	Some evidence of positive effects	Program utilizes skill level books, designed for students behind by two or more grade levels.	Teacher guides

Definitions and Philosophy of RTI Assessments

Response to Intervention (RTI) was developed in recognition of the limitations of "traditional psychometric methods" of identifying learning challenges, which have been critiqued for their inability to effectively distinguish between learning disabilities and low achievement and their inconsistent "overidentification" of students as being learning disabled.[1] RTI aims to provide a more nuanced, meaningful, and valid approach, shifting the "identification process away from diagnosing defects to examining student outcomes" in response to a contingent series of interventions.[2]

RTI features a multilayered approach to preventing, monitoring, and resolving student learning issues,[3] as its main intent is to reinforce the implementation of solutions. RTI promises to improve both identification of learning needs and implementation of useful solutions to meet these needs. However, this report will focus solely on the various instruments published to assist teachers and schools in the second tier of intervention.

A Skeleton for RTI

An RTI-based approach to improving student learning outcomes stresses multiple actions toward a single, definable goal: enhancing the educational experience of diverse students.[4] The National Center on Response to Intervention identifies four "essential components" of RTI:

- ❖ A school-wide, multi-level instructional and behavioral system for preventing school failure;
- ❖ Screening;
- ❖ Progress monitoring; and
- ❖ Data-based decision making for instruction, movement within the multi-level system, and disability identification (in accordance with state law).[5]

RTI programs are based on three-level, multi-tiered intervention structures that establish specific criteria for defining student success and identifying educational needs, with an emphasis on progressing students to the point at which no interventions are required. Broadly speaking, the levels of an RTI model represent the closeness with which an instructor, counselor, or other school administrator must work with a student in order to produce the standardized results:

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[1] Kavale, K. et al. "Responsiveness to Interventional and the Identification of Specific Learning Disability: A Critique and Alternative Proposal." Learning Disability Quarterly. Spring 2006. Vol. 29, No. 2: 114.
[2] Ibid.
[3] "Essential Components of RTI – A Closer Look at Response to Intervention." National Center on Response to Intervention. April 2010, p. 2. http://www.rti4success.org/images/stories/pdfs/rtiessentialcomponents_042710.pdf
[4] Wedl, R. "Response to Intervention: An alternative to traditional eligibility criteria for students with disabilities." 2005. p. 19. http://www.educationevolving.org/pdf/Response_to_Intervention.pdf
[5] "Essential Components of RTI – A Closer Look at Response to Intervention." Op. cit., p. 1.

❖ **Primary prevention**: High quality core instruction that meets the needs of most students
❖ **Secondary prevention**: Evidence-based intervention(s) of moderate intensity that addresses the learning or behavioral challenges of most at-risk students
❖ **Tertiary prevention**: Individualized intervention(s) of increased intensity for students who show minimal response to secondary prevention[6]

RTI programs utilize two screening stages to place students appropriately within the designated levels and to determine the most promising tiers of intervention. The first screening stage is universal, as all students must complete baseline testing in order to identify specific needs groupings among the entire student population. This screening generally consists of targeted assessments to identify specific core content and behavioral skills. These tests should identify both accuracy and fluency in order to "reveal differences both in knowledge and in speed of processing."[7] Screening is typically repeated three times per academic year to monitor student progress over time. Universal screening is essential to identifying the specific needs of subsets of the student population, which is in turn critical to the implementation of prompt secondary interventions. Such screening also helps educators identify students at risk for learning disabilities, while a transitional level of support ameliorates the over-diagnosis of such impediments.

The second screening stage is administered only to those students placed in Tier 2 and is intended to identify additional needs that must be met on an individual basis. Secondary screening allows students with learning disabilities to be positively identified at consistently high rates of accuracy, without inappropriately diagnosing other students.

Program implementers—either schools or school districts—must establish clear methods for determining appropriate placement, interventions, and continued monitoring of students. They must also amass reliable, timely, and longitudinal data to guide decisions throughout the process.

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[6] Ibid. p. 4.
[7] Hughes, Charles, and Douglas Dexter. "Universal Screening Within A Response-to-Intervention Model." Penn State University. http://www.rtinetwork.org/learn/research/universal-screening-within-a-rti-model

Literacy Intervention in the Elementary Grades

While preschool and pre-kindergarten literacy interventions help students develop pre-reading skills, children receive the bulk of reading instruction between kindergarten and 3rd grade. After 3rd grade, the focus of a child's education shifts "from learning how to read—the key focus, along with social development, of the early elementary years—to reading to learn."[8] Children who do not learn to read adequately during the period of kindergarten to 3rd grade may struggle and fall further behind their peers from 4th grade on, with no later opportunity to redevelop basic skills.

Reading interventions for early elementary years take on different forms. The What Works Clearinghouse, an online database provided by the U.S. Department of Education's Institute of Education Sciences (IES), has produced reports reviewing intervention programs. Each program report is based on evidence from an exhaustive search of published and unpublished studies. Based on these studies, the What Works Clearinghouse reviews the effects of intervention programs on student outcomes in the following learning domains:

- ❖ **Alphabetic**, including phonemic awareness, phonological awareness, letter recognition, print awareness and phonics
- ❖ **Reading fluency**
- ❖ **Comprehension**, including vocabulary and reading comprehension
- ❖ **General reading achievement**, a term which refers to outcomes that combine skills from the other domains, or total reading ability

In assessing the programs, the database only includes evidence from research studies that examine sample groups of students in kindergarten through 3rd Grade who are learning to read English. The database also only looks at empirical studies taken in the form of a randomized controlled trial.[9] The effects of an intervention are rated within a given outcome domain by the Clearinghouse as positive, potentially positive, mixed, no discernible effects, potentially negative, or negative. Of 29 literacy intervention programs reviewed by the Clearinghouse, the following programs demonstrated either *positive* or *potentially positive* effects on at least two of the four literacy measures listed above:[10]

- ❖ Corrective Reading
- ❖ Early Intervention in Reading
- ❖ Earobics

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[8] Mead, Sara. "Reading by Grade Three; Reading for Life." The American Prospect. July 2010. Vol. 21, No. 6. p. 2.
[9] "WWC Evidence Review Protocol for Beginning Reading Interventions." U.S. Department of Education, Institute of Education Sciences. September 2006.
http://ies.ed.gov/ncee/wwc/references/idocviewer/Doc.aspx?docId=27&tocId=2
[10] "Topic Areas: Beginning Reading." U.S. Department of Education, Institute of Education Sciences.
http://ies.ed.gov/ncee/wwc/reports/Topic.aspx?tid=01

❖ Kaplan Spell Read
❖ Ladders to Literacy
❖ Lexia Reading
❖ Literacy Intervention
❖ PALS
❖ Reading Recovery
❖ Start Making a Reader Today (SMART)
❖ Success for All

Several intervention programs, including Houghton Mifflin Reading, Invitations to Literacy, Open Court Reading, Read Naturally, and Reading Mastery, were found to have no research studies meeting inclusion criteria for What Works Clearinghouse, meaning no conclusions could be drawn about their effectiveness.

Select programs and curricula from the above list are profiled below, in addition to others not reviewed by the IES. We limited our discussion to those that meet standard criteria for Tier 2 interventions in the elementary grades: namely, those that involve small group meetings between three to five times per week for 20-40 minutes in duration.[11] An overwhelming number of literacy interventions are available at the elementary level, and are too numerous to profile here. Instead, we choose a selection based upon perceived popularity, demonstrated effectiveness, and applicability to Tier 2 students.

Corrective Reading

Corrective Reading is a supplementary classroom curriculum designed to improve reading accuracy, fluency, and comprehension skills of students in 3rd grade or higher who are reading below grade level. The curriculum is delivered in 45-minute lessons, five times per week for groups of up to 20 students. Lessons cover decoding and comprehension across four different levels: Decoding level A, for non-readers; Levels B1 and B2, for struggling readers who do not read fluently or may confuse similar words; and Level C, for students who experience difficulty with vocabulary and complex sentence structures. At all levels, students complete mastery tests and individual reading checkouts to allow teachers to assess individual student achievement.[12]

Published by SRA/McGraw Hill, Corrective Reading is taught by teachers equipped with approximately seven hours of staff development provided by the publisher.

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[11] "Assisting Students Struggling with Reading: Response to Intervention and Multi-Tier 1ntervention in the Primary Grades." U.S. Department of Education, Institute for Education Sciences. 2009.
http://ies.ed.gov/ncee/wwc/pdf/practiceguides/rti_reading_pg_021809.pdf
[12] "Intervention: Corrective Reading: Program Information." U.S. Department of Education, Institute of Education Sciences. July 2007. http://ies.ed.gov/ncee/wwc/reports/beginning_reading/cr/info.asp

Teachers use a direct instruction approach to teach Corrective Reading lessons, following scripted presentations and using exercises and examples.[13]

Research studies of the Corrective Reading intervention program reviewed by What Works Clearinghouse demonstrate *potentially positive effects* on alphabetic and fluency, and *no discernible effects* on comprehension. The What Works Clearinghouse considers the body of research supporting these effects to be small for these variables; specifically, the database cites one study of the program's implementation in classrooms of 79 3rd grade students in Pennsylvania.[14]

Early Intervention in Reading

Early Intervention in Reading is a supplemental instruction program designed to provide extra help to students at risk of failing to learn to read. The program, appropriate for students in kindergarten through 4th grade, involves 15 to 20 minutes of daily supplemental instruction to a whole class or small groups of five to seven struggling readers. Activities at the kindergarten level include listening to stories, creative dramatics, and instruction in concepts of print, rhyme, phonemic segmentation and blending, and letter and sound recognition. In 1st and 2nd grade, classroom lessons include repeated reading of familiar stories and coached reading of new stories, phonemic awareness training, phonics instruction, guided sentence writing, vocabulary and comprehension instruction. In 3rd and 4th grade, lessons focus on multisyllabic words, fluency and comprehension through instruction based in narrative and informational picture books.[15]

The Early Intervention in Reading program offers several different extensive modules for teacher training, which cover instructions for using the program, research and background of the program, and routines and assessments for each grade level. The training program consists of two-hour monthly Internet sessions over the span of nine months, with telephone support from an Early Intervention in Reading trainer.[16]

The What Works Clearinghouse reviewed one study on the effects of Early Intervention in Reading on 1st grade classrooms across one Midwestern state, containing a total of 59 students. This study found the program to have *potentially positive effects* on the learning areas of both alphabetic and comprehension; What Works Clearinghouse considers this body of evidence to be small for these variables.[17]

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[13] Ibid.
[14] "What Works Clearinghouse Intervention Report: Corrective Reading." U.S. Department of Education, Institute of Education Sciences. July 2007. p.2. http://ies.ed.gov/ncee/wwc/pdf/WWC_Corrective_Reading_070207.pdf
[15] "Intervention: Early Intervention in Reading: Program Information." U.S. Department of Education, Institute of Education Sciences. November 2008. http://ies.ed.gov/ncee/wwc/reports/beginning_reading/eir/info.asp
[16] Ibid.
[17] "What Works Clearinghouse Intervention Report: Early Intervention in Reading." U.S. Department of Education, Institute of Education Sciences. November 2008. p.1. http://ies.ed.gov/ncee/wwc/pdf/wwc_eir_112508.pdf

Early Steps

Early Steps is a reading intervention program that targets first grade readers identified as at-risk for reading failure. The program was developed in the 1990s by a professor at Appalachian State University who also authored the Howard Street Tutoring program, a reading tutorial for second and third grade students.[18] Early Steps has been frequently compared to another first grade intervention program, Reading Recovery, particularly for its focus on contextual reading and writing.[19] The Early Steps program consists of 30-minute tutoring sessions, led by a teacher and tutor, which are divided into four main sections: reading, word study, writing, and new reading. In the reading section, teachers and tutors work together with the student to re-read a familiar book that has been introduced in a previous class. This activity is designed to help the student gain fluency, speed, accuracy and comprehension when reading. During the word study portion, students are taught phonemic awareness, phonological and metalinguistic skills to help them decode unfamiliar words, beginning with instruction in grapho-phonemic patterns. The writing section asks students to write their own sentences as a way to practice phonemic and metacognitive awareness skills. In the new reading session, students are introduced to a new text that is slightly more difficult than the book at the beginning of the lesson.[20]

Teachers and Title I tutors are able to receive professional development through Early Steps. Professional development includes meetings once a week in the first month of school and monthly meetings throughout the school year.[21]

A 2003 report analyzing the effects of Reading Recovery, written by researchers from Massey University in New Zealand, discusses a key difference between Reading Recovery and Early Steps, which is that Early Steps includes "direct, systematic study of orthographic patterns that is 'purposefully isolated from meaningful context,'" while the former program strictly emphasizes the contextual learning approach.[22] This report cited a study published in 2000 which found Early Steps to be highly effective, especially for those students who were most at risk for reading failure. In comparing the two intervention approaches, the report considers the idea that "some children might benefit from studying a single information source … in isolation while simultaneously being offered the change to integrate this knowledge in contextual reading and writing," as Early Steps enables students to do.[23]

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[18] "Building on the Best, Learning from What Works: Early Steps." Reading Rockets, American Federation of Teachers. 1999. http://www.readingrockets.org/blog/22887
[19] Tunmer, W.E. and J.W. Chapman. "The Reading Recovery Approach to Preventative Early Intervention: As Good As It Gets?" Massey University, New Zealand. 2003. p. 350.
http://www.region10.org/specialeducation/documents/ReadingRecovery.pdf.
[20] "Building on the Best." Op. cit.
[21] Ibid.
[22] Tumner, W.E. and Chapman, J.W. Op. cit.
[23] Ibid.

An independent evaluation of the Early Steps program took place in a school district in Kalispell, Montana, a small school districts with many lower and middle-class families attending Title I schools. The study examined the reading progress over one year of 49 students who were performing in the lowest 20 percent of their class. For one year, 23 students from the group received instruction through the Early Steps intervention program, while 26 learned in a matched control group. Students in the experimental group outperformed their peers in the control group on outcomes in spelling, word recognition and passage reading at the end of the first and second years after the intervention, as judged by reading assessments. Additionally, 52 percent of the Early Steps students were found to be reading at or above grade level, compared to 23 percent of students in the control group.[24]

STEEP Learning: Oral Reading Fluency Progress Monitoring[25]

This progress monitoring tool is designed as a formative evaluation for students receiving Tier 2 or Tier 3 intervention in grades one through five. Test administration takes one minute, and the data system actively monitors several indicators of student progress. Graphs and written descriptions provide feedback as to individual student competencies and may inform instruction or intervention. Separate data entry mechanisms are available for inexperienced users, experienced users, and students actively participating in the progress monitoring process.

Instructors are required to participate in one hour of training, either on site or through webinars and web-based learning systems. The annual cost of the iSTEEP program is $1.50 per student, including data storage, management, and organization. Progress monitoring forms are sold by grade level, containing 50 scoring forms and 50 student forms, at a cost of four cents per form. Finally, 50 alternative testing forms are available for each grade level.

Kaplan SpellRead

The Kaplan SpellRead program, formerly known as SpellRead Phonological Auditory Training, is a literacy intervention aimed at struggling readers in grades 2 or above including special education students and English language learners. This program is also appropriate for students who are two or more years behind in reading, meaning that they read at a grade level more than two years below their own.[26] According to the program's distributor, Kaplan Inc., most of the students receiving this program fit into one of these categories.

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[24] "Building on the Best." Op. cit.
[25] iSTEEP Learning: Oral Reading Fluency Progress Monitoring.
http://www.rti4success.org/chart/progressMonitoring/impTable/steepORF.html
[26] "What Works Clearinghouse: Intervention: Kaplan SpellRead Overview." U.S. Department of Education, Institute of Education Sciences. July 2007. http://ies.ed.gov/ncee/wwc/reports/beginning_reading/spellread/

The SpellRead program consists of 140 lessons divided into three phases, which can be completed in five to nine months. Each lesson is instructed in a classroom setting, with one instructor teaching small groups of five students for a 60 to 90 minute class. Phase A, containing 50 lessons, focuses on training the auditory process function of the brain to hear and manipulate different sounds of the English language. The second phase, Phase B, teaches 30 lessons covering secondary spelling of vowel sounds, consonant blends, and syllable sounds of two-syllable words. In Phase C, students complete 25 lessons focusing on decoding words of three or more syllables, as well as clusters and word forms. Purchase of the program includes professional development and ongoing support for educators, including five days of initial workshops, two follow-up workshops and regular on-site coaching visits, as well as an online Instructor Support System.[27]

The What Works Clearinghouse reviewed two studies on the effects of Kaplan SpellRead on a population of 208 students between the 1st and 3rd grade years. This research found the program to have *positive effects* on skills in alphabetic and *potentially positive effects* on fluency and comprehension skills.

Peer-Assisted Learning Strategies (PALS)

Peer-Assisted Learning Strategies (PALS) is a unique literacy intervention program designed to provide a supplementary reading curriculum for students in the elementary school years. In PALS, students are paired together based on their abilities on certain skills taught in the classroom, such as reading comprehension; each pair contains a "player," a student who may be struggling with that skill, and a "coach," a student who can appropriately assist them. The roles will rotate through different activities such as reading aloud or retelling stories.[28] Each partner session contains structured activities and exercises lasting 30 to 35 minutes, occurring three times per week.[29] "PALS is designed to complement, not replace, the existing math or reading curriculum by providing opportunities for students to practice what the teacher has taught," specified researchers from Pennsylvania State University in a presentation of intervention best practices.[30] For professional development, teachers participate in a one-day training workshop.[31]

The PALS program includes separate versions for kindergarten (K-PALS), 1st grade (First-Grade PALS), and grades 2-6. The PALS curriculum provides specific lesson

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[27] "What Works Clearinghouse: Intervention: Kaplan SpellRead: Program Information." U.S. Department of Education, Institute of Education Sciences. July 2007.
http://ies.ed.gov/ncee/wwc/reports/beginning_reading/spellread/info.asp
[28] Hughes, C.A. and Macy, M.A. "Research Based Strategies for Special Needs Students – Peer Assisted Learning Strategies." Pennsylvania State Education Association. January 2008. p.1.
http://www.psea.org/uploadedFiles/TeachingandLearning/Special%20Ed%20Peer%20Learning%20Strategies.pdf
[29] "Intervention: Peer-Assisted Learning Strategies." U.S. Department of Education, Institute of Education Sciences. July 2007. http://ies.ed.gov/ncee/wwc/reports/beginning_reading/pals/
[30] Hughes, C.A. and Macy, M.A. Op. cit.
[31] "Intervention: Peer-Assisted Learning Strategies." Op. cit.

sheets for kindergarten and 1st grade student participants, and teachers select appropriate reading material for partner reading at all program grade levels. Kindergarten and 1st grade PALS sessions might include partner activities focusing on learning to hear and identify sounds, sounding out words, learning sight words, practicing passage reading, predicting story plots, reading aloud, and retelling stories. In the later grades, students may complete specific activities to improve reading accuracy, fluency and comprehension.[32]

The What Works Clearinghouse reviewed four studies of the implementation of PALS in classrooms with a total of 360 students in grades 1-3 in the United States. This body of evidence, considered small, found the program to have *potentially positive effects* on student skills in alphabetics, fluency and comprehension.[33] Additional trials have studied the effects of the PALS intervention program in both reading and math on a wide range of children from all income backgrounds in mainstream schools across south Texas, several cities in Minnesota, and Nashville, Tennessee. The results of these studies found that students with learning disabilities, low-achieving students without disabilities, average-achieving students, and high-achieving students all made greater progress in PALS reading and math classrooms than their respective counterparts in non-PALS classes. These results support evidence that regardless of whether students entered the program performing at low, average, or high achievement levels, all ended the year with stronger skills in the learning areas emphasized by the intervention program.[34]

In another study, teacher Brandy Dunn examined the effects of the PALS program on a group of 21 1st grade students at an elementary school that had failed to meet Adequate Yearly Progress two years in a row.[35] The site for the study was a Title I school where over 90 percent of students received free or reduced lunch, with an ethnically diverse population containing over 65 percent English language learners.[36] Dunn expressed that the goal of the program was to help students performing below the grade reading level to catch up to their peers. In implementing PALS in the classroom, she noticed that the students enjoyed the partnership aspect of the program. "The students loved the responsibility and learned at a rapid rate because they were not only teaching, they were learning at the same time."[37] Dunn also noted that during the teacher-led portion of the program, in which an instructor guides students in letter naming, sound practicing, blending, sight word recognition and fluency, the students enjoyed the lessons and made significant gains.

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[32] "Intervention: Peer-Assisted Learning Strategies." Op. cit.
[33] Ibid.
[34] Hughes, C.A. and Macy, M.A. Op. cit. p. 1.
[35] Dunn, Brandy. "PALS: Peer Assisted Learning Strategies." Education Resources Information Center. December 2009. http://www.eric.ed.gov/PDFS/ED507452.pdf
[36] Ibid. p. 5.
[37] Ibid. p. 4.

The PALS class of 21 students was compared with a control group of 19 students of equivalent age and beginning reading achievement levels. Three benchmarking assessment exams were given to both classes in the fall, winter and spring. When compared, it was found that the PALS class scored significantly better than the control group on all three exams. Additionally, students in the PALS class experienced a 24 percent increase in reading fluency rates during each semester of the program – meaning that where in the fall, 42 percent of the class was reading at the state standard of 60 words per minute, 66 percent of students reached that rate by winter break. At the end of the year, 100 percent of students in the PALS class had reached the state standard of reading fluency.[38]

Leveled Literacy Intervention

Developed by the duo responsible for the Scholastic Guided Reading Program, "the Fountas & Pinnell Leveled Literacy Intervention System (LLI) is a small-group, supplementary intervention program designed to help teachers provide powerful, daily, small-group instruction for the lowest achieving children in the early grades."[39] Although the WWC has not yet produced a report on LLI, there are some efficacy evaluations available. A team of researchers from the University of Memphis, Lesley University, and Texas Tech University published a report in 2008 entitled "Evaluation of the Leveled Literacy Intervention: Year 1." To evaluate the program, 165 students from 22 public schools with reading skills "below their grade level" took a pre- and post-intervention Gates-MacGinitie Reading Test (GMRTs). Paired t-tests revealed that mean post-test scores were significantly higher than mean pre-test scores for all grade levels.[40] However, because the study did not use a control group, there is little evidence to prove a causal relationship between the intervention and student outcomes.

Another evaluation, published by the Center for Research in Educational Policy, did utilize a research design involving a control group and also found positive effects. CREP's study was conducted on 427 K-2 students in two U.S. school districts. Students took two separate pre- and post-tests (LLI Benchmarks and DIBELS).[41] Based on the results, the authors concluded that "taken together, all of the student achievement results provide strong evidence that students who are eligible for and participate in LLI make significant progress in literacy compared to students who are eligible to receive LLI and only receive regular classroom literacy instruction."[42]

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[38] Ibid. p. 6.
[39] "Leveled Literacy Intervention: Overview." Heienemann. 2010.
http://www.heinemann.com/fountasandpinnell/lli_overview.aspx
[40] Harrison, L. et al. "Evaluation of the Leveled Literacy Intervention: Year 1." Presented at the annual meeting of the American Educational Research Association. March 2008. p. 20.
http://www.memphis.edu/crep/pdfs/AERA_08-LLI.pdf
[41] Ransford-Kaldon, C.R. et al. "Implementation of Effective Intervention: An Empirical Study to Evaluate the Efficacy of Fountas & Pinnell's Leveled Literacy Intervention System (LLI)." Center for Research in Educational Policy. 2009-2010. p. 2. http://www.heinemann.com/fountasandpinnell/research/LLIEfficacyStudyReport2010.pdf
[42] Ibid. p. 7.

Literacy Intervention in the Middle and High School Grades

Reading intervention programs undertaken in early childhood and elementary school can be helpful tools for establishing a solid literacy foundation on which to build more advanced knowledge. But intervention programs applied in the later years may be equally important to academic success, especially as a means of recovery for struggling students. According to a 2007 report by the National Institute for Literacy, approximately 8.7 million 4th through 12th grade students struggle with reading and writing tasks; in fact, many students who drop out of school choose to do so because they experience these academic difficulties. Recent research has shown that a continued emphasis on direct instruction in literacy skills in the classroom may help to alleviate the reading problems experienced by adolescent students. Aimed at this goal, literacy intervention programs similar to those implemented at the elementary level yet tailored to the more complex tasks required of older students have increasingly been developed, administered and studied at middle and high schools across the country.[43]

The National Institute for Literacy report identifies five literacy components key to reading success among adolescent students:
- ❖ **Decoding**, or phonemic awareness and phonics, referring to the ability to correctly decipher a particular word out of a group of letters
- ❖ **Morphology**, or the study of word structure and how specific sounds can alter a word's meaning, such as the addition of "s" to a word to make it plural or "ed" to a verb to make it past tense
- ❖ **Vocabulary**, knowledge of words used in speech and print
- ❖ **Fluency**, or the ability to read text accurately and smoothly
- ❖ **Text comprehension**, the process of extracting or constructing meaning based on words in text.

While many literacy intervention programs designed for younger students emphasize activities to build foundational reading skills, reading interventions for adolescent students often include an emphasis on more complex metacognitive processes such as self-monitoring that can help students prevent and fix difficulties. Many of the strategies recommended by the National Institute for Literacy are incorporated into intervention programs for adolescent students. This section will provide an overview of programs found to be most effective for supporting adolescent students' literacy skills within the scope of a Tier 2 intervention.

The What Works Clearinghouse reviewed literacy intervention programs for adolescent students, defining this group as being between the age of 9 and 18, or students in grades 4 through 12. For this age group, What Works Clearinghouse

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[43] "What Content-Area Teachers Should Know about Adolescent Literacy." National Institute for Literacy. 2007. p.1. http://www.nifl.gov/publications/pdf/adolescent_literacy07.pdf

examines effectiveness of programs in the same four skill areas as for students between kindergarten and 3rd grade: **alphabetics**, including phonemic and phonological awareness, letter identification, print knowledge and phonics; **reading fluency**; **comprehension**, referring to vocabulary and reading comprehension; and **general literacy achievement**, or overall reading ability. Of the intervention programs reviewed by the Clearinghouse, the following studies were found to have *positive* or *potentially positive* effects on at least one of these literacy outcome measures:

- ❖ Project CRISS
- ❖ READ 180
- ❖ Reading Apprenticeship
- ❖ Reading Mastery
- ❖ SuccessMaker

Other interventions reviewed by this resource included Accelerated Reader, which was found to have no discernible effects on reading fluency or comprehension; and Concept-Oriented Reading Instruction, no studies of which met the What Works inclusion criteria. Only three of the above intervention programs meet the basic standards of a Tier 2 intervention—namely, that the program does not take the place of regular literacy instruction but instead occurs in small group settings several times each week outside of regular instruction time.

READ 180

Developed in 1994 by Scholastic, Read 180 is a year-long literacy intervention program designed for students in elementary through high school who demonstrate reading achievement that is below grade level. The program is designed as a supplementary reading curriculum delivered through a computer program, literature, workbooks, audiobooks and CDs, and direct instruction in reading skills. Read 180 is one of the most commonly used intervention programs, and has been implemented in over 10,000 classrooms in all 50 states since its development in 1999.[44]

Students in Read 180 participate in 90-minute sessions, each containing 20 minutes of whole-group direct instruction, 60 minutes of small-group rotations, and a 10 minute wrap-up as a whole class. Small group rotations can involve use of independent activities, such as using the program software or engaging in independent reading using print books and/or audiobooks. The Read 180 software is designed to adjust to students' abilities based on their performance. The software also allows teachers to monitor student progress, by producing reports and periodic progress updates.[45]

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[44] "What Works Clearinghouse Intervention Report: READ 180." U.S. Department of Education, Institute of Education Sciences. October 2009. p.1-2. http://ies.ed.gov/ncee/wwc/pdf/wwc_read180_102009.pdf
[45] Ibid. p. 2.

Teachers of the Read 180 program complete training consisting of a one-day leadership orientation, two days of in-service training upon implementation of the program, an online course, eight half-day seminars, and reading courses provided within the software package.[46]

A large number of research studies have tested the effectiveness of the Read 180 program, likely because of its current prevalence in U.S. schools. A comprehensive report on adolescent literacy intervention programs produced by LearningPoint Associates summarizes a handful of studies focusing on the impact of Read 180 on student performance on standardized exams. This document reports that in studies of middle and high schools in Los Angeles, Boston, Dallas, Houston, Columbus and Orange County (California), students in the Read 180 program demonstrated *higher than expected* score gains on Scholastic Reading Inventory Lexile Framework exams; *significant* score gains (compared to non-Read 180 students) on the Stanford Achievement Test, ninth edition; and *significant* gains in achievement on other assessment measures when compared to a cohort of control students.[47]

Additionally, What Works Clearinghouse reviewed seven studies of the effectiveness of Read 180 on 10,638 students between the 4th and 9th grades across seven different states. What Works Clearinghouse considers this extent of evidence to be medium to large. Overall, the studies support outcomes of *potentially positive effects* on both comprehension and general literacy achievement.[48]

Reading Apprenticeship

The Reading Apprenticeship literacy intervention program is based on an instructional approach that requires teachers to assume the role of expert reader in a classroom in order to model and guide text-based problem solving and develop comprehension, self-monitoring and recovery strategies among students.[49]   In addition to its use across a range of content areas in middle and high school, Reading Apprenticeship has been implemented in several community college classrooms since 2005. This program has been used in classrooms of struggling readers, English language learners and special education students, as well as students in honors or advanced placement classes.

The Reading Apprenticeship program aims to improve students' reading skills by guiding them, through a teacher's instruction, to examine their own reading strategies as well as those of their teacher and peers, and to subsequently develop effective

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[46] Shanahan, C. 2005. "Adolescent Literacy Intervention programs: Chart and Program Review Guide." Learning Point Associates. p.53.
[47] Ibid. p. 54-55.
[48] "What Works Clearinghouse Intervention Report: READ 180." Op. cit. p. 2-3.
[49] "What Works Clearinghouse Intervention Report: Reading Apprenticeship." U.S. Department of Education, Institute of Education Sciences. July 2010. p.1.
http://ies.ed.gov/ncee/wwc/pdf/wwc_reading_apprenticeship_071310.pdf

strategies for reading and comprehending the different course material they are given in class. This process is facilitated by small group and full classroom conversations, and personal reflection, on the cognitive process behind reading. Through these conversations, teachers of Reading Apprenticeship integrate four dimensions of classroom life into subject area teaching: **social**, by using students' interests in social interaction to create a safe, collaborative learning environment in which to discuss academic texts; **personal**, drawing on skills used by students in settings out of the classroom as well as students' personal interests, identities as readers and personal goals for reading; **cognitive**, involving developing readers' mental processes such as comprehension and problem-solving; and **knowledge-building**, including identifying and expanding the knowledge students bring to a text, such as word construction, vocabulary, text structure, genre, language and content.[50]

WestEd, who publishes the Reading Apprenticeship program provides several types of professional development, including long-term comprehensive district-wide training, leadership and teacher institutes, and other courses for teachers.[51]

One study involving over 2,000 9th graders across the United States studying under the Reading Apprenticeship intervention program was reviewed by What Works Clearinghouse, comprising a small body of evidence for this research. Based on this study, Reading Apprenticeship was found to have *potentially positive effects* on comprehension.[52]

SuccessMaker

Pearson's SuccessMaker is a set of computer-based courses that aims to improve essential reading skills such as phonological awareness, phonics, fluency, vocabulary, comprehension and concepts of print. Students use the computer program to complete lessons that tailor to their ability level within two sets of courses: "Foundations," which help students develop and maintain reading levels, and "Exploreware," which provide opportunities for exploration, open-ended instruction and development of analytical skills. SuccessMaker is designed to supplement regular reading instruction curriculum in classrooms of kindergarten through 8th grade students.[53] Pearson recommends that students work with the SuccessMaker software four to five times a week for seven to 35 minutes, depending on age and skill level.[54]

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[50] Ibid. p. 2.
[51] "Professional Development." WestEd. http://www.wested.org/cs/ra/print/docs/ra/services.htm
[52] Ibid.
[53] "What Works Clearinghouse Intervention Report: SuccessMaker." U.S. Department of Education, Institute of Education Sciences. June 2009. p.1. http://ies.ed.gov/ncee/wwc/pdf/wwc_successmaker_060209.pdf
[54] "SuccessMaker Enterprise." Florida Center for Reading Research. http://www.fcrr.org/FCRRReports/PDF/SuccessMaker.pdf

Pearson conducts an on-site initial training session with up to 12 teachers or staff members. This training session provides participants with hands-on learning of the software and program.[55]

What Works Clearinghouse reviewed three studies of the effects of SuccessMaker on 450 students between the ages of nine and 16 (in grades 4-10) in Alabama, Illinois and Virginia. Based on these studies, considered a small set of evidence by What Works Clearinghouse, SuccessMaker was found to have *potentially positive effects* on both comprehension and general literacy achievement, and *no discernible effects* on both alphabetics and reading fluency.[56]

Corrective Reading

McGraw Hill/SRA's Corrective Reading Program, profiled earlier in the elementary intervention section, is also appropriate for middle and high school ages. The program has recently been used in an effort to boost literacy rates at a rural high school in West Virginia. RTI has been phased in across West Virginia beginning in 2010, and Berkeley Springs High School was used as a preliminary case study site to test the efficacy of a chosen intervention strategy. Thirty students were selected to participate in the project, and ten were placed within each RTI Tier 1nitially, and moved as necessary. For instance, if a student's progress did not keep with the parameters of the class, he or she would be moved to Tier 2. Tier 2 students were given core instruction within the classroom, and were additionally given the opportunity to attend help sessions. They were also given benchmark assessments throughout the year. Students either moved toward Tier 1 or 3, or continued to require Tier 2 intervention. Students were given assistance in small group settings within the classroom.[57]

Improvements were noted at all three Tiers, though Tier 1 students showed the least improvement. Tier 2 students improved their fluency rates from grade equivalency 6.8 to 7.2, their word identification skills from 6.0 to 6.5, and their reading comprehension skills from 6.1 to a 7.2. Tier 3 students demonstrated the greatest improvement using Corrective Reading interventions.[58]

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[55] "Implementation Timeline." Pearson Education.
http://support.pearsonschool.com/coco/index.cfm?LinkServID=F2F9C74E-D7FA-BD44-F8C5CF9341E108F0&showMeta=0
[56] Ibid.
[57] Rozalski, Michael. "A Rural High School's Attempt to Improve Reading Achievement." CEC Today.
http://www.cec.sped.org/AM/Template.cfm?Section=CEC_Today1&TEMPLATE=/CM/ContentDisplay.cfm&CONTENTID=11753
[58] Ibid.

Math Intervention at all Grade Levels

The Institute for Education Science's What Works Clearinghouse has developed a set of recommendations for Response to Intervention procedures in math. These recommendations are based on extensive research that has been evaluated by experts within the Department of Education. Recommendations start with the identification of students who require intervention and end with progress monitoring and assessment:[59]

❖ **Screen all students** to identify those at risk for potential math difficulties and provide interventions to students identified as at risk.

❖ Instructional materials for students receiving interventions should focus intensely on in-depth treatment of **whole numbers in kindergarten through grade 5** and on **rational numbers in grades 4 through 8**. These materials should be selected by committee.

❖ Instruction during the intervention should be **explicit and systematic**. This includes providing models of proficient problem solving, verbalization of thought processes, guided practice, corrective feedback, and frequent cumulative review.

❖ Interventions should include **instruction on solving word problems** that is based on common underlying structures.

❖ Intervention materials should include opportunities for students to work with **visual representations of mathematical ideas** and interventionists should be proficient in the use of visual representations of mathematical ideas.

❖ Interventions at all grade levels should devote about **10 minutes to building fluent retrieval of basic arithmetic facts**.

❖ **Monitor the progress of students** receiving supplemental instruction and other students who are at risk.

❖ Include **motivational strategies** in Tier 2 and Tier 3 interventions.

The following examples of intervention products aim to keep these recommendations in mind. Not every product profiled below is explicitly listed as geared toward a Response to Intervention program, but we include any tool that aims to increase understanding of mathematical concepts for students who are behind grade level and

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[59] "Assisting Students Struggling with Math: Response to Intervention for Elementary and Middle Schools." IES, What Works Clearinghouse. http://ies.ed.gov/ncee/wwc/pdf/practiceguides/rti_math_pg_042109.pdf

utilizes small group instruction, is supplemental to the core curriculum, and includes a progress monitoring component.

Odyssey Math (K-8)

Odyssey Math is a web-based curriculum and assessment tool published by CompassLearning. Materials are aimed at individual or small group work and build student mathematics ability in sessions supplemental to primary curricular math instruction. The product also includes tests and assessments aligned with state curricular standards and a data management system to track student progress. In early grades, Odyssey Math focuses on fundamental math skills such as numeracy, and adapts for later grades to equip students with skills needed for middle and high school.[60]

CompassLearning's Impact Teacher Academy provides professional development opportunities for teachers using the Odyssey Math program. Teachers can gain access to professional development through either online or in-person sessions.[61]

The What Works Clearinghouse reviewed 14 studies which investigated the effects of Odyssey Math on student achievement. Only one study meets WWC evidence standards with reservations. The study in question included 207 fifth-grade students in a Pennsylvania school district who used Odyssey Math as a supplement to a primary Houghton Mifflin curriculum. Teachers used Odyssey Math for a minimum of 90 minutes per week, as per developer recommendations. The research pointed toward a statistically significant positive effect between product use and math achievement amongst the students studied.[62] While the extent of evidence available for Odyssey Math is small, the Clearinghouse does rate the program as having *potentially positive* effects on math achievement.

Cognitive Tutor

Cognitive Tutor Algebra is a software-based adaptive approach to increasing students' mid-level math skills. Developed by Carnegie Learning, the program identifies strengths and weaknesses of each student and customizes prompts to focus on areas in which the student struggles. The program then challenges the student with new questions based on the areas of difficulty. Cognitive Tutor offers multiple products to address the needs of students at varying levels of math proficiency. Products include Bridge to Algebra, Algebra I, Algebra II, Geometry, and Integrated

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[60] "Odyssey Math." U.S. Department of Education, Institute of Education Sciences.
http://ies.ed.gov/ncee/wwc/pdf/wwc_odysseymath_081809.pdf
[61] "CompassLearning Impact Teacher Academy." CompassLearning.
http://www.compasslearning.com/products/show.aspx?page=3.0.2
[62] DiLeo, J. "A Study of a Specific Language Arts and Mathematics Software Program" Unpublished doctoral dissertation, Indiana University of Pennsylvania. Quoted in "Odyssey Math." Ibid.

Math. The products have been used in over 2,600 urban, rural, and suburban school districts since 1992.[63]

Carnegie Learning offers several options for professional development, including implementation training, K-8 mathematics teaching courses, online professional development sessions, and a three-day math learning institute.[64]

Fourteen studies were reviewed by the What Works Clearinghouse in an attempt to define the efficacy of Cognitive Tutor. Only one study met the WWC's evidence standards, being a randomized controlled trial that studied the achievement of ninth-grade students in three Oklahoma suburban schools. The study's authors reported a positive but not statistically significant effect of Cognitive Tutor Algebra I on the standard end of course assessments.[65] The effect size was large enough to be considered important by the WWC. Overall, the Clearinghouse found Cognitive Tutor to have *potentially positive* effects for math achievement.

Accelerated Math (1-12)

Accelerated Math by Renaissance Learning is a software tool that creates individualized assignments for students based on their abilities, scores student work, and generates formative feedback through reports for teachers and students. The program works with students in all grades. According to the developers, Accelerated Math is used by more than 30,000 schools nationwide. The program is used to supplement primary curricular instruction. Teachers are able to use student progress data to adjust instruction for the entire class or for small groups of students.[66] The Accelerated Math for Intervention program is designed specifically to be used in the RTI environment.[67]

Renaissance Learning provides a wide variety of online professional development resources. The Accelerated Math for Intervention program in particular includes training in classroom management, classroom response, monitoring progress, and program guides.[68]

The What Works Clearinghouse reviewed 32 studies investigating the effects of Accelerated Math. Three studies were found to meet minimum requirements for

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[63] "Cognitive Tutor." U.S. Department of Education, Institute of Education Sciences.
http://ies.ed.gov/ncee/wwc/pdf/wwc_cogtutor_072809.pdf
[64] "Professional Development for Improved Mathematics Teaching Success." Carnegie Learning.
http://www.carnegielearning.com/pd/
[65] Ritter, S., Kulikowich, J., Lei, P., McGuire, C., and Morgan, P. "What Evidence Matters? A Randomized Trial of Cognitive Tutor Algebra I." 2007 in "Cognitive Tutor." Ibid.
[66] "Accelerated Math." U.S. Department of Education, Institute of Education Sciences. September 2010.
http://ies.ed.gov/ncee/wwc/pdf/wwc_accelmath_091410.pdf
[67] "Accelerated Math for Intervention." Renaissance Learning. http://www.renlearn.com/ami/default.aspx
[68] "Renaissance Training Center – Accelerated Math for Intervention" Renaissance Learning.
https://www.renlearn.com/training/app/product.aspx?p=AMI

evidence standards. Ysseldyke and Bolt (2007) used STAR Math and Terra Nova exams to assess the impact of Accelerated Math on students in grades 2 through 5 at five elementary schools. The authors reported a statistically significant positive effect of the program on achievement. Nunnery and Ross (2007) tested the impact of Accelerated Math on 416 students' achievement across nine elementary schools in a suburban Texas school district. The authors of this study reported a positive and significant effect of Accelerated Math on overall math achievement. Ysseldyke and Tardrew (2007) used the STAR Math test to determine the effect of Accelerated Math on 2,397 students representing 125 elementary classrooms, 27 schools, and 24 states. Test scores demonstrated substantively important positive correlations, if not statistically significant gains.[69] Overall, the What Works Clearinghouse determined Accelerated Math to have mixed effects on student math achievement.

iPASS

iPASS is an internet software application from iLearn that "manages the entire math intervention process," from assessment to instruction and reporting.[70] iPASS is prescriptive at a detailed level, so that students can be taught on very specific concepts and particular skill deficits can be corrected. Once students achieve mastery of a topic, they progress through the program. The program supplements regular curricular instruction and works on a one-on-one basis. The program handles all pre- and post-assessment, instruction, and review activities. Students in grades 3-8 and high school students in support classes benefit most from the program. Content covers state standards in mathematics for grades 1 through 8.[71] iLearn requires three hours of teacher professional development upon implementation. Ongoing teacher support is also available[72]

The iPASS software is supported by research on instruction and learning. Developers considered the general methods of effective instruction, methods proven to be effective for students with learning difficulties, methods proven to be effective for students with learning disabilities in mathematics, and methods proven effective for instruction in a multimedia format. These four areas were considered during product development to ensure the methods used by the software aligned with best practices. According to the company, iPASS makes a Tier 2 intervention far easier and more practical to implement, "while preserving the features of the approach that have been found to make it effective."[73]

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[69] As reported in "Accelerated Math," Ibid.

[70] iLearn. http://www.ilearn.com/

[71] "About iPASS." iLearn. http://www.ilearn.com/AboutiPass.asp

[72] "Top Ten Reasons to Use iLearn." iLearn. http://www.ilearn.com/topten.asp

[73] Collins, Robert. "The Research Base for the Design of iPASS." iLearn. http://www.ilearn.com/pdf/iPASS_ResearchBase.pdf

Studies regarding the efficacy of the iPASS intervention are not numerous. The results of one study were published by iPASS, and therefore may not be entirely reliable. In this study, iPASS was implemented in the sixth grade at one school in rural Georgia. Fifty-one students used iPASS for math instruction, while 50 only received regular classroom instruction. All students were given a pretest prior to beginning iPASS, and then assessed on the Georgia Criterion Referenced Competency Test at the end of the year. The results of this test found that 65 percent of the control group met or exceeded the math standards on the GCRCT, whereas 87 percent of the iPASS group did so.[74] iPASS has not been evaluated by the Institute for Education Science.

Momentum Math

Momentum Math, by PCI Education, seeks to re-engage students who have given up on mathematics because they have fallen behind by two grade levels or more. The program is suited for all learners, including special education students and English language learners.[75]

The program includes embedded assessments to monitor student performance. The assessments also enable teachers to target instruction based on students' areas of need. The program consists of student books which are organized in three levels based on grade level skills. Books feature graphics and examples that appeal to students in middle school in order to make content more accessible and meaningful.

Momentum Math carries with it extensive evidence of research support behind the development of the program. Research is used to support the conceptual framework of the program and the frequent assessment strategy.[76]

In 2007, the California Board of Education adopted Momentum Math as an approved intervention program for grades 4 through 7. The program had to go through rigorous review and meet specific criteria including content alignment with state standards, program organization, assessment, universal access, and instructional planning and support. The program was found to align with the state's mathematics content standards and was subsequently approved for use.[77]

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[74] "iLearn Math Produces Exceptionally Large Gains in Student Achievement in One School Year." iLearn. http://www.ilearn.com/pdf/iLearn-Math-Achievement-Study-Results.pdf

[75] "Momentum Math from PCI Education." PCI Education. http://www.pcieducation.com/momentummath/

[76] "Momentum Math Research Foundations." PCI Education. http://www.pcieducation.com/UserFiles/file/momentummath/Momentum%20Math-Grade%20Level%20Editions%20White%20Paper.pdf

[77] "California Board of Education Approves Kaplan's Momentum Math as a State-Adopted Math Intervention Program." Red Orbit news. 14 Nov 2007. http://www.redorbit.com/news/education/1144099/california_board_of_education_approves_kaplans_momentum_math_as_a/

Overview of Progress Monitoring in Interventions

Students receiving Tier 2 intervention should be monitored regularly for progress. Students who continue to fall further behind and cannot keep up with other students within their group should be considered for a move to Tier 3, whereas students who are found to improve rapidly or perform above the level of the group might be moved back into Tier 1, or mainstream classroom education. Progress is monitored frequently to determine whether the intervention is successful in helping the student learn at an appropriate rate.

Frequency

Monitoring frequency varies in practice. A recommendation from the University of Louisville's College of Education and Human Development states that while Tier 1 students should be monitored for progress every six to eight weeks, Tier 2 students require assessment much more regularly—on a weekly or greater basis.[78]

The San Antonio Independent School District monitors its Tier 2 students every ten days.[79] Similarly, the Los Angeles Unified School District mandates that Tier 2 students be monitored for progress weekly or biweekly, to keep abreast of student needs.[80] The State of Kentucky's Department of Education states that the progress of students at the Tier 2 level is typically monitored every two weeks.[81]

The majority of products profiled within this report include progress monitoring components, and either monitor on a timed schedule (once per week or more often) or at the time which major curricular units are completed.

Tools

Most intervention products will include progress monitoring tools, but for those which do not include such a feature, there are standalone progress monitoring tools available.

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[78] Fenty, Nicole. "Tier 2 Reading Instruction." The University of Louisville.
http://www.louisville.edu/education/srp/abri/files/Tier%25202%2520Reading%2520Instruction.ppt
[79] "Elementary Reading Interventions." San Antonio Independent School District.
http://www.saisd.net/admin/curric/student_support_team/2010-
2011/rti%20from%20PAD/Elementary%20Reading%20Interventions%2008.02.10.pdf
[80] "Progress Monitoring Guidelines for Tier 2 and Tier 3 Literacy Intervention." Los Angeles Unified School District.
http://www.education.ky.gov/kde/instructional+resources/kentucky+system+of+interventions/supplemental+inst
ruction-tier+2/progress+monitoring+of+students+receiving+supplemental+interventions+in+tier+2.htm
[81] "Progress Monitoring of Students Receiving Supplemental Interventions in Tier 2." Kentucky Department of
Education. 3 Aug 2010.
http://www.education.ky.gov/kde/instructional+resources/kentucky+system+of+interventions/supplemental+inst
ruction-tier+2/progress+monitoring+of+students+receiving+supplemental+interventions+in+tier+2.htm

Curriculum based measures (CBM) are commonly used for progress monitoring as well as for universal screening. CBM provides current, week-by-week information on students' progress. Each student is tested briefly each week, with tests lasting one to five minutes. Each child's scores are recorded and compared to a baseline to determine what kind of action is necessary. CMB data along with classroom observations, district wide assessments, and/or other standardized tests may be used by an intervention team to measure the intervention's effectiveness. The data may then be used to determine if changes in instruction or intervention are necessary to support a student's progress.

In addition to CBM, teachers may opt to use one of a number of progress monitoring tools. The National Center on Response to Intervention (NCRI) has developed a comprehensive chart of progress monitoring tools and their reliability, as evidenced by research conducted by the Center's Technical Review Committee. The following chart summarizes the NCRI's results. The table reviews various products offered under each tool. Evidence supporting each criterion is the same for all products unless otherwise noted.[82]

Progress Monitoring Tools

Tool	Reliability of Performance Level Score	Validity of the Slope of Predictive Improvement	Sensitive to Student Improvement	End of Year Benchmarks
AIMSweb	Convincing	Convincing	Unconvincing (Math); Convincing (Reading)	Convincing
CBM	Convincing	Convincing	Convincing	Convincing
DIBELS	Convincing	Data unavailable	Convincing	Unconvincing
easyCBM	Convincing	Data unavailable	Data unavailable	Data unavailable
mClass Math	Convincing	Unconvincing or unavailable	Data unavailable	Convincing
Monitoring Basic Skills Progress	Convincing	Convincing	Convincing	Convincing
Orchard Software	Unconvincing	Data unavailable	Data unavailable	Data unavailable
Scholastic	Convincing	Data unavailable	Convincing	Convincing
STAR	Convincing	Convincing	Convincing	Convincing
Vanderbilt RTI Monitor	Convincing	Data unavailable	Data unavailable	Unconvincing (Math); Convincing (Reading)
Yearly Progress Pro	Convincing	Convincing	Convincing	Convincing

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[82] "Progress Monitoring Tools." National Center on Response to Intervention. http://rti4success.org/progressMonitoringTools

Project Evaluation Form

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