

Algebra At-Risk Solutions

Districts deploy software to enhance and accelerate algebra instruction

By Lisa Fratt

“We’re seeing gains of up to two years for students, and teachers in other subject areas have noticed improved attitudes and performance in students enrolled in the intervention program.”

*—Amy Blanton, coordinator of instructional technology,
Rutherford County (Tenn.) Schools*

ra's sk tion

Algebra wields an incredible amount of power in U.S. schools. It's the gatekeeper to higher math classes that commonly opens the door to postsecondary education and greater lifetime earnings. It's also one of the most frequently failed courses, often instigating a downward spiral that concludes with dropping out. Los Angeles Superintendent Roy Romer says algebra triggers more dropouts than any other single subject.

Meanwhile, standards are evolving. More states require algebra for high school graduation, which means students with less preparation and weaker skills must bypass less rigorous courses like business math, and take algebra. A few states, such as California, have upped the ante even further by mandating that schools teach algebra in eighth grade.

The challenge for school administrators is to stem the tide of algebra-induced dropouts by helping at-risk learners succeed in algebra. Some districts are finding that software can help students over the algebra hurdle by pinpointing learning gaps and fine-tuning instruction.

Conventional Plans

The Kennewick (Wash.) School District administration's previous approach pushed at-risk students into pre-algebra in ninth grade, explains Dave Bond, assistant superintendent



"If students enter ninth grade behind, the solution isn't to slow them down or back them up. The solution is to catch them up."

—Dave Bond, assistant superintendent of secondary instruction, Kennewick (Wash.) School District



AT-RISK STUDENTS

A Framework for Success

"Software is not a miracle worker," says Raylene Truxton of Aldine (Tex.) Independent School District. Districts that want to rewrite the algebra story for at-risk students should address the issue from all angles: teachers, administrators, students and software.

Instructors:

- Adjust teachers' belief system, says Dave Bond of Kennwick (Wash.) School District. The attitude that some kids can't do math does not build success.
- "Make sure the person responsible for instruction has the knowledge base needed," says Francis Fennell, president of the National Council of Teachers of Mathematics. Staff the learning lab with a certified math teacher.
- Teachers may resent software and believe it waters down algebra. Make sure the program has academic rigor and share it with teachers.

Administrators:

- Wisely implement software by deploying it where it's needed and will have the most impact, says Pat Baltzley of Baltimore County School District.
- Credit recovery and intervention programs require consistency and dedication from the principal. That means establishing procedures to get kids into learning labs and hiring educators and paraprofessionals to staff labs.

Students:

- Motivate them by sharing standards, charting their progress and encouraging them to accept responsibility for their performance.

Software:

- Software should instill understanding, not just prep kids for testing, says Fennell.
- The program should include a broad base of algebra and pre-algebra, cover material on the state assessment and be flexible enough to be tailored to the local curriculum.

for secondary instruction. But the curriculum didn't meet students' needs; most students in the pre-algebra track failed the graduation exam typically taken in the sophomore year. Only 5 percent of students in the pre-algebra track passed the math section of the exam in 2002. That's when the lightbulb went on. "If students enter ninth grade behind, the solution isn't to slow them down or back them up. The solution is to catch them up," states Bond.

While a less rigorous curriculum is not the answer, pushing ill-prepped students into algebra may set the stage for failure and begin the cycle that ends in dropout. Most districts handle failure via credit recovery. Traditionally, the student re-enrolls in algebra in summer school or the following year. But repeating the course, using the same text and teaching methods, is often unsuccessful. Los Angeles demonstrates the point; 75 percent of kids who repeated algebra failed the course the second time in 2005.

Soft Credit

One fairly new option for students who fail algebra is software-based credit recovery. These self-paced remediation programs use software to fill learning gaps and help students pass algebra in summer school or in weekend and after-school learning labs, allowing them to stay on track and graduate on time.

"Just because a student fails algebra doesn't mean he didn't learn anything," points out Ron Bennett, former superintendent of Corona Norco School District in Riverside County, Calif. In a traditional class of 30 to 35 students, it's nearly impossible for a teacher to assess exactly what concepts a particular student misses. "The classroom teacher must complete the state required curriculum. Also, many students will not let their teacher know they do not understand a concept because

they are embarrassed to ask," notes Terese Jurgensen, program coordinator Quest High School, an alternative school in North Branch, Mich.

Most online credit recovery programs individualize instruction by pre-testing kids on algebraic concepts, funneling them back to lessons to review missing concepts and bypassing concepts they understand. In the same lab, one student may focus on multiplication facts, another may work on problem solving, and a third could focus on polynomials.

In many cases, the programs seem to do the trick. Last year, nearly all North Branch 10th- and 11th-graders who used NovaNet online courseware for credit recovery passed algebra, and other districts using math software are seeing more at-risk students pass algebra and meet state standards in freshman year.

In one Corona Norco high school, 74 percent of at-risk students passed the math portion of the exit exam after a six-week NovaNet intervention program; the historical pass rate for the at-risk group hovers around 20 percent.

The real challenge may be to do away with credit recovery. "We'd love to [eliminate failure and] not need credit recovery someday," says Raylene Truxton, district coordinator for online learning, Aldine (Tex.) Independent School District. Aldine is beginning to tackle that hurdle with online intervention programs. Struggling algebra students are enrolled in a SuccessMaker Lab in addition to algebra. The lab provides kids an extra boost by reviewing essential math skills and algebraic concepts. If students fail an algebra test, teachers can refer them to the after-school lab where they can review the concepts, retake the test and possibly prevent course failure.

Last year, Columbus (Ohio) Public Schools recommended students with two Fs in algebra the first semester

to enroll in credit recovery and algebra simultaneously. "Anecdotally, we're often finding that if a student gets remediation, he can catch up, pass the next two grading periods and may earn the grade needed to pull through algebra," reports Karen Gohringer, PLATO project manager for Columbus schools.

Despite implementing this algebra graduation requirement several years ago, Columbus' graduation rate rose 8 percent in 2006.

There is a plus side to the equation; the bar has been raised for at-risk kids. "Kids are better off than they were five years ago," asserts Gohringer.

Kennewick rolled out a similar preventative approach after noting early graduation test results and realizing that 95 percent of ninth graders enrolled in the lowest track pre-algebra course did not meet the state math standard. The district eliminated its pre-algebra course and placed all ninth graders in an integrated algebra and geometry class. At-risk students also enroll in a second "doubles" math class. The new at-risk program embraces these goals:

- Ensure students understand the content of the regular lesson with a quick review of the lesson and a check for understanding.
- Expose at-risk students to kids skilled in math—other freshman act as peer tutors during the morning class, and junior and senior precalculus students may help during the "doubles" class.
- Build missing skills like problem-solving or computation skills.

Kennewick places "doubles" students with the same teacher in both algebra classes. During the second class, the teacher reviews the morning lesson; students who demonstrate understanding use Academy of Math software by AutoSkill International Inc., to work on other areas of deficiency like fractions. Semi-annual

Most online credit recovery programs individualize instruction by pre-testing kids on algebraic concepts, funneling them back to lessons to review missing concepts and bypassing concepts they understand.

EXPAND YOUR KNOWLEDGE AND NETWORK WITH LIKE-MINDED PRACTITIONERS

Solution Tree events are 2- or 3-day gatherings that offer attendees information, awareness, and training on subjects such as:

- ▶ Assessment
- ▶ Professional Learning Communities
- ▶ Pyramid of Interventions



SUMMITS AND PROFESSIONAL LEARNING COMMUNITIES INSTITUTES
FEATURE:
Robert Eaker
Rebecca DuFour
Richard DuFour

CLARIFY YOUR MISSION AND FIND RENEWED PURPOSE IN YOUR PROFESSION.



2006-2007 EVENTS SCHEDULE

TWO-DAY WORKSHOPS 2006

9/20-21	Las Vegas, NV
9/27-28	San Diego, CA
10/5-6	San Diego, CA
10/25-26	Chicago, IL
11/2-3	Chicago, IL
11/16-17	Washington, DC

NATIONAL SUMMITS

10/18-21, 2006	Niagara Falls, ON
2/21-24, 2007	Scottsdale, AZ
10/10-13, 2007	Vancouver, BC

ASSESSMENT 2007

10/25-27	Ottawa, ON
----------	------------

PROFESSIONAL LEARNING COMMUNITIES 2007

2/12-13	Honolulu, HI
4/11-13	Edmonton, AB
6/11-13	Las Vegas, NV
6/14-16	New Orleans, LA
6/25-27	St. Louis, MO
6/28-30	Salt Lake City, UT
7/9-11	Columbus, OH
7/12-14	Boston, MA
7/23-25	Omaha, NE
7/26-28	Durham, NC
8/6-8	Lincolnshire, IL
8/9-11	Seattle, WA

STATE & PROVINCIAL SUMMITS 2007

4/18-21	Toronto, ON
10/3-6	Anaheim, CA
10/29-11/1	Houston, TX

Dates and locations are tentative.

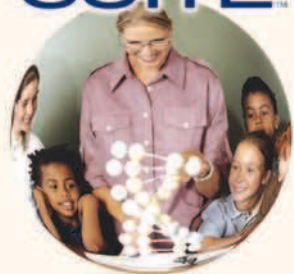
LEARN MORE OR REGISTER ONLINE NOW

www.solution-tree.com

▶ 800.733.6786

www.solution-tree.com

StarBase SCHOOL SUITE™



Integrated web-based solutions for complete information management, available district-wide instantly!

Century Consultant's Star_Base School Suite is an easy-to-use, 100% web-based, SIF certified, centralized SIS that provides secure, real-time information not only to the school districts but to parents and students via the portal feature.



Contact us for a free needs assessment
1-800-852-2566
www.centuryltd.com



Serving the K-12 Educational Community for over 25 years

AT-RISK STUDENTS

Detailing At-Risk Pupils

Not all at-risk students learn in the same way. Software can address basic differentiation, says Karen Gohringer, PLATO project manager at Columbus (Ohio) Public Schools. The reading level for instructions and problems is typically around sixth grade, and audio support helps struggling readers and ESL students. Keyboarding provides tactile stimulation for kinesthetic learners, and multi-media animations provide visual stimulation to lure reluctant learners.

Typical subgroups break students into racial or economic categories, but AutoSkill International Inc. has put a new spin on differentiation by segmenting at-risk students across all subjects into a four-category continuum. Each type of student has unique needs and requires a different blend of skill development and motivational switches.

- "Bubble students" are slightly behind their peers and need quick intervention and targeted instruction to catch up.
- "Reluctant learners" fall farther behind and require targeted and direct instruction to fill missing skills and build trust with the teacher.
- "Disengaged students" expect failure and need high intensity intervention in a range of missing skills.
- "Spiral students" have a long history of failure and are a high drop-out risk. The challenge is to create willingness to learn, so students must be moved far back in the math curriculum to experience success and re-engage in learning. This may mean taking student's back to very basic math tasks.

external testing shows "doubles" kids are doubling and tripling the expected annual growth rate, gaining two and three grade levels in one year, reports Bond. What's more, they are surpassing teachers' expectations, passing the integrated algebra/geometry course and state testing. Before implementing Academy of Math, only 42 percent of all students met the math standard. In 2005, four years after starting the program, 73 percent of kids, including many "doubles" students, met the standard.

Bond credits a comprehensive plan, including the software, with the turnaround. The district assigned its best teachers to "doubles" sections and reduced the student/teacher ratio to 15-1 by hiring a para-educator to oversee kids working with Academy of Math.

Middle School Connections

"Ninth grade is almost too late for these students," admits Truxton. That's because students may feel trapped in a pattern of failure and their math knowledge may be several years behind grade level. One Aldine school uses PLATO to fill in gaps with seventh- and eighth-graders who never passed the TAKS state exam; others target fifth- and sixth-graders to close gaps before a cycle of failure is established. Although the data is not in for the new program, Truxton predicts these at-risk kids will be more prepped for algebra.

Rutherford County (Tenn.) Schools employs a similar approach with seventh- and eighth-grade students with low Tennessee Value Added Assessment Scores. Students are enrolled in two math classes; the second class maintains a 15-1 student/teacher ratio and employs Academy of Math software to reinforce instruction and address individual needs like weak computation or problem-solving skills. "We're seeing gains of up to two years for

students, and teachers in other subject areas have noticed improved attitudes and performance in students enrolled in the intervention program," notes Amy Blanton, coordinator of instructional technology for Rutherford County Schools.

While Rutherford students progress to algebra in ninth grade, other districts are wrangling with algebra at the eighth-grade level. Take Baltimore County School District in Maryland, which offers algebra in middle school. In 2001, Dundalk Middle School, a Title I school not meeting adequate yearly progress under No Child Left Behind, turned to Carnegie Learning's Cognitive Tutor Software.

The curriculum combines three days of classroom instruction with two days of individualized online instruction in a teacher-supervised software lab. Dundalk saw standardized algebra test scores exceed the county and state average and increase from 49 percent to 86 percent over two years. The district also credits the curriculum's teacher-friendly approach with improving teacher retention in low-performing schools. The program guides teachers, says Pat Baltzley, director of preK-12 mathematics for Baltimore County School District, and helps them stay on top of each student's needs—a sure way to help them stay in school. **DA**

Lisa Fratt is a contributing editor.

Algebra Online

Check out these sites for more information about algebra assistance programs to help at-risk learners.

www.autoskill.com

www.carnegielearning.com

www.pearsondigital.com

www.plato.com

MEASURE THEIR SUCCESS BEFORE THEY ACHIEVE IT

PEARSON
PASeries™

Accurately project your students' growth with PASeries.™

Reliable and research-based, PASeries (Progress Assessment Series™) provides formative assessment for **reading, mathematics, algebra I and writing.**

Online or paper; screener, progress and diagnostic tests; trusted scientific Lexile® and Quantile® scales.

PASeries connects instruction to results, and helps districts achieve their progress goals.

PEARSON
Assessments

© 2006 Pearson Education, Inc.
or its affiliate(s). All rights reserved.

Sign up for a free PASeries webinar
at PearsonPASeries.com/webinar
or call 1-888-281-8443

Degree programs for special educators, like you, who use innovative methods to connect students to a better education



For more information or to view the complete list of programs, visit our Web site at www.SchoolofEd.nova.edu or call us at 800-986-3223.

Bachelor of Science (B.S.) in Education with concentrations in:

- Exceptional Student Education
- Child Development

Master of Science (M.S.) in Education with specializations in:

- Exceptional Student Education
- Gifted Education
- Cognitive and Behavioral Disabilities
- Early Childhood Special Education
- Speech-Language Pathology

Master of Science (M.S.) in Counseling with concentrations in:

- Mental Health Counseling
- Applied Behavioral Analysis
- Advanced Behavioral Analysis

Education Specialist (Ed.S.) with specializations in:

- Exceptional Student Education
- Gifted Education

Doctor of Education (Ed.D.) with nine concentrations, including:

- Special Education
- Speech-Language Pathology

Classes are offered online and at instructional sites throughout the United States.

We also offer numerous other degree programs from associate's through doctoral level.



Fischler School of
**Education and
Human Services**

On-site • Online • Worldwide

Nova Southeastern University admits students of any race, color, and national or ethnic origin. Nova Southeastern University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools (1866 Southern Lane, Decatur, Georgia 30033-4097. Telephone number: 404-679-4501) to award associate's, bachelor's, master's, educational specialist, and doctoral degrees. 03-315-06PGA

Copyright of District Administration is the property of Professional Media Group, LLC and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.