PERSONALIZING MATH Through Technology and Differentiated Instruction
Ross Brenneman
Assistant editor, *Education Week Teacher*

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Personalizing Math Through Technology and Differentiated Instruction

Expert Presenters:

*Silvestre Arcos*, founding math teacher and instructional coach, KIPP Washington Heights Middle School, New York City
An on-demand archive of this webinar will be available at www.edweek.org/go/webinar in less than 24 hrs.
Getting Personal:
Teachers, Technology, and Tailored Instruction

www.edweek.org/go/personal
"Many teachers remain skeptical of school and district efforts to merge instruction with digital devices."

—"Amid Skepticism, Blended-Learning Models Aim to Transform Teachers' Work," June 18, 2014
"Leveraging technology has allowed me to meet my students' individual needs and push them at their current levels of proficiency."

—Silvestre Arcos, “How I Blended My Math Class,” June 18, 2014
KIPP: WASHINGTON HEIGHTS
A Technology Tale
**Blended Learning—What Challenge Do You Want to Solve?**

**Our vision:** Personalize learning for all students to meet them where they are.

**Teacher role**
- Teacher as facilitator/coach
- Adjust teaching style/approach by small group or individual
- Encourage students to independently troubleshoot

**Classroom impact**
- Establish student driven, individualized learning
- Foster growth mindset
- Build responsibility and independence
- Develop 21st century skills

**Student role**
- Students own learning trajectory, learn from mistakes
- Individualized student goals, based on level
- Building typing, coding skills

**School-level systems:** Schedule, culture of innovation, strong instructional coaching

**Success metrics:** MAP growth, college-level literacy, life/technology skills
Math Classroom: Our Model

- Two 1 hr computation blocks per week (50 students)
- Five 1 hr problem solving blocks per week (30 students)
- 1-1 computing
ST Math

- K – 6 programs
- Basic reports
- Pre- and Post-Quizzes
- Sequence curriculum
- Limited Choice
- Excellent Content through engaging puzzles

Khan Academy

- Free
- Excellent reports
- Mastery
- Recommend skills
- Student Choice
- Lots of computation and growing problem solving exercises
- Grade – Level Missions
- Common Core and PARCC aligned
  - Sorting exercises
  - Check all that apply
Teacher Role: Facilitator/Coach

- Recommend skills
- Conferencing with students
  - Confer with students to give feedback on their decisions
  - How to look at your own data and making decisions based on that
  - Character Growth Goals
- Celebrating successes
  - Energy points posters
  - Skills Mastered
  - Sun Badge Shirt
  - Shout Outs – Character Strengths
  - Math Is Life Party
  - Grades
STUDENT ROLE: OWNERS OF INDIVIDUAL LEARNING

Find a way or make one

Collaboration

What do I do when I get stuck?

- Watch the video
- Ask for a hint
- Ask for an example
- Ask a team mate
- Refer to your notes
RESULTS

- MAP growth
  - 99% of students achieved growth goals two years in a row
  - Top 5th grade MAP growth in the KIPP network two years in a row

- KIPPster Testimonials
  - I grew 29 points in math this year and worked really hard showing grit and not giving up. That’s what helped me climb to and through college. In some objectives I would attempt 20 times just to go to the next level and I would spend days and even weeks!
  - I grew 38 points this year! I am so happy and proud I got this score. The thing that helped me climb to and through college is practicing, listening in class, working hard, and believing in myself.
KEY LEARNINGS

- Collaboration is essential
- Make a plan for increased autonomy
- The teacher’s role is centerpiece

Silvestre Arcos
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@silvestrearcos
DreamBox Learning Math: 3 Essential Elements

Rigorous Elementary Mathematics

- Reporting Aligned to Common Core State Standards, Texas TEKS, Virginia SOL, Canada WNCP, & Canada Ontario Curriculum Reports
- Standards for Mathematical Practice

Intelligent Adaptive Learning™ Engine

- Millions of personalized learning paths
- Tailored to a student’s unique needs

Motivating Learning Environment

- Student Directed, Empowering
- Gaming Fundamentals, Rewards
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Motivating Learning Environment

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K-8 Lessons & Virtual Manipulatives

Intelligently adapt & individualize to:

• Students’ own intuitive strategies
• Kinds of mistakes
• Efficiency of strategy
• Scaffolding needed
• Response time
# Classroom Summary Report

<table>
<thead>
<tr>
<th>Student</th>
<th>Grade</th>
<th>Kindergarten Curriculum</th>
<th>1st Grade Curriculum</th>
<th>2nd Grade Curriculum</th>
<th>3rd Grade Curriculum</th>
<th>Time on Task (HH:MM)</th>
<th>Notifications</th>
<th>Student Reports</th>
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## Strong Support for Differentiation

**Concept: Multiplication: Double & Halve**

Students use known basic facts and double one factor and halve the other to determine the product of a more challenging problem.

<table>
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<th># Completed with Proficiency</th>
<th># In Progress</th>
<th># Not Started</th>
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<tbody>
<tr>
<td>7 students</td>
<td>10 students</td>
<td>9 students</td>
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<td>John P (about 1 month ago)</td>
<td>Avaneesh S (71%)</td>
<td>Anthony P</td>
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<tr>
<td>Jacob C (about 1 month ago)</td>
<td>Charles K (71%)</td>
<td>Brittany B</td>
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<td>Rebceah D (about 1 month ago)</td>
<td>Emmanuel M (71%)</td>
<td>Christina P</td>
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<td>Julian B (about 1 month ago)</td>
<td>Luke R (71%)</td>
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<tr>
<td></td>
<td>Suna C (28%)</td>
<td>Vanessa C</td>
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<tr>
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<td>Caitlin S (21%)</td>
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DreamBox supports small group and whole class instructional resources

Interactive white-board lessons
www.dreambox.com/teachertools
Develop critical thinking, deeper understanding, and lifelong confidence in math.

Students empowered to think—not just memorize.

DreamBox combines a highly personalized math learning experience with a rigorous curriculum for deep understanding of math concepts, so students learn to solve real-world math problems.

**RESULTS ARE DRIVEN BY:**
- Intelligent Adaptive Learning™ technology that differentiates content, pace, and lesson sequence in real-time
- A rigorous K-8 math curriculum aligned to CCSS, TEKS, SOL, WNCP, and Ontario Curriculum
- A highly motivating learning environment that encourages students to persist and progress

*Request a demo* at [www.dreambox.com](http://www.dreambox.com)
An on-demand archive of this webinar will be available at www.edweek.org/go/webinar in less than 24 hrs.