



WORLD CLASS Math Project

THE STATE OF MATH IN AMERICA

Math education in the United States has fallen far behind other major countries. U.S. Secretary of Education, Arne Duncan, issued a press release on August 18, 2009, stating that the math scores of American 15 year olds ranked behind 31 other countries. He underscored that this will have a direct impact on the country's ability to compete in world markets.

Job markets in math, science and technology are especially impacted. For example, the Chicago Sun-times reported that 42% of Illinois public high school juniors, graduating in 2010, did not have the math skills needed for the vast majority of jobs—including the ability to calculate fractions or discounts.

The results for minority students were even worse. Less than 25% of African-American juniors, and slightly more than 33% of Hispanics knew the math needed for 90% of American jobs.

WHO WE ARE

The *World Class Math Project* directly combats eroding math skills, using organizational best practices and Web-based tools. We formed a private company, Expand the Learning Horizon, LLC, to specifically improve math skills for K-12 public students.

OUR MISSION

Our team of educators, mathematicians, organizational improvement consultants and technology professionals spent years researching the problem of math erosion before finally launching the World Class Math Project.

Although it is important to get at the root cause of how we got to this low point, *it is far more urgent to help our students catch up.*

Our mission is to partner with educational stakeholders to help individual students catch up using proprietary Web-based tools and untapped human resources in the community and home.

"America faces a critical talent gap in science, technology, engineering and math, and is not keeping pace with foreign competition." — Tapping America's Potential (TAP) Progress Report, 2008;

GETTING TO THE CORE

More than 50% of students, from the Fifth Grade and up, are considered not "up-to-grade." This number increases as students move up in grade. As the learning deficit grows, it becomes increasingly difficult for a teacher to both teach the current curriculum AND help lagging students catch up. To compound the problem, the learning deficit is different for each student individually.

A vicious cycle drags lagging students further and further away from expected performance, and prevents stronger students from reaching full potential.



EXPAND THE LEARNING HORIZON, LLC

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THE TWO SIGMA OPPORTUNITY

Pumping more money into the school system, or hiring a few more teachers, is not going to solve the fundamental problem of providing each student with the individualized means to catch up—there are too many students.

Can we realize the significant levels of improvement required to bring U.S. students up to speed?

Power of Tutoring

In a landmark 1984 University of Chicago study, Benjamin Bloom demonstrated conclusively that an average student scoring in the 50th percentile could substantially improve his/her score by two full standard deviations (two sigma)—to about the 98th percentile—by using one-on-one tutoring, instead of traditional group instruction.

In lieu of complete conversion to one-to-one tutoring, the Match School, a small inner-city charter school in Boston, uses a “mega-tutoring” program *in addition to* group instruction. The results are spectacular: 99% of the school’s first five graduating classes were accepted at four-year colleges between 2004 and 2008. To put this into perspective, 50% of US inner-city kids never get a high school diploma and only 10% earn a four year college degree.

The bottom line: Tutoring plus regular group instruction can attain substantial improvements from ALL students, in a relatively short period of time.

Barriers to Tutoring

The Match School model uses paid tutors, which works at their small scale. However, deploying a paid tutoring system across a typical school district would be cost prohibitive.



WORLD CLASS MATH PROJECT SOLUTION

Our standardized math pedagogy is deployed by volunteer tutors, *regardless of their math skills*. Our process is therefore able to achieve two sigma improvements using a wider pool of parents and volunteers—tutors who would not normally participate in a math project.

Key Factors

The World Class Math Project (WCMP) relies on four key factors for success:

1. Cutting-edge math drills—special math skills NOT required
2. Strong support from schools, including teachers & administrators
3. Local volunteer tutors to monitor math drills (Drill Monitors)
4. Proprietary Web-based software for managing tutors, student assessments, math drills, and drill session tracking

WCMP Stakeholders

The World Class Math Project is a collaboration of the following stakeholders:

WCMP provides the organizational guidance, tutoring road map, training and change management.

School District funds part of cost of deployment, and provides support staff to assist in coordinating between WCMP, teachers, and Drill Monitors.

Teachers assess individual student performance, deploy WCMP drills, and track student progress.

Community Contributors include volunteer Drill Monitors, chambers of commerce and local businesses. Businesses will help fund the project using Web advertising and direct contributions.



WORLD CLASS MATH PROJECT COST

WCMP seeks to leverage existing resources to achieve its stated goals. We expect financial support from local businesses, free help from volunteers and parents, and support from teachers and school staff—within their current scope of work.

The project will cost approximately 0.5% of a school's operating budget. Over time, we will decrease the project's cost to each school as a result of economies of scale due to more deployments across the United States.

GETTING STARTED

Although public school systems share a great deal in common, we recognize that each school district is responsible to, and is crafted for, the unique community it serves. We therefore expect to adjust our process accordingly. Generally, we will follow the following series of steps:

1. **Discovery.** Collaborate with School District, Teacher's Union, and Chamber of Commerce to discover the community's specific needs and goals.
2. **Pilot Requirements.** Develop initial plan of action for pilot project.
3. **Pilot Project.** Deploy WCMP in three separate math classes in one school.
4. **Project Requirements.** Develop deployment plan for school district approval. Also solicit buy-in from other key stakeholders.
5. **Deployment.** Deploy WCMP across the school district in accordance with Project Requirements.

RECAP

The World Class Math Project's mission is to bring lagging student back to grade AND enable strong students to achieve their highest potential in math. We are motivated by the urgent fact that our current trajectory in math education will not provide our nation with enough skilled labor to compete in the global economy.

Our research and experience confirm that our goals are achievable in a relatively short period of time, without unreasonable costs per pupil. We can do it with the help of everyone in the community who has a stake in a successful outcome.



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