

PITSCO MATH

Summary

Pitsco Math improves students' self-efficacy and performance in math and algebra courses.

Pitsco Math provides an incremental, individualized approach to learning fundamental math and algebra content. Computer-delivered lessons; teacher-led, small-group activities; and project-based explorations create an experiential learning environment that provides foundational knowledge-acquisition opportunities. Course content includes connections to rigorous, relevant, real-world applications of algebraic concepts.

Demographics

- *Target Settings:* Rural, urban, suburban
- *Target Groups Served:* The program is suitable for any student demographic and has proved to be beneficial to at-risk students or students struggling with traditional math instructional strategies.
- *Districts Served:* Woodmont High School, Greenville; Carolina High School and Academy; Greenville; Youth Leadership Academy, Pickens; the program is also used in Alabama, California, Kansas, Georgia, Missouri, North Carolina, Texas, Virginia

Research and Evaluation

What national or other research was considered during the development of this program/initiative?

Describe the evidence that shows the program/initiative works.

Gardner, Howard. *The Unschooled Mind: How Children Think and How Schools Should Teach* (1991) Kolb, Alice and David Kolb. *The Learning Way* (2009) Kolb, Alice and David Kolb. *Experiential Learning Theory* (1984) Successful K-12 STEM Education by the Committee on Highly Successful Schools or Programs for K-12 STEM Education Board on Science Education and Board on Testing and Assessment Division of Behavioral and Social Sciences and Education, The National Academies Press (2011)

Participants for the study were 494 students from one high school over three years. Students were reportedly randomly assigned to Pitsco Algebra or traditional algebra instruction. Data was collected by the school and shared with researchers. Each year, a brief analysis was conducted to ascertain the impact on end-of-course exams. End-of-course pass rates were as high as 94% for Pitsco Algebra students. At the end of three years of data collection, the comprehensive data set was analyzed by university researchers.

Wood and Schulze presented their findings at the Society for Information Technology & Teacher Education International Conference in March 2014.

Wood, J. & Schulze, D. (2014). Multifaceted Technology-Based Algebra Instruction Versus Traditional Methods: An Achievement Comparison. In M. Searson & M. Ochoa (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2014* (pp. 1479-1481). Chesapeake, VA: AACE.

Excerpt of findings:

“Two 2 X 3 X 2 X 2, four-way analyses of variance (ANOVA) were conducted to investigate the effects of the variables of gender, ethnicity, socioeconomic status (as measured by free-reduced lunch status), and method of instruction on scores on a standardized algebra achievement test and course grades. The first ANOVA revealed a significant effect of type of algebra instruction on course grades, ($f = 5.72$, $p = .05$). Students who received algebra via the SIP [Pitsco Algebra] method had significantly higher test scores than students who received traditional algebra instruction. An interaction effect between gender and method of instruction approached significance ($p = .07$). The second ANOVA also revealed a significant effect of type of algebra instruction on standardized algebra achievement test scores, ($f = 6.14$, $p = .04$). The size of the beneficial effect from receiving algebra instruction via the SIP [Pitsco Algebra] method was an increase of 4.76 points. An interaction effect between gender and method of algebra instruction was even more significant ($f = 10.73$, $p = .01$). Females receiving SIP [Pitsco Algebra] instruction scored significantly higher than males. The size of the beneficial effect from SIP [Pitsco Algebra] instruction for females was 13.09 points compared to 4.04 points for males.

“Results suggest that the SIP [Pitsco Algebra] provided statistically superior achievement scores compared to traditional instruction. Some findings suggest that the benefits of CAI [Computer Aided Instruction] may be greater for certain types of students than others. Further exploration of different student variables with larger samples sizes is recommended in future research. Additional investigations exploring which aspects of a CAI program such as the SIP [Pitsco Algebra] may be most beneficial as well. There is little doubt that CAI combined with cooperative learning groups utilizing multi-function technological work stations will become an integral part of future instruction in algebra and other math courses.”

Resources

- *Annual Cost*: Initial cost for one 24-student program is \$150,000. Beyond the initial cost, each location assumes annual expenses for nominal consumable and perishable items as well as teacher salaries.
- *Funding Sources*: Funding sources vary. Programs have been funded through district monies and federal and state grants.
- *Staffing Needs*: Each Pitsco Math lab is staffed by one teacher/facilitator.
- *Infrastructure/Equipment Needs*: classroom space, computers, basic lab equipment, Internet access for cloud-based delivery system
- *Partner Organizations*: Pitsco Education, Education Blueprints Association

Contact Information

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http://www.pitsco.com/Classroom_Solutions/Mathematics?art=53

Links: Multifaceted Technology-Based Algebra Instruction Versus Traditional Methods: An Achievement Comparison <http://www.editlib.org/p/130974/>

Santa Ana (CA) USD takes nontraditional, blended approach to Algebra <http://www.pitsco.com/About/?art=6609>

Experts talk algebra at academics summit

<http://www.pitsco.com/About/?art=6529>

Pitsco Math Video

<http://video.pitsco.com/?vID=10&p=1>