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“TECHNOLOGY’S EDGE: The Educational Benefits of Computer-Aided Instruction”

Abstract

We present results from a randomized study of a well-defined use of computers in schools: a popular instructional computer program for Pre-Algebra and Algebra (the I CAN Learn® Program). We primarily assess the program using a test designed to target Pre-Algebra and Algebra skills. Students randomly assigned to computer-aided instruction score significantly higher on a Pre-Algebra and Algebra test than students randomly assigned to traditional instruction. We hypothesize that this effectiveness arises from increased individualized instruction as the effects appear larger for students in larger classes and in classes with high student absentee rates.

SALIENT OBSERVATIONS WERE:

- This was a Randomized Controlled Trial study at scale involving at-risk and minority students in three school districts, three states with 17 schools, 3,541 students, 152 classes and 60 teachers.
- When the study controls for teacher impact and student usage (sometimes different than student assignment), the performance difference increases from 0.17 to 0.42 standard deviations.
- **This is equivalent to almost .5 grade levels of increased mastery of Pre-Algebra/Algebra content**
- **The program effectively closes the achievement gap, related to race and ethnicity, by approximately 1/3 on the NAEP Test (Our Nation’s Report card on Pre-Algebra and Algebra).**
- The program’s expense was less than the cost of reducing class size from 25 to 15 students.