

# researchsnapshot

## The Relationship Between Students' Exposure to Technology and Their Achievement in Science and Math



**Source of Research:** Delen, E., & Bulut, O. (2011). The Turkish Online Journal of Educational Technology, 10(3), 311-317.

### What is this research about?

The aim of this study was to investigate how using computers and related technologies affect science and math performance among students.

### What did the researchers do?

By looking at the use and accessibility of computers and related technologies, the researchers analyzed the effects of technology on students' achievement. The sample included 4996 grade 9 students. Data for the study came from the 2009 assessment of The Program for International Student Assessment (PISA). This is an internationally standardized assessment that assesses the domains of reading, mathematical and scientific literacy that is "not covered merely in terms of the school curriculum, but in terms of important knowledge and skills needed in real life" (p. 312). PISA also gathers information on students' and parents' background and their attitudes toward information and communication technologies (ICT).

### What did the researchers find?

The researchers found that ICT usage had a positive impact on students' math and science performance on PISA. Exposure to ICT out of school time had a larger impact on math and science scores for grade 9 students than their exposure to ICT at school. The researchers point out that this may be due to "the lack of integration of ICT into classroom instruction at schools" (p. 315).

### What you need to know...

The results of this study indicated that "students' exposure to ICT at home and school was a strong predictor of their math and science performance" (p. 315). The researchers cite a number of studies that support this same finding:

- "Computer use for certain activities at school positively affect students' science achievement" National Center for Educational Statistics (2001). *The nation's report card: Science 2000*. Washington, DC.
- "Students who have available computers at home and in the library have higher science literacy" Papanastasiou, E., Zembylas, M., & Vrasidas, C. (2003). Can computer use hurt science achievement? *Journal of Science Education & Technology*, 12(3), 325-332.
- "Students who use a computer 1 hour per day had better math scores" Lee, S., Brescia, W., & Kissinger, D. (2009). Computer use and academic development in secondary schools. *Computers in Schools*, 26(3), 224-235.
- "Computer use for math was associated with reducing the achievement gap among different diverse backgrounds" Kim, S., & Chang, M. (2010). Does computer use promote the mathematical proficiency of ELL students? *Journal of Educational Computing Research*, 42(3), 285-305.

Furthermore, the authors noted that the study by Papanastasiou et al. showed "the way in which computers were used had a positive or negative effect on the science achievement of students" (p. 325).

**In what ways do you use computers in your classroom to promote higher level thinking and support students' academic achievement?**

