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Technology may boost learning for at-risk kids

A new report indicates that digital technologies, when used appropriately, may narrow achievement gaps, boost student engagement, and improve learning outcomes among at-risk students.

Using Technology to Support At-Risk Students' Learning was written by Linda Darling-Hammond, a Charles E. Ducommun Professor of Education at Stanford University Graduate School of Education, Stanford Professor Shelley Goldman, and Molly B. Zielezinski, a doctoral student. The research was supported by the Alliance for Excellent Education, which hosted a recent webinar to discuss the findings.

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The report is based on a review of more than 70 recent research studies. It highlights examples of classroom environments where technology is positively impacting outcomes of students on the verge of failing courses or dropping out, Darling-Hammond said.

The findings are especially relevant because children in poverty now make up nearly half of U.S. public school students; students of color also comprise a large share, many of which are underserved by school systems, she noted.

She said there are "mixed reviews" about the circumstances under which technology is most effective. And although there's a dearth of research dedicated to technology use among at-risk students, she said the existing body of research suggests certain approaches, with the right supports, may benefit students with one foot out the door.

Critical components of technology use

The report identifies three important components to successfully using technology with the at-risk student population:

1. Interactive learning;

2. Technology used to explore and create rather than to "drill and kill"; and

3. The "right blend" of teachers and technology, although Darling-Hammond pointed out that technology should never replace teachers.

The paper identified significant disparities in technology access and implementation between affluent and low-income schools, said Zielezinski.

For instance, low-income teens and students of color are less likely to own computers at home and use the Internet than their more affluent peers, she explained, adding that underserved students are more likely to use mobile phones to access the Web.

"Using a mobile phone as your only Internet access really limits a student's capacity to engage in content creation and other much more meaningful [technology-based] activities," Zielezinski said.

Moreover, the drill and kill approach, through which computers "take over for teachers" and students are presented with information they are expected to memorize and then tested with multiple-choice questions, is much more common in poorer schools, she said.

"While that may be effective for some populations, this is really not what's effective for the at-risk students that we are looking at," Zielezinski said in the webinar. "Instead, what they should be engaged with, and what the research shows is actually making a difference in their learning, is direction with digital resources that allows them to engage with information in a variety of ways."

'Interactive' learning

Indeed, studies have shown that workbook-type activities, phonics-based reading, grammar and punctuation exercises, practice with multiple-choice test questions, and the drill and kill approach on math items were not effective for at-risk students, Darling-Hammond said, citing recent research.

On the other hand, simulations, games, word processing for writing, and data analysis -- techniques often employed in more affluent schools to engage students and spur meaningful discussion -- were shown to be more effective learning techniques and tools for all types of students, she said.

Zielezinski referred to a high school in Texas with a high at-risk student population as a promising example.

Students were placed in a study environment for learning quadratic equations using various simulations. They were put through a learning cycle -- explore, explain and elaborate -- which began by having students engage with these simulations, she said.

Once they understood basic concepts, they were then prompted to explain and elaborate on what they learned. In the two end-phases, "students were given the opportunity to share their understanding by manipulating the simulations, filling out interactive graphs and tables, and by discussing this in person, as well as through written text responses," she said.

"What's really working here is giving kids multiple modalities for working with digital content and allowing them to show their thinking in a variety of forms," added Zielezinski. "This is what interactive learning is really all about."

--Emily Ann Brown covers competitiveness issues for LRP Publications.

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