Pearson Tests Growth-Mindset Messages in Software

By **Benjamin Herold** on May 1, 2018

Education-publishing giant Pearson recently tested "social-psychological" messages in learning software used by more than 9,000 unwitting students at 165 U.S. colleges and universities, highlighting the emerging hopes and fears about the ways the ed-tech industry might seek to capitalize on recent research into the impact of students' mindsets on their learning, including in K-12.

The study, "Embedding Research-Inspired Innovations in EdTech: An RCT of Social-Psychological Interventions, at Scale," was presented last month at the annual conference of the American Educational Research Association.

The release of the research prompted a fierce debate over issues of ethics, privacy, and consent during large-scale testing of such strategies using commercial software programs. Pearson's stock fell noticeably in response related to concerns, which the company described as unwarranted.

"Recent media coverage has mischaracterized this relatively minor product update by extracting technical language from the research that, when taken out of context, and paired with words like 'experiment,' conveys a malicious intent," said Scott Overland, Pearson's director of media relations, in a statement.

Through its study, Pearson sought to determine whether encouraging a "growth mindset" and grounding students' expectations of how much effort a task might require would lead them to attempt and complete more problems. The test took place in a popular commercial-software program called MyLab Programming, often used for college-level introductory computer-programming courses.

Pearson embedded the messaging into some versions of the software, then randomly assigned different colleges to use different versions of the program. The company did not seek prior consent from participating institutions or individuals.

Source:
https://www.edweek.org/ew/articles/2018/05/02/pearson-tests-growth-mindset-messages-in-software.html

The results included some modest signs that growth-mindset messaging can increase students' persistence when they start a problem, then run into difficulty. That's likely to bolster proponents of the idea, who say it's important to encourage students to view intelligence as something that can change with practice and hard work.

But students who received both types of social-psychological messages tested by Pearson attempted fewer problems than their peers, running counter to the researchers' expectations.

Outside experts offered skeptical reactions, on a number of fronts.

"It does not surprise me at all that corporations are attempting to monetize a promising way of thinking about a hairy problem," said Phi Delta Kappan CEO Joshua Starr, who was a major proponent of social-emotional learning during his time as superintendent of the Montgomery County, Md., school district and who currently serves on the Aspen Institute's National Commission on Social, Emotional, and Academic Development.

"There is some value" to Pearson's approach, Starr said, but "social-emotional learning is best promoted through strong communities and relationships," not software.

And Ben Williamson, a lecturer at the University of Stirling in the United Kingdom who studies big data in education, raised other concerns.

There's little evidence that focusing on growth mindset in the classroom will significantly benefit students, Williamson argued, citing **recent analyses** finding limited effects of mindset-based interventions in K-12 classrooms.

In addition, Williamson maintained, companies such as Pearson would be wise to pay close attention to the **growing public anxiety** over the ways companies collect people's sensitive information and use it for psychological profiling and targeting.

"It's concerning that forms of low-level psychological experimentation to trigger certain behaviors appears to be happening in the ed-tech sector, and students might not know those experiments are taking place," Williamson said.

In an interview, Kristen DiCerbo, Pearson's vice president for learning research and design, described the experiment as part of the company's "product-improvement

process"—an early test to see if new mindset-messaging features actually work, before they are rolled out comprehensively.

Utilizing commercial software allowed Pearson to see how the changes played out for real students and actual classrooms, DiCerbo said, generating more useful information than had it taken place in a lab—or if the company had rolled out new messaging without systematically studying its impact at all.

Pearson also noted that the study did not involve the collection of any personally identifiable information on individual students and that federal guidelines don't require consent for research involving "normal educational practice."

"We think these motivational aspects are really important for students' learning outcomes," DiCerbo said.

"But the only way we're going to know for sure is to do the research."

Mixed Results

Pearson's MyLab Programming software is typically used for introductory computer-science courses where students learn the programming languages C++ or Java.

DiCerbo said that made sense as the first content area to test social-psychological messaging, because many students have a propensity to attribute failure in programming to a personal shortcoming, rather than seeing it as a challenge and opportunity to learn.

The idea was to see if students' motivation and achievement would be improved in either of two ways:

• Inserting "growth-mindset" messages (stressing the importance of effort and building skills over time) into the software's instructions and into the feedback it offered to students who provided wrong answers. An example: "No one is born a great programmer. Success takes hours and hours of practice."

• Using "anchoring of effort" messages (seeking to leverage a common cognitive bias in which people tend to rely on the first piece of information they learn, even if it's irrelevant to the problem they're trying to solve). Pearson's theory was that students might not have any sense of how much effort is often required to solve computer-programming

problems, so providing them with a high-end estimate based on analysis of previous users' experience could ground them in the expectation that multiple attempts would be necessary. An example: "Some students tried this question 26 times! Don't worry if it takes you a few tries to get it right."

The researchers were surprised to learn that students who didn't receive any special messaging from the software tried to solve significantly more problems (212) than those who received growth-mindset messages (174) or anchoring messages (156).

That finding suggested that the social-psychological interventions they were testing backfired, although DiCerbo said other factors—especially differences in how various instructors use the software in their classes—may have also played a role.

'Open Question'

But the Pearson team also found that students who received the growth-mindset messages successfully completed more of the problems they started than their counterparts. Those students were also significantly more likely to eventually solve problems they initially got incorrect, supporting the idea that encouraging a growth mindset can have positive benefits when students run into difficulty.

Big-picture, DiCerbo said, there's still a lot of work to be done—and Pearson, which is preparing to sell its K-12 curriculum business, believes that more such tests may be valuable.

"It's still an open question as to whether technology is even capable of providing this type of feedback," DiCerbo said.