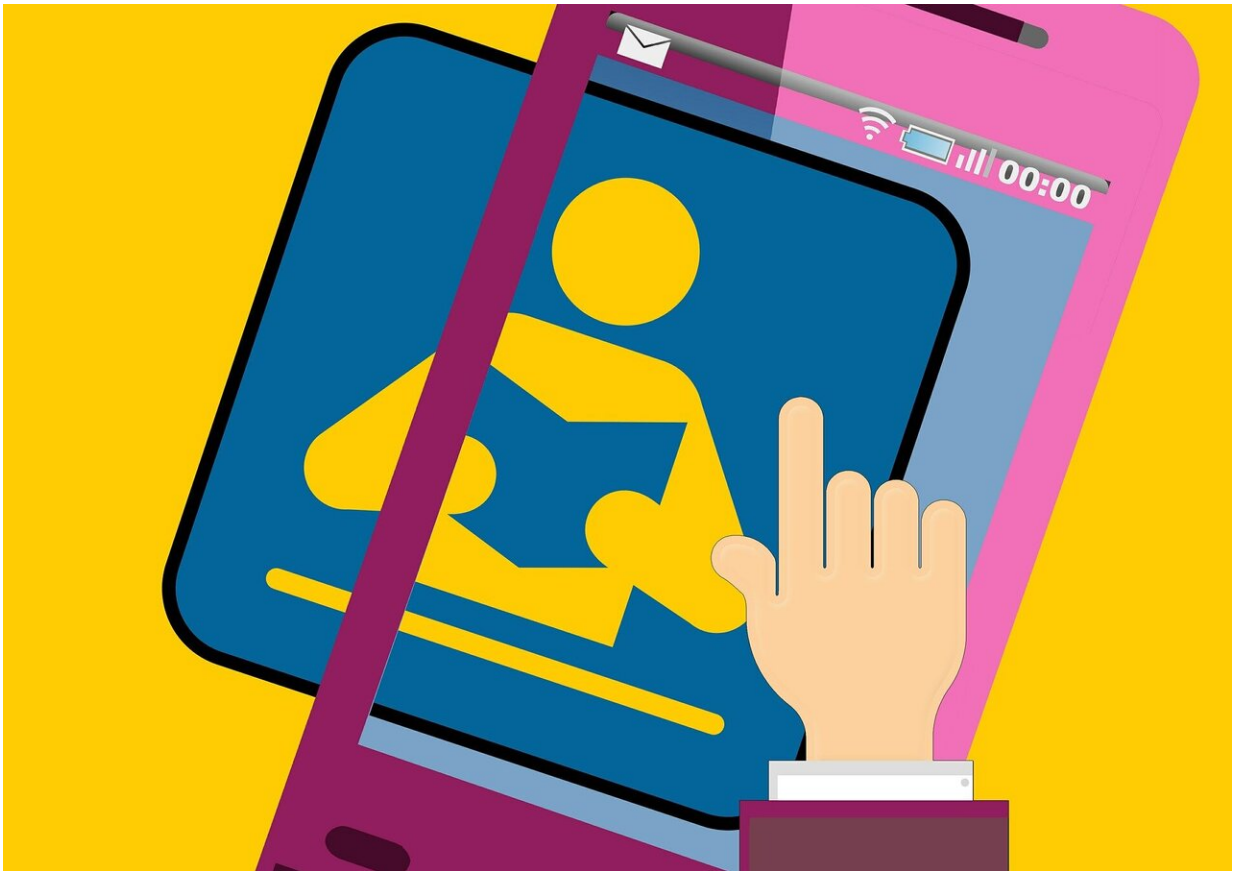# Gaming app aims to teach millions of US adults who can't read

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Credit: CC0 Public Domain

Damon Richardson, a born-and-raised Dallas resident in his mid-20s, tried attending Eastfield College in 2013. But he faced a hurdle so big

that he eventually had to leave: He could barely read.

The college recommended he try Literacy Instruction for Texas, or LIFT, a nonprofit organization that teaches thousands of adults. At the time, Richardson used his smartphone to find where in Dallas that LIFT was located—and which bus would take him there—so he could go get help improving his reading. More recently, though, Richardson found a more direct way to get literacy instruction from smartphones—one introduced by a team of experts from SMU and LIFT.

He downloaded their free learning app.

"Codex: Lost Words of Atlantis" is an Indiana Jones-style game for Android devices that tasks the player with finding hidden artifacts around the world and deciphering the letters and sounds contained within.

The game's team-led by SMU professors Corey Clark, Tony Cuevas and Diane Gifford—tied with one other team as the Grand Prize winner of the Barbara Bush Foundation Adult Literacy XPRIZE competition earlier this year. Each team was awarded $1.5 million.

For each app in the competition, XPRIZE tested a group of low-literate, or functionally illiterate, adults at the start and end of a 1-year period of that group using the app. The winning app was the one that led to the largest average gains in literacy. The SMU-LIFT team scored a bonus of $1 million for also offering the app proven most effective at teaching English-language learners. SMU plans to invest some of the prize money into further technology research for literacy education.

"It was actual data that they collected over 12 months," says Dr. Cuevas, an education technology professor who was part of the SMU-LIFT team. "We know that our app was successful in order to win. So that's really

what excited me the most about it."

The app aims to help teach the least literate of the 36 million adults in the U.S. who read below a fourth grade level. Almost half of very low-literate adults in the U.S. live in poverty. "We have this very large problem in this country that people don't talk about," says SMU's Dr. Gifford, a literacy education professor who developed "Codex's" curriculum.

The extent of low literacy in adults has been constant since at least the 1990s. "The problem isn't going away," says Michele Diecuch, director of programs at ProLiteracy, an international nonprofit organization that works to teach adults to read and write. Smartphone apps like "Codex" are rather new to adult literacy education. Experts hope the innovation can improve the decades-long flatlining of illiteracy trends.

A fourth of adults in Texas are in need of basic adult education, as outlined in a 2018 report by the Texas Workforce Commission, or TWC. Almost 540,000 of them live in Dallas County. "Low basic education and especially reading and English skills relegate many Texans to entry-level jobs," says Cisco Gamez, TWC's media and public relations specialist. "These jobs are often temporary with limited or no promotional or wage-lift opportunities. They are also the first, often to be cut in an economic downturn."

According to the TWC report, one factor for Dallas's low-literacy level is its large immigrant population, where many are not yet fluent in English. The majority of these adults, though, were born in the U.S. Many of them lack a high school degree or have no high school education at all.

But some merely passed through the school system without ever building the proper reading skills, says Dr. Linda Johnson, president and CEO of

In some cases, students "literally graduated from high school without learning to read," says Johnson.

Upon entering adulthood, they face life challenges that could clash with the rigid schedules of classrooms located in a potentially inconvenient spot. "I might be motivated and really want to learn to read," says Gifford. "But if I have childcare, job problems, transportation problems, just life issues, where do I start? It's overwhelming. It's totally overwhelming."

"Codex" has the advantage over a classroom setting in that people can use it to boost their reading skills anywhere—and in 5- to 10-minute increments.

Another major benefit of "Codex" is its privacy. Social stigmas can shame many adults into hiding their low literacy. As a result, they eschew classrooms like LIFT where they must reveal their reading deficiency to an entire group.

"I kept it private for so many years," says Richardson, the LIFT student.

While Richardson says he had never been slighted by teachers or mentors, his peers were a different story. From elementary school to high school, other students called him "slow, retarded" among other insults. "I had a lot of words said towards me, but I always found a way to keep my head up and fight with the pain," he says.

Gifford emphasized that a major goal of developing the "Codex" app was to help "take away the shame."

But users of learning apps often have low digital literacy, as well,

undercutting the app's aspiration to provide simple download-and-play instruction. Some students will need help at first from an instructor to get comfortable using the app, says Diecuch of ProLiteracy who was not involved in "Codex's" development.

A bigger, yet related obstacle for "Codex" is adoption. The app has gotten around 8,300 downloads so far—a drop in the bucket compared to the millions who could benefit from the app.

"This is the problem. This is a hidden group," says Dr. Clark, a professor of computer science and game development who led the effort to build Codex's software. "How do you get people who don't have the ability to read and most likely are not technology savvy to download something, read it, know what they're trying to get and actually make progress? It's a very difficult thing to do."

In anticipation of this problem, XPRIZE created an offshoot competition called the Communities Competition-where community could mean anything from a city to multiple states. Forty-six communities across the U.S., including several in Texas, are currently competing to get the most downloads of the top four apps from the Adult Literacy XPRIZE competition. They have until the end of August this year. Since the competition started in April, Clark reported a six-fold increase in monthly downloads of "Codex."

Though ProLiteracy's Diecuch is confident in the app's effectiveness at teaching, regarding whether learning apps can truly improve the systemic literacy problem in the U.S., "I think it might be a little too early yet," she says.

"This is a new experiment, frankly," Diecuch explains. "It's something that I think we'll look back after 10 years and see if it really made a difference in the trajectory of learners."