Virtual tutoring program uses videos to aid students of math, science

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Leo Shmuylovich knows a lot about how tutoring can take a student from confused to confident. The Washington University graduate student has worked as a tutor for several test preparatory companies over the years, helping St. Louis-area students prepare for college entrance exams.

In that time, he noticed that similar problems hindered many students working on math and science concepts.

"All the students had the same issues coming up," he said. "One key step confused everyone."

Now, Shmuylovich has launched his own idea for adapting tutoring in the digital age.

And Washington University's Skandalaris Center for Entrepreneurial Studies has taken notice, awarding him and his business partner its highest prize for student-led entrepreneurial ventures.

Working with his friend, graphic designer Josh Salcman, Shmuylovich created Virtual Nerd. The tutoring subscription service, found at virtualnerd.com, uses hundreds of online videos -- similar to YouTube -- to guide students visually through math and physics concepts, such as expressions, polynomials and factoring a trinomial.

"I've had a lot of people who say, 'I'm not a math person,'" Shmuylovich

said. "But I think that everyone is built to do math."

Shmuylovich and Salcman wanted to offer tutoring services that could be tailored to students' needs without being prohibitively expensive. The service costs about $40 a month -- a sum that might buy only an hour or two of face-to-face tutoring time from more traditional services.

Virtual Nerd is part of a rapidly growing tutoring industry, which is estimated by some measures to exceed $3.4 billion each year. Those who praise the concept say it fits perfectly within the needs of that marketplace.

"I think that students are obviously becoming more virtual in a lot of the things they do," said Ken Harrington, managing director of the Skandalaris Center, adding that Virtual Nerd makes the technology friendly.

The center awarded the venture the 2009 Olin Cup prize, which included $70,000.

The service gives students the option of using its hundreds of videos to zero in on a concept they are struggling with.

For example, students may want to use the service to learn to multiply binomials. One video demonstrates how to use what's known as the "FOIL" method for solving such a problem.

But students who get lost along the way can click on more basic concepts, such as a video explaining what a binomial even is. Typically, every video links to dozens of others, allowing students to customize their own lessons.

The program was tested at Chaminade Preparatory School last year,

where 100 freshmen used it for three weeks before a physics exam.

Sudesh Shah, a freshman physics teacher, said that the program used her papers and test questions and made tutorials to fit. "They really helped," she said. Students who used the program before the exam "had a great improvement in their grades. I was quite impressed."

Sam Beffa, a student who tested the service at Chaminade, said the videos gave step-by-step instructions that helped him understand the topics. "I had a classroom at my fingertips," he said.

Virtual Nerd has 400 registered subscribers, with others testing the service for free. For now, students are in the St. Louis area, but Shmuylovich and Salcman plan to roll out the service nationwide.

The two also want to expand the program to include other math and science subjects and introduce online assessment to find out how students are developing.

"As we find out more about what students want to know, we can add a link and give students more," Shmuylovich said.