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Science for kids is a success for scientist

New Mexico Business Weekly - by [Megan Kamerick](#) NMBW Staff

Rebecca Keller has a doctorate in biophysical chemistry. But not because she had great science classes in her early education.

"I felt I learned nothing," she says.

The experience led her to homeschool her own children and write a science curriculum for them while she was in graduate school. That evolved into a company, **Gravitas Publications**, that is finding a highly successful niche in the homeschool market. Gravitas made \$287,000 in revenues in 2007 and is on track to make \$500,000 this year.

Keller says younger children usually get random facts when learning science. Then they walk into chemistry or biology class in high school unprepared and they often hate it. So she created a program focused on four core disciplines: chemistry, physics, biology and earth and space.

The Real Science 4 Kids curriculum starts with a series of texts and experiments aimed at kindergarten through third grade and continues through middle school. With big print and cartoons, it teaches young students the basics. Cells become tiny cities with "factories" producing DNA and proteins, and characters move proteins in trucks (which stand in for kinesin). Atoms and molecules have facial expressions. It's a way to introduce the language of science early, Keller says, so the concepts don't look completely foreign when students enter serious science classes in high school.

"She has a tremendous gift for translating different science concepts down to the most elementary level," says Dennis Wagner, executive director of **Access Research Network**, which distributes the Gravitas curriculum.

Keller is the first to confess to her lack of business experience.

"I'm the most reluctant CEO out there," she says.

Which is why, when she drafted her first texts, she worked under the umbrella of Wagner's nonprofit group. She and her husband sold a rental home and pumped \$20,000 into inventory. Even in the company's nascent stages, Keller got tremendous response to her curriculum at homeschool conferences, which have been key to building her customer base.

But the nonprofit umbrella didn't allow her to meet the demand, she said. So she terminated her contract with Access Research, incorporated her business in 2003 and asked the nonprofit to be a distributor instead. She also took business classes at **WESST Corp** and got help writing a business plan at the Anderson School of Management at the **University of New Mexico**.

Keller then obtained a \$25,000 loan from WESST Corp in 2003.

By 2006, Keller was running out of books because she was doing "print on demand" and the company was growing. So she took out a \$250,000 Small Business Administration Loan through **Western Commerce Bank**.

That allowed her to beef up her inventory and also rent space where she stores inventory and handles order fulfillment with help from two staff. She also works with an editor and contract writers through the Internet, from her home office.

She now has 30 distributors and her books are available on **Amazon.com**. She continues to attend homeschool and education conferences as well.

Keller's latest addition is Kogs-4-Kids. It's designed to link scientific concepts to history, philosophy, technology, the arts and critical thinking. Students typically learn individual disciplines without making connections between them, she says.

"But think of people like Leonardo da Vinci," she says. "He was a scientist, an artist, a musician, an engineer."

She attributes Gravitas' growth to the fact that she has now been around for five years and more people are finding her company. Focusing initially on homeschoolers allowed her to be flexible and get instant feedback. She maintains a blog at her site, **www.gravitaspublishings.com**, where she adds new suggestions for experiments. There is also a Yahoo discussion group for Real Science 4 Kids with 965 members.

Patty Myers, a math educator who homeschools her children in Arlington, Texas, found the curriculum about four years ago and was intrigued by the idea of kindergartners learning chemistry.



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Author Rebecca Keller with some of the science books she developed for children.

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"It has caused excitement in the children at a very young age for the sciences," she says. "I liked her approach. It has a very solid foundation and it builds."

Myers has homeschooled other parents' children as well and says recently a mother related a story about the children's grandfather complaining of indigestion.

"They started explaining to him about an acid and a base," she says. "They're seven years old."

Wagner says Keller saw, correctly, that many science curricula do not teach fundamentals.

"[They teach] rocks and dinosaurs instead of physics and chemistry," he says. "Her curriculum has a student text, a teacher text and then a lab test, so you don't have to know a lot about science to teach this. A lot of homeschoolers fear teaching science because they don't have a science background."

Wagner adds he's amazed at Keller's business acumen.

"She was a Ph.D. chemist working in a lab at a university," he says. "Those types of people don't usually know how to translate science to this level and turn their stuff into a business."

Wagner's group is a proponent of "intelligent design." Keller has gone from being an ardent evolutionist, to a born-again Christian and creationist and then toward intelligent design. She has since left what she calls "fundamental orthodox evangelical Christianity" and is now on her own spiritual journey.

But Keller did not create her curriculum with a particular point of view, she adds. And that means she has been able to appeal to people at all points on the ideological spectrum.

"My philosophy is, you teach them the rules of science, teach them the foundation. Then let them think about science from whatever perspective they want," she says.

Tabitha Orr, a homeschooler in Albuquerque who runs a statewide association for homeschoolers, said she and her family are not Christian and in fact, when she first got Keller's materials, she was alarmed because she got them through the Access Research Network. She was concerned that group's ideological bent was also part of Keller's science texts. Many homeschool companies will only talk about their beliefs, she adds, but not Keller's. Orr likes the way the texts are laid out and the fact that they don't dumb down science.

"My kids are definitely getting more science than they would if they were in the public school system," she says. "Her program makes it easy for parents to learn through their children."

Keller hopes to expand into more charter schools and into public schools in the next few years. However, that will require approval from state authorities, who maintain lists of accepted textbooks.

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