

4. Project-Based Learning with Fourth and Fifth Graders

In this article in *Phi Delta Kappan*, Eleanor Smith and Margaret Pastor (special education teacher and principal in a Maryland elementary school) describe the progress of two very different students as their teacher (and her special education colleague) began to implement project-based learning. Mario had just arrived from another school and showed every sign of being a challenge: a non-reader with very low academic scores and limited English, he had a history of behavioral problems and initially presented as scowling and incommunicative. Megan, on the other hand, entered fourth grade with a record of almost perfect grades, completed her work meticulously and on time, and was very well behaved – although shy and not a risk-taker.

The two children's teacher launched a project-based study of U.S. geography, and Mario picked the state of Texas for his challenge. "He quickly became engaged in posing questions and searching for answers to all manner of inquiry about the state," say Smith and Pastor, "and the transformation was astonishing. We learned that he could indeed speak and understand English well; he simply had not cared to speak up in school." That year, Mario began to read for the first time and became a happy, eager student.

Meanwhile, Megan struggled to complete projects because there was often more than one correct answer. She was particularly frustrated when she couldn't figure out how to create a "perfect" diorama. Megan had never been asked to use creativity to solve a problem, and it was very challenging for her.

The following year, the teacher looped up to fifth grade with most of her students, and the class launched into a more ambitious project creating an imaginary colony on the planet Mars. During the Fall, students learned about Earth, Mars, and space, teleconferenced with space scientists, hosted guest speakers, watched videos about the solar system, and took field trips, including to the Smithsonian Air and Space Museum in Washington, D.C. In December they started to design their Martian colony, each student and their teachers assigned responsibility for a 6 x 9-foot pod (they could see how their pod fit into the overall colony on a bulletin board scale model). "Teachers realized that much of their teaching was now guided by casual student discourse while they worked on the pods and other displays," say Smith and Pastor. "Questions and dialogue flowed, and teachers incorporated academic content into these student-led and student-owned conversations." Students delved into what they would need to survive on Mars and posted their ideas – surveys, supply lists, expense forms, descriptive proposals – on an Idea Board modeled after a picture the class had noticed in the background of a photo from the NASA Jet Propulsion Laboratory. Students became experts on Mars and their classroom attracted visitors from around their school.

At one point Megan realized that her perfectly measured and scaled furnishings didn't fit in her pod, which was a little too small. With prodding from the special education teacher, Megan negotiated with students in neighboring pods and got them to share some of their space. She and Mario ended up taking the lead building a life-size model of one of the living pods. At

the end of the year, the entire student body, parents, and many community members viewed the class's Mars colony.

Over the two years, Mario made tremendous progress (while still testing below grade level in reading and math), and even came up with an original insight that the pods should be launched from the moon since it had lower gravity than Earth (the class learned that NASA engineers had a similar idea). "Megan also had grown in important ways," say Smith and Pastor. "She no longer approached learning as an exercise in remembering and repeating information but rather as taking on challenges and seeking answers. Her self-confidence, in turn, had made her into a true leader... And for the first time, she shared with us, she loved to learn."