Learning in 3-D
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"It took forever to get this guy right..." explained Kai '18, as he pointed to a computer-generated character he and partner Cydney '18 digitally created for a classroom project. "He was too scary at first," Kai '18 said in reference to the mascot of their new cereal, "Apple Flakes."

Students in Kris Schwengel's fourth-grade class were not learning about nutrition, or even graphic design, but instead were delving into the world of 3-D. They were tasked with "The Cereal Challenge," created by Dave Burghardt, a member of the K-12 Division of the American Society for Engineering Education. The challenge required students to develop a new kind of cereal and design the packaging. But that was only part of the students' excitement. Once designed, students would print, and then assemble their cereal boxes using a digital fabricator prototype called The Silhouette.

Prior to the "The Cereal Challenge," Schwengel and his students had been exclusively experimenting with The Silhouette, creating everything from top hats to gingerbread houses. Schwengel acquired the innovative 3-D tool, which is not yet available to consumers or educators, through a connection between Instructional Technology Director Judy Beaver and Glen Bull, co-director of the Center for Technology and Teacher Education at the University of Virginia and program chair for the National Technology Leadership Coalition (NTLC). Bull, who, along with several members of NTLC, created the device. Beaver also arranged for NTLC to hold their 2010 two-day summit on Punahou's campus on Jan. 7-8, allowing for the two groups to finally meet.

Nick Sanham, president of Aspex Technology, developed the software for The Silhouette. Designed with educators in mind, Sanham's software allows someone to draw and design 3-D shapes on screen. The program then "flattens" the image and is sent to The Silhouette, which then prints and scores it, making the 3-D model easier to assemble.

NTLC members saw examples of this product in action when they visited Schwengel's classroom. After a short show-and-tell by students, who then went to lunch, Schwengel described their progress to a small group of NTLC members, including Burghardt. "This project fits in perfectly with our lesson," he said, pointing out that his students have learned spatial reasoning, teamwork, geometry, math and engineering with the new tool.

Although it is still a work-in-progress, creators hope to make both The Silhouette and the software available for educational purposes. Bull feels "this is an emerging technology," one that has been underrepresented in schools. With new research about how creativity affects learning, software creator Sanham hopes The Silhouette will be welcomed into classrooms, saying, "the educational opportunities are endless."