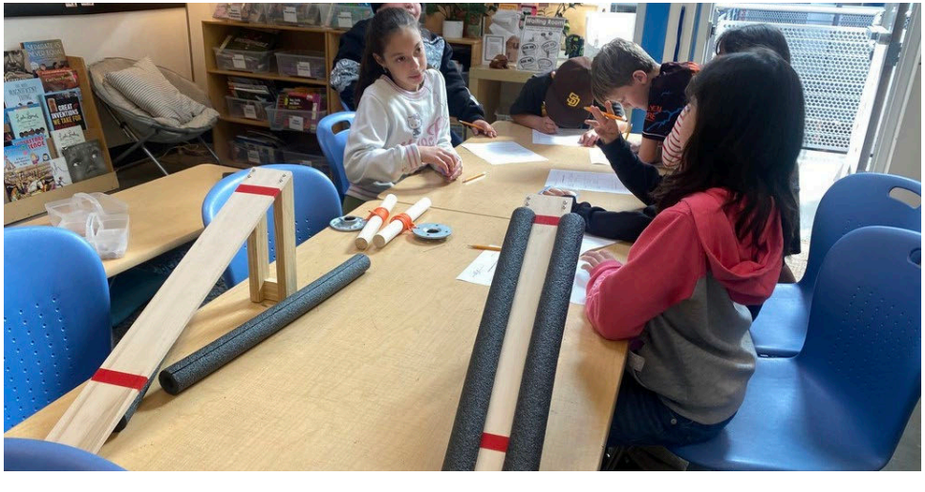

Forces At Play!

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Third Grade
High Tech Elementary

In the Forces at Play project, third grade students designed and built cardboard arcade games inspired by Caine's Arcade and Shane's Inspiration Playground in Los Angeles. Created for kids, families, and community visitors, the games were designed to be fun, accessible, and easy to play. Constructed from recycled materials, they included simple machines like levers, pulleys, and inclined planes. Working in teams, students used the engineering design process—planning, building, testing, and improving their games before presenting them at a public exhibition. Through this process, they explored science concepts related to forces and motion, including how pushes, pulls, gravity, and friction affect movement. Hands-on lab activities and field work brought these ideas to life.

Students also strengthened their literacy skills by researching and writing both informational and opinion pieces about their games. In math, they applied measurement, graphing, and geometry to design and construct their game structures. The final arcade games reflected learning across multiple subjects. Science supported the mechanics, while writing and math helped students communicate and refine their ideas. The result was a fun and engaging demonstration of their creativity and understanding.

Teacher Reflection

This project gave students a meaningful way to explore science through building, collaboration, and creativity. The engineering design process came to life naturally as students tested ideas, improved their designs, and shared their thinking with others. A continuous cycle of revision and documentation was at the heart of the work, helping students reflect on their progress and make purposeful changes. We saw joyful engagement as students played, tested, and revised their games, naturally using the academic vocabulary and eagerly applying what they had learned from their field work and lab experiences to make their designs work.

—Samantha Lee

Student Reflection

In the engineering design process, we made a lot of changes. For example, we changed the ramp into a bucket box to catch the ball. We also changed the puck and puck shooter many times because of friction. Friction made the puck stop and it wasn't as fun to play. I liked that we were to design our game and make it own compared to the original air hockey game.

—Noa S.

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