



Driving Question: How can you design a robot, based on plant and animal structures, that benefits its environment?

Project Description:

Students explored biorobotics using plant and animal structures as the basis for the design of the robots. Watching clips of bio-robotic designs inspired students to think outside the box. Students also chose a biome in China to research and used the features of that biome to determine a task their robot could perform, from providing water in arid regions to planting trees in deforested areas. They learned, in detail, the internal and external structures of plants, dissected lilies, participated in plant field study, performed skits demonstrating plant adaptations, and created habitats for both land snails and crickets. Students created a robot scale model and documented their work and progress in an instruction manual. Finally, students created rubrics for their models, determined deadlines and milestones, and presented their work at a Robot Exhibition.



Student Products

- ▶ Design and build a scale model of a robot that benefits a specific biome in China.
- ▶ Produce an instruction manual for the robot and its function
- ▶ Present robot designs at a Robot Exhibition

Teacher Reflections

"As I reflect on our Structures of Life PBL unit a few key points stick out. First, there's the student-driven excitement and ownership of their learning. Second, there's the opportunity to work together as a team to accomplish a greater task. Finally, there's the enjoyment they got when presenting of all their hard work to audience." James Anderson

"In the project's second year we wanted to enhance the design process by having students identify a problem within a biome in China that their robot could solve. Not only did this help them become more innovative designers, it helped them connect on a more personal level to our immediate environment." Jeff Fessler

Student Reflections

"This project helped me figure out that each living thing in a structure has a job, like in the human world." - Eric C.

"I enjoyed working together with others on the robot project because we got to learn new ideas from each other. I liked designing the robot because we had free space to create." - Leah B.

"I loved the robot-making portion of it because it made us more creative" - James Y.

Find out more at:

<http://cards.buildingculturebybuildingpractice.com>