

OAS

At OAS, our focus is—ology. Our school will focus on various sciences commonly and uncommonly taught in traditional schools. We plan for our school to help prepare students for life outside of school and in the field by teaching life skills such as presenting, public speaking, and collaboration within a Project-Based Learning (PBL) system.

Planning & Design

Deciding on our site location was the first step in our design. We wanted our school to be in an open space where our students could use the land and the surrounding areas for research and have access to a large number of facilities to help drive their learning. With these requirements, we opted to reuse the old location of the Portland Children's Museum near the Portland Zoo, Forestry Center, and Portland Rose Gardens. This location was the perfect size for a small school and research center, allowing us to add to the already existing science community surrounding the site.

Our goal with this school is to house approximately 450 students in a 9-12 setting. We started by making a bubble diagram of our school and space programming. We made drafts of the designs for our school, created a SketchUp model, and made multiple design changes before settling on our current plan.

Architects like Antoni Gaudí, Santiago Calatrava, and Zaha Hadid heavily inspired our design. You can see it most clearly in the curves and interesting shapes of our building. Rather than having a geometric building, we opted for more fluid shapes and large fenestration features to make the school more open and light. Aside from wanting a school visually appealing with the integration of a more nature-like design, we physically wanted to put the environment in the building. We planned for particular elements that would serve to eliminate adverse environmental effects, as well as some features that would enhance learning about our environment:

Rainforest - One of our main features to bring the outside in is “The Rain Forests,” located in a 90-foot-diameter glass dome. This exhibit will be able to showcase 1,600+ live plants and animals. Students can witness the life cycle of various plants and animals and explore life in a controlled ecosystem.

Planetarium - The Planetarium, a 102-foot-diameter astronomy learning space, will be made of % recycled steel and supported by a NanoSeam projection screen. This innovative technology creates a realistic recreation of space and skies, providing students with a unique and enjoyable learning experience. The planetarium uses cutting-edge scientific data to create stunning visualizations of observations, discoveries, and theories about the Universe. The virtual cosmos mirrors its real-world counterparts, creating an immersive experience when projected onto the 102-foot-diameter screen. Students can also use the space for large school presentations and assemblies.

Sustainability

Our school uses solar panels to lower energy costs and pollution and to be more sustainable, particularly when it comes to generating renewable electricity. We plan to install these along with a rainwater collection system to help capture and direct water for reuse in irrigation and other applications. Greenhouse gas emissions will be significantly reduced by producing clean energy and decreasing the

need for nonrenewable energy sources. We also placed our heat pumps near our servers so that the heat pumps could capture the heat exhaust from the technology servers to repurpose it for the heat pumps. Every dollar counts, especially when it comes to schools, and the savings, approximately \$213,198,000 from the solar panels, will allow us to put more money each year into our students and our community.

The rooftop presented a unique challenge. In cities, the air is several degrees warmer than the surrounding areas, and rooftop temperatures are often blistering. This "urban heat island effect," caused by dark, solid surfaces, raises air conditioning demands and pollution levels. We aim to eliminate this effect with our green roof. The roof has several complex layers that combine to support healthy plant life, manage moisture, and protect the building. Unlike normal roofs, living roofs absorb most of their rainwater. They reduce runoff pollutants and minimize flooding and stress on sewage systems. This building retains a majority of the rainwater that falls on it, almost 36 inches per year in our area in the Pacific Northwest. During heavy rains, a system filters overflow water back into the ground. Overall, Our living roof can provide natural insulation, reducing heat loss in winter and cooling needs in summer, which lowers energy consumption for heating and air conditioning, absorbs rainwater, reduces runoff, and lowers the risk of urban flooding while also filtering pollutants from the water and, support biodiversity, improve air quality, and extend the lifespan of roofing materials by protecting them from weathering.

Student Life & Community Connections

The PBL style is not the traditional learning style of memorization. We must use collaboration, out-of-the-box thinking, and public speaking as the basis of everything we do. Each one of these skills is what companies are now looking for in their future employees, and we plan to grow them in each of our students. Many of the design choices of our building encourage these skills and even assist in their success.

Having access to academic programs outside of school provides students with enriching opportunities to learn in hands-on, engaging ways that go beyond the traditional classroom. Programs like those offered by the Oregon Museum of Science and Industry (OMSI) include day and overnight camps, as well as "Portable Stars," a pop-up planetarium that brings astronomy directly to schools and communities. Oregon Space Camp Adventures (OSCA) immerses students in interactive STEM experiences that encourage the exploration of future careers in science and technology. For young astronomy enthusiasts, the Rose City Astronomers (RCA) provide educational resources and youth awards, while the Haggart Observatory at Clackamas Community College hosts public viewing nights that make space exploration accessible and inspiring.

The Oregon Zoo offers several student programs, including the Oregon Zoo Wildlife Leaders (OWLs) and the Zoo Apprenticeship Program (ZAP), which focus on conservation, leadership, and animal care. The Japanese Garden Training Center allows students to study traditional garden design and Japanese cultural practices, fostering global awareness and artistic appreciation. Similarly, the World Forestry Center's Fellowship Program educates students about sustainable forestry and global environmental issues. These diverse programs help students gain practical skills, build confidence, and deepen their passion for learning across science, nature, and culture.

School logistics would require us to operate on an A/B rotation schedule to provide students with more than just classroom-based instruction—it would allow them to actively engage with these community partnerships and apply their learning in real-world settings. Having access to the Zoo, Rose Garden, and the Forestry Center will leave the students knowing they have learned skills that can be applied in the future. This structure supports learning through direct experience, with students rotating between the main school building and community sites. As a result, students gain not only academic knowledge but also practical skills, mentorship, and a deeper connection to the professional and natural world around them, preparing them for both future careers and lifelong learning.