



printbot

LEARN



Designing and Printing A Community Centre

OVERVIEW

This project asks students to design a new community centre based on a number of criteria that are easily modified by the classroom teacher to include outcomes from language arts, math, science, etc.

GRADE LEVELS

Based on the depth and the additional pieces that the teacher may wish to include, this project would be suitable for upper elementary and middle school students. (10 – 14 years old)

STEPS TO COMPLETION

- 1.) Develop Knowledge: The building must contain three different geometric solids. Review geometric solids and explore 3D shapes (polyhedrons, prisms, pyramids).
- 2.) Students are challenged to think of many solutions to the challenge. (Design Sketch #1/Justify Design #1/Design Sketch #2/Justify Design #2, etc)
- 3.) At this point, students design a prototype model either on paper or in CAD software. They sketch, share their model with others and then reflect on their initial design.
- 4.) Following this you could discuss volume and surface area and have students partake in volume and surface area activities in CAD software.
- 5.) After these activities, the students can alter their designs, changing and improving them based on what they have learned.

6.) Comment on two other groups' designs. Did they meet specs?

7.) After working through this process, the model that the students' created are printed on a 3D printer.

8.) After completing their designs and printing them out, students could present their plans at a public meeting or open house where community members could ask questions and / or vote for the design they feel best meets the needs of their community.

FOLLOW UP

Students will create a model skateboard park. Using the PBL and design process, students will be presented with a series of problems requiring engineering, science and math skills. Ramps will require specified speeds controlled by inclines and ramp shape. Miniature skateboards sold in retail stores will be used for testing.

EXTENSION QUESTIONS

- How does the base area of an extruded figure relate to the volume of the extruded figure?
- What are the similarities and differences of a cone and a pyramid?
- Compare/Contrast two three-dimensional shapes.

This project was originally created by:

Elizabeth Willoughby
ewilloughby@scslakeview-k12.com

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