

Paper Prototyping for VR

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Duration: 45 minutes

LEVEL	SUBJECTS	PROVINCES / TERRITORIES	TOOL
Grades 4-6, 7-8	Visual Arts, Mathematics	Across Canada	Unplugged

Overview

Create a paper prototype! In this activity students learn about prototyping and the product development cycle. Students will create a paper prototype of a VR world.

Prep Work

- This activity requires construction paper, glue, sticky tack, scissors, and markers
- Students should be placed in pairs or small groups

Lesson

Introduction

Students should think of a problem in the world that they would like to use VR to help or bring awareness to. Examples can include global warming, gender equality, global water consumption, food waste etc.

Ask: What is a prototype (A: See Terminology)

Ask: Why is prototyping useful? (A: Foresee problems, visualize your product or software, get user feedback)

Key Coding Concepts

- ✓ Debugging

Terminology

Debugging: Finding problems and solving them.

Prototype: is the first or preliminary model of a product. A prototype is used as a basis for further development and testing.

Low fidelity prototype is a prototype that only has some of its content and visual design completed. Often has little to no interactivity.

from others)

The main goal of creating a prototype is to answer the following questions:

- **Looks like?** (Colors, shapes, style)
- **Works like?** (What can I press?, What moves? What lights up?)
- **Experience like?** (Is it easy to use? Is it intuitive?)

Explain the three types of prototypes, and their purposes. Demonstrate that you start with a low fidelity prototype and work towards high fidelity prototype by improving the product based on user feedback at every step.

Activity

Students will pretend they are VR game designers who have been tasked with bringing awareness to their cause through a VR world.

Using construction paper, they are to create a 3D low fidelity prototype using paper (paper prototype) for their world - similar to a pop-up book. Students should be encouraged to test out various colors and materials to determine which ones fit their theme the best. Students should use sticky tack rather than glue when attaching objects. This will allow them to be moved and changed easily. Interactivity is encouraged! Students should find ways to make objects mobile!

After most groups have completed their prototypes, have each group decide on a 'product designer' and a 'user'. Users will test prototypes of nearby groups and provide feedback on things they liked and things that could use some improvement. Feedback will be given in TAG format (See terminology). Product designers will stay with their prototype and tell users what their theme is. Product designers should be encouraged to see how a user interacts with their prototype and ask if there is anything they find confusing.

Medium fidelity prototype is a prototype that contains most of the content and most of the visual design. Should have all basic functionality.

High fidelity prototype is a prototype that is very near the end of the development stage. Should contain all content, all visual design and be fully interactive. Should be nearly identical to the final product.

TAG is a method for giving feedback. It stands for tell something you like, ask a question and give a suggestion.

Curricular Connections

Example: Grade 4

Visual Arts

D1.1 create two- and three-dimensional works of art that express feelings and ideas inspired by their interests and experiences

D1.4 use a variety of materials, tools, and techniques to determine solutions to design challenges

Half-way through this activity switch the users and product designers so all students have the opportunity to perform both roles.

Once all groups have had a chance to get some feedback, they should work to improve their prototypes based on the feedback they received.

Example prototype:



Assessment

Learning Outcomes:

I know what a prototype is used for.

I know the different kinds of prototypes - low fidelity and high fidelity.

I can modify a prototype based on user feedback.

I can create a paper prototype.

Success Criteria:

I pitched an idea for a cause to bring awareness to.

While creating my prototype I experimented with multiple colors and materials.

My prototype is interactive, I can press and move things.

I modified at least one part of my prototype based on feedback.

Assessment Ideas:

Have students present their prototypes to a panel of 'investors'. They should talk about their prototype and what users thought of it in their testing. The investors will then decide if they would like to invest in the cause and why. Ensure that at least 1 person invests in every group.

Mathematics

Geometry and spatial sense:
construct three-dimensional figures, using two-dimensional shapes;

References

Why is prototyping important?

<https://blog.zipboard.co/why-is-prototyping-important-13150d76abc4>

Types of prototypes

<https://theblog.adobe.com/prototyping-difference-low-fidelity-high-fidelity-prototypes-use/>

Extensions

- Use a phone or laptop to add music to the prototype. Experiment with different kinds of music and see how each song gives the prototype a different feel
 - Create your own music with <https://www.soundtrap.com>
- Add additional paper prototypes to represent different environments in their virtual world
- After prototyping, create a high fidelity prototype of their VR world using [CoSpaces.io](https://www.canadalearningcode.ca/lessons/envisioning-a-better-world-in-vr/) using the “Envisioning a Better World in VR” lesson plan: <https://www.canadalearningcode.ca/lessons/envisioning-a-better-world-in-vr/>