

UNIVERSITY *of* WASHINGTON

# VIRTUAL REALITY

## ART & DESIGN CURRICULUM

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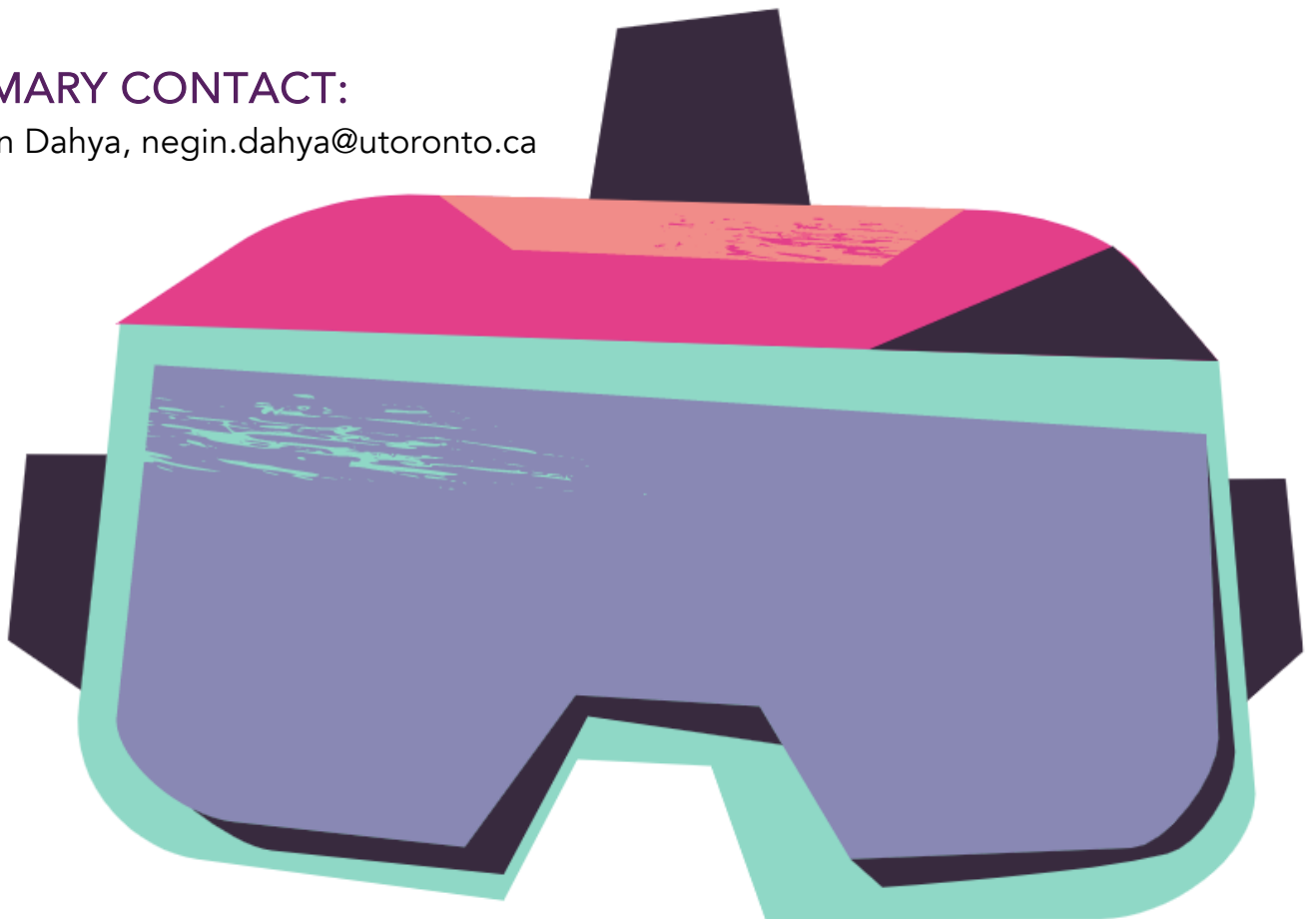
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## Proposed reference:

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# INTRODUCTION

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// I think for me, whether it was that program or any program, watching the kiddos in VR being vulnerable, being genuine, being comfortable, and acting as learners in an environment that traditionally they have not been successful in...really opened up possibilities to consider other things that I think are really necessary in education, like social, emotional, and cultural learning.

- Juvenile Rehabilitation School Principal, June 2019 //

This curriculum presents a six-module educational program focused on exploring virtual reality creation through art making and world-building. The goal of the curriculum is to teach young people about VR technology and digital art making, and to engage students in activities that explore art creation across two-dimensional (2D) and three-dimensional (3D) mediums. This program also included two additional modules at the end, designed to take the art created during the first six sessions and display that work as an art exhibit in a local public library. The exhibit and co-curation work is described at the end of this document.

Our team of educators and researchers created this curriculum for incarcerated young people living and studying in a juvenile rehabilitation center in Washington State, USA, in 2018-2019. Given the setting, this curriculum was uniquely designed for a highly restrictive environment, described in more detail below. Here, we present this curriculum publicly and believe it to be of value across different types of communities.

The program was designed with the intention to support and succeed with some of the most marginalized members of our community, incarcerated youth. *We propose that this curriculum can also serve as an excellent program for many other groups across the axes of oppression, power, and privilege.* Meaning that, while this curriculum was designed specifically for incarcerated young people in Washington State, *the anti-oppressive principles on which it was designed make it inclusive of many other communities as well.*

## PROGRAM DESIGN FOR JUVENILE REHABILITATION

// Having so many team members, adult team members in the room, connecting with them individually and gathering their feedback about what if, what's your opinion, how do you envision - that kind of level of engagement. I think [that] was the other reason I felt that it was so successful.

- Juvenile Rehabilitation School Principal, June 2019 //

Our team faced distinct challenges related to research and educational programming based on life “inside” this juvenile rehabilitation center. For example, we were told to expect high rates of school program attrition related to participant adherence to rules and regulations in other classes and programs. We also faced limitations on access to the students and the facility prior to the start of the program, as well as an inability to engage with participants in any personal way about their life histories. The latter point included not talking about personal life stories, crimes, or trauma.

To ensure the program did not invite discussion about personal histories or trigger past trauma, our team carefully considered how to frame the program. Often, media education programs are framed in relation to storytelling and personal empowerment. Keeping away from this common narrative theme brought us to a focus on 2D and 3D art design. We were also instructed to consider what kinds of art materials to use to avoid opportunities for harm to self or others. Relatedly, we created a workspace layout to avoid persons in VR feeling vulnerable, exposed, or having their backs to a room full of people (see Image 1 below). We researched and tested a series of VR experiences to evade potential triggers for past trauma. These realities led us to the creative world-making and art design curriculum presented here.

Our curriculum development was guided by an [anti-oppressive framework](#). This approach focused on the reality, restrictions, and lived experiences of participants in the ways described above. We involved the local community by interviewing teachers and staff before the project's implementation to learn more about the students who would be involved. Through this process, we gained important information that influenced how we set up the equipment and working groups, including having VR users face the open room with their backs to the school library bookshelves, instead of with their backs to the other students. Throughout the project, we attended to feminist

and anti-racist practices in program design and implementation, including purposeful outreach to girls and women. Our program facilitation plan was attentive to the racial dynamics described by teachers between participants, and the power dynamics at play between participants and the education team delivering the program.

Our team represented thoughtful, community-minded, and dedicated researchers, educators, and librarians. This group was predominantly comprised of racialized and minoritized peoples, including women, people of color, LGBTQ+ folks who were also faculty, graduate students, and library professionals.<sup>1</sup> These team members served as curriculum designers and program facilitators. The team spent eight months working on this curriculum, before the start of the program, between 8-20 hours per week.

Time was spent researching good models for digital media programs in settings of incarceration, as well as VR programs specifically in these settings and in libraries and schools more broadly. The team also spent time testing the technology setup and layout (see Image 1), researching and testing VR experiences, and crafting activities around those experiences that also fit within the allowances of the institution. Finally, ample time was also spent securing Washington State level Institutional Review Board approval for the research components of the project and submitting volunteer applications for the team to enter the juvenile rehabilitation center and facilitate this program in the on-site school.

The curriculum was delivered in May and June 2019 to two groups of teens 13-21 years of age, with 12 people in each cohort. The vast majority of participants were boys, despite the project being open to boys and girls at the facility, and despite active efforts to recruit girls and offer girls-only groups.<sup>2</sup> There was only one young woman who regularly attended the program and two others who occasionally participated. The school principal was delighted with the program, indicating that student engagement and positive social behavior was high and notable. Anecdotally, our team similarly felt the positive energy of the students in the room through this

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<sup>1</sup> The program is indebted to the work of Dovi Mae Patino, Eliza Summerlin, Aaron Joya, Wendy Roldan, Zithri Saleem, Yolanda Barton, Siri Benn, Elaine Carter, Nicole Claudio, Nicole Jarvis, Allison Moore, Dorothy Svgdik and Regan Pro. Additional thanks to Maleeha Iqbal and Adelina Tomova for their work on editing and formatting the report.

<sup>2</sup> The student population at the time was around 100 students, with about 20 girls. Exact numbers fluctuated sometimes daily based on sentencing and release.

program. Unstructured time for participants to spectate, chat, and freely draw/make art with the materials available was an important time for them and the group as a whole. This type of loosely structured or open time was valued, including the informal near-peer mentorship between educators, libraries, and participants. Similarly, when we had extra time at the end of a session, we opened up for **free play** of their choosing, which students loved.

## SUMMARY OF ANTI-OPPRESSIVE PRINCIPLES AND PRACTICES

- Accept that existence of power structures in society, such as patriarchy, racism, heteronormativity, ableism, and classism;
- Recognize that colonialism continues to impact local and global relations between settler colonizers and Indigenous Peoples in ways that are structurally oppressive;
- Accept that race is a social construct and that racism is a tool designed into political, legal, social, educational, technological, and economic systems to maintain white supremacy;
- Carefully consider relational accountability throughout the project - Who benefits from the work, and how?
- Seek community feedback, if not participation, in curriculum development, research design, data collection, and analysis;
- Center the lived experiences of women, People of Color, LGBTQIA+ communities, people with varying abilities, age, class (focus on *intersectionality*);
- Apply, question, and revisit ethical questions and considerations at every stage of the project—Who is at risk of harm or exploitation? Whose values are being prioritized, and to what end?
- Carefully assess the positionality of research and education team members in the project through **self-reflection** and analysis of our own power and privilege in relation to the project participants and setting (incarceration).<sup>3</sup>

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<sup>3</sup> Bell, L. (2014). Ethics and feminist research. In S.N. Hesse-Biber (Ed.), *Feminist research practice: a primer* (pp. 73-106). SAGE.; Dei, G. J. S. (2005). Critical Issues in Anti-Racist Research Methodologies. In G.J.S Dei & G.S. Johal (Eds.), *Critical Issues in Anti-Racist Research Methodologies* (pp. 1-27). Peter Lang.

## RESEARCH

Research data was collected throughout the project and primarily included interviews with educators and librarians involved in the school, as well as one focus group discussion with three youth participants. Data was collected before the project started to inform design during and after the project. Research findings will be published separately and will explore questions related to the value, interest, and effectiveness of the VR concept art design program in this juvenile rehabilitation setting.

There were many limitations to doing empirical research in this setting and with this population. Our project team spent many months securing state level IRB approval to collect qualitative data alongside our educational program. When we received our approval, we immediately began interviews with educators and librarians in the school (n=13). At the same time, we began recruitment with youth, which required parental signature to participate in the research. This was a major barrier given that incarcerated youth are removed from their families and do not necessarily see them on a regular schedule. In the end, we secured three permission forms from youth to participate in focus group discussions for research, one of whom was already 18 years of age and could sign for herself.

As barriers to conduct research became evident, we focused on and remained committed to developing a rich and anti-oppressive educational program. We stayed committed to conducting the educational program regardless of our ability to gather research data, and did so with enthusiasm. A few excerpts from the School Principal, student focus group discussion, and other educator and librarian interviews are also included in this report. We want to note here that for educational researchers, the tensions between research and practice can surface in complicated ways, such as in this case. Ultimately, an anti-oppressive framework demands the commitment to community be upheld as a priority even if the research faces limits and barriers to completion.

## ROOM AND TECHNOLOGY SET UP

This program was set up in the School Library. Image 1 depicts the library set-up. There are a few noteworthy elements regarding the way the technology was set up and how students were organized in the room. There were four VR systems set up on four tables (indicated by the green rectangle in Image 1). In each case, the participant would stand between the table where the computer was located and the bookshelf behind them, facing out into the room (participant location marked with a star in

Image 1). This way, when the participant was engaged in VR, no one was standing or sitting behind them. Importantly, small groups of students sat at tables in front of the VR machine (shown in Image 1 as “Activity Table”) and the computer screen displaying the VR experience faced out towards the spectators. Participants stayed in the same groups for each session, and mostly across sessions, and activities changed every 5-30 minutes.

#### IMAGE 1: SKETCH OF SCHOOL LIBRARY SET UP

The school library was located within the designated school building on the grounds of the juvenile rehabilitation center. The participants lived on-site and walked to and from their cottages, activities, recreational spaces, and classrooms daily. Our institutional partners coordinated the movement of participants to and from the library as needed and organized for teachers and administrators to stay for the duration of the program. We designed small-group activity tables (blue tables) where 4-5 self-selected groups of students would sit. The computer connected to the VR systems was on the green tables, with the screen facing out to the group so they could watch. The VR user stood behind the computer table with the headset on, with ample space around them to move during VR, and with no one else in the space or behind them.





# CURRICULUM DAY 1: INTRODUCTION TO VR

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## DESCRIPTION

This module focuses on introducing participants to VR technology. The goals are to present participants with the VR system Oculus Rift and have them experience it. Educators can use any VR system available. There are opportunities to discuss, explore, and learn about how the technology and VR experiences are created through hands-on, participatory activities. Additionally, the module introduces ideas about VR creation and digital art, with a discussion about the full scope of the curricular program, including the final exhibition of the participants' work in the local public library.



Source: [Oculus](#)

## OBJECTIVES

- Introduce students to VR technology, including hardware and software;
- Present the goals of the full program, including the creation of art for and about VR to be displayed in a public local library;
- Allow everyone to try two different VR systems - Oculus Rift and Google Cardboard;
- Encourage spectating, observation of peers in VR;
- Engage in discussion about what VR is, how it works, and how the tools available are different.

## DURATION

2 hours of activities, plus set up and clean up time.

## MATERIALS

### Applications

1. [Oculus First Contact](#)
2. [Henry](#)

3. [Google Spotlight Stories Sonaria](#)
4. YouTube video: [What is Virtual Reality & How Does it Work?](#)

### Supplies

1. Oculus VR headset for demonstration
2. Minimum 1 VR system per 4-5 participants
3. Minimum 1 desktop computer or 1 VR-ready laptop per 4-5 participants
4. Large pieces of paper (e.g. Post-it poster pad)
5. Markers, crayons, and other writing utensils
6. Scratch paper
7. Sticky notes
8. Minimum 2 Google Cardboards per 4-5 participants and complimentary device (e.g. mobile phone) to host Google Spotlight Stories application

## MODULE SCHEDULE AND ACTIVITIES

### INTRODUCTION AND ICE-BREAKER

**Duration:** 15 minutes in total.

**Description:** Snacks on entry. Welcome and program orientation, including introductions of the education team running the program. Demonstration and best practices of how to get into VR for safety by team. Describe the goal of creating an exhibit at the end. Explain that art created throughout the program can be included in the exhibit if the students choose to include it.

#### Supplies:

- VR headset for demonstration

### ACTIVITY 1: HANDS-ON VR ORIENTATION

**Duration:** 30 minutes of VR time, divided by number of participants per group for rotation (one person in VR at a time).

**Description (VR):** VR experience Rift Touch Basics Tutorial. For example, picking gem items up and throwing paper airplanes. Participants will jump into VR using Rift one at a time, to give them a quick introduction of controls in a fun gaming environment.



Source: [Oculus](#)

**Description (non-VR):** Others spectate and discuss what they are seeing, how they imagine VR to be.

**Applications:**

- Rift Touch Basics

**Supplies:**

- Minimum 1 VR system per 4-5 participants
- Minimum 1 desktop computer or 1 VR-ready laptop per 4-5 participants

## ACTIVITY 2: HOW VR WORKS

**Duration:** 10 minutes in total.

**Description:** All participants screen a short [How VR Works](#) video and discuss. Discussion questions can include open questions like: What is Virtual Reality? How does VR technology work? How does VR differ from videogames that you play?

**Applications:**

- YouTube video: [What is Virtual Reality & How Does it Work?](#)

**Sample Discussion Questions:**

1. What's different about VR compared to videogames?
2. What surprises you about VR so far?
3. What are you excited to try in VR and why?

## ACTIVITY 3: EXPERIENCING VR

**Duration:** 30 minutes, divided by number of participants per group. Participants rotate through two different activities with one participant in VR (Rotation I) and the other 3-4 engaged in discussion about VR at their activity table (Rotation II).

**Description (VR):** Animated VR experience—Henry. One at a time, participants will take a deep



Source: [Henry on Oculus](#)

dive into VR using Henry to begin understanding the possibilities of VR experiences. Turn the screen towards the VR user (away from spectator) to maintain the surprise of the story for each participant when it is their turn.

**Description (non-VR):** Students will respond to the prompt: How is VR created?

**Guiding questions for activity:**

1. Who do you think is involved in making VR hardware?
2. How do you think VR experiences/software is made?
3. Illustrate your ideas. Use icons of locations, buildings, job roles/people, and/or the process of the work.

**VR Applications:**

- [Henry](#)

**Supplies:**

- Minimum 1 VR system per 4-5 participants
- Minimum 1 desktop computer or 1 VR-ready laptop per 4-5 participants
- Large pieces of paper (e.g. Post-it poster pad)
- Markers, crayons, and other writing utensils
- Scratch paper
- Sticky notes

## ACTIVITY 4: COMPARING VR SYSTEMS

**Duration:** 30 minutes, divide time based on number of participants and number of Google Cardboard available. Participant groups rotate through two different activities, which occur simultaneously.

**Description (VR - Google Cardboard):** Allow as many students as Google Spotlight Stories: Sonaria accommodates to begin understanding the possibilities of Google Cardboard



Source: [Google Spotlight Stories: Sonaria on Steam](#)

experiences, for example, by following two creatures through water. Depending on the number of Google Cardboard available, additional participants can spectate and observe reaction, movement, and commentary from their peers who are using Cardboard.

**Description (non-VR):** Sketch/illustrate responses on sticky notes: *How do Oculus and Google Cardboard experiences compare?* This activity will be for students who have tried Cardboard and for those observing Cardboard in use. Answers can include drawings of devices, one word or short statements from students. Sticky notes will be organized into two columns (+/-), and content will be used in a reflective/debrief closing activity.

**Guiding questions for activity:**

1. Why might the Google Cardboard be better?
2. Why might it not be?
3. How can you imagine using these two different systems?

**Applications (VR):**

- [Google Spotlight Stories: Sonaria](#)

**Supplies:**

- Minimum 2 Google Cardboards per 4-5 people and complimentary device (e.g. mobile phone) to host Google Spotlight Stories application.
- Markers, crayons, and other writing utensils
- Sticky notes

## CLOSING DISCUSSION

**Duration:** 10 minutes in total.

**Description:** Group Question: If you had to tell people, in one sentence, about how VR works, what would you say? Facilitators collect all activity work, diagrams, images, stickies etc. for future reference. Have work organized by date and table group for possible use in exhibit.

**Supplies:**

- Large pieces of paper (Post-it poster pad)
- Sticky notes

# CURRICULUM DAY 2: WORLD-MAKING

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## DESCRIPTION

In this module, participants will play with world-building using the program Tiny Town VR and engage in various participatory design exercises to generate creative ideas about fictional VR worlds, thinking about the different affordances of 2D, 3D, and VR environments. Possible areas of exploration: Who uses your world? How is your world organized? How do people get around?

## OBJECTIVES

- Introduce students to creating fictional places in 2D, 3D, and VR environments;
- Explore creative and imaginary ideas about possible VR worlds;
- Build more VR experience through use of different experiences.

## DURATION

2 hours of activities, plus set up and clean up time.

## MATERIALS

### Applications

1. YouTube video: [Ready Player One - Official Trailer](#)
2. [Tiny Town VR](#)

### Supplies

1. Minimum 1 desktop computer or 1 VR-ready laptop
2. Minimum 1 VR system
3. Large pieces of paper (e.g. Post-it poster pad)
4. Scratch paper
5. Pens, markers, crayons, etc.
6. Building blocks (different sizes and shapes)
7. Sticky notes

# MODULE SCHEDULE AND ACTIVITIES

## INTRODUCTION AND ICE-BREAKER

**Duration:** 15 minutes in total.

**Description:** Snacks on entry. Welcome and explanation of theme: world-making. For example, we are asking you to consider what it means to create a fictional place in three different environments (2D, 3D, and VR). Full group discussion: What is your favorite video game? Why do you like it? How would you describe the world it is in?

## ACTIVITY 1: MEDIA SCREENING

**Duration:** 10 minutes in total.

**Description:** Media screening of *Ready Player One* trailer and short discussion. Have you seen the film? What do you think the film is about? What do you know about the virtual world created in this movie? Note: educators can replace this film trailer with any VR film or game trailer that is relevant to students at that time.

**Applications:**

- YouTube video: [Ready Player One - Official Trailer](#)

**Supplies:**

- Minimum 1 desktop computer or 1 VR-ready laptop

## ACTIVITY 2: TINY TOWN VR & WORLD-MAKING IDEAS

**Duration:** 30 minutes, with one participant in Tiny Town VR and the others participating in the supplementary activity described. Divide the time according to the number of participants.

**Description (VR):** One participant plays and experiments with Tiny Town VR experience.



Source: [Tiny Town on Oculus](#)



**Description (non-VR):** World-making ideas for group members not actively using the app. Use stickies to list all of the things you would want in your fictional place, if you had an unlimited budget (e.g., pool table, waterfall, rollercoaster).

**Applications:**

- [Tiny Town VR](#)

**Supplies:**

- Minimum 1 VR system
- Minimum 1 desktop computer or 1 VR-ready laptop
- Sticky notes and pens or markers

### ACTIVITY 3: VR TINY TOWN & WORLD-MAKING DESIGNS (2D)

**Duration:** 30 minutes, with one participant in VR Tiny Town and the others participating in the supplementary activity described.

**Description (VR):** One participant plays and experiments with Tiny Town VR experience.

**Description (non-VR):** World-making designs . Use your favorite fictional place as inspiration or a jumping-off point to build/create their own fictional place in 2D using paper drawing materials.

**Applications:**

- [Tiny Town VR](#)

**Supplies:**

- Minimum 1 VR system
- Minimum 1 desktop computer or 1 VR-ready laptop
- Large pieces of paper (e.g. Post-it poster pad)
- Scratch paper
- Pens, markers, crayons, etc.

### ACTIVITY 4: VR TINY TOWN & WORLD-MAKING BUILD (3D)

**Duration:** 30 minutes, with one participant in VR Tiny Town and the others participating in the supplementary activity described.

**Description (VR):** One participant plays and experiments with Tiny Town VR experience.



**Description (non-VR):** World-making build. Use your favorite fictional place as inspiration or a jumping-off point to build/create your own fictional place in 3D using blocks of all sizes.

**Applications:**

- [Tiny Town VR](#)

**Supplies:**

- Minimum 1 VR system
- Minimum 1 desktop computer or 1 VR-ready laptop
- Large pieces of paper (e.g. Post-it poster pad)
- Scratch paper
- Pens, markers, crayons, etc.
- Building blocks (different sizes and shapes)

## CLOSING DISCUSSION

**Duration:** 10 minutes in total.

**Description:** What was your favorite way to build a fictional place today? Why? What do you think are the different opportunities and/or challenges of building in the three different spaces? Facilitators collect all activity work, diagrams, images, stickies etc. for future reference. Digital work and screenshots carefully archived at the end of each session. Have work organized by date and table group for possible use in exhibit.

**Supplies:**

- Large pieces of paper (Post-it poster pad)
- Sticky notes



When we did the blocks and I was like I don't know how this is gonna be like virtual reality, but I feel like it's all the little things. They add up when somebody might see those blocks and think of creating something out of it, you know.

- Youth Participant, Focus Group Discussion, June 2019



# CURRICULUM DAY 3: FUTURE BUILDING (LIBRARIES IN THE YEAR 3000)

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## DESCRIPTION

In this module, students will play with world building using the program Tiny Town and engage in various participatory design exercises to generate creative ideas about fictional VR worlds, thinking about the different ways to create a sense of place. Possible areas of exploration: Why do people use libraries? How will technology change the way you design your library? What is currently missing in libraries?

## OBJECTIVES

- Engage students in a creative exploration about the role of libraries in the future;
- Engage with Fantastic Contraption, a building game in VR;
- Continue exploration of the use of Tiny Town and other VR building experiences.

## DURATION

2 hours of activities, plus set up and clean up time.

## MATERIALS

### Applications

1. [Tiny Town VR](#)
2. [Fantastic Contraption](#)

### Supplies

1. Sticky notes
2. Oculus Headset
3. Construction paper
4. Markers

## MODULE SCHEDULE AND ACTIVITIES

### INTRODUCTION AND ICE-BREAKER

**Duration:** 15 minutes in total.

**Description:** Snacks on entry. Ice-breaker and circle question at individual tables: What is one thing you wish your library had that it doesn't? Why?

### ACTIVITY 1: NON-VR CREATION ACTIVITY

**Duration:** 15 minutes in total.

**Description:** Using construction paper, markers, foam blocks, etc., draw or 3D model/create a vehicle of the future. What does it look like? How does it work? Who would use it? Be ready to share your ideas with the group.

**Supplies:**

- Construction paper
- Markers
- Foam blocks

### ACTIVITY 2: VR + SPECTATING FANTASTIC CONTRAPTION

**Duration:** 30 minutes in total.

**Description (VR):** One student explores the VR game Fantastic Contraption while others participate in spectating and sticky activity reflecting on VR so far.

**Description (non-VR):** Sticky activity for spectators. What do you like and what do you dislike about VR so far?

Compile on flip chart. What would you like to see or do in VR?

**Applications:**

- [Fantastic Contraption](#)

**Supplies:**

- Sticky notes
- Add supplies



Source: [Fantastic Contraption](#)

### ACTIVITY 3: NON-VR CREATION ACTIVITY (FULL GROUP)

**Duration:** 15 minutes in total.

**Description:** All participants. Using large foam lego blocks, create a library or city on your team table. What does it look like? When and where is it? What's different about it from the world today?

**Supplies:**

- Large foam lego blocks

### ACTIVITY 4: VR + SPECTATING FANTASTIC CONTRAPTION OR TINY TOWN

**Duration:** 30 minutes in total.

**Description (VR):** Participant in VR can choose to build using Fantastic Contraption or Tiny Town. Tiny Town creations encouraged to work on their library or future world ideas.

**Description (non-VR):** See if the group can agree on one VR experience and work on building out one world/place/library together. If so, they can work together to build on each idea or world. If not, they can take turns. Spectators not engaged in VR building can play Exquisite Corpse or other games.

**Applications:**

- [Tiny Town VR](#)
- [Fantastic Contraption](#)
- [Exquisite Corpse](#)

**Supplies:**

- Paper
- Pens
- Markers

Facilitators collect all activity work, diagrams, images, stickies etc. for future reference. Digital work and screenshots carefully archived at the end of each session. Have work organized by date and table group for possible use in exhibit.

# CURRICULUM DAY 4:

## VR & MUSIC

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### DESCRIPTION

In this module, students will think about the ways that music and visuals interact using the VR programs Fantasyth and Beatsaber. Possible areas of exploration include: How does music make you feel? How might we represent music differently than how we engage with it today?

### OBJECTIVES

- Participants will learn and reflect on the ways in which VR and music interact;
- Participants will think about the visual representation of sound in VR.

### DURATION

2 hours of activities, plus set up and clean up time.

### MATERIALS

#### Applications

1. YouTube Video: [Sun-Flower](#)
2. YouTube Video: [Chance the Rapper](#)
3. YouTube Video: [God's Plan](#)
4. [Fantasyth](#)
5. [Beat Saber](#)

#### Supplies

1. Minimum 1 desktop computer or 1 VR-ready laptop
2. Speakers (with an auxiliary or Bluetooth connection)
3. Large pieces of paper (Post-it poster pad)
4. Scratch paper
5. Pens, markers, crayons, etc.
6. Minimum 1 VR system
7. Sticky notes

## MODULE SCHEDULE AND ACTIVITIES

### INTRODUCTION

**Duration:** 10 minutes in total.

**Description:** Snacks on entry. Explain that the motivation for this day is to think about how music and visuals interact in the VR program.

### ACTIVITY 1: LISTEN AND DRAW (FULL GROUP)

**Duration:** 15 minutes in total.

**Description:** Respond to pre-downloaded songs with thoughts and feelings. Share out first thoughts to each song with the group (voluntary, one word, short phrase answers).

**Applications:**

- YouTube Video: [Sun-Flower](#)
- YouTube Video: [Chance the Rapper](#)
- YouTube Video: [God's Plan](#)

**Supplies:**

- Minimum 1 desktop computer or 1 VR-ready laptop
- Speakers (with an auxiliary or Bluetooth connection)
- Large pieces of paper (Post-it poster pad)
- Scratch paper
- Pens, markers, crayons, etc.

### ACTIVITY 2: SONG STORYBOARD CREATION (NO VR)

**Duration:** 20 minutes.

**Description:** Each table/sub-group of participants will take one large sheet of paper and fold it into 6 squares and be asked to respond to the following prompt: Using one of the three songs you heard during Activity 1, create a story using the 6 squares as sequences.

**Supplies:**

- Large pieces of paper (Post-it poster pad)
- Scratch paper
- Pens, markers, crayons, etc.

### ACTIVITY 3: SENSORY PLAY W/ FANTASYNTH

**Duration:** 30 minutes in total.

**Description (VR):** Participants experience Fantasyynth. The laptop/computer should be turned to hide the screen from the rest of the activity table participants.

**Description (non-VR):** The participant who is in VR is asked to share out loud



Source: [Fantasyynth on Steam](#)

what they are seeing and experiencing to students waiting for their turn. Students waiting to participate are asked to sketch on a large piece of paper what they think the student in VR is seeing. This can be done individually or collaboratively depending on the dynamics of the group. The goal is to have students think about how to visualize and draw the description of what their peer is seeing in Fantasyynth.

**Applications:**

- [Fantasyynth](#)

**Supplies:**

- Minimum 1 VR system
- Minimum 1 desktop computer or 1 VR-ready laptop

### ACTIVITY 4: SENSORY PLAY W/ FANTASYNTH

**Duration:** 30 minutes in total.

**Description (VR):** Each student will play a song of their choosing in Beat Saber, a VR rhythm game. Screen can be turned back to the activity table for spectating.

**Description (non-VR):** After gameplay, students will be prompted to reflect on their ideas about the physical connection with music through VR applications. Small group,

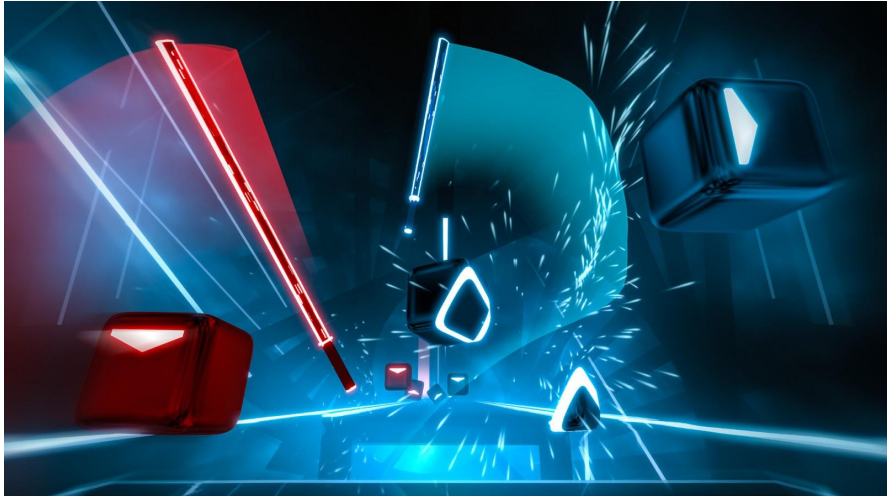
informal table discussions about Beat Saber and open spectating for those waiting their turn.

**Applications:**

- [Beat Saber](#)

**Supplies:**

- Minimum 1 VR system
- Minimum 1 desktop computer or 1 VR-ready laptop



Source: [Beat Saber on Oculus](#)

## CLOSING DISCUSSION

**Duration:** 10 minutes in total.

**Description:** How do you think VR will change the ways we make and listen to music? Facilitators can ask follow-up questions, like learning instruments, creating music videos, and attending concerts. Facilitators collect all activity work, diagrams, images, stickies etc. for future reference. Digital work and screencaptures carefully archived at the end of each session. Have work organized by date and table group for possible use in exhibit.

**Supplies:**

- Large pieces of paper (Post-it poster pad)
- Sticky notes



# CURRICULUM DAY 5: ART

## DESCRIPTION

In this module, students will think about art creation in 2D and 3D VR environments using the VR experiences TiltBrush and SculptVR. They will also engage in various participatory design activities. Possible areas of exploration include: What are some different forms of art you might envision yourself creating? What are the limitations and strengths of the tools available to you as you try to create art?

## OBJECTIVES

- Participants will engage in art activities in 2D and 3D;
- Participants explore the differences in creation in these different modes.

## DURATION

2 hours of activities, plus set up and clean up time.

## MATERIALS

### Applications

1. YouTube Video: [Tilt Brush](#)
2. [Google Tilt Brush](#)

### Supplies

1. Minimum 1 desktop computer or 1 VR-ready laptop
2. Speakers (with an auxiliary or Bluetooth connection)
3. Scratch paper
4. Pens, markers, crayons, etc.
5. Minimum 1 VR system
6. Large pieces of paper (Post-it poster pad)
7. Sticky notes

## MODULE SCHEDULE AND ACTIVITIES

### INTRODUCTION

**Duration:** 10 minutes in total.

**Description:** Welcome and video trailer of Google Tilt Brush.

**Applications:**

- YouTube Video: [Tilt Brush](#)

**Supplies:**

- Minimum 1 desktop computer or 1 VR-ready laptop
- Speakers (with an auxiliary or Bluetooth connection)

## ACTIVITY 1: VR ART MAKING

**Duration:** Total time of 45 minutes. Extra time per student for program orientation as Tilt Brush takes a little time to learn, navigate, and get used to.

**Description (VR):** Students will be asked to recreate their 2D art piece, or to generate something new, in Google Tilt Brush.

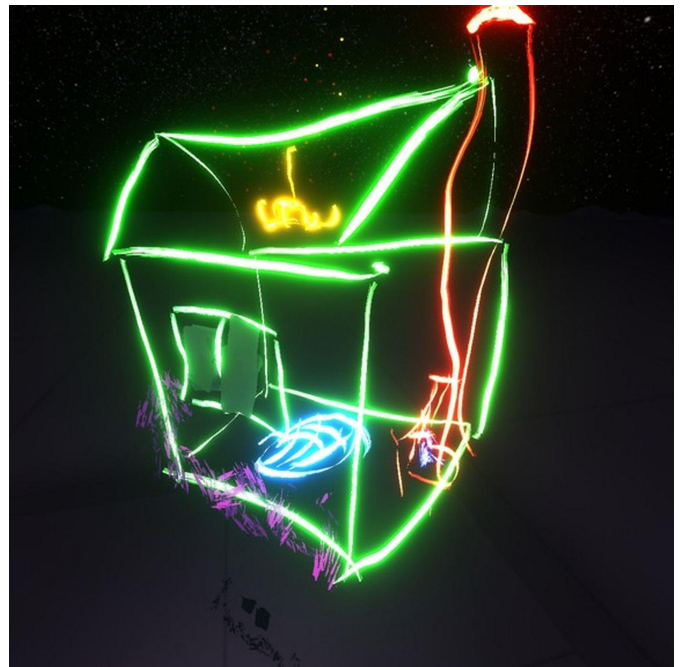
**Description (non-VR):** Students who are spectating will engage with paint and art. Prompts: create your own creature, alien, monster, car, or dream house/room or paint from a famous artwork (print-outs).

**Applications:**

- [Google Tilt Brush](#)

**Supplies:**

- Minimum 1 VR system
- Minimum 1 desktop computer or 1 VR-ready laptop
- Scratch paper
- Pens, markers, crayons, etc.



Source: [Google Tilt Brush](#)

## ACTIVITY 2: VR Pictionary

**Duration:** Total time of 45 minutes.

**Description (VR):** Pictionary, in VR! s

**Applications:**

- [Google Tilt Brush](#)

### Supplies:

- Minimum 1 VR system
- Minimum 1 desktop computer or 1 VR-ready laptop
- Drawable items for Pictionary on cards

### EXTRA TIME: OPEN PLAY

**Duration:** Remaining time: free time with option/selection of any of the VR experiences. Facilitators collect all activity work, diagrams, images, stickies etc. for future reference. Digital work carefully archived at the end of each session. Have work organized by date and table group for possible use in exhibit.



Image created by project participant using [Google Tilt Brush](#), included with participant's permission.

// You know, earlier, when you asked me what was good about Tilt Brush, I feel like [...] people who can't draw got on there anyways and made something that looked reasonably good.

- Youth Participant, Focus Group Discussion, June 2019 //

# CURRICULUM DAY 6: VR EXPLORATION

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## DESCRIPTION

This module is focused on allowing participants to take a closer look at VR technology that they have experienced before. Our goals are to allow participants to revisit the VR system Oculus and Google Cardboard and allow them to follow up on previous explorations. Possible areas of exploration include: How are your experiences with VR different today compared to your first time experiencing it? What strategies did you learn from your first time using VR that you used today? Which experience was your favorite and why? What questions do you still have about VR moving forward?

## OBJECTIVES

- Participants can use this module to reflect on the experiences they have had during the previous modules, and what they would like to explore further in VR technology;
- Time allocated for those working on worlds or art projects in Tiny Town or Tilt Brush in particular to complete those works.

**DURATION** 2 hours of activities, plus set up and clean up time.

## MATERIALS

### Applications

1. [Google Tilt Brush](#)
2. [Job Simulator](#)
3. [Fantastic Contraption](#)
4. [Tiny Town VR](#)
5. [Fantasyynth](#)
6. [Beat Saber](#)
7. [Sculpt VR](#)

### Supplies

1. Minimum 1 VR system

2. Minimum 1 desktop computer or 1 VR-ready laptop
3. Markers, crayons, other writing utensils
4. Large pieces of paper (Post-it poster pad)
5. Sticky notes
6. Paints
7. Paintbrushes
8. Paper towels
9. Cups

## MODULE SCHEDULE AND ACTIVITIES

### INTRODUCTION

**Duration:** 10 minutes

**Description:** Snacks on entry. Welcome and warm up question: If you could give a creative new name to Oculus (the VR experience company name) what would it be?

### ACTIVITY 1: PROJECT WORK & GAMES

**Duration:** 30 minutes.

**Description (VR):** Participants can choose to use this time to gain additional experience on any of the programs used before. Participants are encouraged to complete any world-building in Tiny Town or art in Tilt Brush. Other available options include Job Simulator and Fantastic Contraption.



Source: [Job Simulator](#)

**Description (non-VR):** Participants who are working on projects are guided to think about how to prepare for their VR time. Once finished, or for others who have finished their worlds and art, they have open time for spectating and open art making with table materials.

### Applications:

- [Tiny Town VR](#)
- [Google Tilt Brush](#)
- [Job Simulator](#)
- [Fantastic Contraption](#)

### Supplies:

- Mix of art supplies

## ACTIVITY 2: MUSIC

**Duration:** 30 minutes.

**Description (VR):** Participants can spend more time on Fantasyth and Beat Saber.

**Description (non-VR):** Participants who are working on projects are guided to think about how to prepare for their VR time. Once finished, or for others who have finished their worlds and art, they have open time for spectating and open art making with table materials.

### Applications:

- [Fantasyth](#)
- [Beat Saber](#)

### Supplies:

- Mix of table art supplies.

## ACTIVITY 3: ART

**Duration:** 30 minutes.

**Description (VR):** Station III will be set up as Art from Module 3B with the two VR experiences Tilt Brush and Sculpt VR.

**Description (non-VR):** Participants who are working on projects are guided to think about how to prepare for their VR time. Once finished, or for others who have finished their worlds and art, they have open time for spectating and open art making with table materials.

### Applications:

- [Google Tilt Brush](#)
- [Sculpt VR](#)

### Supplies:

- Mix of table art supplies.

## CLOSING DISCUSSION

**Duration:** 20 minutes.

**Description:** Small group discussion activity work using art supplies on table. Report back to the larger group based on two prompts: (1) How would you design a VR session for your peers? What would it include? What would it omit? (2) What careers are possible to train for with VR technology? (This could include both virtual and non-virtual options). Facilitators collect all activity work, diagrams, images, stickies etc. for future reference. Have work organized by date and table group for possible use in exhibit.

### Supplies:

- Large pieces of paper (Post-it poster pad)
- Sticky notes

# PROGRAM & EXHIBIT DEVELOPMENT

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## EXHIBIT DEVELOPMENT AT ON-SITE AND LIBRARY INSTALLATION

Six students and two instructors from the Museology Graduate Program at the University of Washington were also a part of the project team. Their focus was on building the curricular modules for the creation of the public exhibit of student VR art. This exhibit was designed for display in a local public library, with the intention that all content would be created by the participants and collaboratively installed by participants and Museology graduate students.

This model of exhibition development reflects the “co-curation” method, in which curatorial authority is either shared or entirely given to community members or stakeholders that are outside of the museum institution. This allocation of authority reflects a field-wide movement to engage more authentically with underrepresented community members, as well as to encourage the participation of populations who rarely see themselves or their stories represented in museums. Additionally, this design presents a more equitable model of community participation, one that emphasizes lived experiences which are overlooked by institutions focused on white histories and cultures.

The entire curriculum was designed to prioritize the students’ words, voices, feelings, and experiences with VR, and was framed in cooperation with the Museology team to produce works that might be included in the public library exhibit. It is critical to note that the restrictions of working in juvenile rehabilitation hindered a fully cooperative and collaborative creation of both VR concept art and the curation of the final exhibit. This section outlines the steps that were taken to produce the exhibit, including how partnering with Museology professionals informed the curriculum design.

## PREPARING FOR THE VR PROGRAM & EXHIBIT

The Director of the University of Washington Museology Program, Jessica Luke, invited the Seattle Art Museum’s Deputy Director of Education and Public Engagement, Regan Pro, to run a small for-credit course during the Spring 2019



quarter. Five Museology master's students enrolled in the course. The class aimed to prepare students to work with incarcerated youth, to co-develop an exhibit with youth, and to install the exhibit at Snoqualmie Library.

The course curriculum was comprised of four key parts:

1. Explored relevant key concepts to inform the exhibit, including using virtual reality as an interpretive tool and learning about existing programming with incarcerated populations;
2. Decided on the approach to take in order to co-develop an exhibit with youth over a short time frame—Do-It-Yourself (DIY), community-based exhibit development—and examined and clarified practices associated with this approach;
3. Identified a “big idea” for the exhibit to bring to the participants—what VR means to me and why it matters—to focus the creation and curation work with youth in one area. During the course, the master's students developed activities to facilitate with the VR program participants onsite in order to create content and products for the exhibit.
4. As the culminating project of the class, students worked with VR program participants to generate additional art about VR using the VR programs they had learned (e.g. *Tilt Brush*). The Museology master's students then installed the work in an exhibit at Snoqualmie Library, featuring the ideas and products created by participants.

## WORKING ONSITE WITH PARTICIPANTS

Onsite sessions with youth were guided by two core principles. The first was to ensure the Museology sessions felt integrated with the rest of the curriculum, rather than being a separate, siloed experience. To achieve this integration, the two Museology modules at the end of the curriculum followed a similar format to previous sessions. Previous activities and experiences were referenced and some of the VR program team were also present, working alongside the Museology students. Similarly, the five Museology students had been present to support the VR concept art design curriculum during those modules as well.

The second principle was to create opportunities for maximum agency over the exhibit among participants—what it looked like, what was in it, the stories it told. To achieve this agency, we ensured participants had choice and control over what they produced and whether or not they wanted it to go into the exhibit. We then facilitated two, two-

hour sessions with youth at the school. In these sessions, we facilitated various activities designed to engage youth in answering the questions: “What does VR mean to me?” and “Why does VR matter to me?” Our activities included the following:

- Identifying one word that described how they felt about VR;
- Creating a collage that showed how they feel when they are in VR;
- Customizing cardboard VR goggles;
- Creating artwork in VR, using programs like TiltBrush;
- Telling a story about their relationship to VR.

## INSTALLING THE EXHIBIT AT THE LIBRARY

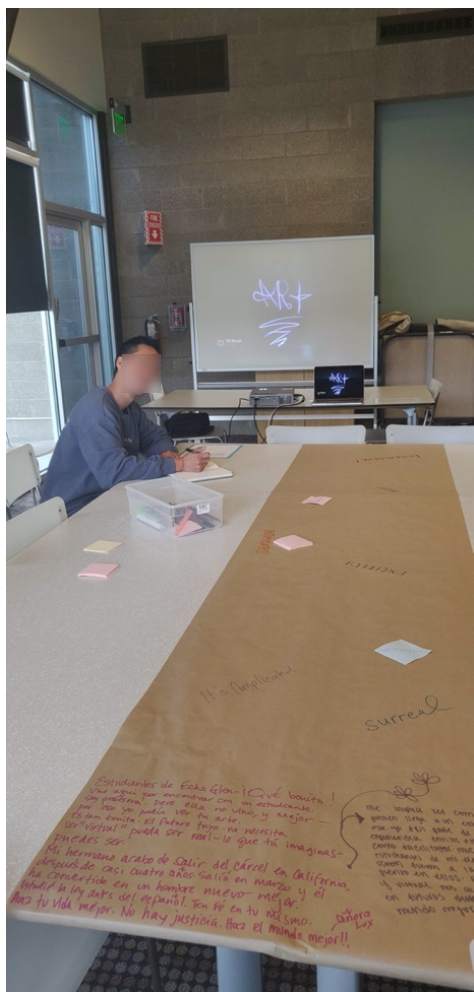


Image 1: Public Library Exhibit

The Museology team spent a full day at Snoqualmie Library installing the exhibit, entitled *Here But Not Here*. We aimed to center youth voices and perspectives, not our own. For example, we wrote brief labels for the exhibit that focused on youth’s ideas and used youth’s words, documented during our two exhibit development sessions with participants.

Two of the most common words that students used to describe virtual reality were “realistic” and “trippy.” This led us to the theme, VR is Real. Students felt they were able to do unreal things in ways that felt real, or do real work in made-up situations. We also aimed to make the exhibit participatory, by inviting library guests to engage in conversation with one another about the ideas. For example, we created a “Join the Conversation” station with the following prompt: “In this exhibit, students shared their experiences with virtual reality. What is one word that you would use to describe your feelings about virtual reality? Post your work on the paper in front of you.” The exhibit was on display for four weeks.



Image 2: A view of the exhibit of student work. The images are a mix of drawn sketches and storyboards, pictures of students working on VR (no faces), or images of the art created during the program. Other artifacts include those created specifically for the exhibit, such as collage created to express how they feel in VR, or decorating Google goggles.

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### Attribution

*Oculus First Contact, Henry, Tiny Town VR, Fantastic Contraption, Fantasyth, and Beat Saber are trademarks of Oculus LLC—this program and curriculum are not endorsed by or affiliated with Oculus in any way. Google Cardboard and Google Spotlight Stories: Sonaria are trademarks of Google LLC—this program and curriculum are not endorsed by or affiliated with Google in any way.*

# APPENDIX A: GETTING STARTED

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The following information describes the technology needed to operate the VR systems used in these modules. Additional instructions are given for installation and other setup concerns.

## COMPUTER OR LAPTOP:

To set up your Oculus Rift S or Rift, you'll need to download the Oculus app on your PC. Before you install the Oculus app, check to make sure that your hard drive has sufficient disk space.

When you install the Oculus app on your computer, it'll install on the C: drive. If you want to install the app on a different system drive, follow this support article for additional instruction.

To download and install the Oculus app on your computer:

1. Go to <http://www.oculus.com/setup> and click Download Oculus Rift Software.
2. Open the Oculus app and click Install Now.
3. Follow the on-screen instructions to create an Oculus account and set up your Rift S or Rift.

## THE HEADSET:

After making sure everything is up to date, check to make sure your headset and headset sensor cables are plugged into the right ports:

### Plugging in Your Headset:

- HDMI end: Plug the HDMI end of the headset cable into your dedicated graphics card port.
- If you're already using your HDMI port for your monitor, you can try using an HDMI adapter or another display port (for example: DisplayPort, DVI).
- USB end: Plug the USB end into a USB 3.0 (blue) port.
- Plugging in Your Headset Sensors:
- Plug the headset sensor cable into another USB 3.0 (blue) port.

### Headset Software:

- Next, open the Oculus app on your PC and go through the software setup.
- Open the Oculus app on your computer.
- Select Devices in the left menu.
- Click Configure Rift and then select Full Setup.
- Follow the on-screen instructions to run the full Rift setup.

### Headset Fit & Adjustment:

- Put on your headset and make sure it fits comfortably.
- Loosen the side tabs and then the top strap.
- Move the on-ear headphones outwards.
- Starting from the back, put your headset on.
- If you're wearing glasses, put the headset on from the front first.
- Tighten the side tabs and then top strap.

- Move the on-ear headphones down to your ears.
- If the image in your headset isn't clear, move the image slider on the right of the bottom of your headset.

## SENSORS

If you're setting up your Oculus Rift for the first time, follow the on-screen instructions to set up your sensors. If you're using more than one sensor, you'll need an additional USB 2.0 or higher port.

### To Set Up A New Sensor:

- Open the Oculus app on your PC computer.
- Select Devices in the left menu.
- Click Configure Rift and then select Sensor Setup.
- Follow the on-screen instructions to set up your new sensor.
- Standing Height: Entering your standing height lets Rift calculate the distance to the floor. This makes your experience in VR feel more realistic. You only need to set your height once, even if you decide to sit or let someone else use your Rift.

### Sensor Placement Tips:

#### *Space*

- Make sure nothing is blocking the line of sight between your headset and the sensors.
- Move away any objects that you may bump into or trip over (e.g., sensor cables).
- Make sure your play area is at least 3 feet by 3 feet (1 meter by 1 meter).

#### *Placement*

- If you're only using two sensors, try to put your sensors 3-6.5 feet (1-2 meters) in front of where you'll be wearing your headset.
- Check to make sure the glossy side of the sensor lens is pointing towards your play area.
- If your sensors are close together, rotate them so that they face forward. If your sensors are wide apart, rotate them towards the center of your play area.

## CONTROLLERS

If you're setting up your Oculus Touch controllers for the first time, follow the on-screen instructions when you plug in your additional sensor.

### To Add Your Touch Controllers From Your Settings:

- Open the Oculus app on your computer.
- Select Devices in the left menu.
- Click Configure Rift and then select Pair Touch.
- Follow the on-screen instructions to add your Touch controllers.



## APPENDIX B: VR APPLICATIONS

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The following is a list of applications downloaded and used in the modules. Short descriptions, along with links to the download page, are included. Additional experiences are included at the end of the list, which are recommended resources for introducing museum and exhibition experiences into the modules.

- [Beat Saber](#): A rhythm game where participants “slash” virtual cubes to a beat. Developed by Beat Games.
- [Dreamdeck](#): Dreamdeck transports you to impossible places and magical worlds. Developed by Oculus. This is a passive experience, but one that emphasizes exploration beyond physical limitations.
- [Fantasyth](#): Immersive audio and visual experience. Developed by HelloEnjoy.
- [Google TiltBrush](#): Engaging creativity tool developed by Skillman & Hackett. Google TiltBrush affords users with an opportunity to play and create in a variety of settings and a multitude of tools that professional artists would use in real-life
- [Henry](#): Henry is a short, animated, immersive film that allowed students a first look into what it could feel like to be in a VR experience as a bystander. This affords an opportunity to get acquainted with the virtual environment. Developed by Oculus.
- [TinyTown VR](#): Tiny Town VR is a casual worldbuilding game in virtual reality, inspired by the nostalgic storytelling power of LEGO and action figures mixed with the excitement of making something original. This was chosen because it allows participants to build their own worlds, then fill them with thousands of different objects. Add characters whose joints can be pushed, pulled, and twisted into any pose imaginable, then give them a voice with custom speech bubbles. Once the worlds are built, they can be captured using the ingame camera. Developed by Lumbernauts.

Possible applications that focus on exhibits, but were not used:

- [The Finnish Virtual Art Gallery](#)
- [The Rougeau Gallery](#)
- [Mocove Arts](#)
- [Boulevard](#)
- [Kingspray Graffiti](#)

## APPENDIX C: HEALTH & SAFETY CONSIDERATIONS

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General concerns for the health and safety of participants using VR focus on spatial awareness along with concerns about balance when wearing the headset. To reduce the risk of injury or discomfort you should always follow these instructions and observe these precautions while using the headset:

- Remember that the objects you see in the virtual environment do not exist in the real environment, so don't sit or stand on them or use them for support.
- Serious injuries can occur from tripping, running into, or striking walls, furniture, or other objects, so clear an area for safe use before using the headset. Have a facilitator watch participants at all times to mitigate injuries caused by a lack of spatial awareness.
- Recommend easing into the use of the headset to allow one's body to adjust; use for only a few minutes at a time at first, and only increase the amount of time using the headset gradually as one grows accustomed to virtual reality.

Immediately discontinue using the headset if any of the following symptoms are experienced:

- seizures
- loss of awareness
- altered, blurred, or double vision or other visual abnormalities
- dizziness, disorientation, impaired balance, impaired hand-eye coordination
- excessive sweating
- increased salivation
- nausea, lightheadedness, or any symptoms similar to motion sickness

Additionally, when working with youth and other vulnerable populations, consent for touch is always necessary and important to emphasize. Best practice includes modeling how to put on the headset and use the controllers yourself before putting students in the headsets. Always ask for permission before:

- adjusting the head strap
- handing over the controllers
- moving students to the correct position in the play field

# APPENDIX D: REFLECTIONS FROM 2019 PROGRAM

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## TECHNICAL

- Engage participants in setting up and taking down VR equipment from the start, so they learn and become comfortable with the mechanics/tool
- Create activities with more guidance and scaffolding around understanding the differences between Oculus Rift and Google Cardboard, such as a quick debate or deeper dive into the different types of technology and mechanics in use
- Get a VR professional to share about their experience creating in VR:
  - Students want and need for their experience with VR to be more than just gameplay or exposure;
  - They want to know how VR works and what you can do with VR skills in the future.

## PROGRAM ARC/ART CREATION

- Build in opportunities for choice - create a day of free play for students to revisit experiences that they liked best to promote continued interests and creativity;
- Foster creativity by imagining how different types of allowable materials could be used to create more robust 3D environments;
- Further teach and scaffold 2D and 3D drawing and creation to facilitate a more robust comparison between these two modalities and VR;
- Build on open play time in ways that invite students to think about why it was fun, how the music available in the games enhanced their experience, or what they might like to see musically in games like these might be a valuable direction for this module.

## ART EXHIBIT

- Provide more clarity and description about the creation of the final art exhibit in the public library at the start; include photos or examples to help contextualize this end goal early on;
- Facilitators can offer consistent reminders that the projects that students create will be used for the exhibit at the end of the sequence; build in activities each module to introduce or build towards exhibit throughout, rather than focused at the end;
- Remind students to create works that are content appropriate for a public library setting, such as not writing out their names as part of their artwork which excludes it from display;
- Facilitators should gather artwork created throughout the sessions and have it organized so that the students can sort through it easily during the final modules; this includes drawings, digital images created by students and screenshotted, and statements written down by facilitators (with permission and anonymous attributions).