GNG-1103 Deliverable D

Philippe Rollin, Camila Florez, Lily Couture, Joshua Li, and Jiayi Zhang

February 9th , 2025

Abstract:

The following report contains the process taken to develop three final story concepts for the VR simulation outlined in previous deliverables. The first few sections (1.1.0-1.5.10) examine the individual story concepts of each member of the group. The following section takes individual components from the original five stories and re-combines them to create something new. The final section contains a table comparing each newly recombined story using design criteria and a final grading score. A conclusion terminates the report by wrapping up the findings and ranking the stories based on their scores.

[1 Initial Story Ideas 2](#_Toc1129869517)

[1.1.0 Story 1: Philipe Rollin 2](#_Toc1055665620)

[1.1.1 Selected catastrophe: 3](#_Toc933929924)

[1.1.2 Storyline/overline objective: 3](#_Toc417668163)

[1.1.3 Secondary objectives: 3](#_Toc558535089)

[1.1.4 Logistics: 3](#_Toc1868998201)

[1.1.5 Sound design: 4](#_Toc1672940831)

[1.1.6 Environmental design: 4](#_Toc57113041)

[1.1.7 Insurance of education: 4](#_Toc1589543749)

[1.1.8 Accessibility/ Accommodations: 4](#_Toc707173566)

[1.1.9 Pros of design concepts: 5](#_Toc270702273)

[1.1.10 Restrictions: 5](#_Toc32615792)

[1.2.0 Story 2: Joshua Li 5](#_Toc580640911)

[1.2.1 Storyline: 5](#_Toc1235413994)

[1.2.2 Secondary Objectives: 6](#_Toc675232912)

[1.2.3 Logistics 6](#_Toc2056323608)

[1.2.4 Sound design 6](#_Toc474660355)

[1.2.5 Accessibility 6](#_Toc508717250)

[1.2.6 Education Insurance 7](#_Toc1384693439)

[1.3.0 Story 3: Camila Florez 7](#_Toc388542463)

[1.3.1 Selected Catastrophe 7](#_Toc694311700)

[1.3.2 Storyline/Overall Objective 7](#_Toc839361609)

[1.3.3 Secondary objectives 7](#_Toc1240874481)

[1.3.4 Logistics 7](#_Toc1196901252)

[1.3.5 Sound Design 8](#_Toc2063688587)

[1.3.6 Environment Design 8](#_Toc1193153478)

[1.3.7 Insurance of Education 8](#_Toc1730362677)

[1.3.8 Accessibility/Accommodations 9](#_Toc201001282)

[1.3.9 Pros of Design Concept 9](#_Toc1520836271)

[1.3.10 Restrictions 9](#_Toc1629116760)

[1.4.0 Story 4: Lily Couture 9](#_Toc6317456)

[1.4.1 Selected Catastrophe 9](#_Toc958392572)

[1.4.2. Storyline/Overall Objective 9](#_Toc949556380)

[1.4.3. Secondary Objectives 10](#_Toc1579959773)

[1.4.4. Logistics 10](#_Toc1171634335)

[1.4.5. Sound Design 10](#_Toc1106393989)

[1.4.6. Environment Design 10](#_Toc408171256)

[1.4.7. Insurance of Education 11](#_Toc1737149655)

[1.4.8. Accessibility / Accommodations 11](#_Toc519495977)

[1.4.9. Pros of Design Concept 11](#_Toc1387921897)

[1.4.10. Restrictions 11](#_Toc1651193971)

[1.5.0 Story 5: Jiayi Zhang 11](#_Toc799262811)

[1.5.1 Selected Disaster 12](#_Toc237279048)

[1.5.2 Storyline/Overall Objective 12](#_Toc1105849742)

[1.5.3 Secondary Objectives 12](#_Toc1486862630)

[1.5.4 Logistics 12](#_Toc1888885775)

[1.5.5 Sound Design 12](#_Toc366408330)

[1.5.6 Environment Design 13](#_Toc906058736)

[1.5.7 Ensuring Educational Value 13](#_Toc786559957)

[1.5.8 Accessibility/Adaptation 13](#_Toc1045302085)

[1.5.9 Design Concept Advantages 13](#_Toc928428402)

[1.5.10 Limitations 13](#_Toc1926871808)

[2 Mixed Stories 14](#_Toc905765691)

[2.1.0 Mixed Story 1 14](#_Toc855649748)

[2.1.1 Selected catastrophe: 14](#_Toc2035420835)

[2.1.2 Storyline/overline objective: 14](#_Toc212220644)

[2.1.3 Secondary objectives: 15](#_Toc2002823365)

[2.1.4 Logistics: 15](#_Toc628833197)

[2.1.5 Sound design: 15](#_Toc578550809)

[2.1.6 Environmental design: 16](#_Toc1903659352)

[2.1.7 Insurance of Education: 16](#_Toc40252462)

[2.1.8 Accessibility/Accommodations: 16](#_Toc1789136481)

[2.1.9 Pros of design concepts: 16](#_Toc1218956049)

[2.1.10 Restrictions: 16](#_Toc859056892)

[2.2.0 Mixed Story 2 17](#_Toc1077321779)

[2.2.1 Selected catastrophe: 17](#_Toc998341266)

[2.2.2 Storyline/Overall objective 17](#_Toc217858204)

[2.2.3 Secondary Objectives 18](#_Toc1780878766)

[2.2.4 Logistics 18](#_Toc1423399604)

[2.2.5 Sound Design 18](#_Toc329771479)

[2.2.6 Environmental Design 19](#_Toc1283135968)

[2.2.7 Insurance of Education 19](#_Toc1206279690)

[2.2.8 Accessibility/Accommodations 19](#_Toc956260872)

[2.2.9 Pros of Design Concept 19](#_Toc1457692794)

[2.2.10 Restrictions 20](#_Toc218896063)

[2.3.0 Mixed Story 3 20](#_Toc1048245079)

[2.3.1 Selected Catastrophe 20](#_Toc151551942)

[2.3.2 Storyline/Overall Objective 20](#_Toc759103112)

[2.3.3 Secondary Objectives 21](#_Toc1384888310)

[2.3.4 Logistics 21](#_Toc72909650)

[2.3.5 Sound Design 21](#_Toc804084014)

[2.3.6 Environment Design 21](#_Toc1096307043)

[2.3.7 Ensuring Educational Value 21](#_Toc1319046855)

[2.3.8 Accessibility/Adaptation 22](#_Toc29034218)

[2.3.9 Design Concept Advantages 22](#_Toc2021410972)

[2.3.10 Limitations 22](#_Toc1172366731)

[3. Story Comparison Table 22](#_Toc287139390)

[4. Conclusion 24](#_Toc825686107)

# 1 Initial Story Ideas

These stories were generated by each group member individually.

## 1.1.0 Story 1: Philipe Rollin

### 1.1.1 Selected catastrophe:

* Tornado (Barrhaven tornado) – Inspired by (Tornado in Barrhaven damages about 125 homes | CBC News)

1.1.2 Storyline/overline objective:

* You’re sleeping on the couch in the Livingroom and left the TV on overnight. At one point during the night, you hear a loud noise coming from outside. You stand up and decide to open the blinds and see the house Infront of you (which is about 100 meters away from your house) get destroyed by this massive tornado. While this is happening, the TV is playing warning sirens about this huge tornado. His job is to not get panicky and wake everybody else in the house. His duty is to get them to the basement safely. He has a family of 4 and is determined to get everybody safe while this tornado is coming in hot. He must start by waking up his wife who can help him pick up the kids. Once the wife wakes up in panic, she goes to help him get the kids. Being in distress they get the kids on time and go to the basement. The tornado is about 15 meters away from the house and he realizes that he forgot his best friend Milo (his favorite pet). He goes upstairs and calls for his dog and hears his barks coming from the living room. He hurries and grabs his dog but fears that he might not make it to the basement in time. He either hides in the tub or goes in enclosed pantry (this could be where the user decides). Game ends.
* The point of this game is to test the user's decisions on what steps should be taken when a tornado hits and to get everyone to a safe place when a tornado occurs.

### 1.1.3 Secondary objectives:

* The simulation requires the user to make decisions and get everyone to safety. The user will be asked questions during the simulation of what they should do.
* Each of these decisions will be tracked and counted and at the end of the game will let you know how well you did

### 1.1.4 Logistics:

* Each decision (“?”) will pop up and must click on the right decision. Any decision you make will have a different outcome and the scene will switch to the next.
* You will be able to interact with objects doors, unlock pet cage, pick up the kids, opening of the blinds etc.
* A slight context will play before the simulation on the TV that goes over details from the Barrhaven Tornado, how it impacted neighborhoods, and how it is related to climate change. This way, the entire simulation can focus on procedure, instead of taking time to build up context.

### 1.1.5 Sound design:

* There will be sounds playing throughout the VR simulation of the kids crying and dog barking.
* The tornado sound will be exceptionally low since it is happening from a distance but once it gets remarkably close the sounds get louder which will be harder for the user to concentrate

### 1.1.6 Environmental design:

* This simulation is set in a 2-story house. The 2nd story consists of the bedrooms and the first floor like a normal home (kitchen, living room and bathroom). The story begins in the living room and will go through the 2nd floor and then the basement. Lastly, he went back in the living room to get his dog and hide in the pantry.
* Whatever the decision the users pick the outcome is different
* The surroundings are the house Infront of his which is about 100 meters away from him
* The landscape is nothing too special, it just looks like what Ottawa is.

### 1.1.7 Insurance of education:

* Each decision (“?”) will insure to be educational, for example if the user picks the wrong one there will be a brief explanation why it is wrong, but they must still play through it.
* The way to win this game is to get everybody to the basement and then get yourself and the dog to an enclosed pantry.

### 1.1.8 Accessibility/ Accommodations:

* Each decision will have a French and English menu
* Visual accessibility
  + High contrast (helps with visibility)
  + Subtitles and visual cues (TV having a big warning and on-screen text)
* Audio accessibility
  + Closed captions
  + If we can have vibration done to the controller to show danger or urgency
  + Spatial audio adjustment (for user’s comfortability)
* Mobility
  + Can be played sitting down or standing up
* Emotionality accessibility
  + A short introductory video of what will happen so users can decide to play or not
  + Have a button to exit the game if a user is not comfortable.

### 1.1.9 Pros of design concepts:

* Just need the tornado to be shown in one slide and the rest will be done in the house
* Easy to implement the decisions
* Engaging
* Accessible
* Emotionality accessibility
* Educational

### 1.1.10 Restrictions:

* Due to short amount of time and the experience that our team has some restrictions are to be probable:
  + To make a fully interactive game because of time constraint
  + To add sound effects in the background like the tornado wind and baby crying
  + To be able to pick up the kids
  + Having to make different outcome for each decision may not be probable

## 1.2.0 Story 2: Joshua Li

### 1.2.1 Storyline:

* The beginning of the simulation will feature the person waking up to a narrator asking them if they know about how to survive a tornado, specifically the Barhaven one.
* The narrator prattles on unbothered by the player’s inability to speak and says they better start moving because a tornado is coming.
* The narrator may also narrate over text boxes that pop up next to interactables. The backstory behind this is that you are thrust into a tornado disaster and must prepare to survive.
* The game ends when the player has completed finding all of their personal belongings.

### 1.2.2 Secondary Objectives:

* The narrator will be a third-party observer from above
* He will chime in with tornado advice if the player becomes stuck during a scene

### 1.2.3 Logistics

* Game area will generally consist of 3 areas, an intact house, the basement and the destroyed house.
* The narrator will urge the player to go and find certain salvageable items and will explain more aspects of climate change. The surrounding area is devastated once the player enters the basement and the tornado passes overhead.
* The house is a bungalow with a basement and the goal is to secure as many personal belongings as possible and reach the basement.

### 1.2.4 Sound design

* Sound design will come from stock ambient violent wind noises and maybe a little jingle when the player transitions from a loading screen or when they pick up a necessary item.
* During the transition from normal house to destroyed house, we must be careful to not include any sudden noises.
* Aim for more organic sounding noises like a crunching leaf rather than a car crash for sound design.

### 1.2.5 Accessibility

* The game should be compatible with people from the height of 5 ft to 7 ft to accommodate for any potential physical difficulties.
* French as an option should be considered last due to time constraints
* There will be a disclaimer for potential frightening depictions of a tornado and a pause menu if people don’t feel safe and want to leave the simulation.
* The way forward should be colored in either yellow, red or blue to indicate the way forward or new items.
* User interface should include colorblind options

### 1.2.6 Education Insurance

* The narrator's role in this is to guide the player and fill in on what can cause a future disaster.

## 1.3.0 Story 3: Camila Florez

### 1.3.1 Selected Catastrophe

- Tornado (Barrhaven tornado)

### 1.3.2 Storyline/Overall Objective

1. The user is in their home when the tornado starts and has to make two decisions so that they can get to safety. These decisions will also provide user with educational information about tornados and the typical procedure of getting to safety during tornados
2. The user will eventually get to safety and the scene will be very short (around one minute out of the three minutes)
3. Once safe, the second scene will appear, which is the user in their home the day after the tornado.
4. The user will make the decision to walk their dog or go to the grocery store, both of these decisions will lead to the same place. The decision is there to make the simulation more interactive
5. User will arrive on a road where people are cleaning up from the tornado and the user will interact with the people to help them
6. The simulation will end with some information about how long the clean up and repair after a tornado can take and how that can affect a persons daily life.

### 1.3.3 Secondary objectives

1. Interactivity: The user will have to interact with objects which will have “?” over them. When pressed, these objects will display the decisions.
2. Education: When a user selects an option, information about tornados and safety procedures will be displayed. The information will be in small bodies of text so that the user doesn’t get overwhelmed.

### 1.3.4 Logistics

1. For decisions to be displayed, users will have to press objects with a “?” icon floating over them.
2. Once selected, a menu with different options will appear. Each of the buttons will lead to a small body of test with educational information.

* Some decisions will be only for interactive purposes, these will not lead to any information
* Some decisions will have correct and incorrect options. If the incorrect option is chosen, a body of test will appear explaining why the decision is incorrect, then the user will be brought back to the menu with all the decision options.

### 1.3.5 Sound Design

Scene 1:

The sound won’t be very intense because the user will be inside their house but there will be some quiet sounds.

* Rattling windows
* Wind
* Occasional crashes from outside (these will not be loud or startling)
* Barking dog

Once the user gets to the basement, these sounds will go silent

Scene 2:

* Nature sounds
* Leaves crunching
* Birds
* Light wind
* People talking (once the user gets to the road with the people)

### 1.3.6 Environment Design

Scene 1:

The user will be in a very simple house. It will have one floor and a basement. The first floor will have a kitchen, a bedroom, and a laundry room with no windows. The basement will be small, grey, and fairly empty.

Scene 2:

The outside of the house will be the country. There will be a main road right beside the house with forest on both sides. An open field with some trees in the distance will surround the rest of the house.

### 1.3.7 Insurance of Education

The decision making and the information texts will ensure education

### 1.3.8 Accessibility/Accommodations

1. Closed captions
2. Voice over for the information text
3. Large font for text
4. Adequate contrast for text
5. English and French options for the text

### 1.3.9 Pros of Design Concept

1. Interactive
2. Educational
3. Provides the user with information about how their life would be affected both during and after the catastrophe
4. Not too dramatic or negative. The user gets the option to interact with other characters to help clean up after the tornado.

### 1.3.10 Restrictions

1. Our team has no background with unity or VR
2. There are multiple scenes which will make the project more complicated
3. The simulation might be too long due to the two scenes and all the reading that the user must do when making decisions
4. The bilingual option would make the software more complicated

## 1.4.0 Story 4: Lily Couture

### 1.4.1 Selected Catastrophe

Tornado (Barrhaven tornado) – Inspired by (Tornado in Barrhaven damages about 125 homes | CBC News)

### 1.4.2. Storyline/Overall Objective

* You’re home alone inside of your house when you get an alert on your phone about a tornado warning that’s imminent. You panic and try to remember what to do in these situations. You read the alert details to try and better understand what it is that you need to do. First, you need to gather all the members of your household. Currently, it’s just you and your dog, Benny. So, as trees fall and debris whips around outside, you search inside of your house for Benny. You eventually find him hiding in the upstairs closet, and the two of you quickly make your way to the basement and take cover until the storm passes.
* To win the game, you must find Benny and get to the basement before the “Tornado timer” becomes zero. Otherwise, you fail and must try again.

### 1.4.3. Secondary Objectives

* The entire simulation requires the user to search throughout the house for Benny. As they work their way through the house, small “!” will mark important features. Eventually the tornado itself is visible within one of these “insights”.
* Each one of these “insights” are tracked and counted and must all be examined to beat the game to its full extent.

### 1.4.4. Logistics

* All objectives will be indicated on the side of the screen as they are introduced. All interactive “!” elements use buttons to transition to a new scene (a closer view of the element in question).
* A tracker in the top corner indicates how many “insights” have been found, and a map (like the one on the alert app) another in the bottom corner of the screen shows how much longer the user has before the tornado reaches their location (2 minutes and 30 seconds).
* Context for the simulation will be playing on a slideshow that users can examine before the simulation, that goes over details from the Barrhaven Tornado, how it impacted neighborhoods, and how it is related to climate change. This way, the entire simulation can focus on procedure, instead of taking time to build up context.

### 1.4.5. Sound Design

* Sound effects will be muted since the catastrophe is happening outside of the home, and not inside.
* Benny’s barking will slowly get louder/quieter the closer you are to his location, so that the user can find him easier

### 1.4.6. Environment Design

* The “set” is a 2-story house, where the first story is where the story begins, and Benny is hiding in one of the back bedrooms.
* Once Benny and all the “insights” are found, the door to the basement becomes accessible - Surroundings can be anywhere, though a neighborhood is more accurate to the historical event.
* Landscape outside of the house closely resembles Ottawa landscape in summer

### 1.4.7. Insurance of Education

* The “insights” will provide the user with educational information.

### 1.4.8. Accessibility / Accommodations

* All sounds will have a closed captioning description. When Benny barks, there will be a visual indication as well on the screen to show the direction to go.
* Captions will have both EN/FR translations (time permitting)

### 1.4.9. Pros of Design Concept

* Does not require much animation for the tornado itself if not necessary
* For the most part is quite easy to establish the set
* Is not complicated for the user to understand - Uses basic buttons and scene switches - Accessible
* Engaging
* Educational
* Not dramatizing, but putting intense elements in play to cause the user to feel something

### 1.4.10. Restrictions

* Based on the groups level of expertise on Unity, it may be difficult to engage some of the proximity features (like the sound of Benny’s barking depending on how close you are to his location)
* It also may be difficult to get proximity requirements, such as knowing where the user is inside of the simulation relative Benny.
* It may be difficult to encourage users to take the time to read the “insights” if they are rushing to find Benny. Perhaps it’s worth finding a way to time each one of them, to force them to read what is on the screen.
* It may be difficult to have the door “appear” when all the components are found, so it may need to be mandated to the users that they MUST find all the “insights” before they can enter the basement of the house.

## 1.5.0 Story 5: Jiayi Zhang

### 1.5.1 Selected Disaster

Tornado (Oklahoma, USA)

### 1.5.2 Storyline/Overall Objective

1. The user is an ordinary resident at home when they receive a tornado warning.
2. Due to climate change, extreme weather events have become more frequent, and the user must decide how to respond to the storm.
3. The user has two main choices: immediately go to a shelter or find a safer place within their home.
4. Different sheltering choices will lead to different outcomes, with some options being more dangerous than others.
5. After the tornado passes, the user faces the reality of a damaged community and must decide how to help neighbors or begin recovery efforts.

### 1.5.3 Secondary Objectives

1. Interactivity
2. Education
3. Sense of realism
4. Awareness of post-disaster recovery

### 1.5.4 Logistics

1. The user clicks on objects with a “?” icon to access relevant information or make choices.
2. Some decisions only serve to enhance interactivity without additional information.
3. If the user makes an incorrect decision, an explanation will be shown, and they will have the opportunity to choose again.

### 1.5.5 Sound Design

Scene 1 (Receiving the Warning):

* Emergency alert sounds from TV or mobile phone
* Distant thunder and wind sounds
* Everyday household noises

Scene 2 (Tornado Strikes):

* Intense storm wind sounds
* Windows rattling and breaking
* Objects being blown away

Scene 3 (Post-Disaster Recovery):

* Cleanup sounds on the street
* Neighbors talking and helping each other
* Rescue workers giving instructions

### 1.5.6 Environment Design

Scene 1: A regular home, including a living room, kitchen, and bedroom.

Scene 2: The tornado hits, causing partial house damage and a chaotic outdoor environment.

Scene 3: Streets filled with fallen trees and broken utility poles, with neighbors helping each other.

### 1.5.7 Ensuring Educational Value

Decision-making processes and information prompts help users understand how to stay safe during a tornado and respond after the disaster.

### 1.5.8 Accessibility/Adaptation

1. Option to enable or disable subtitles.
2. Large font size for readability.
3. Available in English and Chinese.

### 1.5.9 Design Concept Advantages

1. Gives users realistic experience of making decisions during extreme weather events.
2. High interactivity helps users learn effective disaster response strategies.
3. Realistic community recovery scenarios enhance engagement.

### 1.5.10 Limitations

1. No experience with climate disaster simulations.
2. Multi-scene and interactive design increases development complexity.

# 2 Mixed Stories

These stories will take different components from each story to create a better version.

## 2.1.0 Mixed Story 1

### 2.1.1 Selected catastrophe:

* Tornado (Barrhaven tornado) – Inspired by (Tornado in Barrhaven damages about 125 homes | CBC News)

### 2.1.2 Storyline/overline objective:

* You are at home and when an emergency alert flashes on your phone. This alert says that there is a big tornado coming towards your area where you live. Panic sets as you try to recall the proper safety procedures. You quickly realize that it is just you and your dog, Benny, and you must act fast. With debris flying outside and windows rattling, you navigate the house trying to find Benny while making critical safety decisions.

* Once you find Benny upstairs, you both rush downstairs to the basement and get there just in time before the tornado strikes. The storm shakes the house and then silence falls. When it is over, you emerge into a world transformed with trees falling on the ground, damaged homes, and neighbors in need of help.

* Now you must decide how to contribute to the aftermath of a tornado. You either choose to assist with the cleanup, help your Neighbours or gather supplies. Each choice offers insights into disaster recovery efforts and long-term impacts of climate change.

* The experience concludes with an overview of real tornado aftermaths, the time it takes for communities to recover, and how extreme weather events are becoming more frequent due to climate change.

### 2.1.3 Secondary objectives:

* Interactivity: The user will have to interact with objects which will have “?” over them. When pressed, these objects will display the decisions.
* Education: When a user selects an option, information about tornados and safety

procedures will be displayed.

* Sense of realism: The simulation will be realistic and not overexaggerated
* Awareness of post-disaster recovery: Users will understand and learn the procedures to take when a tornado hits.

### 2.1.4 Logistics:

* When the user interacts with the objects with the logo “?”, the decisions will be displayed

* Once selected a list of 2-3 decisions will be listed. Each of these decisions will have an educational background
  + Some decisions will be only for interactive purposes, these will not lead to any information - Some decisions will have correct and incorrect options. If the incorrect option is chosen, a body of test will appear explaining why the decision is incorrect, then the user will be brought back to the menu with all the decision options.
* The context for the simulation will be played on a slideshow that users can examine before the simulation, that goes over details from the Barrhaven Tornado, how it impacted neighborhoods, and how it is related to climate change. This way, the entire simulation can focus on procedure, instead of taking time to build up context.

### 2.1.5 Sound design:

* Benny’s barking will slowly get louder/quieter the closer you are to his location, so that the user can find him easier
* There will be some sounds of windows rattling, wind noises and some nature sounds (these sounds will not be overwhelming)
* Your Neighbours talking

### 2.1.6 Environmental design:

* The user will be in a very simple house. It will have one floor and a basement. This house consists of a kitchen, living room, 2 bedrooms and a bath. The basement will be dark since there is no power.
* Landscape outside of the house closely resembles Ottawa landscape in summer
* Partial house damage and a chaotic outdoor environment (fallen trees, broken home, etc.).

### 2.1.7 Insurance of Education:

* The decision making and the information texts will ensure education

### 2.1.8 Accessibility/Accommodations:

* Closed captions
* Voice over for the information text
* English and French options for the text
* Option to enable or disable subtitles.
* Spatial audio adjustment (for user’s comfortability)
* Can be played sitting down or standing up
* Emotionality accessibility
  + A short introductory video of what will happen so users can decide to play or not
  + Have a button to exit the game if a user is not comfortable.

### 2.1.9 Pros of design concepts:

* It gives users realistic experience of making decisions during extreme weather events.
* High interactivity helps users learn effective disaster response strategies.
* Realistic community recovery scenarios enhance engagement.
* Accessible
* Engaging
* Educational
* Not dramatizing, but putting intense elements in play to cause the user to feel something

### 2.1.10 Restrictions:

* Our team has no background with unity or VR
* It may be difficult to engage some of the proximity features (like the sound of Benny’s barking depending on how close you are to his location)
* Multiple scenes to implement in a short amount of time given
* The bilingual software would be very hard to complete
* Difficulty of making every scene interactive

## 2.2.0 Mixed Story 2

### 2.2.1 Selected catastrophe:

* Tornado (Barrhaven tornado) – Inspired by (Tornado in Barrhaven damages about 125 homes | CBC News)

### 2.2.2 Storyline/Overall objective

1. The user wakes up as the character. They are in their bedroom and the TV is on. The TV displays an alert about an approaching tornado.
2. The TV will have a person on the screen. This person instructs the character to find their dog and a few objects and go to the basement.
3. The user will have two minutes to navigate their house to find the objects and make their way to the basement.
4. Each object that the user finds will provide them with information about the relationship between tornados and climate change. The number of objects that the user finds will be counted and displayed in one of the corners of the screen.
5. Once the user has found at least half of the objects, the door to the basement will “unlock” allowing them to attempt to get inside.
6. When the user presses the button to enter the basement, a question testing their knowledge will appear. When the question appears, one of three scenarios can occur:
7. The user gets the question correct. If the answer is correct, the user will enter the basement and be safe.
8. The user gets the question incorrect and has not found all the objects. If this is the case, a message prompting the user to go find the rest of the objects before trying again will be displayed
9. The user gets the question incorrect and has already found all the objects. In this case, the correct answer with an explanation will be displayed on the screen. The user will be let into the basement.
10. Once the user is in the basement, or if the timer runs out before the user enters the basement, the screen will go black, and the next scene will begin.
11. The user is outside the next day and has the option of helping clean up the street or helping collect food and resources for those that lost everything during the tornado.
12. A person will show up and give some final information and the simulation will end

### 2.2.3 Secondary Objectives

1. Interactivity

* The user will interact with objects in the house
* The user will interact with people in the second scene
* The user will answer questions to be able to pass between scenes
* The user will navigate through the first scene

1. Educational

* The text that appears when the user selects an object will educate the user about climate change
* The visuals will show the user how life after a tornado can be
* The story will educate the user about a real scenario that could occur due to climate change

### 2.2.4 Logistics

1. Interactive objects that provide information only will have a “!” icon hovering over them.
2. Text will be narrated by the same voice from the TV.
3. Interactive objects that require the user to answer a question or make a decision will have a “?” icon hovering over them.
4. The tornado timer will be a minute and a half or two minutes.
5. The scene switch will occur automatically if the timer runs out. Or, if the user gets to the basement, the scene will switch. This way the user will have the opportunity to learn about the aftermath of a tornado regardless of whether or not they "win.”

### 2.2.5 Sound Design

Scene 1:

* Alert sound from the TV
* Narration from the TV and from the informational text provided from the objects
* Tornado sounds: wind, rattling windows, crunching leaves. These sounds will gradually get louder as the timer approaches 0.
* Barking dog
* The tornado sounds will go silent when the user reaches the basement or when the scene switches if they don’t reach the basement.

Scene 2:

* People talking
* Calm outdoor sounds (birds, light wind, rustling leaves)

### 2.2.6 Environmental Design

Scene 1:

* Small house with one floor
* Front door, living room, kitchen, bedroom (in that specific order)
* Basement door will be in the living room
* Basement is a small, simple, grey room

Scene 2:

* The user will be looking from their front door, and they will see a simple city
* A few buildings
* Fallen things
* People cleaning up

### 2.2.7 Insurance of Education

1. Questions asked of the user
2. Decision making
3. Narrated text boxes when the user selects an object

### 2.2.8 Accessibility/Accommodations

* A short disclaimer will be given before the simulation so that no user gets scared
* An exit button will be provided to the user
* Closed captions for any narration
* Proper contrast and font size for any text
* Adjustable audio and brightness
* Bilingual (if time permits)

### 2.2.9 Pros of Design Concept

* Interactive and educational (Decisions, questions, object selection)
* Scene 1 is timed so the simulation won’t run long
* The situation will be realistic and not very harsh/scary’
* Will teach the user about how climate change will affect them DURING and AFTER the catastrophe.

### 2.2.10 Restrictions

* The story is slightly complicated
* Our team has no background with this kind of software
* There are multiple scenes and many interactions which might not be possible to employ considering the time and experience constraints
* There is no way of ensuring that the user is reading the information instead of just powering through the game and trying to “win”.

## 2.3.0 Mixed Story 3

### 2.3.1 Selected Catastrophe

• Tornado (someplace)

### 2.3.2 Storyline/Overall Objective

1. The user is at home when they receive a tornado warning. Due to climate change, extreme weather events have become more frequent, and the user must decide how to respond to the storm.
2. The user has two major choices: immediately seeking shelter or attempting to gather emergency supplies before taking cover.
3. Depending on their choice, the user will face different challenges, such as finding shelter in time, avoiding dangerous locations, or ensuring their loved ones' safety.
4. The user will eventually get to safety and the scene will be very short (around one minute out of the three minutes)
5. Once the tornado passes, the user emerges to see a damaged community, where they must decide whether to assist with recovery efforts or secure personal resources first.
6. The user interacts with others in the community, such as neighbors and rescue teams, to help rebuild and understand the long-term effects of tornadoes.
7. The simulation ends by providing real-world data on tornado recovery times and climate change's impact on increasing disaster severity.

### 2.3.3 Secondary Objectives

1. Interactivity – Users will interact with objects marked with a “?” icon to make decisions and learn more about tornado preparedness.
2. Education – Each choice provides educational information on tornado safety and post-disaster response.
3. Sense of Realism – User decisions impact the environment, affecting community recovery and future risks.
4. Awareness of Post-Disaster Recovery – Users gain insight into the long-term challenges communities face after a tornado.

### 2.3.4 Logistics

1. The user clicks on objects with a “?” icon to access relevant information or make choices.
2. Some choices are purely for interactivity, while others provide valuable safety tips or impact the storyline.
3. Incorrect choices trigger explanations and allow the user to reconsider their decision.

### 2.3.5 Sound Design

Scene 1 (Receiving the Warning): • Emergency alert sounds from TV or mobile phone • Distant thunder and wind sounds • Household noises

Scene 2 (Tornado Strikes): • Intense storm wind sounds • Windows rattling and breaking • Objects being blown away

Scene 3 (Post-Disaster Recovery): • Cleanup sounds on the street • Neighbors talking and helping each other • Rescue workers giving instructions

### 2.3.6 Environment Design

Scene 1: • A standard home, including a kitchen, bedroom, and basement or safe room.

Scene 2: • The tornado hits, causing partial structural damage, debris flying, and chaos outside.

Scene 3: • A neighborhood filled with fallen trees and broken infrastructure, with people assisting each other in the cleanup process.

### 2.3.7 Ensuring Educational Value

• Decision-making prompts provide information on staying safe and responding effectively to disasters.

• Post-disaster recovery decisions highlight how rebuilding efforts can be impacted by preparedness.

### 2.3.8 Accessibility/Adaptation

1. Subtitles can be enabled or disabled.
2. Large font options improve readability.
3. Voice over for the information text
4. Available in English, French, and Chinese.
5. High contrast visuals for accessibility.

### 2.3.9 Design Concept Advantages

1. Provides a realistic experience of decision-making during a tornado emergency.
2. Highly interactive, helping users develop better disaster preparedness strategies.
3. Enhance engagement by showcasing realistic recovery scenarios and community efforts.
4. Educational.
5. Provides the user with information about how their life would be affected both during and after the catastrophe.
6. Not too dramatic or negative. The user gets the option to interact with other characters to help clean up after the tornado.

### 2.3.10 Limitations

1. Limited experience in developing climate disaster simulations.
2. Multi-scene structure increases development complexity.
3. Bilingual and accessibility options require additional implementation efforts.
4. The multiple language options would make the software more complicated

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Design Criteria | Importance | Mixed story 1 | Mixed Story 2 | Mixed Story 3 |
| Selected Disaster | 1 | Barhaven Tornado | Barhaven Tornado | Tornado (someplace) |
| Storyline | 2 | Player has to find dog and enter basement. Then they go help community with cleanup | Player has to become a quizmaster and enter a basement | User has choice between shelter or packing up. Then they go help with cleanup |
| Secondary Objectives | 2 | Interactivity and education about tornado procedures  Realistic Simulation | Interactivity with objects, people and quizzes | Realism, education and awareness |
| Logistics | 1 | Have “?” icon over decisions. 2-3 will be listed  Context on slideshow for players | Have a “!” or “?”icon over special objects | Have “?” icon with interactables |
| Sound Design | 2 | Neighbours talking  Proximity based noises for dog  Ambient window shaking | Gradually louder tornado sound and ambient noises | Ambient tornado noises  Big storm sounds  Neighborly chatter |
| Environmental Design | 3 | Bungalow with basement  Outside looks like summer | Small house to basement to outside lawn | Normal house with basement  People outside assisting with cleanup |
| Insurance of Education | 3 | Decision making and info texts | Questioning user for info they retain | Decision making  Post recovery decisions |
| Accessibility | 3 | CC, Voice over, English and French  Spatial audio, Can play setting or standing | Disclaimer and exit | CC  Large fonts  Voice over  English French and Chinese  High contrast visuals |
| Total Score |  | 46 | 26 | 43 |

# 4. Conclusion

The final outline of the project is one where the story is based of the Barhaven tornado, where the main objective for the first half is to find a lost dog in the house whilst being informed about tornado safety procedures. A question mark icon will appear in front of interactable as to guide the player through the level and the background to the disaster will be shown through a slideshow. The sound design will be loud enough to simulate a storm but not as sudden as to not scare the player. The second level will consist of community cleanup where the user will achieve objectives during the aftermath of the cleanup. The info will be educational through info boxes and decision making. Accessibility options will include subtitles, an English and French option, spatial audio, high contrast visuals and the ability to play sitting or standing.