

In My Shoes Final Report



CS3216 Group 12

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Application Description

In My Shoes is an interactive, immersive simulation that depicts the daily life of various characters and the challenges they face. It aims to promote empathy and raise awareness on inequality. Players play as a character and virtually 'live' through various scenarios in their shoes, experiencing the choices and challenges that the characters encounter. The simulation also serves as an pre-discussion activity in empathy workshops conducted by our partner organization, Soristic.

The simulation is similar in format to the point-and-click genre of games, and can be played in the browser, at: <https://simulation.inmyshoes.asia/youth>. Gamified features like dialogues, a points system, collectible badges, sound cues, and more are used to make the experience more engaging. Both desktop and mobile play are supported. Some sample screenshots can be seen below:

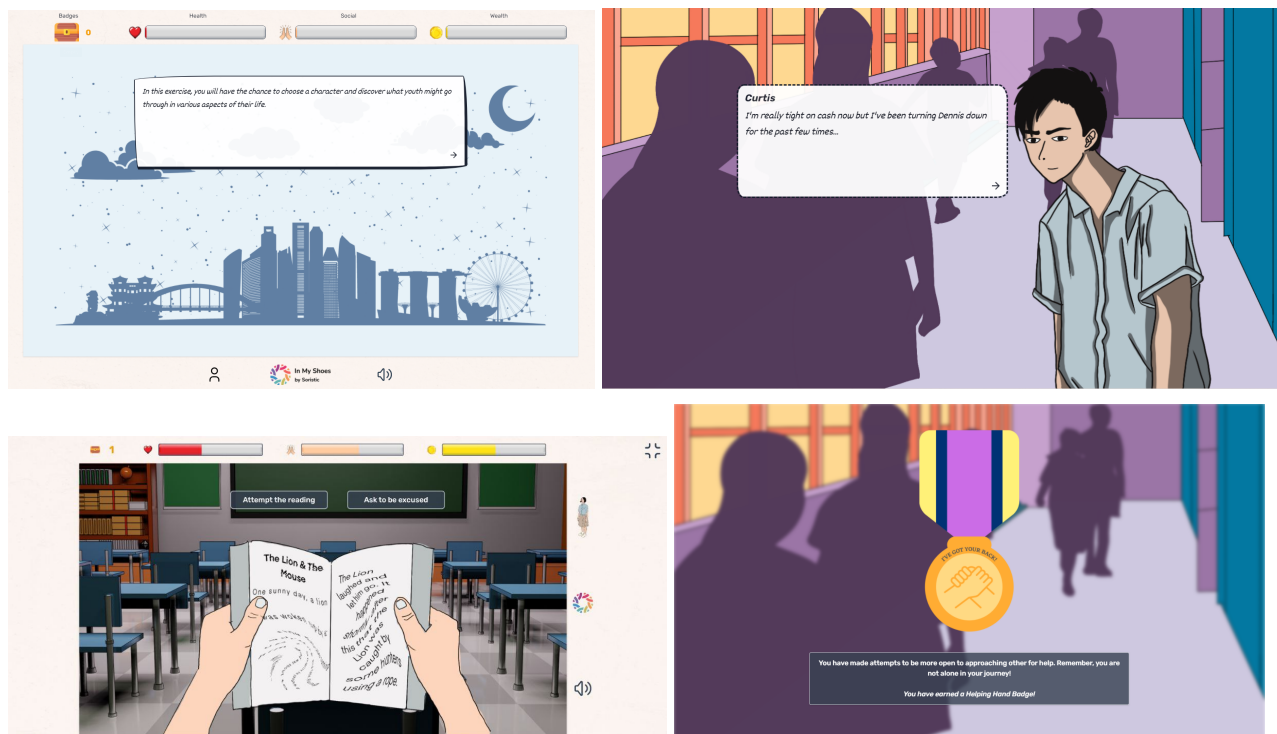


Fig 1. Screenshots of the simulation

User Profiles

Soristic's workshops (and by extension, the simulation) are primarily targeted at youths in Singapore, such as secondary and tertiary students. Based on feedback from past workshops, Soristic has indicated that these youths prefer the simulation to be more engaging and visually appealing. They also intend to eventually extend these workshops to primary school students, where interactivity is even more important.

Besides its use in workshops, In My Shoes is also available as a standalone simulation that anyone can access online. There is thus a need for individual users to quickly understand how to use the simulation and what they need to do.

Our last stakeholder is Soristic itself. As authors of the story behind the simulation, writers at Soristic are mostly non-technical people that need a way to easily update or expand on the existing story content, with minimal assistance from developers or dealing with program source code.

Market Research & Product Differentiation

There are two major aspects to our project. First, we have a simulation, which belongs to the intersection of visual novels and interactive adventure games. Next, we also have an underlying game engine, which runs the simulation based on a configuration file, allowing the story authoring process to be low-code/no-code.

In terms of the simulation experience, there are existing online & PC games that make use of the similar text-adventure based structure to impart lessons behind their cause. For example, SPENT¹ and Depression Quest² are two such games.

We plan to stand out from these games by offering stories in a local Singaporean context. These stories are carefully crafted by writers at Soristic after numerous interviews with people from all walks of life. This allows our message to hit close to home, achieving a greater impact among our target users.

In terms of the low-code game development engine, there are also existing products such as Ren'Py³ and GDevelop⁴. Such products could in theory be used to help us develop the In My Shoes simulation.

However, we chose not to use these products and create our own engine, primarily because we wanted to ensure that the features of the simulation were tailored exactly to Soristic's needs. We wanted to avoid a situation where we could not easily implement a feature due to limitations of the underlying framework/engine. Thus we set out to build the game engine from scratch, with the ability to extend to an arbitrary no low-code game creator as a bonus.

¹ <https://playspent.org/> Spent is an online game about surviving poverty and homelessness. It was created by ad agency McKinney for their pro bono client Urban Ministries of Durham, whose mission "is to provide food, clothing, shelter and supportive services to neighbors in need".

² <http://www.depressionquest.com/> Depression Quest is a 2013 interactive fiction game dealing with the subject of depression.

³ <https://www.renpy.org/> The Ren'Py Visual Novel Engine is a free software game engine which facilitates the creation of visual novels.

⁴ <https://gdevelop-app.com/> GDevelop is a 2D cross-platform, free and open-source game engine, which mainly focuses on creating PC and Mobile games, as well as HTML5 games playable in the browser.

Review of Project Milestones & Timeline

We have attached our proposed timeline as follows:

Date	Engineering Timeline	Non-Engineering Timeline	Soristic Timeline
Oct 13	-	Progress Report 1 review	Finish story content for Belinda and Arthur
Oct 15	Implement character select & credit screen Implement basic sound effects & other UX fixes	Complete Internal Game Testing Session 1 Adapt Belinda & Arthur story to JSON	-
Oct 18	Implement wildcard event system	-	Finish art assets for Curtis Finish art assets for Belinda
Oct 20	Implement slide navigation system for character info Implement more featured transitions, ie. transitions between scenes.	Integrate Curtis and Belinda art assets into game	-
Oct 23	Write documentation for JSON schema for game authors	Complete Game Testing Session 2, ideally with external parties Begin marketing the game on social media	-
Oct 25	-	Complete Progress Report 2	-
Oct 28	Fix outstanding bugs and address user feedback	-	Finish art assets for Arthur
Nov 1	Fully featured game completed	Complete in-class Progress Report	-
Nov 5	-	Prepare STePS poster	-
Nov 6	-	-	Soristic conducting a workshop with NYC, ideally with the full game with 3 characters
Nov 10	Final adjustments based on user feedback	Complete STePS preparation	-
Nov 21	-	Final Report	-

In accordance with the plan, we managed to complete most of the milestones on time. The required design assets were delivered by Soristic accordingly and requests to update some of the images were handled promptly. Our steady progress allowed us to iterate on our design and receive weekly feedback from Soristic to improve the application further.

There were some delays to certain tasks, and we explain the reasoning below:

1. Adapt Belinda & Arthur story to JSON. After we established the game engine and created some examples, we were supposed to transfer the written story for Belinda and Arthur to the configuration file. However, we then realized that the story authoring process required more effort than expected because of the customizability of the engine. After we had completed the expected JSON format story for Belinda, we decided to hold off adding other characters until the art assets were ready. This decision was made so as to not waste time in crafting the scenes with placeholder images. In the meantime, having one character ready to play was sufficient for testing purposes.
2. Begin marketing the game on social media. We started to plan out our marketing strategy according to the timeline. However, we delayed the start of the giveaway contest and other social media postings due to two reasons. First, we put our focus on polishing our application by making it mobile friendly and we added a landing page to introduce the simulation. Secondly, in view of STePS happening on 10 November, we thought that it would be more impactful to start our campaign in the two weeks just before the event. This way, we could build up the contest over the two weeks, publicize it during STePS, then announce the winners at the end of the STePS event.

Contribution & Roles

Group Work

- Conducting social media contest
- Prepare publicity materials
- Conduct playtesting sessions
- Come up with the configuration file JSON schema

Individual

Huang Weijie

- Game store and states
- Image elements
- Game actions logic
- Conditional logic
- Wildcard logic
- Badges

Liu Yongliang

- Clickable elements
- Character selection
- Belinda storyline JSON
- Animations and sound effects
- Landing page

Ng Shi Wei

- Dialogues
- Header display for states (health, wealth etc.)
- Curtis storyline JSON

Tan Wei Liang

- Narrations
- Arthur storyline JSON
- JSON format documentation for Soristic

External Parties (Soristic)

- Story content development
- Design assets (Character & Background images)
- Feedback and Testing

Our partnership with Soristic involves us handling the technical aspects such as the game engine, game logic and game elements, and Soristic providing the content and graphic assets. Although we mostly handled the programming, we were also actively involved in other decisions, such as art direction, art asset decisions, and the storyline.

Meetings with Soristic were held once a week to discuss the game's progress and share feedback for both sides of development. Separate internal meetings within the team were also held once a week to plan the tasks to complete after the milestones were decided with Soristic. For the most part, development of the content was focused on the character Curtis, as changes to the game mechanism and addition of gameplay elements like game states and wildcards required changes to the JSON schema. The other characters, Belinda and Arthur, were added when the JSON schema was mostly finalized.

Aside from development, Soristic also provided support for our marketing efforts such as advising us on our marketing plans and providing us the platforms and prizes for executing our plans.

Application Design

Design Goals

The following design goals guided our application design:

1. The simulation should be easily accessible on all devices, since Soristic would be using the simulation in their workshops for potentially a variety of audiences.

2. The content needs to be easy to update for non-technical staff, as Soristic has plans to update the game content based on feedback. Given enough time, a visual editor could also be considered, to make the authoring process even easier.
3. Soristic should be able to easily create new simulations in the future, as they have expressed plans to do so.
4. It should be relatively simple to add new features to the simulation to support any requests that Soristic may have in the future.

Given these goals, we made the following high-level application design decisions:

Using Web Technology

To allow the simulation to be easily accessible on all devices, we decided to have it be a web application. This allows any user to quickly access the game via a link on any device. Since most users would likely only access the game once, a downloadable game like an native app or PWA would be an unnecessary hassle. The entire simulation can run in the user's browser, thus no server is required.

Having a Separate Game Engine and Story Configuration File

To allow Soristic to easily update the game and create new simulations, we decided to separate the game engine and the story configuration file. The game engine reads the configuration file to initialize the game. This way, when the game requires updates, only the configuration file needs to be edited and re-deployed. Also, new configuration files can be created for any new simulation that Soristic wants to create. Lastly, having a separate configuration file with a well defined schema also makes it easier to create additional tools like visual editors for the simulation.

We decided to use JSON for the configuration file as it is relatively human readable and simple for the game engine to parse and read. As mentioned above, we decided to create our own engine instead of using an existing one as we wanted to ensure the features could meet Soristic's needs.

Game Engine Design

Below is a rough diagram detailing the high-level design of our custom game engine. The main purpose of the diagram is to give a high level view of how the engine works, and thus it is highly simplified with some details omitted.

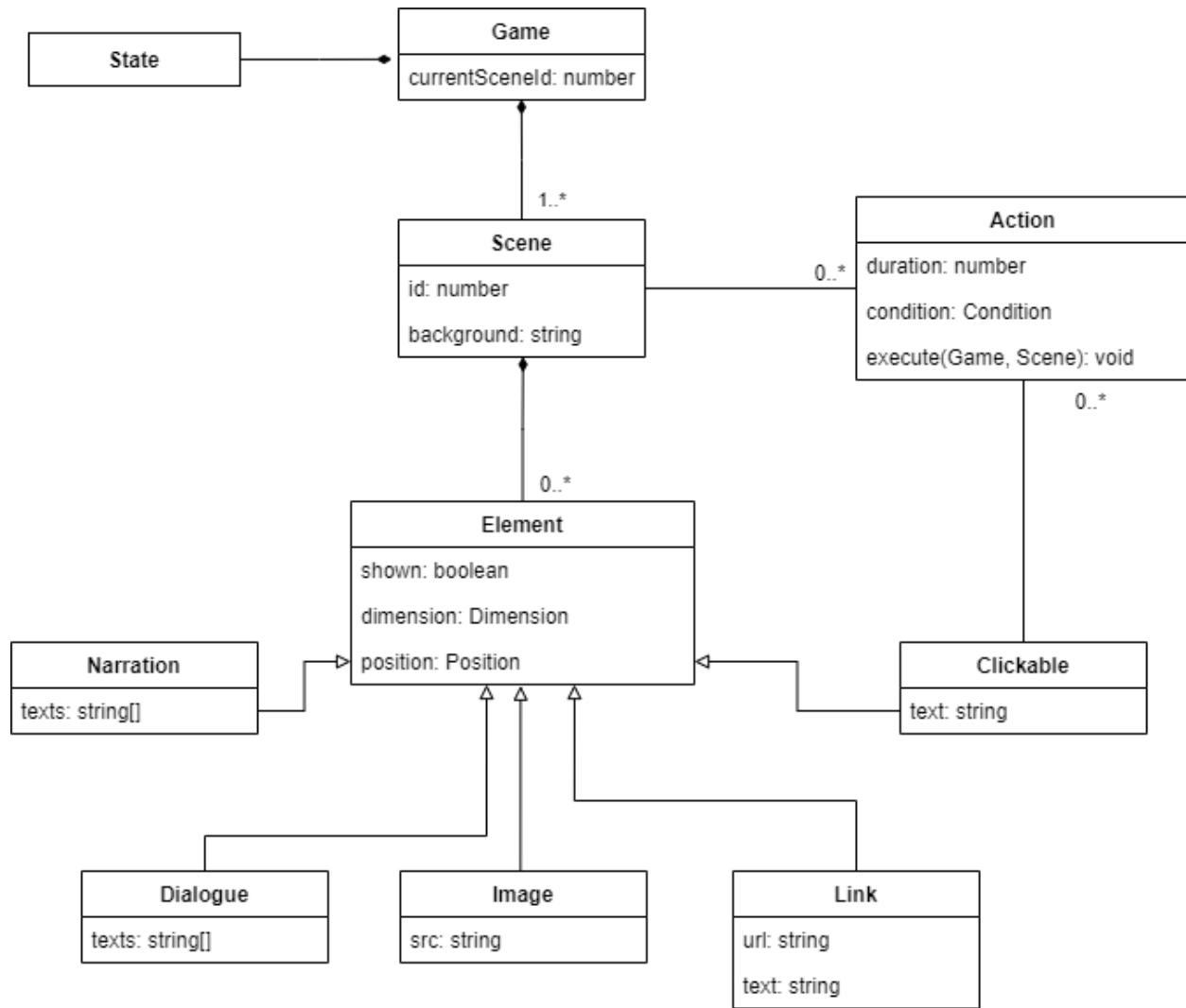


Fig 2. High level design of game engine

High-Level Overview

The game consists of a set of image and story assets defined in the JSON configuration file. The configuration file also defines how these assets are composed together, and the possible interactions that can affect the story. When the game engine starts, it reads the JSON configuration file and renders the appropriate assets onto the screen. A game can also contain some user defined **state**, which allows the game to support more complicated logic.

Scenes

A game consists of a sequence of **scenes**, where only 1 scene is displayed at a time. Each scene is essentially a stage in the game with a common background image. On top of the scene, various other gameplay **elements** such as character dialogue can be displayed. Additionally, when a scene is first displayed, a sequence of events called **actions** can be run, for gameplay purposes. More details on actions can be found below. All this can be defined in the configuration file.

Elements

As mentioned earlier, **elements** are constructs that are displayed on top of a scene for various gameplay purposes. An element has a general interface, where every element can be shown or hidden, and should have a dimension and position to define their placement on a scene.

However, we have a set of specific elements that correspond to common gameplay features. Each specific element extends the base element interface and adds its own custom functionality. This way, custom elements for various specific gameplay use cases can be easily added. Also, complicated functionality can be encapsulated by the elements, and does not need to be specified in the configuration file.

Some current elements include:

Narration elements display a list of texts in sequence to the players of the game. The narration element includes behaviour to navigate backwards and forwards through the display of the list of texts, and includes a text-box like background to display the narration on.

Dialogue elements are similar to narration elements but also include the image of the character speaking, and have a different text-box style.

Image elements display arbitrary images and **link** elements display links to another URL.

Clickable elements can trigger a sequence of actions when clicked, similar to the sequence run when a scene is first displayed. This allows for higher levels of interactivity.

Actions

An **action** is an event that can update certain properties in the game or current scene. For example, an action can toggle the visibility of an element, change the current scene, or update the game state. As mentioned earlier, sequences of actions can be triggered when a scene is first displayed, or in response to a click on a clickable element.

Each action can have a duration specified, which indicates how long the game engine will wait until the next action in sequence is run. Each action can also define a condition, allowing certain actions to be run only when the condition is met. Finally, each action has their own implementation of an `execute` method, which defines how the action should update the game. An action for a new use case can simply be defined by implementing a new `execute` method. The actions are thus extremely extensible, and 23 different actions have been defined so far.

Using the primitives of elements and actions, the general game flow can be defined, ie. first showing a dialogue when a scene is displayed, then displaying a set of choices, where each choice may navigate to a different scene.

Marketing Efforts

Social Media

As with most other project groups, we planned out a series of social media posts to be published on channels such as Facebook and Instagram.

However, instead of starting from a completely fresh Facebook page or Instagram account, we made use of Soristic's existing social media pages which already have some followers. This allowed us to reach out to more users within the limited timeframe of the project.

Giveaway Contest

As part of our social media marketing campaign, we organized a simple giveaway contest over the 1-2 weeks leading up to STePS. To participate, participants need to play the In My Shoes simulation, take a screenshot of it and post a brief reflection on Soristic's page. Then, a winner with the most thoughtful reflection would be selected, as well as a few other randomly selected entries.

Soristic has kindly sponsored the prizes for this giveaway, including Grab vouchers and pouches designed by Soristic.

Final Project Video

As part of our preparation for STePS, we create a one minute video to introduce our project. The video is available at: <https://youtu.be/spAcnFFqgSc>

User Analytics

Besides the internal playtesting sessions conducted, we had three major events that helped boost our outreach and got more users to try out the simulation:

- Social media giveaway contest (1 Nov - 10 Nov)
- National Youth Council (NYC) Volunteer Workshop (6 Nov)
- STePS (10 Nov)

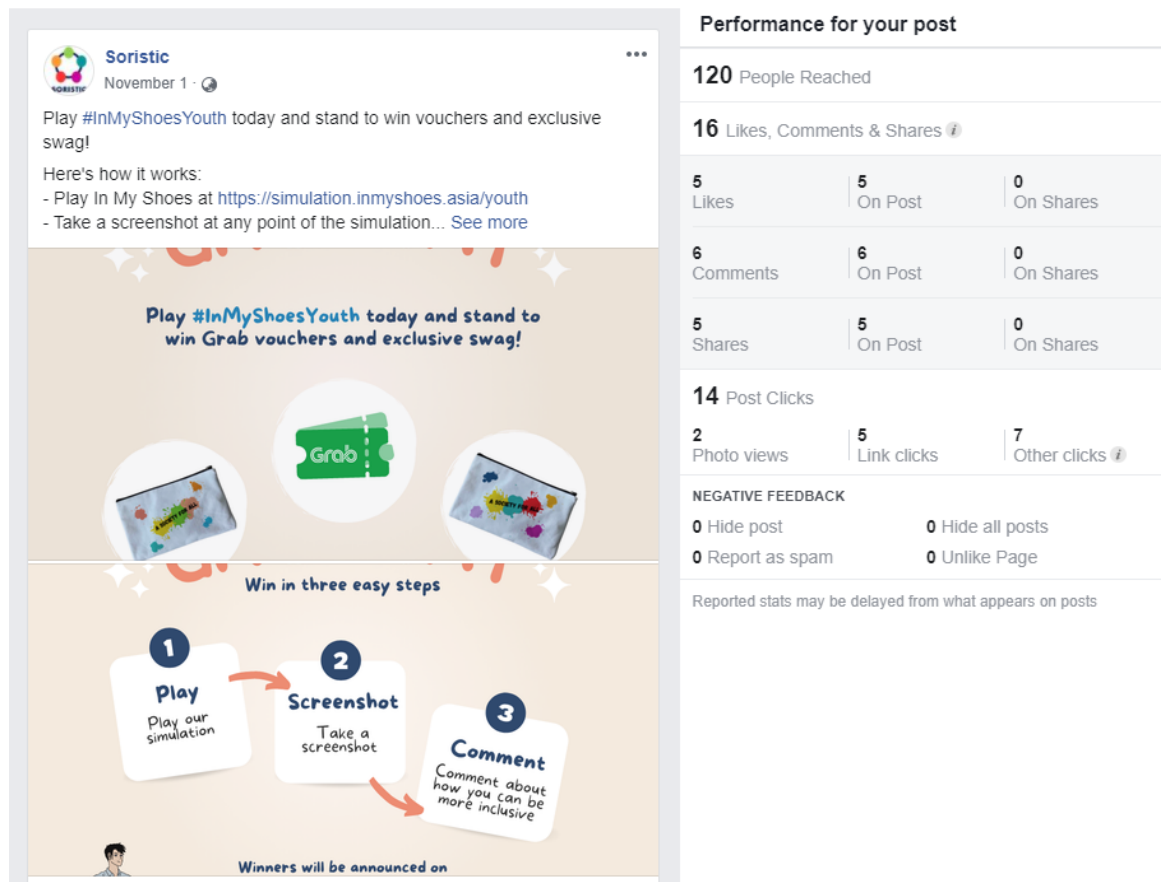


Fig 3. Facebook post announcing the start of contest

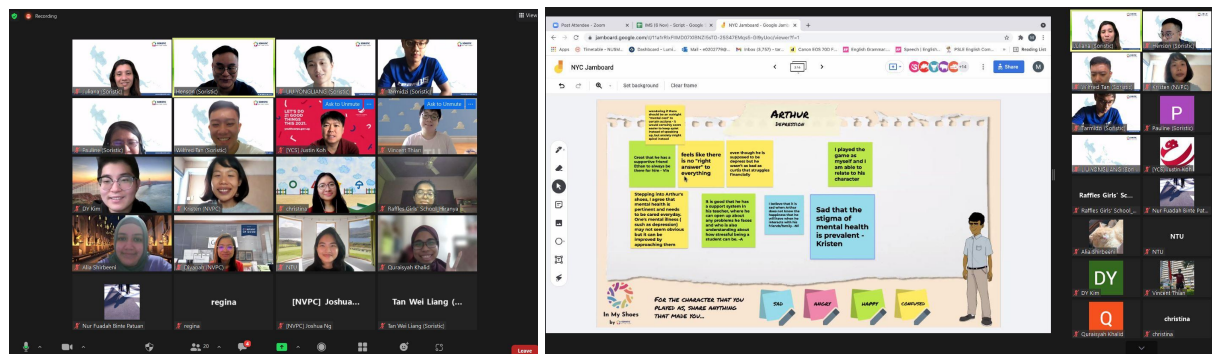


Fig 4. Screenshots of the NYC workshop

In-depth user analytics were collected via Google Analytics. Also, at the beginning of the simulation, new visitors to the site would be prompted with an introductory survey. The results from the introductory survey as well as the feedback survey helped to capture some user responses.

In the two surveys, we asked the participants to evaluate their agreement to the following three statements as a means to evaluate the impact of the simulation.

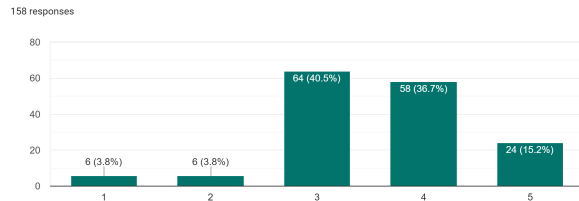
1. I sometimes try to understand my friends and family members better by putting myself in their shoes.

2. I care for people less fortunate than me.
3. I consider others' circumstances when I'm talking with them.

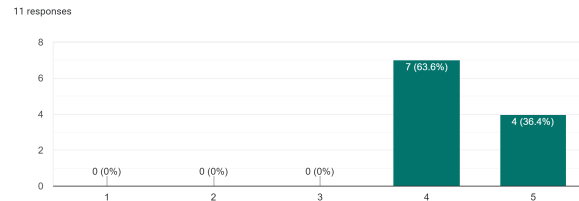
Overall, there is a noticeable improvement in participants' sentiment towards empathy and inclusiveness. Below is a comparison of the result. Note that

- The charts on the left are from pre-simulation surveys and the right are from post-simulation.
- For each individual chart, the options are on a scale between
 - Does not describe me well (Leftmost)
 - Describes me very well (Rightmost)

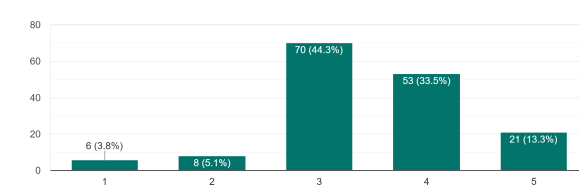
I sometimes try to understand my friends and family members better by putting myself in their shoes.
158 responses



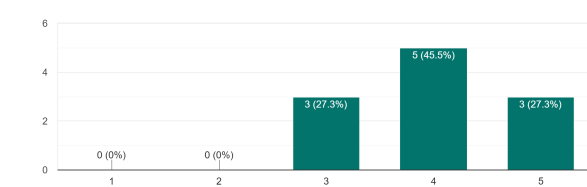
I sometimes try to understand my friends and family members better by putting myself in their shoes.
11 responses



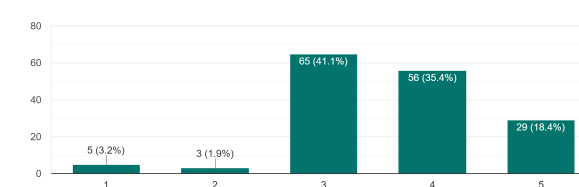
I care for people less fortunate than me.
158 responses



I care for people less fortunate than me.
11 responses



I consider others' circumstances when I'm talking with them.
158 responses



I consider others' circumstances when I'm talking with them.
158 responses

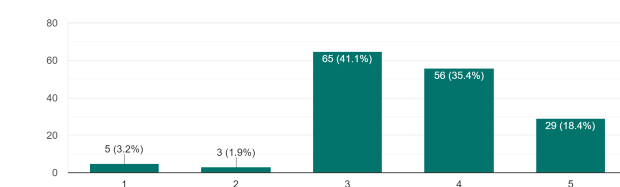


Fig 5. Screenshot of the survey responses

In summary,

- total number of users: 339
- total pre-simulation survey submitted: 157
- total post-simulation survey submitted: 11

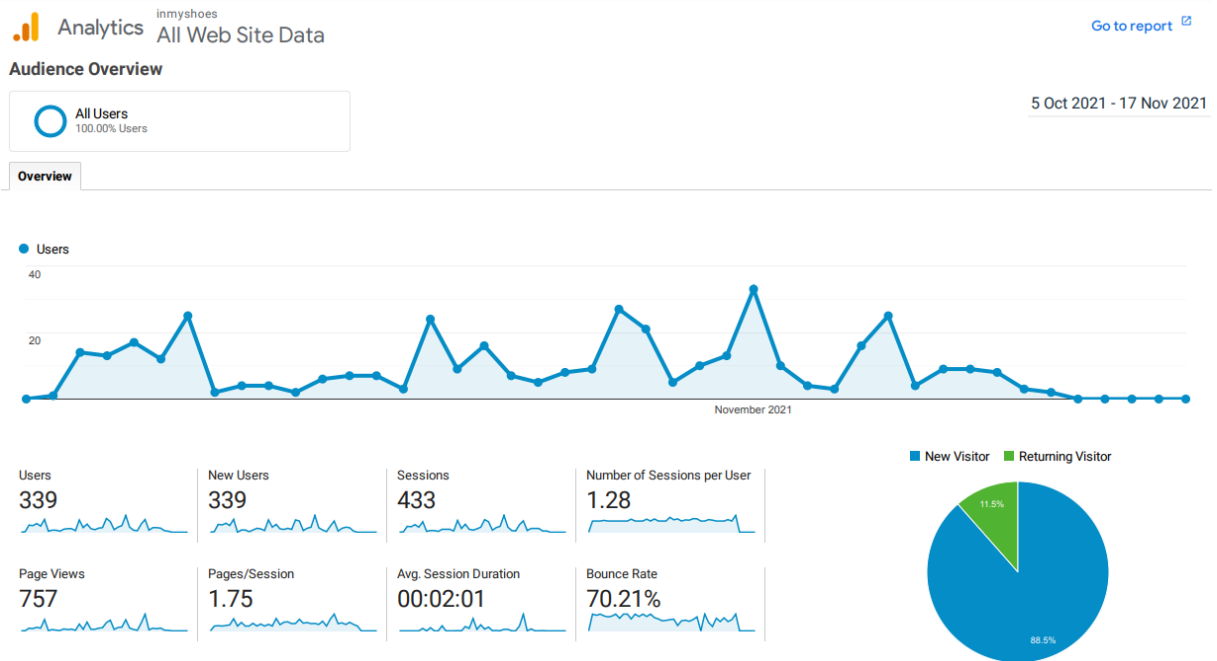


Fig 6. Screenshot of the audience overview

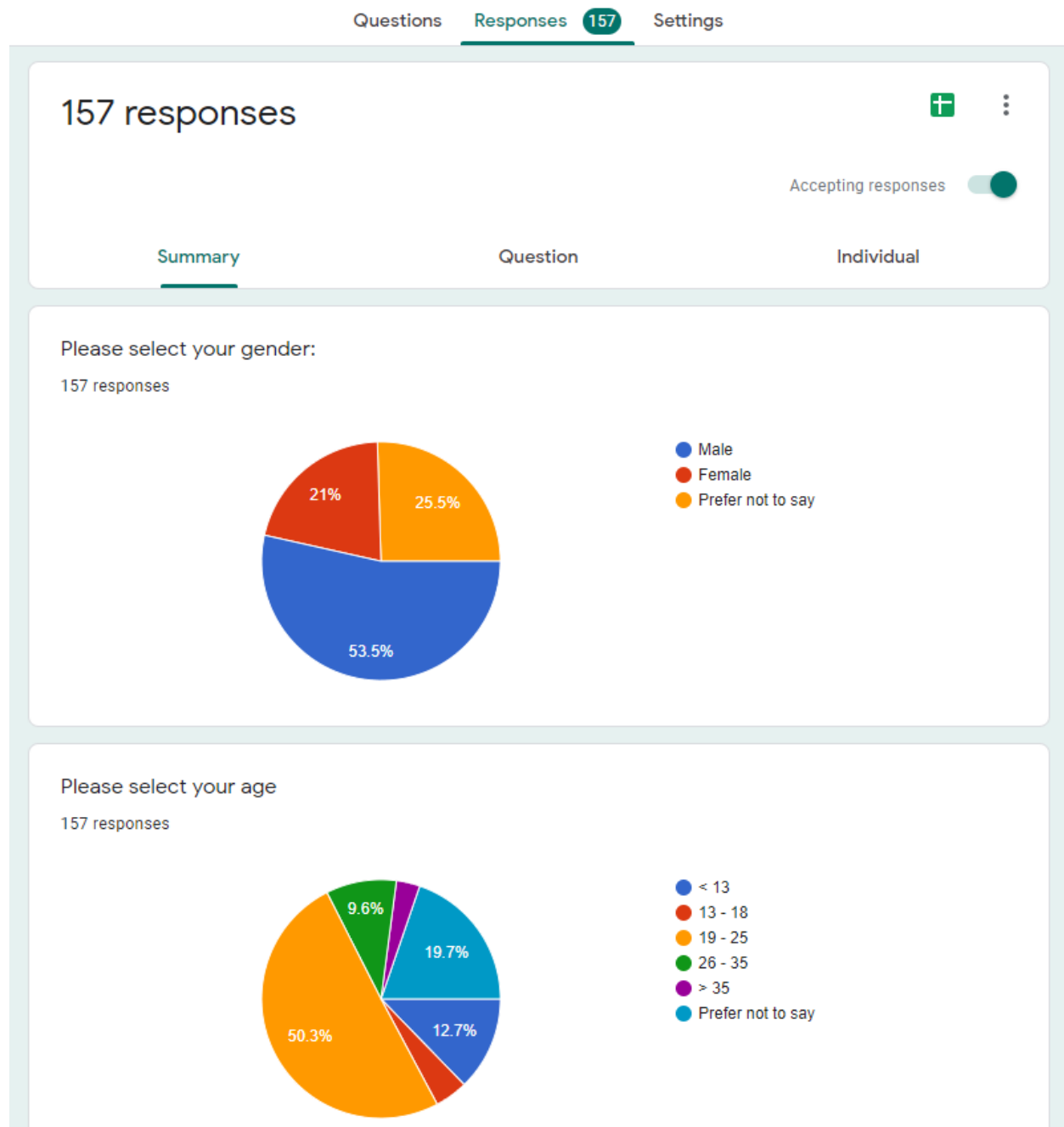


Fig 7. Screenshot of the pre simulation survey

Future Plans

While the game engine is mostly feature-complete, we are considering implementing some nice-to-have features to improve the game experience. First, customizable transition effects like "SlideIn" or "ZoomOut" (similar to PowerPoint transitions) could be added to allow for more cinematic transitions. Also, additional sound effects could be added to more interactions to make the game feel even more interactive.

In the near future, we also intend to do a proper handover of the In My Shoes simulation to Soristic so that they can maintain and update the story, and create new simulations if needed. Documentation on how to update the configuration file already exists, but we will also hold sessions with Soristic to go through how we create and edit the files. We will also get the game engine to read the configuration file from Soristic's own internal content management system (CMS) to make it easy for them to re-deploy any updates.

Next, nearing the end of the project, we have also realized that with the current simulation, the size of the configuration file has become slightly unwieldy. Thus, editing the file directly may be rather inconvenient. A plan we have to tackle this is to develop a visual editor for the game engine, as mentioned earlier. We had initially considered this idea at the start of the project but omitted it as it was unfeasible to complete within the timeline of the project. Soristic and other game authors would be able to more easily edit the game via the editor and get the JSON configuration file as an output. This would make updating existing simulations and creating new simulations much easier.

Finally, given that we have designed the game engine to be separate from the configuration file, we have the option of releasing the standalone game engine as a tool/framework for others to use. Other users could feed their own configuration files into the game engine to create their own games. Together with the visual editor, the game engine could be marketed as a low-code/no-code way to build any point-and-click game. This would require minimal code changes and some documentation efforts. Additionally, In My Shoes could be featured as an example for the game engine, thus helping to direct more traffic to In My Shoes.

Insights Gained

1. Non-technical aspects of a software project may be equally challenging and have a huge impact on the project's success. Even though our simulation targets a younger audience, it is playable by anyone who is interested to find out more about what different characters experience in their daily life. Our marketing efforts were focused on creating greater outreach. We came up with the idea of a giveaway contest and ran it to garner more attention and visits to the site. In that process, we realized that a successful campaign requires proper planning and execution. To keep the contest 'alive', we had to plan out multiple posts and the accompanying images/videos to promote the contest on social media platforms. In hindsight, it would have been better if we could cross post our contest content to some of the major interest groups/organizations in order to get more participation.
2. Understanding the user requirements is crucial. At the beginning of development, our team did not consider gameplay on mobile devices as we had thought the simulation would be played on the computer during workshops. Only after the groundwork for the game engine was settled did we realise that gameplay on the mobile was essential as many workshops were conducted in schools and there were usually no computers and the students would play on phones or iPads. We eventually made the simulation playable in landscape mode for mobile devices but the execution was less optimal. In hindsight, if we had fully clarified the requirements, we would be able to better plan for cross-platform compatibility.