

Final Design Report - Team 1's Virtual Classroom (The Spud Zone)

Team 1: Neal Bright, Issac Helms, Jacob Madeja, Mary Thomas, Gabriel Rentas

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I. Design Goals

The design challenge our team chose to tackle is the virtual classroom challenge. The goal of this challenge is to ‘Design a virtual world for a classroom that can be used by multiple courses in the College of Computing and Informatics for online learning that enables active, team-based learning.’. The virtual classroom design will be set in a 3D environment, and we hope to accomplish a few different design goals and task related goals to improve the experience of online learning.

After conducting user research our team found that many current students in the College of Computing and Informatics found that their current online classes using video conferencing software had a lack of engagement, efficiency and familiarity. We found that the data gathered during our user research aligned well with the personas we had created beforehand. Our personas consisted of a student who does not enjoy online classes, and another student who does enjoy online classes but feels they could be improved. Using all of this gathered information we tailored our design goals and tasks to meet the needs of our personas and students in our focus groups.

The tasks that our team would like users to be able to complete using our virtual classroom design are as follows:

- Complete coding assignments in the virtual classroom and receive help from other students and professors using the built in IDE.
- Complete assignments in the virtual classroom using the built in Virtual Machines.
- Easily receive help from teaching assistants and professors by using the chat system with channels specifically for requesting help.
- Professors will be able to award participation points to students, the points can be used to purchase accessories for their avatars or play games with other students.

The usability issues that our team would like to address with our virtual classroom design concept are as follows:

- Engagement - Promote and encourage more engagement in the virtual classroom by implementing a reward system and having students work together in shared IDEs and virtual machines.
- Efficiency - Increase efficiency in the virtual classroom by having chat channels specifically for questions that notify the teaching assistants and professors when a message is sent in the channel.
- Familiarity - By designing a user interface that is similar to those that many users would already be familiar with, as well as by making signifiers and instructions very clear the design should be very easy to use.

II. Personas and Stories

When creating our personas we wanted to capture two personas that were the opposites of each other, so we could be sure that we were not just viewing the issues we learn from our user research from one perspective. We decided to have one of our personas be a UNCC student who does not enjoy online classes, and the other persona also be a UNCC student, but one who does enjoy online classes.

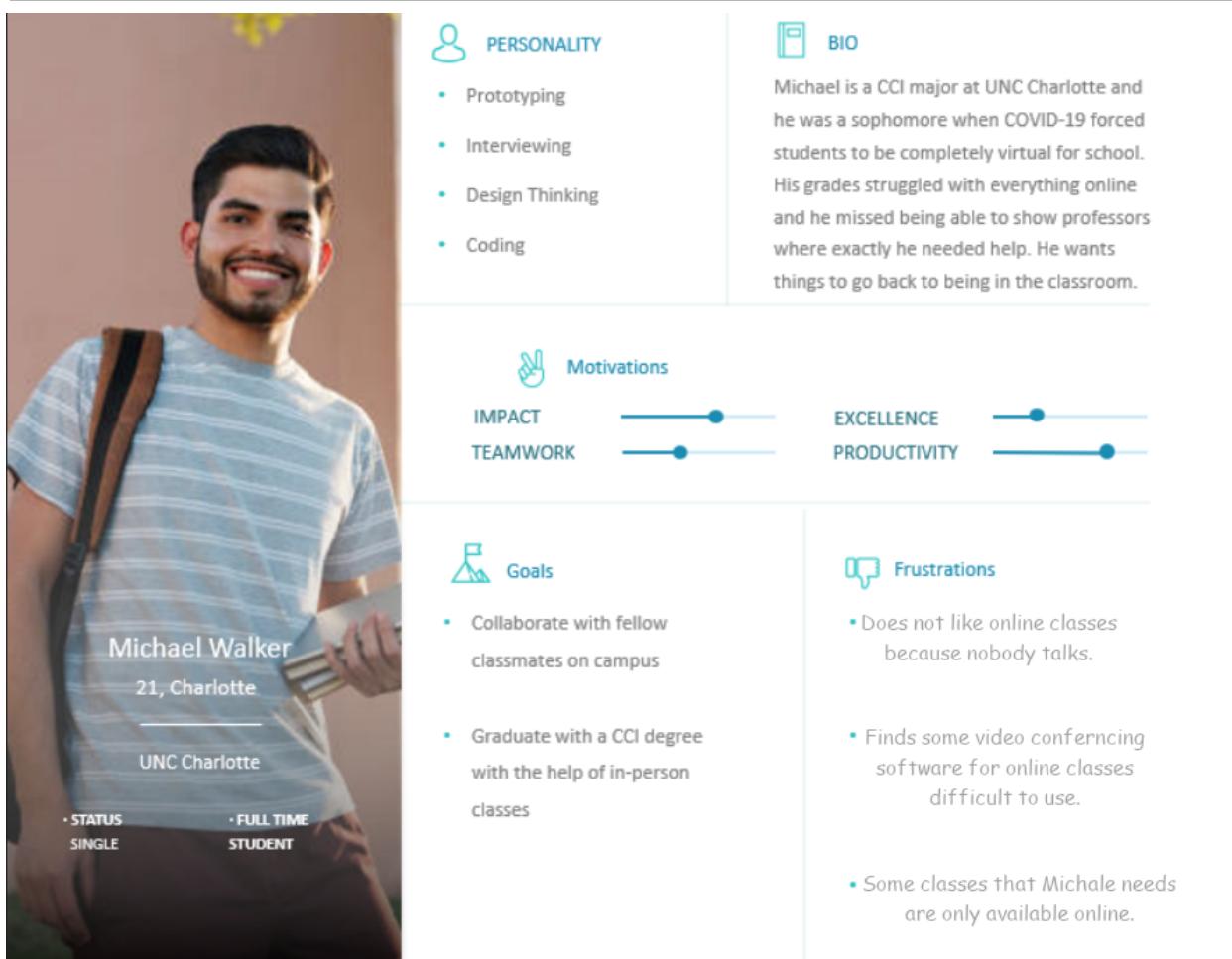


Figure 2.1: This persona is a student who does not like online learning.

Our first persona is Michael Walker. Michael is a student at UNC Charlotte, and does not enjoy online learning. Michael does not enjoy online learning, ever since school went online when the COVID-19 pandemic started his grades have been struggling.

Michael believes this to be because he is not able to as easily get the help he needs in an online learning environment than he is in an in person classroom environment. Michael finds sharing screens with professors to get help with his code to be complicated, and when he can figure it out sometimes the professor can not easily see where the issue is. Video conferencing software can sometimes be clunky and confusing to use, Michael wishes there was a way for the

video conferencing software to tell him exactly what he needs to click to do things. What would be even better, would be if the professor could just edit his code straight from the video conferencing software.

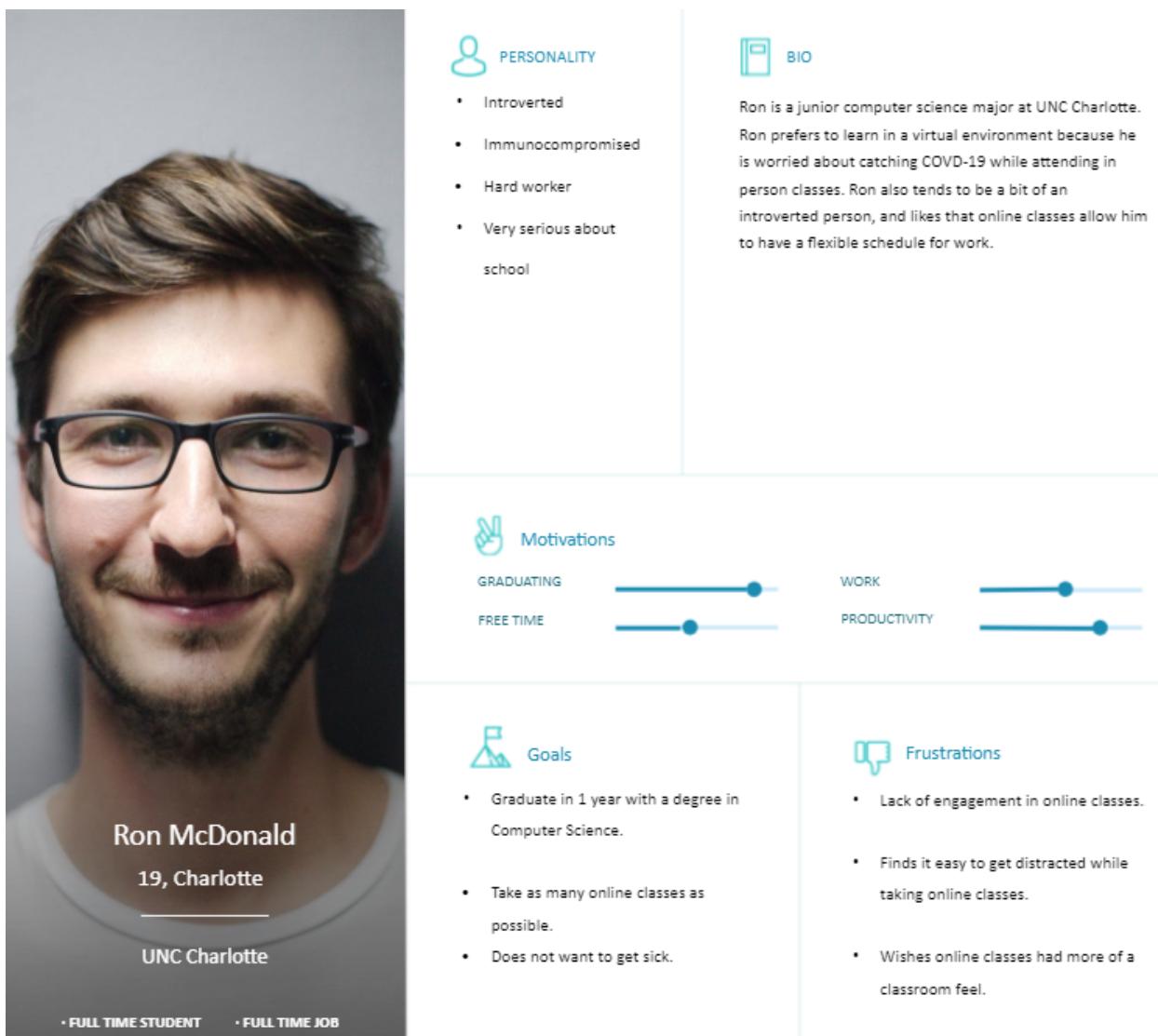


Figure 2.2: This persona is a student who likes online learning.

Our second persona is Ron McDonald, who is also a student at UNC Charlotte. Ron enjoys online classes for the most part. Online classes allow Ron to have a flexible schedule so he can focus on work and family. Online classes also help keep Ron safe from COVID-19, as he is immunocompromised.

However, Ron still has some issues with online classes. Ron finds that during his online classes there is a lack of engagement, which makes it a lot easier for him to get distracted. Ron feels if students had more of an incentive to pay attention to class, and if his online classes had more of a classroom feel, the quality of online learning would greatly improve.



Fig 2.3: This storyboard presents the problem of engagement from the point of view of a student who wants to learn in a virtual environment.



Fig 2.4: This storyboard presents the problem of engagement and classroom familiarity from the point of view of a student who does not want to learn in a virtual space.

The four above figures represent the two greatest common problems we would like to tackle in our project: engagement and familiarity. The two students represented in these personas and storyboards are very different. One likes the online learning environment, but finds himself distracted by youtube, gaming, or some other tab in their browser. The other does not want to learn in the virtual space at all because they are not engaged by a zoom call and they don't have an in person relationship with an instructor or TA to ask for help.

These two different problems have a similar theme: the existing virtual environments are not engaging enough for large groups of students. We believe that we can solve this problem for many people with a few simple steps.

We believe that an immersive world with a personal feel and that has been gamified will increase engagement. We also believe if we build a familiar looking environment (similar to how Gather Town's sprites are familiar to people who have played pokemon and other 2D games) students will have more subconscious incentive to stay engaged for their entire learning sessions. This also makes the virtual classroom more efficient than video conferencing software, by having everything the student needs to do their work in one place.

In Summary, our personas were very different people, who struggled with a very similar problem. We have found through our research that students have a desire to be engaged in a familiar setting. Our design provides this engagement through gamification, freedom of movement, and immersion.

III. Interaction Design

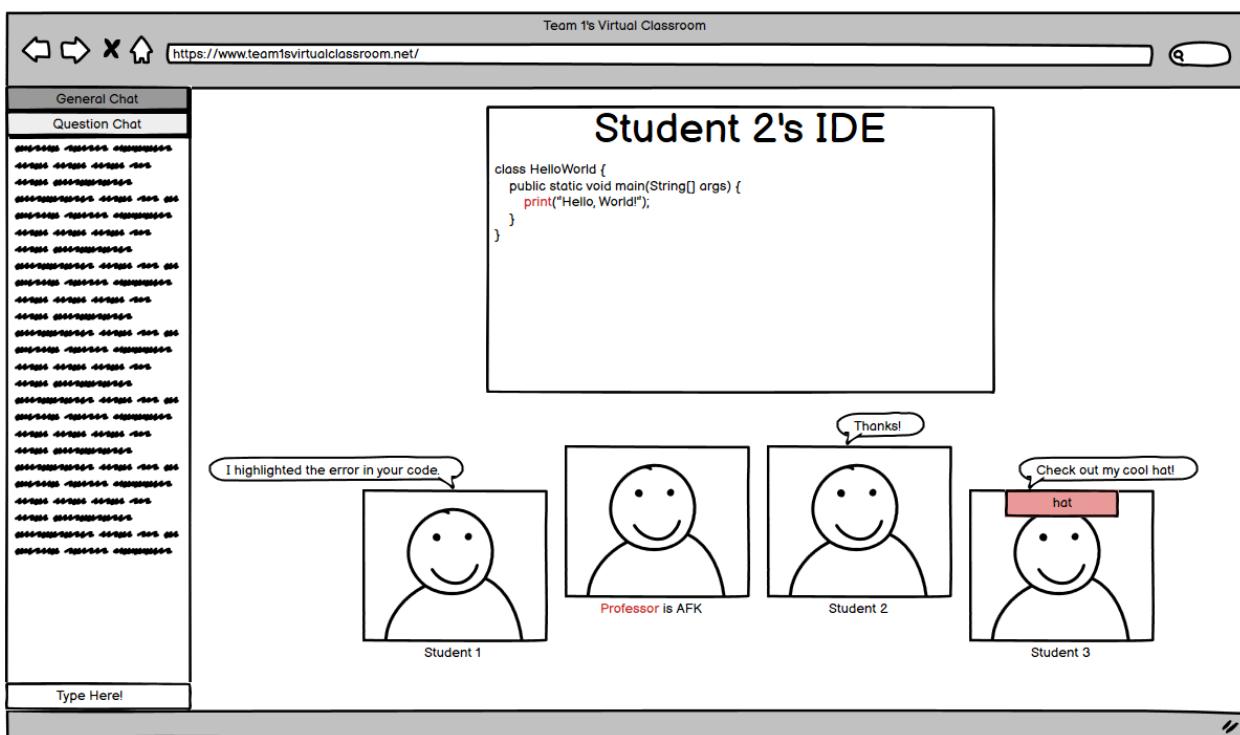


Figure 3.1: Two students helping each other solve their code issues while the professor is away, while another student shows off their cool hat from the reward system.

Figure 1.1 shows an initial wireframe we created for our design concept. This wireframe shows the general location for the chat, and the concept of a shared IDE in the virtual world.

On the left of the wireframe is where the chat box will be located. The user is shown where they can begin typing in the chat box by the ‘Type Here!’ signifier. At the top of the chat box the user is shown where they can switch chat channels by the ‘General Chat’ and ‘Question Chat’ signifiers. In the middle of the wireframe you can see the IDE, the ‘Student 2’s IDE’ at the top of the IDE signifies whose code is being shown.

This wireframe has two displays of technology that are important to note. The virtual classroom will be browser based to allow for easy access. The user will not have to install any sort of special software in order to access the virtual classroom. Another piece of technology being displayed is the built in IDE, which will allow students to collaborate on assignments together and easily receive help with their code while remaining inside the virtual classroom.

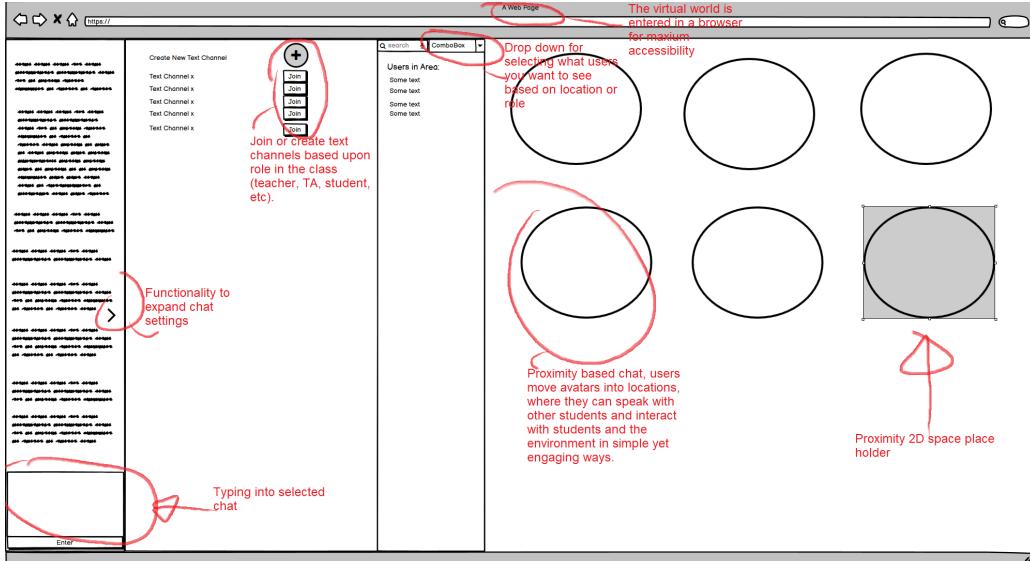


Figure 3.2: An updated sketch of the user interface revolving around chat, and updated ideas about locations and proximity chat.

Figure 1.2 was another iteration on our chatting ideas, and our rough concept of the virtual world. The circles indicate a shared space where teams could meet, much like Gather Town, our initial inspiration.

The tables in the wireframe would be where we could place computers that students could access in order to use the built in IDE or virtual machine. Each table would be its own group, when a user joins the table they can use the computer they selected as their own personal IDE or virtual machine. Then if the user wishes, they can click a button in order to join the group IDE or virtual machine, where they can work together with their other group members to complete assignments or receive help from each other or a TA/Instructor.

Some of the signifiers we added to this design was the right facing arrow to expand or remove the chat settings, and plus signs/join buttons for creating and joining text and voice channels. We also wanted the people in the world to be able to find a TA/Instructor easily to message them directly, so we added in a functionality for the chat where the user can see who is online that has a “moderator” role.

After finishing the first two wireframes we realized that since our virtual classroom design is supposed to be 3D that we should find a way to better represent our design. The 2D wireframes we had been working with were not accurately representing our intended design. That is when we decided to build our virtual classroom environment in Minecraft, and overlay

our design ideas on top of screenshots from the game to give a better visual representation of our concept.

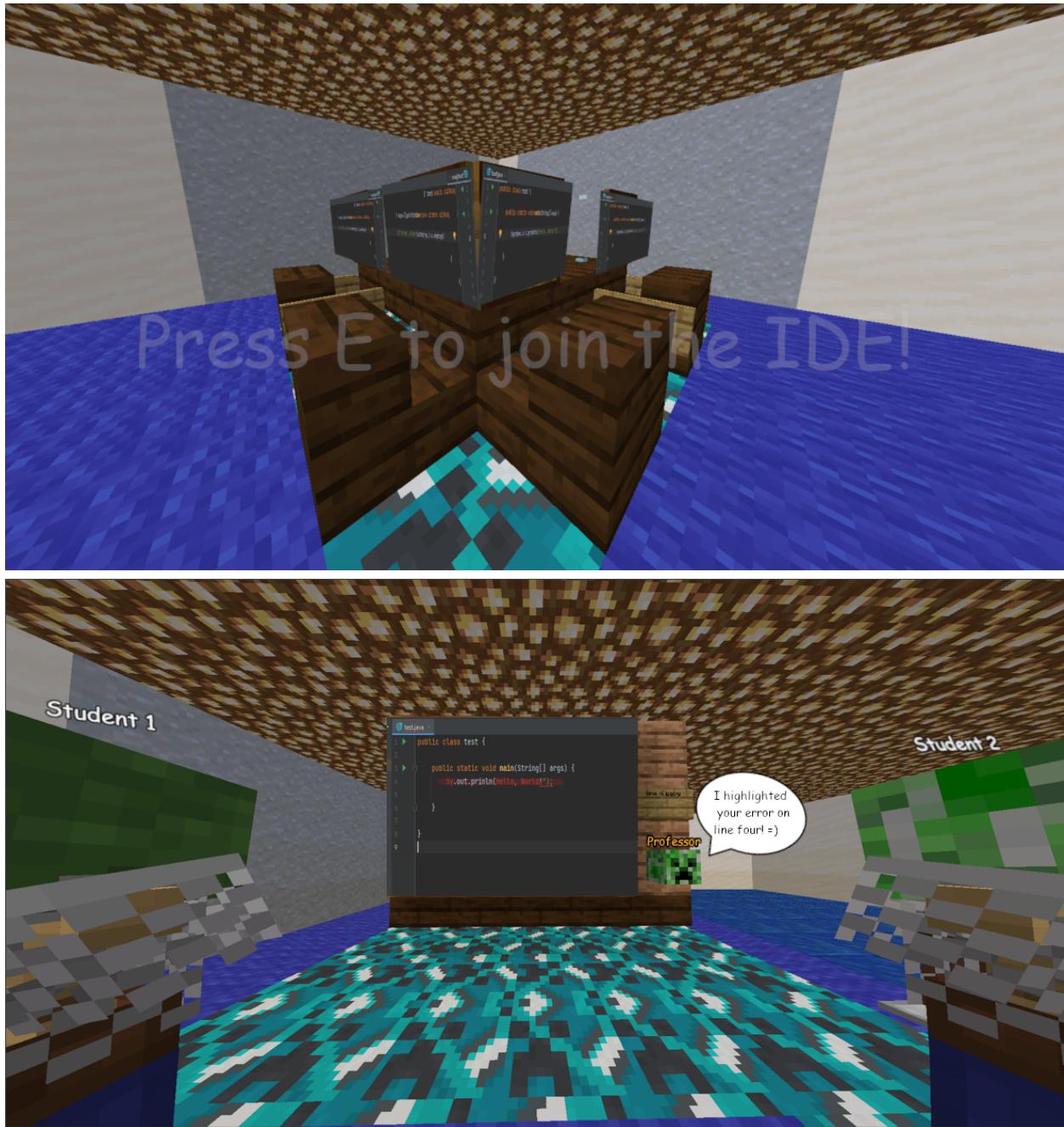


Figure 3.3-3.4: Our first rough build of the design, which we built in minecraft.

Figures 1.3 and 1.4 show a few key concepts of our design in slightly higher fidelity than our wireframes. We created a mock workspace in minecraft. Figure 1.3 presents a similar signifier to Gather Town.

As the user gets within a certain proximity of an interactable piece of the environment, they are prompted on screen, in an obvious but not obnoxious manner, to press a key binding or click to interact with an object. In our design, the user presses this keybinding or clicks with their mouse, and is taken to a space where all users are gathered around an IDE that they can all see in the world and they can all manipulate in the world without having to go to another window or tab out. In this example, the professor is also interacting with the IDE and has corrected an error in their code. This is signified by a red highlight.

What follows is our highest visual fidelity prototype of the design. We have tried to be as in depth as possible with our description. Each figure will have a small comment, and each figure will have a description of what is going on. It will be a **user's journey** through our virtual space.

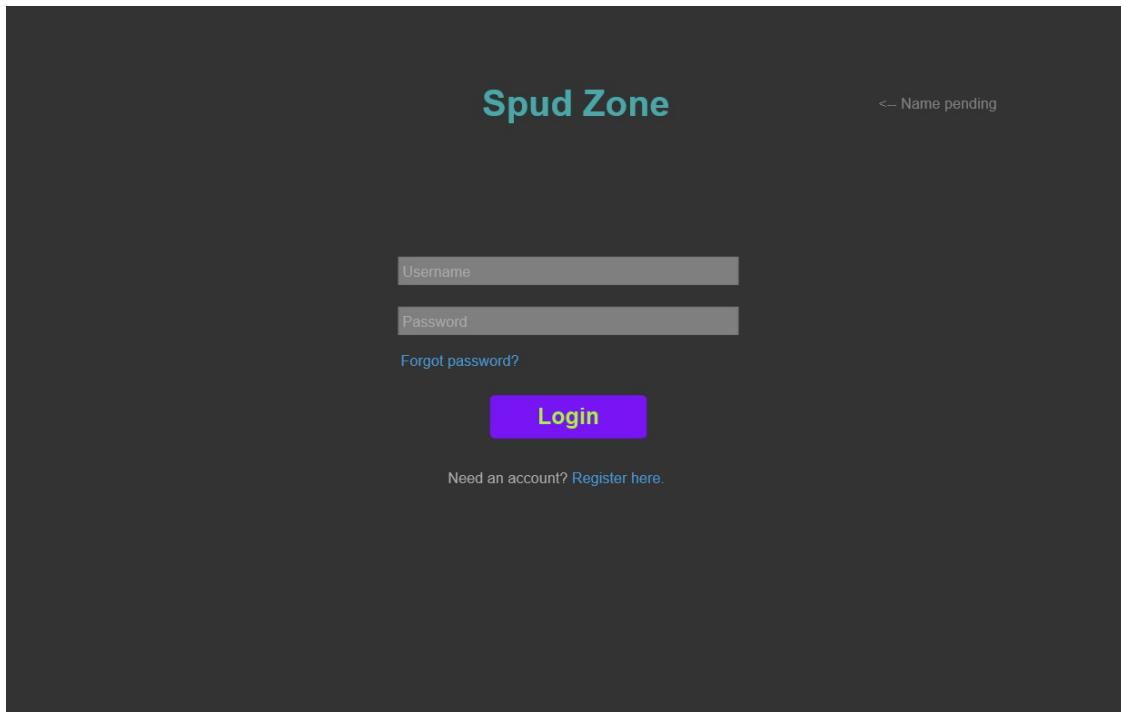


Figure 3.5: The login screen.

This is our high fidelity design of our login screen, it is simple, and it holds all of the key information necessary for a login screen. The username and login boxes have slightly transparent example text, letting the user know which box is which. There are the essential Register and Forgot Password buttons, as well as the Login button. We made the choice to give the window a grey and darker theme, because most people looking at their screens for work or school all day prefer a darker theme to a blinding white theme. We believe that this is a small part of the success of two of our inspirations, Discord and Gather Town, which have darker environments and are easier on the eyes.



Figure 3.6: The entrance to our virtual environment.

There are several things that a user would initially notice about the environment when they first log in. Directly in front of them are a few instructions on a large board. These may be difficult to read because of the small pictures in the report, as other things might as well, so we will make sure to point them out as we go.

The instructions on the board say that the user can move with their arrow keys or WASD. It also introduces the signifiers for a voice chat, which will be familiar to many people. A green microphone icon represents an unmuted mic, a red microphone represents a muted mic, and a white chat circle above an avatar's head represents the fact that that user is currently chatting in voice. These signifiers can all be found above an avatar's head, along with the student's name.

One of the key factors to a student's first time in our environment is the behind the back third person camera angle. This gives them a 180 degree view of the environment, and complete control of their camera. The freedom to move their avatar and their camera adds a layer of **engagement** to our design. The student does not feel restricted to a breakout room or a chat channel. They actually exist in this world and can move within its boundaries just as they could in an actual classroom.

The final thing to note is that the pathways a user can take are always labeled. The user can explore the simple environment without feeling like they are lost.



Figure 3.7: The chat box.

One of the biggest challenges of a virtual environment is chat usability, which certainly adds to the problem of a student having a hard time getting help or communicating with a TA or instructor. We believe that our chat design helps to minimize these problems significantly.

Upon loading into the world, the user will have a chat box in the bottom left corner of their screen. This is a universal placement for chat boxes, and so it adds to the familiarity of the environment. The student can click the X in the upper right corner of the box to temporarily hide it. The student can simply hit enter, or scroll over that area of their screen with their cursor to toggle it back on again.

There are three named channels on this example chat box that the user can click on and select. This changes to these custom channels, which might have different students or groups attached to them.

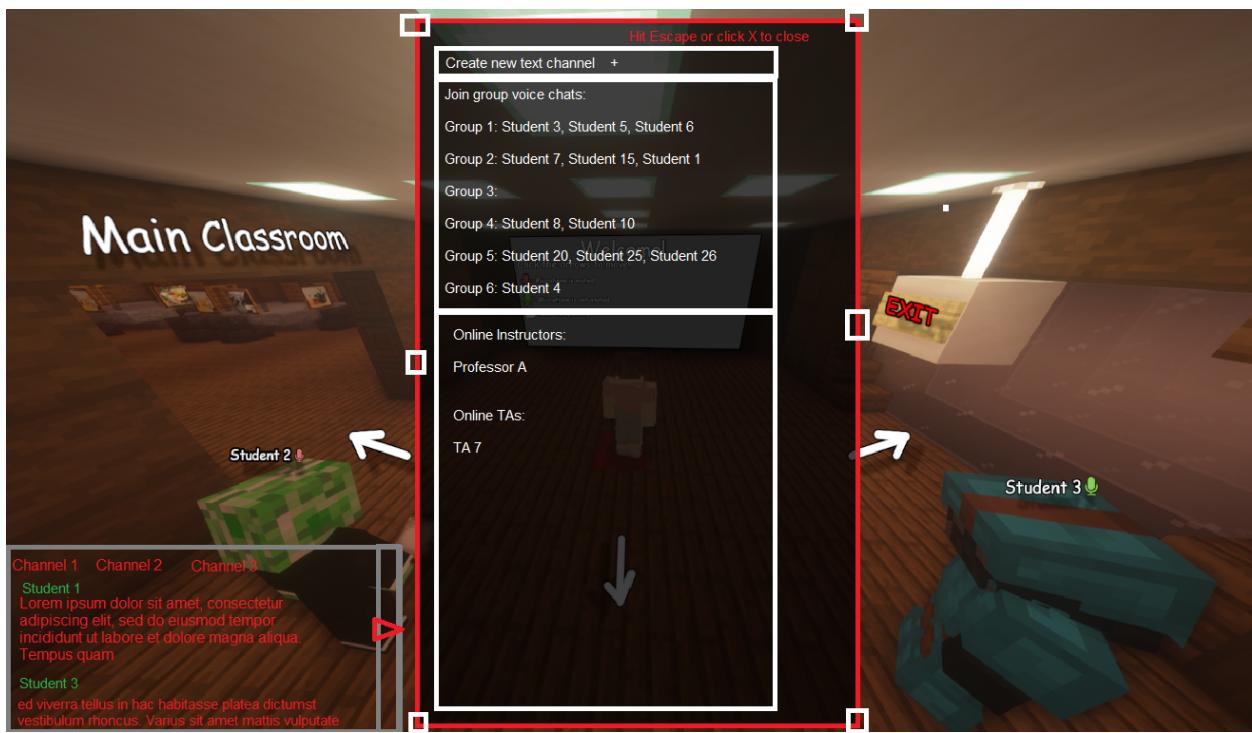


Figure 3.8: Chat Settings.

By clicking the arrow on the right side of the chat box, the user can pop out the settings and additional functionalities for the chat system. This is a simply laid out screen that is transparent, so that the user does not lose the world completely when they toggle it. They can still make out their own avatar or anything else in the environment that the chat settings box is covering up. This window can also be dragged to other parts of the screen, resized by adding dragging the corner or sides of the box, or close by hitting escape/ clicking the x in the upper right hand corner. The white boxes on the side of the setting panel draw the users attention and indicate that they can be dragged and resized.

The actual functionality of this window is simple but very important. At the very top is the option to create a new chat channel. The user simply clicks the + sign and another window opens up (see Figure 3.9 for details).

The voice chat of our design works in a very similar way to Gather Town. It is proximity based by default, meaning that users who are around specific tables will be able to hear each other, but not the tables next to them. We believe this adds a level of engagement and familiarity, and simulates the classroom setting. A user can just walk up to a table and talk to the people there. However, we have added the functionality to join closed chat channels where group members might be. This is as simple as clicking on the name of the voice channel in the list in the above box.

The final, and maybe most important function of this window is to show which TAs and instructors are online. They can be easily messaged by adding them to a chat channel (see Figure 3.9 for more information).

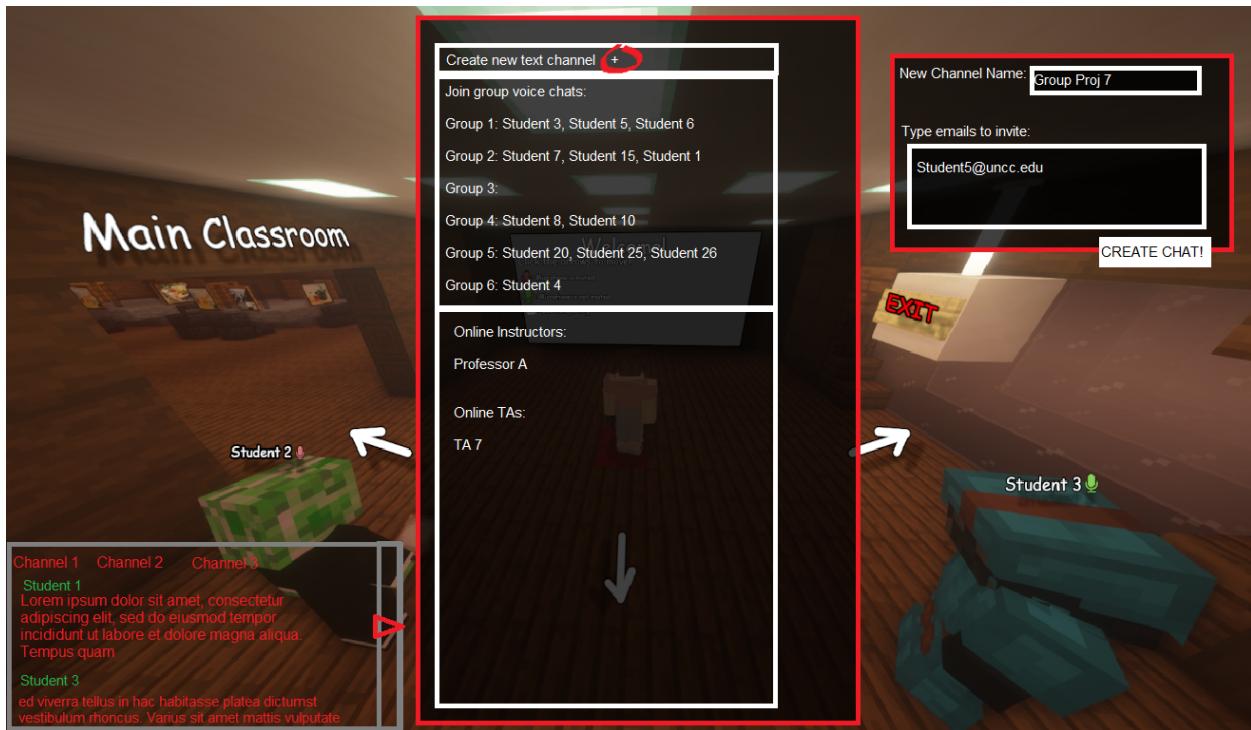


Figure 3.9: The User creates a new chat channel.

As previously mentioned, the user can click the plus sign next to the Create new text channel option, and another panel opens up. As with the base chat settings window, this window can be moved and resized, and is transparent so as not to completely cover up the environment.

The user can easily give the new chat channel a name, enter the email address(es) of the person(s) they want to add, and click the CREATE CHAT! button or hit enter to create the new chat channel.



Figure 3.10: The new channel is displayed in the chat box.

Now the user has a new chat channel, and it is displayed next to the other channels in their chat box. They click it to see what the people in that channel are talking about, and they can respond to those messages specifically.



Figure 3.11: The user has entered the Main Classroom area.

Upon taking the path to the left after loading in, the user will find themselves in the main classroom area, and will be presented with three options. They can go left to the IDE workspace, right to the Virtual Machine workspace, and to the Group Meeting Area in the middle if they have a question for other students, TAs, or the professor.

Since the environment gives users free movement, the student may not always find the TA or the professor at this common space, but much like Gather Town, we believed that our environment needed a meeting place for the entire class, where students can gather in larger groups.



Figure 3.12: The user approaches the IDE workspace.

The user has decided to go to the left side of the Main Classroom to join their group in a shared coding session. When the user gets close enough to the table, they are prompted via a keybinding or click to join their group in the session. We can see that there is already one person at the table, and this student is currently talking. This signifies that the person who is attached to that avatar is already in the coding area.

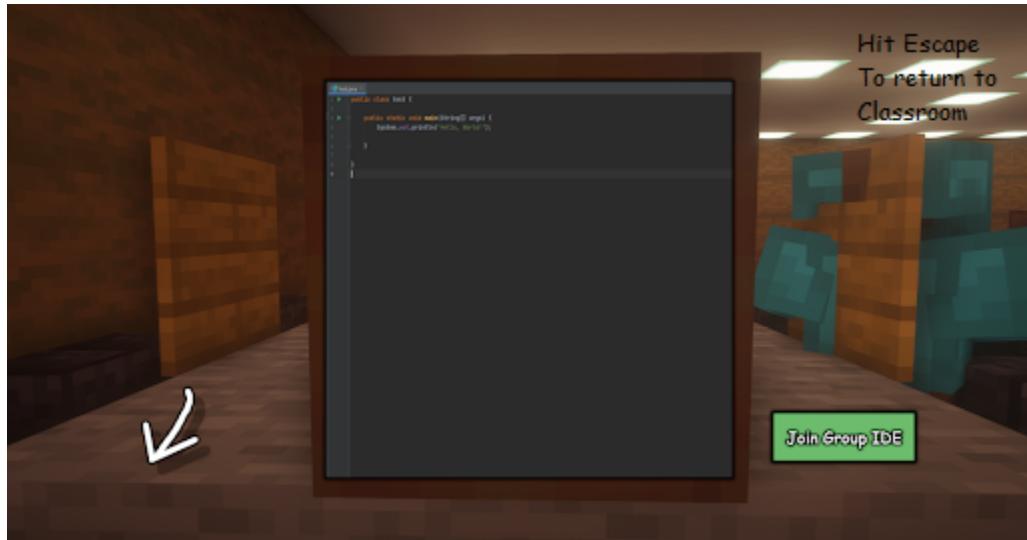


Figure 3.13: The user enters the personal IDE workspace.

This screen shows up for the user, simulating them sitting down at a terminal to code in a lab environment. This also acts as a confirmation of whether they want to join in on the coding session, or hit escape to return to the main classroom.

As with all aspects of our design, we want to also let the user know what their options are, so we have a green button labeled for joining, and black text telling the user how to exit this display.



Figure 3.14: The user loads into the virtual shared IDE workspace.

The user has loaded into the virtual IDE workspace. We can see that the voice chatting signifiers (the microphone symbols and the chat bubble symbol) have remained consistent throughout the design.

All users in this room can see the shared IDE. Each user can also click the small red panel to open a windowed version of the IDE as an overlay on their screen. This can be moved and resized, and is partially transparent so as to not remove the user from the world. Most importantly though, these IDEs are shared and the large “screen” on the wall allows for all students to look at it in the world while it is being edited by a professor or another student. The professor or TA can also use markup technology to highlight the error in their code and show them where their syntax or logic is incorrect.

This environment is the core of our design. We believe that it is both familiar, engaging, and efficient. It looks like a stylized classroom. It has a cozy feel. It is an environment that is free to explore and move about in. A student has the choice to follow along on the big screen, or on a transparent window of their desired size.



Figure 3.15: The user leaves the IDE workspace.

The exit sign, which was visible in Figure 3.15, is a consistent addition to the environments in our design. They are in every room, and when approached, they tell the user where they are going to be taken.

This student has finished their shared IDE session, and is now returning to the Main Classroom. All they need to do is approach the exit sign, and click/press the keybinding when prompted.



Figure 3.16: The group meeting area.

The user has returned to the main classroom, and is looking for TA. They see the familiar avatars of the TA's at the group meeting table, and so they approach it to join the proximity chat there. Unfortunately, the TAs are muted working on something else, so the student will have to wait.

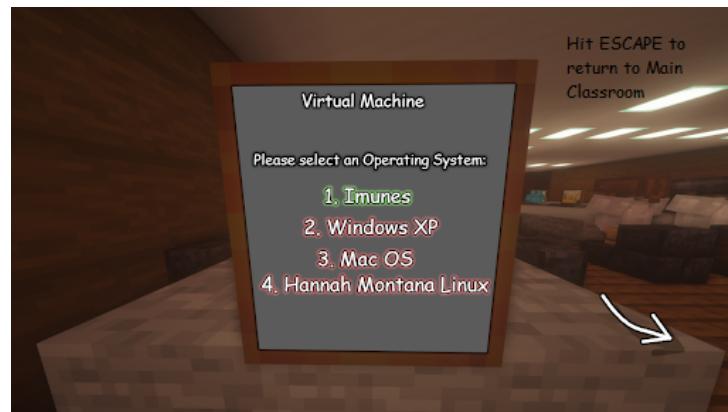


Figure 3.17: The user approaches the Virtual Machine Table.

The user has decided to visit the virtual machine environment. As before, when they approach the table they are prompted via keybind/click to join the session. This menu appears before them, and they can select a VM to run. As with the other menus, the option to hit escape to rejoin the main classroom area is made clear. The student has decided to load the Imunes software.

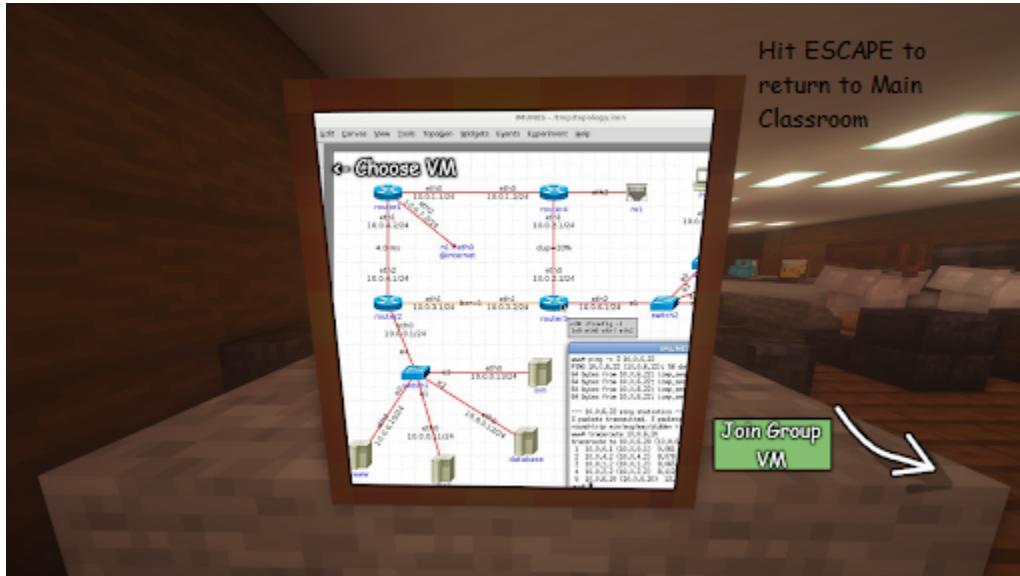


Figure 3.18: The user confirms if they want to join, and sees a preview.

As with the IDE workspace, the user can see a preview of what is happening in the shared workspace, and must click the button to join, or hit escape to go back to the Main Classroom area. They also have the option in the upper left corner to return to the VM selection menu.



Figure 3.19: The student manipulates the VM environment.

The student and a group member have joined the Imunes environment, which is simulated in 3D, with a top down view. The students can move freely, as with all other rooms in our virtual world, and they can work on their networking project.

The user can approach the door with an exit sign above it, and be prompted to return back to the Main Classroom Area.



Figure 3.20: The student enters the reward center.

Across from the main classroom area, the user can enter the Reward Zone. This part of the prototype is the final piece of engaging content, and adds greatly to the concept of gamification. This area can be seen in Figure 3.21, 3.22.



Figure 3.21: The user approaches the shop.

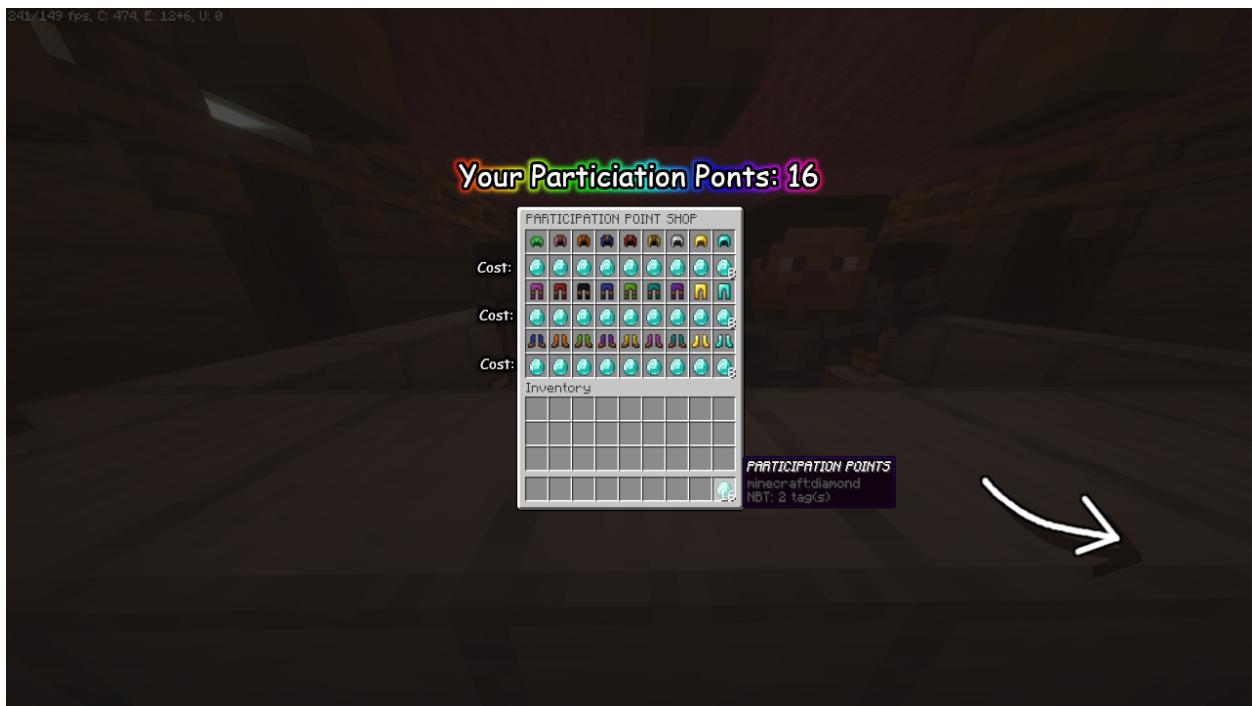


Figure 3.22: The user purchases accessories.

As the user spends time completing work in the IDE or VM workspaces, they earn participation points. The user can then return to the shop and spend them to buy new clothes,

hats, or other fun accessories for their avatar. This adds a layer of gamification to the learning environment, and we believe it greatly increases engagement.

In summary, based on the personas we created and the user research we conducted, we have been prompted to create a virtual classroom design that addresses the issues of lack of familiarity, engagement, efficiency. We made our prototype detailed, but not complicated. All of the signifiers and affordances are made clear to the user in order to keep the design efficient and familiar. We use bright colors for the rewards section in order to grab the users attention, when the user goes to see the rewards they can get they will be encouraged to engage in the classroom to get participation points so they can get rewards. It is also a lot easier for students to engage with each other and receive help from TAs and instructors by using the built in IDEs and virtual machines.

IV. Prototype

For our team's prototype design we used Minecraft to create a set for our 3D Virtual Classroom. We then took screenshots of our Minecraft classroom and used photoshop to overlay our ideas for a virtual classroom on top of the screenshots. Thus none of our features are implemented, only simulated. We decided to go with this approach because Minecraft gave us an easy way to create a cozy visual representation of what our virtual classroom might look like. Using edited screenshots also helped save us time by not needing to fully implement our design ideas into Minecraft.

After the screenshots were edited we created a website with each page hosting a different screenshot. We then used image maps to make the prototype interactive. When a participant of our user studies clicks on an area of the screenshot that has an image map they are taken to another page of our website with a corresponding screenshot for whatever it was they clicked on in the prototype. This simulates the movement of their avatar in the virtual classroom, and also simulates the features we wanted to add to our classroom.

For our user study the main features we decided to simulate were the built in IDEs, built in virtual machines, a chatting system, and a rewards & game system. Below you can find links to the interactive version of our prototype, as well as a link to a video that shows how to interact with our prototype.

[Team 1's Virtual Classroom Prototype \(Link may not work after Jacob graduates.\)](#)

[Team 1's Virtual Classroom Prototype \(Link may not work on UNCC campus internet.\)](#)

[Team 1's Virtual Classroom Prototype Video](#)

In Summary, our prototype design uses edited screenshots of Minecraft to represent a 3D virtual classroom. We hope the simulated features we added to our prototype help create a more efficient, engaging, and familiar virtual environment for classes to be held.

V. Evaluation

As we began our user studies, we were looking for information based upon three main questions:

- Is our design intuitive and enjoyable?
- How do our personas react to our new virtual setting?
- Could our design be an alternative to Zoom or Gather Town?

In order to gather this information, we found 5 college students of a similar age (age breakdowns will be in the information below) to take part in our user studies.

We decided to ask the users to perform four main tasks:

- Open the chat system and create a new chat channel.
- Navigate to the rewards section and participate in a game with another student.
- Buy something from the rewards shop
- Enter and leave a shared IDE

We had five post task questions:

- On a scale of 1 to 5, how easy was it to navigate through the prototype and why did you give it this rating?
- Do you think the additional features added would help promote engagement in the classroom in comparison to Zoom?
- Does the shared IDE system seem like it would realistically function in a virtual learning environment? Why or why not?
- How do you feel about the chatting system and its functionalities?
- Do you feel that the gamification of our design is a positive addition or a detriment to the virtual learning environment?

Finally, we developed an introduction that we read to our participants:

Hi my name is Jacob/Issac/Neal/Gabriel/Mary thank you for participating in this study. We are simply going to go through the website and see how you are able to navigate through it. I will just need for you to share your screen and I will be recording what you do so that I can see your thought process. As you navigate through the website, please try and “think-out-loud”. Just try and say whatever you are looking at, thinking, doing, and feeling at each moment. You don’t need to have had any training for this, the website itself guides you through the prototype and at the end I will ask how easy it was to navigate.

Following this introduction, we asked them to complete the aforementioned tasks. Below is a table that shows the data retrieved for our quantitative analysis.

	User 1	User 2	User 3	User 4	User 5
Ease of navigation rating	4.5/5	4/5	4/5	5/5	5/5
Age	20	22	23	26	26
Time Elapsed	7 Minutes	4 Minutes	6 Minutes	4 minutes	5 minutes

Figure 5.1: Quantitative Data

The first section of our Quantitative data table is the compilation of our Ease of Navigation ratings. Our first post task question was to ask the participants to rate the ease of navigation within our prototype on a scale of 1 to 5. Our average numerical rating for this metric was 4.5 out of 5.

The second section of our quantitative data table is simply the ages of our participants. They range from 20 to 26. The mode of our ages was 26, with two of the students being 26. 26 was the only age that we saw more than once. The mean of this data was 23.4 years old.

The third and final portion of our quantitative data table was the time elapsed while our users manipulated our prototype. We did not break this data into smaller sections. The average time spent in our prototype was 5.2 minutes.

Thematic Analysis

Theme: Intuitive

In the appendix you will find the transcripts for our Think Aloud data. The singular most important theme that we have taken from this data is that our design was in fact intuitive.

Our very first participant, a student named Marie, said within the first few moments of her study: "I am clicking the arrow that points to the section I want to go to". She also says: "So I'm gonna guess the IDE is in the main classroom". This is in reference to the fact that almost every room in our prototype had a label telling you exactly where you were or where you were headed when facing that direction.

Madison, which participated in our third user study, said: "I see Welcome, Main Classroom, and Exit. I am going to go to the Main Classroom to see if the rewards are there. Ummm.. I see group IDEs, a group meeting area, and virtual machines. I don't think the rewards are in here so I am going to go back to the lobby".

User 4, who wished to remain anonymous, said that: "I like how it's all labeled man this makes it easy for me". Also, he told us no less than 18 times outloud what he was clicking and where that was going to take him. He was never lost during the user study due to the labels and the conveniently placed and pointing arrows.

User 5 had a very similar experience. He was never lost, his clicks were based on the location and positioning of the arrows and the text about doorways or in the environment, and he easily moved around the prototype.

We interpret these portions of the think aloud data to mean that our design is in fact intuitive. This information is supported by our ease of navigation scale ratings.

Theme: Gamification: Engagement and Enjoyment

Three out of five of our participants were disappointed that the game portion of our prototype was not functional, and all five interacted enthusiastically with a simple game of tic tac toe which did not have full functionality, only a win or lose condition based upon whether they clicked X or O at the beginning of the game.

User 4 said: "Im gonna wreck this scrub at tic tac toe". This was the most passionately he spoke about anything during the user study.

User 5 asked me which option (X or O) user 4 had chosen (they are friends), and while I didn't tell him, he chose X and won. He said: "...I'm a *expletive* winner".

Marie said when interacting with the tic tac toe game: "Do I actually get to play?". When told she could not, her heartfelt response was: "Awww..".

We interpret these quotes a few different ways. Firstly, User 4 and User 5 show us that students like to playfully compete and interact with one another in a virtual environment, because one asked about the others choices and wanted to best them.

More importantly, though, we interpret these results, and the raw data in our transcripts, to mean that the average CCI student would really enjoy gamification in a virtual world. The ability to earn points doing school work and then spend them interacting in a stress free learning or strategy game is something that students find enjoyable.

An emphasis we had in creating the initial concept of our design was engagement, and it has been one of the most important things we have discussed throughout this creative process. Gamification was what our users were most passionate about in our prototype, and because of

the interaction between the games and the participation points earned in the virtual classroom part of our design, we interpret this data to also mean that our prototype was engaging to the user.

Theme: A Little Lost

Our final theme is a simple one. Three of our five users had difficulty initially finding the Rewards Room of our prototype. When the user spawns into the world in our prototype, there are four arrows. These arrows point left, right, up, and down. The arrow that points down or backwards is directly behind the user's avatar, who has a 180 degree view of the virtual world. This means they can easily see the arrow, but they cannot see the labeled door to the Rewards Room itself.

We interpret this data to simply mean that our design requires a few tools so that the user does not get lost in the world. This will be discussed further in the improvements section below.

Interview Analysis

Qualitative Data

Not including the Ease of Navigation rating of our interview questions, we are left 4 qualitative questions about our design.

Do you think the additional features added would help promote engagement in the classroom in comparison to Zoom?

Several of the users focused on the comparison to zoom, and these comments all followed the theme of “this prototype is way more engaging than zoom”. All of our users believe that this concept would give students further incentive to interact with others inside the virtual classroom, and thus would drive up engagement significantly.

Does the shared IDE system seem like it would realistically function in a virtual learning environment? Why or why not?

All of our users believe that our concept and design of a shared IDE would function in a virtual learning environment. Most of their reasoning were really similar. They thought that the ability to see each other’s code and mistakes all in one place, with the option to pull up a “personal” IDE overlay would be a huge improvement over the current shared coding rooms or coding alone in a Zoom breakout room and having to share files on discord or github.

How do you feel about the chatting system and its functionalities?

Our participants almost all agreed that the chat system was a significant improvement compared to what exists on Zoom, webex, skype, or gather town. One student felt that there were a lot of options, but that they did not think it was something they couldn't get used to pretty quickly.

Do you feel that the gamification of our design is a positive addition or a detriment to the virtual learning environment?

Our participants certainly felt that gamification **could** be detrimental, but they suggested that use of learning games or coding games in a functional design would limit the over use of gaming space and the under-use of the classroom/ learning space. All of our users felt that it would increase engagement, because it added a place students could bond more with each other.

Improvements

We found from all the aforementioned data, and the data in our transcripts, that there is one change we could make to immediately improve our prototype, and one change that could be implemented in a functioning alpha design that would immediately improve the users experience in the world.

The change to the prototype would simply be labeling the arrows, adding a double layer of Ease of Navigation. Being that the doors are already labeled, if we also labeled the arrow to where the user was going in our click to explore prototype, the user would theoretically be able to find their way around with no help whatsoever.

The change to a functioning alpha version of the design would be to include a minimap, or a map that was bound to a keybinding that a user could press and see on their screen as an overlay. This would add a layer of comfort to the user because they would always know where they were and where they were heading in the world

At least one user stated that it may be a good idea to change the games in the virtual world to be more educational, like a coding game. We agree that this could be an improvement in the functional design, which would further increase engagement.

VI. Appendix

Focus Group 1 Transcript

Jacob: Alright, so here we are! Focus group. Let's do this. We've got Dave, Casey, Jackson and Maddie. Before we get started with all the questions and discussion and everything I am going to tell you guys kinda what this is all about. So, in terms of definitions here I have to make sure you guys know these definitions.

Video Conferencing is used for two or more people to have a conversation with each other with audio and video support.

When your professor has class on Zoom you are using video conferencing software.

When your grandma calls you on Skype or Facetime you are using video conferencing software.

And if anyone has any questions please feel free to stop me. So next we have the definition of virtual world. I am sure you can kinda figure out what that means but I am still going to define it.

A virtual world is a simulated environment in which the user controls an avatar that they can use to interact with anything that may be simulated in the virtual world. So for this example were going to use Gather Town, we briefly discussed it beforehand so everyone would be a bit familiar with it.

Gather Town is a virtual classroom where you can control an avatar representing yourself.

Gather Town is used by some professors to host classes instead of Zoom or other video conferencing software.

The professor and students can speak to each other, share their screens, and use a webcam just like traditional video conferencing software.

Proximity Chat is used in Gather Town to create easier breakout rooms. You can only hear people that are in your avatar's general vicinity. Instead of the professor having to worry about putting people into breakout rooms you just have to walk to your breakout room.

Interactive whiteboards and games are provided to help the virtual world feel more like a real classroom.

So, the whole point of this focus group is that my group in this class is doing a design challenge where we will design a virtual world for a classroom that can be used by multiple courses in the College of Computing and Informatics for online learning that enables active, team-based learning. In this classroom students may be learning technical skills such as programming, AI, data science, as HCI.

Our goal is to create a virtual world that is more enjoyable, efficient, and engaging than using traditional video conferencing softwares like zoom.

And I do have a couple of our design ideas here but I do think it might be best to go for the questions first. Ok so I guess the first basic question is do you guys find it easier to focus and retain information in person or online? And what are the reasons behind your answer?

Casey: I would say in person because I am more held accountable for if I am on my cell phone or not, if I am being completely honest.

Dave: Yeah pretty much the same here, like if I'm on my phone it's like whatever, but if I'm in front of the teacher then I feel a little guilty. So I tend to spend a little more time focusing on the instruction.

Casey: I totally agree with that.

Maddie: I'm quite neutral. I have trouble focusing if it's just a lecture, but I tend to learn better if I am at home in a comfortable space, coincidentally.

Jackson: I am finding that in college for me personally it doesn't matter either way because there is nobody really restricting me from glancing at my phone during class and not listening. So I would say it doesn't matter either way for me, I feel accountable either way.

Maddie: I'll add one more point. With the online it helps my focus cause I can actually see what I can read. Some classes are so big or there are people sitting in front of me and I can't read what they're trying to explain. So I feel like at home it is much easier to focus because I can actually see what is written on the board.

Jacob: Yeah I agree with that one too actually, that's why I stopped going to my stats class. Or one of the reasons.

Casey: That's a good point, I didn't think about that.

Dave: Some of the classes have like a live transcript so like they have all the words listed like out beside them, or at least some of my classes have.

Maddie: My stats professor needs that.

Jacob: Yeah, I think with certain video conferencing softwares you can have like subtitles or something. So now, it seems like most of you find it easier to focus and retain information while your classes are online. But do you also find it easier to complete assignments when your class is online, or easier in person? So whether it's your in class assignments or a group project or homework or anything.

Casey: I feel like it's easier to do at home cause I can do it on my time like rather than the teachers time. Where they'll be like "Oh you have to submit this by the end of class" where if my class is asynchronous it's just "Hey this is the assignment for the week I'll complete it when I'm ready to do it when I am filled with enough information to actually do the assignment" rather than "Hey I just taught you all this here's your assignment do it and submit it and then you can go home for the day".

Maddie: I also agree with you on that one. I think the only point that I would disagree with is group work because I feel like that's better in person. Due to less communication errors and with the computer science field it's much easier to show code than trying to explain online.

Casey: That's a really good point. It's true, I didn't think about that.

Jackson: Yeah, also with online as well I prefer online too because at home I already have it set up to where I can multitask as well. Because I have like for example, two monitors. And like you said Casey it's much more comfortable to just do it at home because you can just do it on your own time. Where you work or that kinda stuff, you can just work around that kinda stuff.

Dave: Yeah no I agree, I think online is much better. Because if you're having to turn it in and you have class on Tuesday and let's say three classes on Wednesday and then that class again on Thursday, you barely have enough time to finish that assignment whereas most online classes will just have it due at the end of the week, which is much nicer. It gives you a lot more time to work on assignments.

Jacob: Alright so, how do you feel remote courses held on video conference software like Zoom, Webex, or Gather Town differ from an in person environment, and would you consider these differences to be positive or negative?

Dave: I feel like it's a double edged sword. Cause on one hand you can control the amount of distractions in your environment online, whereas if you're in person if there's somebody in class

watching Netflix on their laptop that's kinda a big distraction. But then again you also have to hold yourself accountable so it's not quite the same.

Jacob: So you would say it's different in the sense that there's less distraction at home?

Dave: Yeah, if you can hold yourself accountable there definitely is.

Casey: Now, I personally can not stand zoom or webex. There's been plenty of times where I've been in a breakout room where none of my group mates have spoken and we all just sit there in silence. Whereas with Gather Town the teacher can join. I know they can do that with zoom but it's a lot easier to see where the teacher is and if they're coming to your group or not rather than with zoom where you're just kinda staring at a screen with four names. I would consider Gather Town a much more positive experience than zoom or webex, I feel like those are kinda negative experiences just from my experience of using Gather Town I really enjoyed how we all had our specific groups at our tables we had to sit at while the teacher was at the podium and we could see what the teacher was doing. I think the most I have ever learned from an online class was through Gather Town.

Maddie: Yeah, I wish I got to learn Gather Town (Maddie used Gather Town as a project topic, did not have a class in Gather Town) so I could have that experience but I do agree that with webex and zoom engagement is hard and it's hard to get the teacher's attention. When we are forced into the breakout rooms trying to get the teacher's attention was nearly impossible. Because you would have to leave and then they would have to assign you back into the room. That's the one negative of the online classes at least for zoom and webex, just trying to get the teacher's attention versus in person.

Casey: Yeah I agree with that engagement aspect with Gather Town compared to zoom its a lot less forced.

Jackson: Yeah, I'll have to agree with Dave's statement, its kinda a double edged sword. I mean in a real classroom you don't have to worry about people having a bad mic for example, we all hear the echoing screeching mic that someone has. Or you don't have to deal with someone's dog barking or kids crying or stuff like that. It's usually a much more controlled environment in person. The zoom breakout rooms can sometimes be not that great.

Casey: Gather town is much more useful when it comes to group work or a teacher trying to go to a specific person to help them whereas zoom is great for if it's a teacher lecturing to a class and doesn't stay for questions, doesn't answer questions and doesn't really engage with the students.

Jacob: Yeah I've actually noticed the same thing you have in regards to Gather Town. I have had so many breakout rooms on zoom and everything where nobody talks. But I have found that people are much more likely to talk to each other in Gather Town. I guess it's because in comparison to zoom you're just talking to a name but I guess in Gather Town you can talk to their little character?

Dave: Also like you gamify it almost.

Jacob: Yeah, that's actually a big point of what we are trying to do, which we may get into later. So I guess overall you're all saying that the biggest difference between zoom classes and in person is the difference of distractions? That seems to be the consensus.

Casey: I would say that, yeah.

Jacob: Ok good, great. So now I know that this could be inferred from your answers from the previous questions but I am still going to ask anyway. Overall do you prefer online or in person instruction? And why is that?

Casey: I guess it's kinda a loaded question there. Because I guess it depends on the type of class you take, what class you take it with, what is expected of you, and how the class will be delivered. If the class is going to be delivered via zoom and the teacher is just going to lecture, I am not going to pay attention, in complete honesty I am going to lose my focus and I am going to do other things. Whereas if that class where the teacher just lectures was in person I would be more focused in class in person rather than online. But if it was online and it was via Gather Town and it was more engaging with your group to process and apply the information you are learning I would be more apt to learn in a virtual setting. It just depends on how the class is delivered.

Jacob: Ok so I guess would you say that it's less how the class is delivered but more of the engagement level of the class then?

Casey: Yes.

Jackson: Could you repeat the question again real quick? Sorry.

Jacob: Oh yeah sure, so overall, do you prefer in person or online instruction? Why?

Jackson: I would say online, I'm a very bound to the letter kind of person. I want the instructions laid out in front of me in a document or something like that. In person can be kinda hit or miss. They'll tell you one thing and they'll come back the next week and they'll be like "Oh I thought

I told you to do this" and everyone is like "No, you didn't tell us to do this". So I much prefer online just because the whole "They put it on canvas so that's what I did" and that's the end of it. There's no hit or miss with it.

Jacob: There's no confusion about who said do what or anything like that.

Jackson: Mhm it's all documented. If you have any questions you can refer back to the document, it's just all there.

Maddie: I guess for my opinion on which one I prefer, I get distracted either way, in either environment. In person I get distracted by my computer, but online it's much easier to pay attention for me because as I mentioned a few questions ago I like that I can see the slides, I can read what I need to read, I can actually hear the teacher clearly, and if other people want to speak up I can hear them clearly. Versus in a large classroom where it would be kinda embarrassing where I could ask in person 'hey can you repeat this'. I just enjoy the accessibility. I guess the only drawback to that is just that for engagement level it's just avatars or the teacher's face, but still I prefer the online classes despite the negatives.

Casey: That's another very good point.

Dave: Yeah, I'd say that I prefer online. But only because I have to work full time, so having online classes really gives me the flexibility I need in order to work around the schedule that I have. And also having the ability to record the lecture in a zoom call and then referencing it later when I am studying is very nice. I am able to work at my own pace, which I feel like you can't do in class if the professor continues to talk, I am not going to be able to get that information back unless I have a recording device in the room. A lot of my classes, what they'll do is they will record ahead of time, post the recording, and then you can watch it at your own pace, which is really nice. That gives me the option to maybe chill out for a couple hours after I get home from work and then get to class work on my own schedule. So I would say the main benefit of online classes is really due to scheduling for the most part. At least in my case, I know not all classes are like that, a lot of online classes require you to be in a class at a certain timeframe but from the few that offer flexibility it is very nice to have as an option.

Jackson: Yep.

Casey: And you're also saying that it;'s convenient too.

Dave: It is very convenient, absolutely.

Jackson: I'd like to add on to that too. A lot of these video conferencing softwares allow you to log all of your meetings, documents, and everything. So students can access that anytime they want. You don't have to worry about having to give it out in class or anything like that. It's just all there on the cloud.

Jacob: Ok yeah, great those are some good answers. Now that we got those questions out of the way the general consensus is that you guys prefer class in an online setting, now I have more questions. Since we have all been learning virtually since around MArch 2020, has anything changed in the virtual environments that you have used? Or has it just mostly stayed the same? Like you hop on the zoom, your teacher talks, and that's it? Or has there been any sort of evolution in terms of what we have been using in online classes? Or has it remained the same because it works good enough?

Casey: Yeah I go back to the same thing of the most I have ever learned out of a class within the computer science field was when we used Gather Town. Zoom is more like a conference call where Gather Town was more of a virtual world that was more engaging.

Maddie: The one difference I noticed was basically upgrading the programs they were using. When we first moved to online classes a lot of my teachers predominantly used WebEx, which was ok to use, was a little jarring. Then we got to use Zoom for my next semester. Which was a lot better. The changes really depended on if the teachers adapted to online learning. I think for some teachers when we first went to online classes they didn't adapt well and they assigned too much homework, or they didn't know how to use the software. I think I noticed a change in teachers using software better, being able to share their screens, recording their zoom lessons for others to use later, putting passcodes to make sure random people don't join, and putting in polls to make sure people pay attention. They are trying to get better with the engagement, that's the main change I have seen with online learning.

Jackson: Yeah, I would say one of the biggest changes I saw this past year was discussion boards, and chat software like Discord, google meets, and that kinda stuff. Everyone is starting to be connected a lot more, the teachers have started to encourage the use of discussion boards and discord. I feel like the teachers have kinda caught on to how we can work together while in an online setting. It has made the transition a lot easier over time.

Casey: I agree with that.

Dave: I found that some of the teachers really did have a lot of difficulty with the technology. A lot of their coursework seemed really disorganized. As time has gone on they have cleaned everything up quite a bit. I did find that there was an issue with group work towards the beginning, where a lot of it was difficult to communicate with each other effectively because

there was no organizational structure. It's nice now that our classes are able to use a bunch of different pieces of technology now to make things a lot more seamless, as opposed to all being hosted on one platform.

Casey: I would have to agree with what Maddie and Jackson said though, as to when the teachers started to adapt and learn how to use the online software it did become more tolerable to be in an online class. It wasn't as 'pull out your hair' anymore.

Jackson: Agreed.

Casey: Where half your class would be spent trying to tell your teacher how to share their screen or teaching them how to open up the zoom chat so they could answer questions.

Jacob: Ok and so with all you have just said about these video conferencing softwares you've been using, do you think based off of everything that we have talked about now that moving to a virtual world rather than video conferencing software would be an improvement or not much would change?

Casey: Improvement, 100%.

Dave: It would be a lot more fun.

Jackson: Yeah I feel like if online classes become more common everyone's mindset will change to 'Let's improve what we have already in our virtual space' I guess.

Casey: And it's also proven with video games, right. Some people very much enjoy the virtual world. They enjoy that type of game because it is fun for them. So why not incorporate that into learning? When people have fun they are more engaged, when they are more engaged they learn more.

Jacob: Ok, and so when attending a remote course whether a video conference or virtual world, how does being at home affect your learning?

Casey: It can be very distracting, but it can also be very rewarding by having no distractions.

Jackson: Yeah I mean it kinda has its ups and downs, sometimes I'll be in class and there's something I gotta do that day and I'm like 'Oh, I can just leave class early' or something like that. But there's other times too where I'm like 'Oh thank god I'm home, I can get everything done'. It's kinda a double edged sword.

Casey: I think it also goes back to what Jackson said about being in a controlled environment for the in person classes rather than being at home. You can't really control your neighbor if they're cutting their lawn, or if they're fighting upstairs, or if there are cars going by.

Maddie: Or dogs barking.

Dave: I think it also has a lot to do with individual discipline too. Because it is so easy to get distracted if you're at home. If you're in class for example you can't be playing a video game, or it will be harder to. But at home you could be. If you're able to hold yourself accountable and actually pay attention in class and put in the effort, I think it is a lot less distracting to be at home. Because you won't have to deal with a guy in your class watching netflix.

Jacob: Ok, and do you think a more immersive program would affect the separation of home and the classroom? So let's say a virtual classroom right, do you think a virtual classroom would help your online classes feel like a real class?

Jackson: I would say it depends on how far they go. If I have to walk around or have to do something then yes, I would say I would help a lot. Because I wouldn't have that second thought of "While this person is talking I can just read up on this article" or something like that. One thing I would love to see is a virtual reality classroom.

Maddie: To hop onto Jackson's thing I do think if they do get more immersive and more into it, making it more interactive, I think it would help out. Because there are times in class where they're just talking, I'd like to do other things but it's just a lot of talking and not really engaging. I think that's the main point, just something to keep us engaged, something to keep our attention to help with the learning aspect.

Casey: And in the same respect, to piggyback off that, I feel like it also can differ from person to person. For some people there will never be that separation from the home and classroom because there are just some people who have a very loud home and a classroom is the way for them to escape that and focus. But I feel like with online classes if they become more widely known and stay around I feel like more people will be like "Oh I'll just go to the library for my online learning". When I was in Gather Town I would use my arrows keys like I was in Minecraft and I would just do circles, it kept me entertained, and it kept me engaged in class instead of going off and reading an article.

Jacob: Yeah so it's like the option to be able to do something and interact instead of just sitting and listening is more stimulating.

Jackson: It's like twiddling your thumbs.

Jacob: Alright so, do you find professors and TAs to be easily accessible in video conferences like zoom?

Jackson: Sometimes during a video conference I feel more rude asking them to stop during the video conference than in person. I don't know what it is, but I feel like because they kinda have everything scheduled on a video conference, and if I say something everyone is going to hear it. In some of my in person classes the professor will be talking and there will be TAs off to the side and I can wave my hand at them and be like "Hey I don't understand what she just said (the professor)".

Casey: I kinda feel the opposite of that, when its in person. I remember in 1212 I did not want to ask for a TA's help while the teacher was talking. Where I feel like if it's in zoom I can either just message the TA privately or message the teacher privately. The teachers I have had when it came to zoom conferences, if they were asked a question privately they would be like "Oh this is a great question, let's explain this so you can further understand the topic I am explaining".

Jackson: I didn't think about that, I didn't think about private messaging.

Jacob: But do you ever have issues getting responses when you message the Teachers and TAs if you don't want to speak out?

Maddie: Yes.

Casey: Yeah sometimes.

Dave: I feel like to a certain extent it is so much easier for a person to ignore a message in their inbox as opposed to ignore somebody that is saying something to their face.

Casey: That's true.

Maddie: I think it varies from teachers to TAs. I have had some classes where the TA is super engaged, like they even joined our Discord and kept us updated, posted diagrams, told us "Hey by the way the test is coming up", super involved. Then I have had TAs that are grading my work and I am like "Hey how's it going?" and I get radio silence for months. Or the teacher has the zoom class and people are asking questions in the chat because they don't have a mic or don't want to speak, and the teacher just bulldozes over the chat, they just think the chat does not exist. So I think it varies from teacher to TA.

Jackson: Yeah.

Casey: That's very true as well.

Jacob: Ok and do you think perhaps having different chat channels like on Discord would be useful? For example if there was a chat channel specifically for questions the teacher would know if any messages show up there the teacher would know they would be questions, someone needing help, rather than just students talking to each other?

Dave: Oh absolutely.

Jackson: Yeah definitely. For example, in the games I play, massive multiplayer games, there's thousands of people online at once and they have subcategories of chat, there's the help category, general category where it's just people talking back and forth. I feel like if that kind of system can manage thousands of players I feel like it would work really well in a classroom.

Maddie: One of my teachers had a tab for questions but if you direct messaged the teacher they wouldn't respond. But the second you put a question in that discussion board they immediately respond. So I guess it depends, I think they do want something Just for questions instead of just having cluttered inboxes.

Casey: I feel like they also, when it comes to that type of thing, teachers should have a thing like Discord when you get a message. Say like if Jake were to message me and I get that little notification in my headphones that says-- I can't make the noise but you know the noise.

Dave: de-doop

Casey: And it's like "Hey you got a message", I feel like teachers, when they get privately messaged should have a type of system like that so they are notified. Or they should even have something like Twitch where if you get donated it pops up on your screen. Now I do know that it can get very annoying if the teachers are not explaining themselves properly. But having different systems that are to the teacher's preferences, if they mightn't hear the noise they can use the popup instead.

Dave: *Plays Discord Noise*

Casey: That noise.

Jackson: Yeah I guess it's just a software limitation now. That they just need to add more features to the conference call softwares.

Dave: I think it's also because online teaching to this scale hasn't been done until 2020. So hopefully we will be adding features as time goes on. There's obviously a lot of issues that need to be fixed or a lot of quality of life upgrades that could happen that just haven't happened yet.

Casey: A lot of things that need to be addressed.

Jacob: Yeah so exactly, and if we were to move from video conferencing like zoom to a virtual world like Gather Town, maybe more specifically for CCI majors, if you wanted something out of it, a feature, or if you wanted to be able to do something in this virtual classroom, whatever it may be, what would you want? What would you want to make the virtual classroom a better experience?

Dave: Maybe like virtual office hours becoming a regular thing. A lot of my professors would still have office hours where you would still have to meet them in person, even if they were online teachers. I just prefer to be able to talk face to face rather than talking over email. So being able to know that I can join a voice chat with my teacher between these hours would be really nice.

Casey: But also for virtual office hours the teachers have to be there on time.

Dave: Yeah.

Jackson: I would honestly just want more personalization. More chat channels, and maybe some filters to filter things out.

Dave: I wanna be able to get like, a virtual hat if I do something.

Jacob: Like a reward system.

Dave: Yeah some sort of reward. I wanna get like coins that I can spend on accessories for my character.

Jacob: Ok yeah, that's interesting.

Jackson: Or for example how about this, what if the teacher made a challenge or assignment for students to do. The first person to get it done gets 20 points, with that 20 points they can buy their character a cool new shirt.

Dave: Yeah, like a gather quest in an MMORPG.

Jackson: Yeah like look at your buddy Tom over there, he's got the coolest shirt so you know he did a lot of work to get that shirt.

Jacob: So something to show that you're better than the other students?

Jackson: I mean haha yeah.

Dave: I want a loot box feature.

Casey: But for virtual learning for CCI students I would 100% say for it to all be through Gather Town. It is much more engaging, the teacher can show things much more easily, and personally go to each group and draw on their white board. The teacher that I had for Gather Town in each block she had a question to do for the quiz so you would walk around the classroom to get the questions, it was definitely engaging to get to walk around to make sure you got them all.

Jacob: Earlier Maddie was talking about how it's difficult to show someone code while sharing screens and everything. In zoom and Gather Town once you share screens you're kinda taken out of the class. All of the focus is on the screen, it's like you're just watching something, you're not watching/listening to a person anymore. It takes you out of the environment. How does the idea of having an IDE built into a virtual classroom where students can share their code with the professor and other students sound? You would be able to edit it live to get help with debugging. It would work like if they took a google doc but made it an IDE and slapped it into a virtual classroom. So if you need help with your code your buddy can walk up to your computer or whatever in the virtual classroom and edit your code live like it's a google doc or something. Do you think something like that would be a lot more useful than screen sharing?

Casey: Oh yeah absolutely.

Jackson: I think the biggest problem with screen sharing is when you're in person and there's something wrong with the code you can point directly to where they messed up. You can't really do that when screen sharing. A live IDE like that would be as close to real life as you could get.

Jacob: Yeah that's the idea and that's one of our design goals that we are shooting for is to have a built in IDE that works using Markup so people can do exactly that. You could have the professor come up and highlight your code where you messed up. Now how would you guys feel if professors could assign all of your assignments for the class inside this virtual classroom? So they could look at your assignment at any time and see how you're progressing. Do you think this would be a good feature or a bad feature? It would make it a lot easier for the professors to help students. It may also help discourage students from cheating as well, since the professor can

see their assignments. It wouldn't be an invasion of privacy, they aren't looking into your computer, all of the assignments are in the virtual classroom.

Dave: I would say that is probably less convenient, only from the perspective of if I got my laptop and have to go on vacation somewhere it feels like it would be more of a hassle to navigate this virtual world to go to the assignment room or whatever to completed assignments instead of just opening up google doc.

Casey: The only issue that I would see with it is if a teacher was grading things too early. Like if a student finished A, B, and C, and they had not gotten to D yet because they wanted to finish A, B, and C, and the teacher grades it and gives them points off for D even though they didn't do it yet. That's one of the reasons I like Canvas is because when I submit my assignments I know what I am submitting and I know what is being graded. If a teacher can always come not my assignment to see how I am doing they don't know I am fully done yet unless there's a way for me to tell them that I am done.

Jacob: What if there was a submit button?

Casey: I'd be ok with it then.

Maddie: I feel like I'd be worried about TAs and teachers micromanaging, there's always gonna be a TA that leans over your shoulder like "You're doing it wrong" or "You need to do it like this" that would be my worry if they were able to see us doing our assignments live. I know they would be helping, but a lot of times they like to offer a lot of comments rather than actually helping us.

Jackson: Yeah I would like to build off that, one of the great things about online classes is doing the whole thing at your own pace. I know for a fact that if a teacher was looking over my shoulder I'm worried they would tell me to hurry up, or something like that. I don't want to worry about being pressured to finish at the same time as the other students. I wanna be able to do it on my own time. I don't want to feel like I am being punished for doing it last minute.

Casey: Yeah like if you're submitting it at 11:55 PM instead of the day before at 9 AM.

Jackson: Yeah cause stuff happens you know, like work, car problems, life.

Jacob: Ok so would you guys say that a feature like that would make the virtual classroom too much like a real classroom then?

Jackson: I would say less so, I don't have people looking over my shoulder 24/7 in class either.

Maddie: Yeah they still wait until you turn in the paper, they don't come over and read while you're writing it. Could you imagine if you get people coming over to see your code and they're just like dogging your coding style?

Jackson: Yeah that's exactly what would happen honestly.

Jacob: You could set it so people would have to send a request to see your code.

Casey: That would at least make it a nicer feature.

Jackson: It would be like xbox live party invites all over again.

Jacob: Alright so that is all I got, thank you all for participating. I really appreciate it.

Focus Group 2 Transcript

Gabriel: All right. So basically, what I'm going to have you guys do is I'm going to run you guys through some questions about online classes versus in-person classes, and I'm going to get you guys an opinion on it. Just see how you guys learn. We'll get you guys' attention when you're learning. And then I'm going to talk about a product that might cater to whichever side you feel you do better at. So, I mean, I'm going to be asking everybody questions like one on one because I want to hear everybody. But like if you all want to have a discussion about it or you want to add in something, if somebody says anything, then that's cool too. Yeah, got it. Yes, so. So oh, yeah. So first of all, you guys might want to introduce yourselves and just like. I mean, everybody's a college student here, and that's that's no, that was kind of a requirement, but just like introduce you, get yourselves and everything like that. Okay.

Tyrell: I guess I'll go first. My well, like, what do you want to say, like our names in school and stuff?

Gabriel: I mean, yeah, you just just say your names and like maybe what your major is and stuff like that.

Tyrell: Oh, my name is Tyrell, and I'm in it, major.

Canaan: Hey, my name is Canaan. I'm a geology major, and I go to college in Charleston.

Dashawn: My name is Dashawn. I go to Coastal Carolina. I am it major.

Gabriel: All right, cool, so. So, yeah, I'm just going to run you guys to these questions once you guys kind of after I give you guys like the intro questions, I'm just going to ask you which one you prefer overall. And once you say that I'm just going to run you through like some specific questions based on what you chose for the overall question, and I'm going to give you guys that. The description of that product that we're working on. I got it. Yeah. So and just any order, whoever wants to answer it first. How would you say you retain knowledge whenever you're in a learning environment? Like what? What is it that triggers you to learn your best?

Dashawn: Well, I would say. Mostly hands on instruction and. Being Involved physically is more so. I would say it's more so something that triggers me to do better.

Gabriel: Okay. So kind of like tactile learning, like you have to do it in order to actually understand what you're doing.

Dashawn: Yes. Now I can understand with written instruction as well, but I feel I do my best work with tactile learning.

Gabriel: What would you say you do better with, like if you're on your own, that you can just focus on it and you don't have any distractions of anybody else, like in a classroom talking or doing anything like that. But if you're a person, you can ask questions and so on, so forth. Which one would you say that you do better with the tactile?

Dashawn: I definitely do tactile learning better in the classroom setting. Mostly because I like you said I can ask teacher questions if I have any and I feel more focused in that environment, whereas if I'm on my own, I kind of just, I'm in a quiet and different zone with doing that type of work, and I can still do it, but I feel as though I do a lot better in the classroom setting.

Gabriel: Okay, Canaan?

Canaan: Uh, yeah, I pretty much agree with what they said. I'm pretty hands on when it comes to learning, especially with the type of major that I am, have to be a lot more hands on and understand exactly what I'm looking at. But I find that when the teacher explains a concept and really drills it into every everyone in the class and make sure that we understand it before we move on, it doesn't really add any extra like steps or anything that are unnecessary, but really gets down to the core, like what we need to learn and how we can do it. Give some good solid examples, then that's the best way that I learn.

Gabriel: So you would say that in person, tactile is what you're best at.

Canaan: Yeah, because out of person and without really any hands on or learning by yourself is a lot more difficult, right.

Gabriel: Okay, Tyrell?

Tyrell: Okay, so for me, I kind of agree with them, but it honestly really depends on the class. For example, some of my classes from my major have been online since I started since I've gone since freshman year, basically. And some of the online classes have been really, really easy to do, right? Like online, I'm sitting and I'm like yeah, I didn't really need to go to a class for it. It's like, it's pretty straightforward. But you know, there's also like. Some classes, mainly like coding classes where I'm like, yeah, I think I'm better off with doing this stuff in person so I can like, you know, ask questions, be able to troubleshoot in person.

Gabriel: So for the and for those online classes, is it when you're saying that if they were easier to do like do you do you remember like some of the information from like, was it easy to retain the knowledge? It was just easy to complete?

Tyrell: Oh, like, I retain the knowledge because it was pretty straightforward. But really just easy to complete. .

Gabriel: Yeah, and that was the next question that I was going to ask was about retaining information, which you guys pretty much already answered. So the next question was actually going to be do you find it easier to complete assignments when instruction is in person or online?

Tyrell: I guess I can go first as I was last on. Like I said before, it honestly depends on the class, honestly. Like, if we're talking about math class, probably better in person, like I'll probably get the assignment done in person for the most part. But for a lot of it, classes, no, not really, I could do it online tomorrow.

Gabriel: Yeah, I can see that.

Canaan: Yeah, retention, at least in my field of study, was a lot harder just because again, with all that hands on learning, I guess with with the COVID year, I was about to call it a semester, but really just the COVID year and a half, you know, it was it was a lot different, you know, because instead of getting that again, hands on learning experience or somebody right in my face telling me, this is what you need to look for. You have to like, kind of teach yourself through PowerPoints or like. You know, through slides and things like that, you can't really put your hands physically on the rocks or anything so that made it a little bit more difficult, especially for retention. So I'm in classes now where I find myself, the teachers are like, yeah, you know, you learn this in this class and I'm like, okay, I did. I do remember hearing that. But you know, physically seeing it now in lab is different than seeing it on a computer slide or something like that.

Gabriel: Would you say that it's the same thing for your assignments?

Canaan: It's a similar thing for assignments, I think it's kind of interesting now because a lot of teachers are having some trouble returning back to normal classes. And so it's still like kind of a mix of online normal, and you throw in the fact that some of the professors aren't the best at teaching some subjects because they're kind of complicated and you get a recipe of like students not really understanding what's going on. Professors not really explaining it the best way and the concepts just in general being hard. So that but special cases, I mean, for the most part, yeah, like retention is a lot harder with online, but in person now it is a lot easier to do assignments.

Gabriel: Okay, Dashawn?

Dashawn: To add on with what Canaan said, it can be a mixed bag in person. I've had a few issues with different professors not necessarily knowing how to really give out the information to students, but I feel like retention is definitely easier in class, even though you know my major is IT. When we did the COVID year, I would say that it was pretty. I feel it was more so the environment that we were placed in, or at least with me, I feel like it was the environment that I was placed in and being in the house all the time. So, you know, more distractions. In my opinion I had some retention issues. But I would say the classes were definitely easier like Tyrell was saying, but the retention, as I said, was a little bit off, wasn't as good as it would have been in class.

Gabriel: So for the next question, how do you feel about conference software like Zoom and WebEx? How do you think they differ from the classroom environment? And would you say that those things are positives and negatives?

Dashawn: I could see some positives, I guess, from the angle that since we can't meet up until at least have class and some. But I would say it's mostly a negative experience because I've experienced a lot of people that will either have their computers muted or they won't have their video cameras on. So it's not as engaging as it would be in person or if you're in person, you could just fall asleep in class or something like that. But I still feel that the human interaction being in class, that's more profitable results.

Gabriel: I can see that. Canaan?

Canaan: I will have to agree with this on that, that human interaction in class, you know, whether it be through peers or through teachers. Really helps me, you know, I'm sitting next to a few people in classes now and talking to them and just being like, well you don't understand this, but since we're working together, you know, since we're right next to each other, we can kind of ask each other questions and bounce off ideas that the other person might not have thought about just individually.

Gabriel: You Tyrell?

Tyrell: Yeah, I kind of agree with them, too. For the most part, because, you know, it's not the same as sitting in front of everybody in class or whatever. But I think one benefit will be with the Zoom and WebEx stuff, it's like, you know, if you want to have office hours with your professor real quick. But instead of just going all the way to their room or whatever, you could just jump into a Zoom call real quick, do what you need to do and then leave and you're done with. It's one good thing. But for the most part, especially during the COVID stuff, you know, you don't really

get to interact with a lot of your classmates and stuff. Well, you can, but it's like it takes an extra effort, which I did for the most part, you know, try to talk to at least one person in each of my classes that were online so I at least know one person that I could talk to the work about.

Canaan: But if I could say something else, I really think that a benefit about online learning and stuff is the ease of access of like recording the lectures and stuff like that. It's a benefit, but it's also kind of like a drawback because I know a lot of my peers, we can just use it as like, Okay, well, I don't have to show up to classes recorded anyway. I can just watch it later. But at the same time, that can be really helpful. If you're trying to study or something, you want to remember exactly what the teacher said and you write that down in your notes, you know, so it's double edged, really. But at the same time I wasn't a person that recorded, you know, class time or lecture or whatnot, and now I can just be able to listen to it in my own time, that's really, really helpful.

Gabriel: So with that, all that being said overall, would you guys say that you prefer in person or online instruction primarily?

Canaan: Oh, I'll go first. I'd say overall, I'd prefer in person just because that's the type of learning style that we were raised on, you know, it's a lot easier to cope with something that I've already done for a while. Even though online has a lot of perks, and at the beginning it was very like, you know, its highs are really high, its lows are really low. I think it's starting to even out a little bit more. But in-person learning is just a completely different feel. You know, if you go to sleep, that's that's more on you, less so because you're in your bed, you know?

Gabriel: Right. Dashawn?

Dashawn: I'd say I agree with what Canaan said. It definitely becomes more personal if you like you said, you fall asleep less comparative to being online.

Gabriel: Yeah. So overall, you're also for in person over online.

Dashawn: Yes, definitely.

Gabriel: Okay, Tyrell?

Tyrell: I still stand by it depends on the class. Honestly, some classes are just better in person and some classes are just better online.

Gabriel: If you had to choose, though, like I get that you're in the middle and that's cool too, but just if you had to choose one. If you were given the option, where you had a class and it said you

can either take online or can either take in person, there's no hybrid or anything like that because I know a lot of classes are hybrid. I have a couple like that. But if they had to give you a choice, which one would you choose?

Tyrell: It's kind of a hard one to answer, I know that sounds weird, but it's kind of a hard one to answer because like, I don't know. I'll just say in person.

Gabriel: Yeah. Okay, I got you. So since pretty much all you guys said in person, Tyrell I'll run through the virtual settings questions with you just because you're so much in the middle. But I'll get the in-person question first since everybody agreed to that for the most part. You guys pretty much already answered this question, I'll just kind of glaze over it, I won't make you guys go super in-depth with it again. What's the main draw to you guys for the in person? Like, is it the interacting with people or is it interacting with the professor because they feel more accessible, like they're right there? What's probably the most important thing to you guys? What is that key thing to you that makes it so much better than virtual?

Canaan: I'll go first. I think it's the for me, it's the the act of actually going to class if if I have someplace really physically to go and get up to and have to, you know, expend energy or whatnot, wake up and everything to again, like actually go to physically, I feel like I'll be more interested in the subject that I'm listening to and more like in-tune to understand what exactly is being taught instead of again, like having something that is already pre-recorded that I can listen to. I don't want my own leisure, gives me a lot more time to procrastinate, and it becomes more of a. Or it becomes less of an issue to skip or anything like that, even if the class is mandatory. You know, an in-person class, somebody will notice that you're missing a Zoom class if you have fifty people. You know you're just in a sea of no video screen faces, you know, so I definitely think that that is one of the main, if not the main point of in-person versus online learning.

Gabriel: The idea of accountability.

Canaan: Yeah, it's like I can hold myself more accountable if there's an in-person class. Yeah.

Gabriel: Okay, yeah, I got you. I have some other questions to ask you guys just based off your answers to these questions, but I'll go through everybody first. Tyrell?

Tyrell: I guess it's just, to be able to interact with people face to face. That's pretty much it.

Gabriel: Okay yeah, Dashawn?

Dashawn: Definitely in agreement that it's interacting with people in person. More specifically, my professor. Just to ask questions, get your questions answered, clarify any hiccups that I might

have with some of the work that we've been given. Yes, I definitely think it's the person-to-person aspect.

Gabriel: So to you and Tyrrell if you were in a virtual class, that was a bit more interactive with everybody, as in instead of just boxes of Zoom faces, so on, so forth, you could actually talk to people one on one. Much easier than it is to do a Zoom call because Zoom calls, you have to do breakout rooms and it gets a little tedious trying to talk over professors and everybody's learning. Would you view virtual learning a little bit more positively if there are features to actually interact one on one with both the professor and with your peers?

Dashawn: I'm. Hmm. Repeat.

Gabriel: So essentially, if you if you had a virtual system that or a virtual environment that was more interactive than a Zoom call, so instead of instead of just a whole bunch of faces just lined up and you have to if you want to talk to the professor while the professor is teaching, then you have to basically talk over her and everybody can hear it so and so forth. And it's very hard to talk one on one with your peers and TAS because you need breakout rooms for it, right? If you had a virtual environment where it was much easier, like the accessibility to talk one on one with the TAS and with your peers was almost instant. And if you had a way to talk more with your professor in that virtual setting, would you view that virtual environment a little bit more positively than you do Zoom and WebEx?

Dashawn: If things are updated and stuff like that, then yes. I don't know how much necessarily, just because, you know, it's a hypothetical, really, and I don't know how I would feel in that situation, but I can say that I'd definitely take a look at it again and I definitely. I'd think more positively about it.

Gabriel: Okay, Tyrell?

Tyrell: I would say, yeah. It'll make it easier to interact with everybody. You don't have to do the extra step like raising your hand or a private messaging, somebody in the Zoom call hoping that they see it and stuff like that.

Gabriel: Right. So your issue was essentially just the accountability thing, if there was a way for professors to hold a little bit more accountability like a virtual roll call or maybe for you for personal accountability, like maybe interactive ways to make sure that you're on top of paying attention to the things that are going on in class. I know there's things like poll everywhere. That's what a lot of teachers use to make sure that you're paying attention. The knowledge is being told, but there were interactive things like that in a virtual environment. Do you think you would be more inclined to use virtual?

Canaan: Yeah. And I mean, I know that school by school, they have spaces for students who are virtually learning to like actively, you know, get up and go to as almost like a classroom setting. And that can kind of become a routine. So students that are like me who are like, Oh, I don't really want to stay in my room because it doesn't give me the drive to actually do schoolwork, you know, can actually get out and do that stuff, right? Well, I do believe that having some app or website or forum or something like that, if the teacher wants to make the class mandatory, you know that would really help. Like instead of at the beginning of the semester, the teacher saying, Well, you know, I'll make sure to look a little bit to see if everyone's camera's on. But you know, I'm not really going to do anything about it like that doesn't. Yeah.

Gabriel: So, yeah, my next question was basically about how the pandemic learning affected you, or how the pandemic in online classes affected your life. But we pretty much already stated that. So I'll just kind of give you guys the scenario that I was going to give you. If there was the main thing that you guys are saying, that there was a lack of tactile learning because I remember Dashawn and Canaan especially were saying that you guys really struggle with the fact that you couldn't really do hands-on things in front of the professor to ask the questions you needed. And if there's any misconceptions, you couldn't do anything with that. So if there was a virtual environment that was more hands on. As in, if you're doing an assignment, you could do it like, you know how a lot of things have screen sharing. Instead of sharing a screen per say, you could share your work like you could. You could actually put it into an interface where you could do the work on your computer. Your professor will be able to see it. Maybe make some edits themselves if you give them access to do it. Kind of like how you do with Google Drive, Google Docs. If you let a person come in and give them rights to edit it and view it so on, so forth, they can do stuff with it. So if there was a virtual environment that kind of took something like that so that you could do the hands-on work with your professors, still they're guiding you along. Would you be more inclined to a virtual environment that does that?

Dashawn: For me personally, while I do like having a teacher that can evaluate my work and be right there or if I have a question, the issue with that for me personally, is that I don't necessarily do well with people watching me while I work. You know, if I am on my own, it's perfectly fine. And then, you know, I'll ask a question when I need it. But like having somebody looking over my shoulder and, well, virtual,

Gabriel: That's not necessarily what I meant. Like, it's not like they're just watching you the whole time.

Dashawn: Yeah.

Gabriel: Okay, Okay. Like, imagine you're doing an assignment and you call over your professor in this virtual environment and you tell them, Hey, I'm having this issue. Let's say it's a code. Okay, I'm having an issue with this block of code. So they say, Okay, give me access so that I can see what's going on and maybe help you edit it, and you give them access and they'll be able to see it as if you're screen sharing. But instead of just screen sharing, they can also edit what you're doing as if it's a Google doc.

Dashawn: Oh, okay, well, if that's the case, then I think it would be even more of an improvement to the online aspect, and I'd be more keen to work in that space over something like Zoom, where you just have to screen share but they can't really do anything.

Gabriel: Okay, gotcha. Canaan?

Canaan: I would still be kind of reluctant about it, but I would definitely give it more of a shot. I would be more open minded to it than just like PowerPoints on a screen showing me the same information.

Gabriel: So you feel like it would make it a better experience, but you still don't think it would be equal to in person.

Canaan: Yes, I would think that it would improve online, but I believe that the faults that online have and the faults that in person have aren't really too synonymous. Like if you understand what I'm saying to where online learning is its own type of thing and should be kind of mediated in a different way than in-person learning is?

Gabriel: Okay, Tyrell?

Tyrell: Yeah, I would be down for something like that, especially with anything like coding work. That's when it's like not really like the actual programs we are supposed to do by ourselves but like the practice work to help us understand, like the new concept we're supposed to be learning, you know? Like show the professor, make sure we get on the right track and stuff, right? But I don't like extra steps to take screenshots of the work and show them and all of this stuff, and they can actually go in and show us, like, what we're doing wrong.

Gabe: Okay, so my last question for the in person is. I'll start with Canan, because you kind of lightly touched on it with your response, as you gave me. What do you think are the major shortcomings of virtual classrooms? Like what would you say the same way I asked you what your main appeal for in-person is? What would you say is your major? The major red flag of online to you.

Canaan: A major red flag of online, I guess, really is like technical difficulties and scheduling. And I mean, we all know scheduling in person is can be really hard, you know, you have to find a time and make sure that you get there on time or early and all that other stuff like that, where as online you can, you know, functionally be in a very professional top but unprofessional bottom, you know, like have weird pajamas and stuff like that. But with technology becoming more prevalent, like in our daily lives or whatnot, at least I've seen it be more prone to failure or drawbacks and things like that which can be prevented. But you know, things happen. and it's really hard to justify when those things destabilize like a whole classroom, because all of it is online, you know, just because a website is offline or just because there's service that needs to be done or, you know, just random day to day things. I mean, even down to forgiveness, from a student to a teacher, you know, or connectivity issues and all that other stuff like that. Yeah.

Gabe: Dashawn.

Dashawn: Could you repeat the question? I was gone for a second.

Gabe: So basically, what are what are the same way that I ask you what your main appeals were for the in-person setting? What are your major red flags for the virtual classrooms? Like what? What one or two things are the main problem that you see with online classes.

Dashawn: The. It in a sense, I would say, the enablement of kind of slacking off and being lazy. You can. Well, I heard Canan over again and say something about being, you know, being professional up top and non-professional bottom. Whatnot, but having a little bit too much leisure can lead to that. So. I would say that is a red flag. I think that's my biggest red flag, to be honest with.

Gabe: So it sounds like it's what kind of mentioned earlier as far as like accountability for you to be attentive in the classroom. And actually, yes, actually give yourself, you know, give the class the attention that you would if it was in person.

Dashawn: Yes

Gabe: Okay. Tyrell.

Tyrell: Seems like there are red flags for us in terms of online classes.

Gabe: Yeah, so yeah, at the same way I ask about your biggest thing for the in person. What do you think the biggest shortcoming of the virtual classroom?

Tyrell: Like the classes that don't really have like, you know, Zoom meet ups at a certain time or like. Well, even with those classes to do like after the Zoom call or whatever, if you have questions because sometimes we get kind of hard. Well, I was going to say it can get kind of hard to contact professors and ask questions, but that's kind of not really an online thing. That's just a college thing in general.

Gabe: So you mentioned the asynchronous thing, like if you're if it's an online class that doesn't have any meeting times like it's just completely online watch videos or watch or read PowerPoints and stuff like that.

Tyrell: Um. Yeah. Trying to think. I guess it's the one, I guess, really is the one red flag is just , you know, human computer. I mean, the human interaction is not fully there, right?

Gabe: Okay. So. Okay, so I'm going to move to the virtual questions just because you were on the fence Tyrell and most of these would be aimed towards you. Oh, well, I mean, some of these can be asked for anybody, so I'll just ask them to you guys, but you can just kind of just. You don't have to go as in-depth if you don't want to just kind of like, give me an answer and I'll understand what you mean, probably. So while you guys have been while we've all been in online. Have you seen anything changed with the virtual environments that you use, like have you seen any changes in Zoom? Have you seen any updates to WebEx that actually change the game stuff like that?

Tyrell: Um, I don't think I've ever used WebEx.

Gabe: I think that might just be. It's not just a UNCC thing, but I haven't seen it very much. So let's just focus on Zoom. Yeah, yeah. Have you guys seen anything? Anything that's really changed the game was like, have you seen any updates that have come out that have been like, Oh, that's new. That's really useful.

Dashawn: No, really. Not really. I think I think when I was using this semester, the only thing that I really saw get updated was the fact that you could have a virtual green screen background, but that's not really the most important thing. Accessibility and whatnot for classes. I think Microsoft team got some updates, but I'm not entirely sure about those.

Gabe: I heard no's from you guys, too. So is it pretty much like nothing has really changed for you guys?

Canaan: Yeah. Nothing. I just going back and thinking about it, nothing really has changed for Zoom, for me. I mean, other than the occasional funny green screen background or, you know,

zoom or whatnot, or I mean, the raised your hand feature is kind of nice, but I do believe that was implemented pretty early on.

Dashawn: So, yeah, that's the same with the Microsoft Teams as well.

Gabe: Same for you Tyrell

Tyrell: Yeah, pretty much.

Gabe: Okay. So if they had used if they had implemented more things, that would have been helpful, like the things that we talked about before, like if they would have over time seen that a lot of people were or at least heard from just feedback and so on and so forth that it was hard to interact or if it was hard to do hands on assignments, if they would have kind of continually updated the application based on needs that they heard from users. Do you guys think that you would have had a bit more of a positive outlook on Zoom?

Canaan: You said if they started updating Zoom based on like user reviews

Gabe: And stuff like that.

Canaan: Yeah, I mean, I believe they toOkay a lot of the input that some people who actively use Zoom a lot gave, then Zoom would be a little bit better of a platform for. I mean, it's online purposes or whatnot. I definitely think so. Yeah.

Gabe: Um. Dashawn?

Dashawn: You repeat it.

Gabe: So basically, if they had if they had updated things over time so that it was more interactive, like we talked about before, it was more hands on like assignments could be done in person or not in person. I'm sorry, I keep saying the assignments could be done in real time, like with your professors and with your peers and stuff like that. If they would have basically just updated things over time so that it was more friendly to the feedback that they got. Do you think you would have had a more positive outlook on Zoom?

Dashawn: I would definitely say so. I would definitely say that. Yeah, but I agree with that, that Makes sense.

Gabe: Um, Tyrell.

Tyrell: Um, yeah, I pretty much agree with them, honestly. Yeah, pretty much.

Gabe: Um, so the next question I want to ask is. Is about virtual, a virtual virtual conference thing like Zoom or like WebEx or Microsoft Teams, like you mentioned Dashawn versus like a virtual world. So like if you're moving around like in an avatar, like in a game, you're just moving around an avatar and going towards people and maybe talking to them like that. Would you think that that would have been more interactive or more or more useful than just a Zoom meeting or something like that? Like if you basically had an avatar who was I was walking around and maybe once you go up to somebody, you can kind of like, you could talk to them. You could share work that you're doing with them once you actually get access to them and stuff like that, you think that would have been better? Do you think it would have been kind of the same?

Dashawn: Hmm. I actually think that's. Because it's more engaging instead of just sitting down and. And typing here or there, clicking on tab to tab every now, and I think that's since it's more engaging, it's a very interesting idea. I think it better than the current thing of using Zoom and Microsoft Teams or WebEx, just sitting down and not being as engaged. I think I would definitely check that.

Gabe: Okay. Tyrell.

Tyrell: And. Uh. Repeat the question one more time, please.

Gabe: So basically, instead of a virtual conference thing like Zoom or WebEx or Microsoft Teams, if you had like a virtual environment where just like in a game you're moving around an avatar, you could go up to people and share information with them and talk to them. If they give you access to do so, and you're your professor would also be an avatar who's probably just got the mascot controls to talk to everybody at the same time if they need to, if it's if it's a classroom announcement. So basically, if you were using a virtual virtual world instead of a virtual world instead of Zoom, do you think you would have a better outlook on that?

Tyrell: ehhhhh not Really? I feel like that would add extra steps compared to Zoom. You :got.

Gabe: So you think and yeah, you're correct about that. But do you think that the attentiveness that it gives because at that point you would kind of have to for you to do all the functionalities of the application like that would give you you would you would kind of have to be at least somewhat engaged into it? Do you think that that's not really worth the trouble of the extra steps?

Tyrell: Pretty much.

Gabe: Okay. Yeah, Uh, Canaan?

Canaan: I was going to kind of share the same sentiment that I feel like. I think it would be a good idea if the technology was really there for it to be super immersive, you know, in which you're almost in a virtual classroom setting. But I don't really see that happening and I could see it being a lot more, a lot more like more of a task to get in and understand what you're supposed to be doing and how you do it, then it needs to be, which could take away from. I mean, because then at that point, you're learning a new program and topics for education or subject matter or whatnot instead of just going about your daily business in a conference setting and learning about your subject matter.

Gabe: Okay, so. Next thing while you've been in remote courses or courses, how are you being at home affected, how well you've been able to perform?

Canaan: Oh, can you repeat the question, I couldn't, I couldn't hear you. You cut out.

Gabe: Yeah, I probably backed up a little bit. How does being at home affect your learning?

Canaan: How does being at home affect our learning?

Gabe: Does your performance in general with your courses.

Canaan: Well, speaking from personal experience, it's either extremely positive or extremely negative. Yeah, I either really, really like and pay attention to the class and try not to or try to limit the distractions, or I do almost everything to not be to not participate in the class when, especially if I don't feel like it and it's being recorded for later. And I mean, it definitely depends on how important the classes for my major to because if a class isn't really that important for the major and don't really think I need to know the information all too well, then it's the easiest way to get a good grade on the class and not be able to fail. It is by taking it online.

Gabe: Okay. I'll go. I mean, either orientation is this.

Dashawn: Is it a question about? What nets a better grade?

Gabe: I mean, how it affects your learning and how it affects your overall performance in courses?

Dashawn: Okay. Oh, me personally, especially. Me being an IT major, and all again, I can work in both settings. I would say that the. The settings don't. Change much, except for the fact that. You know, I definitely tend to get lazier and be like, Okay, well, I don't have Class, I don't really

have to, you know, do too much to get ready to hop on the computer and just sit there at my desk at home and. Sit and just listen. Listen in on the class, Because of that. Like I said, I do be lazy. And it definitely hurts my performance because as Canaan said a few questions ago, when he gets up, he really feels as though that getting dressed and actually going to is having something to look forward to and Actually going out of his dorm, his house. That gives some a sense of. Whoa, whoa, whoa. Well, what would the word be, how do you feel about it? Um. Well, I'm asking Canaan, just to make sure I ask the question, I'm sorry. Yeah, I was saying, when you get up and go out, is it like, would you say, is the sense of urgency or something like that? Oh, you know

Canaan: Yeah, I guess it could be like a sense of urgency or just like just my sense of responsibility, I mean responsibility. It turns into a more personal thing of urgency because I'm usually almost late to class. So it's like even more of a Okay drive to get out and go to class because, you know, I'm paying for that and all that. So.

Dashawn: Yeah, definitely. And I definitely feel the same way. It's basically what I was fishing for.

Gabe: Okay. So, Tyrell.

Tyrell: I don't. I didn't really have that problem, like if I have an online class, like I'll just get up like ten minutes before. And I'll get in class in my pajamas, and I mean, I'll pay attention and. For the most part, I kind of like shut everything out around me and just do the work. Maybe with some music or something and then when I'm done, I'll, you know. To walk around and be, you know, go outside, get some air and stuff, so. It's not like I was just being cooped up in my house or in my room for hours at a time the whole day.

Gabe: Okay, so you don't really think it affected you too much then?

Tyrell: Not really.

Gabe: Um, so. You can still answer the question, but this more applies to Canan and Dashawn because they said that it affected them a bit more if you had a more aversive program. I said aversive immersive program. Do you think that it would have helped you kind of block out some of the distractions just because it's more engaging or it's more like I said, it's more immersive, you kind of have to pay attention to it more. Do you think that would have helped?

Dashawn: I never think it would.

Canaan: Yeah, I think that the more immersive slash, the more interactive, you know, things that we do instead of just that kind of regular call and response conference style zoom, the more into the lesson I am. I did a study session the other week with my bio teacher and we were playing like, you know, video games or whatever like, you know, jeopardy type game, even Kahoot, you know? I find myself more invested in that than just sitting down for minutes an hour and minutes listening to somebody, you know, go over a PowerPoint slide that they already emailed to us, you know? Even though it would be harder for me to learn that on my own then than going over that over the Zoom.

Gabe: I got you.

Tyrell: Shoot, read that question one more time, I'm sorry.

Gabe: Just basically if you had a more immersed program, more engaging program, do you think that it would help your separation of home in the classroom even more?

Tyrell: Oh, yeah I think so. I think it would make it more bearable. Pretty much that's it. Okay.

Gabe: So, the last couple of questions, and we did lightly touch over this, but this is just basically to ask more directly. Did you find your professors in TAs easily accessible in your virtual classrooms, or was it difficult? Does anybody?

Tyrell: Um I would say it was more difficult. Um, well, currently, if it was a Zoom class during the Zoom class, it was actually not difficult, very easy. Because, you know, there's features and stuff there to get your professor's attention, but afterwards, that's a different story.

Canaan: All right. I think it depends on the professor.

Canaan: But for the most part, I found it actually a little bit easier because it was always difficult for me to remember office hours specifically and you know, for which one, for which teacher. And I mean, definitely, you can look back at the syllabus or whatever. But a lot of my core class teachers would have a link in their email that sent them straight to a Zoom link meeting sign up thing, which you can do for like almost any day that they're available and they'll just be on, you know? And so it's like I can talk to them either after class or using that Zoom link, and that's that's just it.

Gabe: Okay, yeah. Dashawn, go ahead.

Dashawn: Well, for me, it was definitely a mixed bag, and it depends on the teacher in the class. I have had some issues with. That situation, it's not. It's not really too deal-breaking, because since

this is why I call it a mixed bag, there's more focus put on doing virtual meetings. So while we can do virtual and in-person meetings now. Since it's specifically focused around that, most of the teachers that I had generally had office hours that were more than more extensive than they did in person. So I think that in a way it helps. But at the same time as well, there's going to be a lot of people generally going to office hours. So those blocks can get filled up as well, since it's specifically focused on virtual and again with no in-person instruction. You can't ask questions over Zoom and stuff, but I feel like there have been cases where there were people that expected it that had issues with content their learning.

Gabe: Okay. So I mentioned it kind of like that. That chat system that I kind of gloss over you guys with the avatars and so on and so forth, so kind of like something similar to a games chat log. You guys think if you had something like that that it would really change anything or do you think that it would be pretty much the same thing?

Dashawn: I think things will change and things will change a bit. Just because. I think in a positive way. There could also be some drawbacks I really can't really think of any right now, but. I think that in a positive way, it would go in a positive direction.

Gabe: Canaan or Tyrell, either or doesn't matter.

Tyrell: I think it could. It definitely could change in a positive way. But I feel like, you know, adding an extra step with the avatars, all that kind of stuff might also. Can cause some negative issues as well.

Gabe: On what kind of not to put you on the spot, like what kind of negative issues do you think it would really cause?

Tyrell: Because like. I was, you know, you like you said you sold. Well, is that Okay? Maybe not. I can't really think of any negative issues off the top of my head. But it's just I don't know. Uh, I can't really I can't think of anything off the top of my head right now.

Gabe: Okay, But you just did you feel like it could start to get a little bit clunky, like there could just be some issues that arise from it?

Tyrell: Um, yeah.

Gabe: Uh, Canaan, yeah.

Canaan: As much as I was thinking about it, I really don't have much else to say other than what they said, like, I think it might be a little bit too many extra steps that I don't know. Maybe that's

just like conscious thinking or whatnot because we have been able to really understand how to work technology a lot better. But I see the first people using it, having some issues, and of course, it might get refined later on. But just the first few waves might be kind of rocky.

Gabe: Okay, so that is the end of the question, so I will now run by you guys what we actually have in mind for our design idea. It's a software that is mostly geared towards computer science students, but it can be used for any students of any college or anything like that. But essentially a virtual world classroom. So instead of just, you know, zoom calls and faces on screen, you would have maybe a little avatar just so that you could interact with people a little bit better. So you could actually feel like you're in a classroom. It would have a classroom aesthetic and stuff like that. We're aiming to create a virtual world that is much more enjoyable. It's efficient, it's engaging. It comes with an IDE for students to easily share code with their professor and with classmates. So they could get help with the bugging. They could easily collaborate with other people, for programming and IT. If they give people access, they could actually get on there just tamper with the code and edit it and see if people can come up with solutions collaboratively as if they were actually in person. That's actually something that we thought was the biggest thing about it, because I know even now a lot of times you'll get into classrooms that are like, hey, this team needs to do this coding assignment. You're all really working off of one computer. You can't really have multiple people typing on one computer, you know? So we thought that that was a pretty good aspect of it. and of course it's all real time because you're going to be in class. students would be able to complete their assignments in class, and it would allow professors to easily monitor student progress. So obviously since they're monitoring your progress, there's a lot more accountability because if they're going through the process, they're like, okay, so-and-so has done this much of the code. Their group has done this much of the code. They go to your group or they go to you and they're going to see that you're not there. So obviously there's direct accountability. it would also discourage students from cheating because the professors would be able to actually monitor what they're doing. if they see a whole bunch of code, just kind of randomly appear, they're going to be like, hey, that wasn't there fifteen minutes ago when I checked what you were doing. and like I said, this is mostly geared towards computer science students ,but Canaan I know you're not a computer science student. We are thinking about also having documents, like Google docs and stuff like that. Or just documents in general that we would have in our interface that you can have group collaboration on and stuff like that, so that you could get a hands-on experience while being in a virtual space. And, yeah, that's pretty much our design. So after talking about everything that we discussed, what do you guys think about it? Would you guys want to use it over zoom and would you be fine if it was an alternative to an in-person class? I'll ask about the zoom thing first.

Canaan: Yeah, I mean, I think it would benefit comp sci students a lot. And especially if you could find a way for it to work with students outside of like those programs or whatever, I think it's a good start. Or it would be a good start as a test or something like that.

Tyrell: Yeah, I agree.

Dashawn: Same here.

Gabe: Okay. So you guys think that it would be a really good thing to test for comp sci students over zoom. Now, would you be okay with having a class say, you can either take in person or you could take this, would you want to take this over that in person feel?

Tyrell: Can I switch back and forth, Like a hybrid? Let's say one day I want to go into class and another day I'm like, nah, I'm just going to go into the virtual world. Could I do that?

Gabe: Well, that's mostly, you know, that's just dependent on the class when I said, if you had the option, I'm talking about like, during registration, oh, this professor is teaching in a person, oh, this professor is teaching in this virtual space. Just for the sake of this question, if you had to choose one.

Tyrell: In person.

Gabe: In person?

Tyrell: Yeah.

Gabe: Okay, Canaan?

Canaan: I would also choose in person. Just cause it's not fully fleshed out yet and zoom already has its issues, you know?

Gabe: Yeah. So you think it would be better than zoom, but not better than in person. Okay, I can see that. And to just ask the question that Tyrrell just asked, if there was a classroom that kind of offered a hybrid, like some days you come in some days you do this virtual world or you choose if you want to do the virtual room or if you want to come in person, would you guys be open to doing something like that?

Tyrell: Yeah.

Canaan: Yeah. Most definitely.

Gabe: Okay, and Dashawn?

Dashawn: Just to try it out, yeah.

Gabe: Okay. All right. Well, that's pretty much all that I have. Thanks you guys, for being honest with all your opinions and helping me out with this.

USER STUDY 1

Jacob: Hello, thank you for participating in this study. We are simply going to go through our prototype and see how easily you are able to navigate through it and perform tasks. While you are sharing your screen I will record what you do so I can see your thought process. As you navigate through the website please think out loud. This means try to say whatever you are looking at / seeing / thinking / doing during each moment of the process. You do not have to have any sort of training for this, the website will guide you through the prototype. At the end I will ask you some post task questions which will get some feedback from you on the design. Keep in mind that this is a prototype, it is not really a functional piece of software or anything. All that is just screenshots of Minecraft with our design ideas put over it. We are just using Minecraft as a base to represent our 3D Virtual Classroom. So I guess we can go ahead and begin then. So, if you could go ahead and login to the virtual classroom. Great. So now could you open the chat system and create a new chat channel? This will be the first task.

Marie: Ok, so I am gonna guess that it's this red arrow... ok that makes it bigger.... That doesn't do anything.. oh wait, create new text channel!

I can name my channel... I can type emails.. I can click create chat.

Now I have created a new chat channel I assume? Since it's next to channel 1, 2, 3?

Jacob: Yes, good job you have successfully created the chat channel. So for the next task, could you navigate to the IDE section, then join and leave the shared IDE?

Marie: So I'm gonna guess the IDE is in the main classroom.

And there's the group IDEs, I am clicking the arrows that point to what section I want to go to.

And now I'll click to join the coding group. I'm here! And now I am joining the group IDEs.

Ok cool, so I'm at a table looking at someone in my groups' IDE and the professor is explaining what mistake is within their code.

Jacob: Yep, that is correct. Now could you leave the group IDE now?

Marie: I clicked the go back arrow, and click here to exit, big red button means exit. Now I'm in the main classroom.

Jacob: Alright so now, navigate to the rewards section and purchase something from the rewards shop.

Marie: I'm gonna go straight because that's where the door seems to be.

Ummmm nope...

Ok now I am back in the main classroom and I am gonna go back to before the main classroom.

I want the rewards section... not exit... it's back behind me.

Now I am into the rewards zone and into the rewards shop, clicking on the arrows to find my way there

Click here to open the rewards shop. Well I have 16 diamonds (participation points) so I can pretty much purchase whatever I want to from here. Now I purchased.

Jacob: Awesome ok, so now could you navigate to the game zone and participate in a game with another student.

Marie: I click the arrows to follow what it's telling me (sign on the wall).

I'm playing tic-tac-toe against Student 5, choose a side. I pick X's.

Do I actually get to play? Aww..

Jacob: No, sorry it's not fully functional. It just kinda automatically tells you if you win or lose.

Alright so those were all of the tasks we had for you, so now I have a few post task questions for you to answer.

On a scale from 1-5 how easy was it to navigate through the prototype and why would you rate it that way?

Marie: I wanna say like a 4.5, and that's just because I am not familiar with the environment so I do not completely know how to navigate. But in terms of navigation it is very well labeled and very easy to see what you want to do, if that makes sense.

Jacob: Ok, do you think the additional features we have added would help promote engagement in online classes in comparison to something like Zoom or WebEx?

Marie: Definitely, I like the rewards shop because I feel like a lot of people play games outside of school. You can rack up your points to buy things for your avatar.

The group IDE I really like because it makes it very easy and clear for others to see mistakes as well as easy for a professor to help the group or the individual who needs assistance.

I like the game area because that will definitely encourage students to participate more to earn participation points to play games against each other because it will tap into the competitive side of them, which will fuel their drive for learning and to earn more participation points.

Jacob: Ok, in regards to the shared IDEs, do you think it would work/function well in a virtual learning environment? Why or why not?

Marie: Absolutely, it makes it very easy for students to see other's mistakes or their own mistakes, and allows for 1 on 1 time with the professor, or group time with the professor to learn from the issue that they are having.

Jacob: How do you feel about the chatting system and it's functionalities? For example, in the chat system you are able to create different chat channels just for you and your group to talk, or you can use a chat channel that is specific to asking questions to the TAs or professors.

Marie: It definitely eliminates the issues that I feel in zoom.

Talking to a professor all at once and it's like a collaboration between groupme or facebook messenger or any type of texting app that allows students to create group chats where they don't have to ask the entire class they can just ask a select small group.

Jacob: Do you feel that the gamification of our design is a positive addition or a detriment to the virtual learning environment?

Marie: I would say positive, I would definitely enjoy the virtual IDE. And I wish it was implemented in my classes because this would be very beneficial for learning.

Jacob: How about in regards to the gamification aspect of the design? As in, students can be given participation points to be used to purchase items for their avatars or play games with each other, making it more like a game.

Marie: I like that, I like that a lot. I was trying not to say that I liked that learning would be a game, because I feel like that's a terrible thing to say. Cause you know, you should be learning because you wanna learn not because its a game.

But I love it because it is a game, and I think it would be very fun and very interactive and very motivating to participate or to just do my work in order to buy things or to win.

Jacob: Is there anything with our design that you would add or change? And why?

Marie: Nope I don't think so.

Jacob: Ok well that's all, thank you for participating in our study and helping us improve our design prototype.

USER STUDY 2

Jacob: Hello, thank you for participating in this study. We are simply going to go through our prototype and see how easily you are able to navigate through it and perform tasks. While you are sharing your screen I will record what you do so I can see your thought process. As you navigate through the website please think out loud. This means try to say whatever you are looking at / seeing / thinking / doing during each moment of the process. You do not have to have any sort of training for this, the website will guide you through the prototype. At the end I will ask you some post task questions which will get some feedback from you on the design. Keep in mind that this is a prototype, it is not really a functional piece of software or anything. All that is just screenshots of Minecraft with our design ideas put over it. We are just using Minecraft as a base to represent our 3D Virtual Classroom. So, if you could go ahead and login to the virtual classroom.

Patrick: I'm clicking the login button.

Jacob: Ok could you please open the chat system and create a new chat channel.

Patrick: Is it there?

Ok so in order to create a new text channel I gotta hit the plus?

And then create chat.

And now I'm in group project 7.

Jacob: Yep, alright that's great. Now could you close the chat window?

Patrick: Chat window closed.

Jacob: Great, ok so next could you navigate to the rewards section and participate in a game with another student.

Patrick: Yes.. rewards section.. There isn't anything on the screen that says rewards section.

I'll check out the main classroom.. I don't see it here, let me go back here..

Ok there it is, rewards zone.

Go to the game room, join the game room, play tic-tac-toe, I guess I'll choose a circle.

I'm not very good at tic-tac-toe.

Jacob: Ok great, now could you locate the group IDEs, join one, and then leave.

Patrick: Alrighty, so I am going to exit and go back to the starting room.

I'm assuming that it's in the main classroom.. Yep group IDEs.

Join the coding group, and now I have to leave.

I can't press where it says exit, so I will press the arrow.

Jacob: Alright, great you have successfully joined and left the shared IDE. So now, could you buy something from the rewards shop?

Patrick: Yes. Let's see..

That's the virtual machine table, ok so I'll go back in here where I saw the rewards zone.

Uhh I keep wanting to click the titles (signs).

Click here to open shop, I'm gonna buy some diamond armor.

Jacob: Alright and there you go you successfully purchased an item form the reward shop.

Now that's all of the tasks that we have for you, it covers the basics of most of the features we have in our design. Now we will get into the post task questions.

On a scale of 1 to 5 how easy was it to navigate through the prototype and why would you give it the number that you did?

Patrick: I would give it a 4. For the most part it's pretty easy and straightforward. I would say there were a few issues that I ran into where sometimes I would get confused as to what to click on. Sometimes, especially when I left the group IDEs I wasn't sure where to go after exiting. But other than that it seems fine enough, I say if you just labeled some of the arrows it would be a lot easier to navigate.

Jacob: Ok and what if this was a 3D world and you walked around instead of using arrows, do you think you would still have that same issue?

Patrick: Absolutely not, I think that would solve the issue big time.

Jacob: Do you think the features we have added such as the shared IDE and rewards would help promote engagement in the classroom in comparison to video conferencing software such as zoom or webex?

Patrick: Yeah absolutely. I mean not being able to interact with a virtual world is interesting enough to make you prefer it over other platforms but not only that, but you have access to all of these tools. When using video conferencing software you have to use a bunch of different programs at once. This pretty much just streamlines everything.

Jacob: Does the shared IDE system seem like it would function well in a virtual environment? Why or why not?

Patrick: I'd say so. Maybe if you were to join the IDE it would be kinda like a google doc. And I would prefer it to not be like an item placed in the game but I think it would definitely be pretty useful, yeah.

Jacob: Yeah so that's kinda the idea there. If you look at the IDE screen it shows where everyone is typing, on the group IDE. So you see how it says 'Student 2', 'You', 'Professor', it shows where everyone is. So everyone can type, edit, highlight, whatever at the same time. Like a google doc.

Patrick: Yeah, I think that would be great.

Jacob: In terms of the chatting system, do you think having different chat channels and having a specific channel to ask questions to TAs and professors, do you think that's a good feature or do you think its not very useful?

Patrick: I think it's pretty useful. There was a lot going on in there but I am sure after using it for a while you would get the hang of it. But i'm sure if you had to make a group chat for a project or something it would be really useful to have that feature.

Jacob: Ok, and do you feel that the gamification of our design is a positive addition or detrimental to the learning environment?

Patrick: I'd say that it's a positive addition. I wouldn't imagine unless you add too many distracting elements that it could be ditracint in any way.

Jacob: Ok and do you have any sort of other feedback you would like to give us? Like Something that would be changed, added, or removed?

Patrick: I think maybe streamlining things like the chat channel would be really nice. And then maybe in the game center maybe have games that are more oriented towards education. Maybe a coding battle or something.

Jacob: Or maybe like a 1v1 trivia match or something.

Patrick: Yeah exactly, something more academic oriented. I think something like that would be a great idea. But other than that it looks good.

Jacob: Ok great, and so that's all we got for you so thank you for participating in our study and helping us improve our design prototype:

Patrick: Yeah thanks for having me.

USER STUDY 3

Jacob: Hello, thank you for participating in this study. We are simply going to go through our prototype and see how easily you are able to navigate through it and perform tasks. While you are sharing your screen I will record what you do so I can see your thought process. As you navigate through the website please think out loud. This means try to say whatever you are looking at / seeing / thinking / doing during each moment of the process. You do not have to have any sort of training for this, the website will guide you through the prototype. At the end I will ask you some post task questions which will get some feedback from you on the design. Keep in mind that this is a prototype, it is not really a functional piece of software or anything. All that is just screenshots of Minecraft with our design ideas put over it. We are just using Minecraft as a base to represent our 3D Virtual Classroom. So, if you could go ahead and login to the virtual classroom.

Madison: Alrighty, it looks like most of the information is already put in so I just hit login.

Jacob: Ok, and so now that you're in the virtual classroom, could you open the chat system and create a new chat channel?

Madison: I do see off to the side there is a rectangle, there is channel 1, 2, and 3.

I clicked an arrow which I assume means it would open the chat window, which is what it did.

You said to create a new chat channel.

I do see an option for create new text channel so I'll click that.

And it already fills in the information so, simple enough I just hit create chat button, and it looks like I created a new channel.

Jacob: Alright great, now could you go ahead and close the chat window?

Madison: Alrighty, I am gonna guess the X button will close it, which it did.

Jacob: Awesome, so now could you navigate to the rewards section and participate in a game with another student?

Madison: Ok ummm I am looking around..

I see Welcome, Main Classroom, and Exit. I am going to go to the Main Classroom to see if the rewards are there.

Umm.. I see group IDEs, group meeting area, and virtual machines. I don't think the rewards are in here so I am going to go back to the lobby.

I see another arrow pointing towards me so I am going to click that. And I found the rewards zone! I am going to click on it and enter.

Alright I see the game zone and the reward shop what would you like me to do?

Jacob: Navigate to the rewards section and participate in a game with another student.

Madison: Alright so I'll go to the game zone.

Click here to join the game zone, so I am going to do that. I'll be playing tic-tac-toe with student 5. I'm gonna choose X as my option. And it looks like I won the game.

Jacob: Now that you have played a game could you navigate to the IDEs, join a group IDE, and then leave the IDE?

Madison: Alrighty I am going to click the arrow here which I guess indicates to go back.

And it says click here to exit to the rewards zone, so I will be clicking that.

And exit to the starting room so I am going to go there, clicking exit to starting room. If I remember from before, I am going to go to the main classroom.

And I see group IDEs, so I am going to click on the arrow to go there. I am going to join the coding group, which is where the IDEs are.

In there I have a picture of an IDE and the join group IDE button, so I am going to click that.

It looks like I am able to view an IDE classroom with several other students and the professor.

So I am going to then exit the IDE, it looks like I have an arrow here that allows me to exit. It says click here to exit the main classroom?

Jacob: It's to exit to the main classroom, sorry that could have been more clear.

Madison: Oh ok I didn't understand, so I will click that to exit the IDE.

Jacob: Now could you go to the reward zone and buy something from the reward shop?

Madison: Let's see here I have arrows pointing different ways..

I'll pick the one that goes straight. It looks like I joined the table so I am going to click the arrow again.

Looks like I am back in the middle of the classroom so I am going to click the back arrow because it looks like it is pointing towards the door.

I remember I got to the rewards by clicking this arrow and clicking go to the rewards zone.

And now I see the rewards shop, I am going to click the arrow to go there.

There is a nice man greeting me, welcoming me to the reward shop. There is text to click here to open the shop, so I click that.

Alrighty I guess I will choose a hat, and it says I purchased a hat.

Jacob: Ok great so those are all of the tasks we have for you to complete. So now we have some post task questions.

On a scale of 1 to 5 how easy was it to navigate through the prototype and why would you give it that rating?

Madison: Ummm, what is it out of?

Jacob: 1 to 5

Madison: 1 to 5, ok, I'd say it's a good 5. It's very easy to navigate the arrows, simple..

Actually I'd give it a 4 out of 5. It was intuitive but I think to get a 5 I would recommend text on the arrows. But I feel like that would clutter it so I think it's a good 4 out of 5.

Jacob: Do you think the additional features such as group IDEs and participation points to use for different things would help promote engagement in the classroom in comparison to video conferencing software like zoom or webex?

Madison: I think it would really help the engagement, the group IDE. You would really be able to see what was going on, most of the coding classes where the professor shows the IDE are usually really engaging and help you learn. And also the rewards zone, everyone likes playing minigames even when their internet out they play the dinosaur game so I think it does promote engagement.

Jacob: Ok, does the shared IDE system similar to google docs, do you think something like that would function well in a virtual learning environment? Why or why not?

Madison: I think it would function well if everyone was being professional and nice. And by nice I mean they were being courteous to the other coders. It would be nice to see everyone working on the same document so you don't have to worry about the github and the pulling and pushing and all that. The only drawback would be if someone were controlling of the code and they were getting rid of what you were typing. But beyond that it is very helpful and I think it's a nice feature.

Jacob: In regards to our chat functionalities, creating chat channels, chat channels for the TAs and professors, that kinda stuff, how do you feel about all that. Do you think that it is something that should be important or useful in a virtual classroom?

Madison: I think that would be important, especially if someone is using the virtual classroom for the first time. The teacher can help walk them through without being in the main chat with everyone asking questions, cluttering the chat. I know sometimes when you're using new software, everyone asks the same question. So it definitely would be helpful for others in the classroom.

Jacob: Ok, do you feel like the gamification of our design is a positive addition or a detriment to the virtual learning environment?

Madison: Umm I think it's a positive addition. It feels engaging, there are some virtual classrooms where it feels flat, and you get bored. I think it does bring a nice look to the virtual classroom, so you actually feel like you're there, in a way.

Jacob: And how about the gamification in regards to being awarded points and all so students can get participation points and use them to play games with each other or buy items for their avatars?

Madison: It's really a toss up in that case. There's always going to be that one person that screws it up for the rest. It could be positive, and if people are moderate with it, if people aren't using it during something important. If people are just joining so they can do the games and that's it, then it could be detrimental, but it could also help you bond and talk with your classmates. So it's kinda a toss up in that case.

Jacob: Ok, and is there anything that would add/change/remove from our design?

Madison: Maybe if it's possible, an option for a map so you know where you're going. With the arrows there was one that was pointing towards me and I didn't know where it went so I just had to guess. So an option where you could click a key or something and it would tell you 'Hey you're here, here is a map' that would be helpful.

Jacob: Alright, that's all we got, thank you for participating in our study and helping us improve our design prototype.

USER STUDY 4

Issac: We are simply going to go through the website and see how you are able to navigate through it. I will just need for you to share your screen and I will be recording what you do so that I can see your thought process. As you navigate through the website, please try and “think-out-loud”. Just try and say whatever you are looking at, thinking, doing, and feeling at each moment. You don’t need to have had any training for this, the website itself guides you through the prototype and at the end I will ask how easy it was to navigate

Issac: Alright, here are the tasks I want you to try and complete: Open the chat system and create a new channel, find the rewards section and play a game with the placeholder student, buy something from the rewards shop, and enter the shared IDE. I am going to let you kind of do what you want and explore.

User 4: Well, I see the chat window. It kind of reminds me of wow’s chat.

I’m going to click the arrow on the side.

Oh nice. I think I'll click the plus sign beside the create new text channel option. Discord has those plus signs

Okay cool, so functionally I could name the channel and invite people with their emails right?

Issac: Yeah thats basically the idea.

User 4: Alright nice.

Im going to click create chat.

Oh so it adds it to the bar at the top of the chat channel. Did you design this like wows chat box?

Issac: Yeah a little.

User 4: Yeah I can tell.

Im clicking this arrow behind me. Im good at this, I already found the reward zone.

Im clicking to enter the reward zone now.

I guess im gonna approach the shop guy, so I am clicking the arrow that leads that way.
Im gonna click the text to open the shop, and buy all his cool stuff bro.

Alright im clicking the arrow to leave the shop guy and then im clicking the arrow to move away from the shop.

Im gonna click the arrow over here **to head to the game zone** *he says it like macho man randy savage*

Alright i see the thing is keeping track of my participation points and what it costs to enter.

Im clicking the text to join the game zone above the door

Im gonna wreck this scrub at tic tac toe. Im clicking the O. *Loses*

Alright, i guess im gonna click this arrow to leave now that I have been beaten so handily.

Im clicking the text above the door to exit the reward zone.

I guess ill click the arrow to approach the exit door.

Im clicking exit to go back to the starting room. I like how its all labeled man this makes it easy for me.

Issac: You're killin it

User 4: Im clicking on the arrow under the Main Classroom sign, I would guess your IDE thing is in there

Yep there it is im clicking the arrow to go to that side of the room.

Im clicking the text to join the coding group

Is this view like a preview of the IDE, or just a placeholder image?

Issac: it would functionally be the preview for what was going on in the shared IDE space.

User 4: That's cool.

Im clicking the green button to join group IDE. Oh this is nice.

Im gonna click the red button for the personal IDE. Okay cool so you have the ability to see it one the big screen or edit and see it in a more traditional way. Aight thats not a bad idea.

Alright im gonna click the arrow that leads to the exit.

And now im clicking the text to go back to the main classroom.

Im gonna click this middle arrow here to check out the middle table.

Ah, this is the TA nerds gathering place.

Alright im going to click the arrow to leave the table. And then I'm clicking the arrow to leave this room.

And I guess Ill click the arrow to exit, and now I'm clicking the text to log off. Very cool.

Issac: Alright we can do these interview questions really quick.

His answers to the questions:

User 4 answers:

- 5, the arrows gave context to the direction i was going, and the prototype itself was familiar as a click to explore journey.
- The additional features would definitely increase engagement. Zoom is terrible.
- I think it would function in a learning environment. The ability to switch between an overlay and a shared screen is neat. The only problem I see with it is the size of the shared screen.
- The chatting system reminds me of discord kind of, I feel that it is a step up from something like skype or zoom. It would be better for comp sci students for sure.
- I think that the gamification is cheesy, personally; however, I know that a lot of people are super into changing their “transmog” or their character appearance and pay money to do so, so its probably a good idea.

USER STUDY 5

Isaac: We are simply going to go through the website and see how you are able to navigate through it. I will just need for you to share your screen and I will be recording what you do so that I can see your thought process. As you navigate through the website, please try and “think-out-loud”. Just try and say whatever you are looking at, thinking, doing, and feeling at each moment. You don’t need to have had any training for this, the website itself guides you through the prototype and at the end I will ask how easy it was to navigate

Issac: Alright, here are the tasks I want you to try and complete: Open the chat system and create a new channel, find the rewards section and play a game with the placeholder student, buy something from the rewards shop, and enter the shared IDE. I am going to let you kind of do what you want and explore, but if you could attempt to manipulate the chat first that would be helpful.

User 5: Alrighty, well I see that you have copied every MMO ever’s chat box. I bet you feel really good about it.

Issac: If it works then it works man

User 5: I'm gonna see what happens when I click this arrow on the side.

Okay so now I get this overlay. I like that you guys made it kind of transparent. Oh and you made the channels in here a little like disc?

Issac: Yeah the discord is where we took most of the inspiration here.

User 5: Alright i'm going to click the plus sign

Look at that. So in a functional prototype could you make these chat option boxes move?

Issac: Yeah and they would be resizable.

User 5: Yeah I saw the placeholder marks for being able to drag the first box. Its good that you could make them move.

Alright im clicking the create a new chat channel button. And very nice it shows up on the chat.

I think now I am going to click this arrow behind me. Oh cool the reward zone. Time to get some spicy micro transactions.

Im clicking the text to enter the reward zone, And Ill click the right arrow to head over to the little shop guy.

Ill click the text to open the shop, see if he has anything juicy.

You guys used diamonds as the currency? You shouldn't have used diamonds as the cash shop currency. Netherite scraps would have been better.

Issac: Ill make sure and put that in the report

User 5: Good good.

Alright im clicking this arrow to leave the shop menu, and then the next arrow on the right to leave the shop entirely.

I'll head for the Game Zone so I'm going to click the arrow on the left over here.

I'm gonna click the text to enter the game room. Very convenient labeling so far by the way

Issac: Thanks man

User 5: Alright, I'm in the game room. Which tic tac toe option did *says user 5s name* choose?

Issac: I won't say

User5: Alright, I'm gonna go with X. So I'm clicking the X. And I'm a *expletive* winner. Can I swear?

Issac: Maybe you shouldn't but it doesn't really matter I guess. I'm not gonna put it in the report ha.

User 5: Okay cool. I'm going to click this arrow on the bottom to leave this game.

And I am going to click the text to exit back into the reward zone room.

I'll click the arrow over here to go back to the starting room.

And I guess I'm clicking the text to actually enter the starting room.

Alright, so now I just have the IDE group thing left to do?

Issac: Yes, if you could find that for me.

User 5: Well that would be in the Main Classroom. And if its not im gonna call that teacher and have your points docked for being dumb af.

Issac: This might go a lot faster if you just clicked the arrows and told me what you were doing instead of roasting me

both laugh

User 5: Alright alright im clicking the left arrow to go to the Main Classroom.

Alright you win this round, I see the little sign for the IDE.

I'm clicking the left arrow to approach the IDE. And I am clicking the text to join the coding group. And I am clicking the little green button to join. Is this a preview? Like in a functional model this would be a preview?

Issac: Yeah it would show what was going on in the other room

User 5: Alright thats a smart idea.

Okay so I am in the coding room.

I am going to click this red button on the table. I think it says something about personal IDE.

Okay, so you can swap between the big screen and the personal overlay type thing. I Like the way that you can see where everyone is one the shared screen. Kind of like a google doc.

Alright i'm going to click the arrow to leave this room and go back to the main classroom.

And i'm clicking the text to go back to the main classroom.

Is that all you wanted me to do?

Issacl: Yeah and i just need to ask you these questions really quick

User 5: Sure. One thing before we do that. I could see how this could have been really confusing, like when we were kids playing those click to investigate adventures. I dont know if you ever played on of those, but there were rarely any labels on anything. This was nice and simple because of the stuff over the doors.

User 5 answers:

- 5, moving around was simple, and the environment just made sense to me.
- Zoom, webex, and skype are trash and literally anything is better, so the 3d environment is a real step up.
- The idea is really good, and the ability added in to swap between the shared screen and the like the personal screen that you mentioned is nice. I think it's way better than coding alone in a zoom call or something.
- The chatting system is better than the basic *expletive* that most voice comm apps have, like skype or zoom or whatever. I like that it shows the TAs and Instructors are online and can be messaged directly.
- Giving people the chance to change their avatar is always a good idea in any game, because some people lose their *expletive* over things like that. I know someone who paid 400 bucks in PoE for a transmog, so this is just a good idea.