Bodystorming Notes for Motion Controls in a Virtual Learning Environment
Roy Wales and Treyton Cowell

3D Persona - Template

Role: Student

User type: Consumer

Familiarity with VR/AR:
Moderate-beginner

Emotional sensitivity:
Students may be worried about peer reactions to their responses

Emotion target:
embrace the learning environment

Mood goal:
Emerse and feel comfortable while learning

Presence goal:
Feel immersed in the virtual classroom

User goals:
Pay attention, answer the teacher's prompts and ask questions

User tasks:
confirm and shake their head to answer. Raise their hand to ask questions. Learn from the teacher

Story arc:
Follow along with the teacher's lesson and questions

Agency:
We want a realistic class feeling from a sitting perspective

Diegetic events:
Class members and teacher's interactions

Sound events:
Teacher and class members' voices. Sound effects for answering questions and raising your hand

Movement events:
Raising your hand, head shaking. Hand movements

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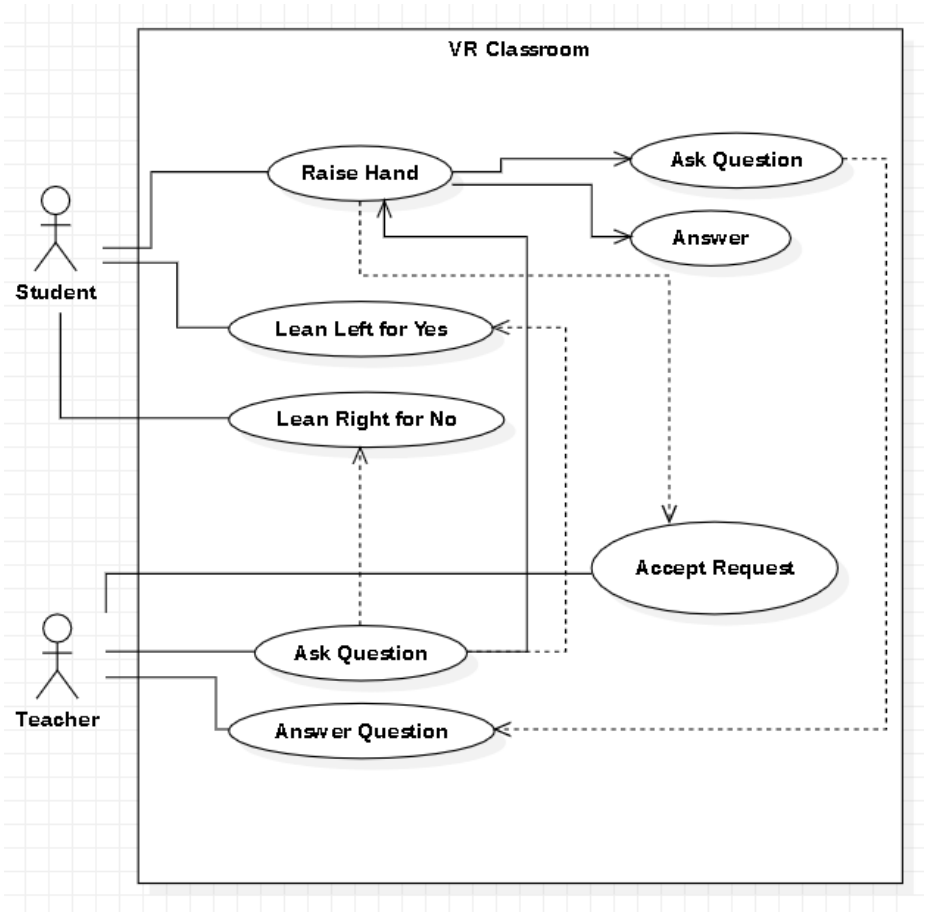

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Observe and document how the task is traditionally done.

Students join the meet,
Don't need to be at their computer, cameras and mics usually off
The teacher presents their screen usually hindering their ability to monitor the chat and present
Students' control scheme usually involves clicking or a hotkey
Limited involvement, no motion

-**With the use case and persona done, based on your understanding of the problem and collected information, identify potential problems with the traditional workflow**.

-the traditional meeting workflow

- Poor student involvement
    - Mic and camera rarely used
- Students aren't engaged in movement
- Controls aren't natural
- Feels distant from the professor

- Hard for professor to present and monitor chat
- Hard for the professor to draw/explain things

BodyStorming 1 (Actor - Emma, Observer - Roy)

○ **Ask the actor to write the situation down**

- A student is in a virtual classroom and is expected to participate and learn in that environment. They need to use functions to raise their hand, unmute, mute, answer simple questions and stay involved

○**Ask the actor to write two possible scenarios during the previous situation.**

- Engage the student learning
- The student is presenting

○ **Ask the actor to write down issues that may occur during those scenarios and potential solutions**.

- **Engage the student learning**
  - No physical interaction with the space
    - Some kind of movement
    - Stand up, move arms, force movement
  - Lack of accessible communication with peers
    - Breakout room
    - Pairs
  - Removing headset/pretending to be present
    - Show idle
    - Have avatar for brb
  - Lack of direct contact with the instructor
    - Controllers vibrate for emphasis when the teacher is speaking
    - The teacher has control, manual or automatic
- **Student is presenting**
  - Lack of familiarity with teacher controls
    - materialization/ learning session
  - Keep the class engaged
    - Some sort of movement
    - Or test student engagement
  - Attendance
    - mandatory/ participation marks
    - A portion of the presentation utilizes engagement for marks

○ **Set the physical environment for interactions, and use the props, tape, and other elements to set the boundaries. Add sticky notes to let the actor know of particular representations of elements within the scene**.

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-explain with pictures of our set up

-sitting down in a classroom setting
-have tp rolls as controllers
-sticky notes represent pop up action confirmations
-have us simulate the teacher
- simulate the content and interactions that they would be viewing
    - asked questions
    -Head shake yes or no (original idea)
    -watching the lecture
    -raise hand

○ **When set up, have the actor play the scenario(s). At the same time, the observer takes notes using the following powerups: i) freezing the scene to analyze further and take notes of the actions being performed, and ii) creating what-if scenarios based on the observer's point of view during the execution of the scene**.

- Found the hand raise to be very natural
    - Enjoyed the interaction
    - Easy and interactive
- Like the idea of the head shake
    - Worry that the headset would be shaken off or become loose
    - Might pivot to a head lean instead
- Worried about the time the headset will be on for, potential strain and fatigue
- Created a what-if scenario for how a student would interact and ask a question
    - Found it to be quite similar to an in-person interaction
- Created a what-if scenario for how a student would answer questions
    - Liked the idea of a pop-up displaying the student's answer
    - Worried about other students seeing their answers
        - Add a feature for only the teacher to see the results

BodyStorming 2 (Actor- Roy, Observer-Trey)

○ **Ask the actor to write the situation down**

- A student is taking a quiz in VR and must ask the professor for assistance with one of the questions on the test.

○**Ask the actor to write two possible scenarios during the previous situation.**

- A student seeks clarification on what a question is asking
- A student answered a quiz question and got it wrong and then wanted to debate how they should be considered correct

○ **Ask the actor to write down issues that may occur during those scenarios and**

potential solutions.

- Issues
    - How do users determine which specific question they are interested in discussing?
    - Calling over a busy teacher to discuss your question.
- Solutions
    - Press a number related to the question so the teacher can see a student has a question about number 6 as an example.
    - Organize a queue, those who are first to ask for assistance, receive help first.

○ **Set the physical environment for interactions, and use the props, tape, and other elements to set the boundaries. Add sticky notes to let the actor know of particular representations of elements within the scene**.

-explain with pictures of our set up

-sitting down in a classroom setting
-have tp rolls as controllers
-sticky notes represent pop up action confirmations
-have us simulate the teacher again
- simulate the content and interactions that they would be viewing
    -participating in VR quiz
    -raise hand to discuss
    -asking questions
    -selecting question that you struggle with

○ **When set up, have the actor play the scenario(s). At the same time, the observer takes notes using the following powerups: i) freezing the scene to analyze further and take notes of the actions being performed, and ii) creating what-if scenarios based on the observer's point of view during the execution of the scene**.

- Found the hand raise very similar to its in-person effect
    - Enjoyed the interaction
    - Easy and interactive
- Student and Teacher conversations should be muted to other participants
    - This allows students to ask questions and discuss topics in private
- Selecting numbers for which question you want to discuss with the teacher could potentially take immersion away, as it would be a change from the real world interaction

BodyStorming 3

○ **Prototype the interaction in VR/AR (Wizard of Oz), revisit the use case, and perform the task to understand what worked, what didn't, and what needs to be redesigned.**

We created a VR prototype in a unity scene. The scene was designed with a very basic classroom that involved the player spawning at a desk with a few objects on the desk. It was designed to show off the basic hand raising function so that when the player raises their hand a corresponding message displays their action. It was also designed to implement a basic Yes or No answering system when the player tilts their head. We wanted to showcase these as our main features in the prototype.

What worked?

- Hand raising felt natural
    - Very easy to perform
- Head leaning was an easy mechanic to perform
    - Works very well for simple engagement and questions
- A simple control scheme allows easy learning and participation
    - Makes it easy for users to focus

What didnt?

- Need a better way of toggling events
    - Hand raise so the student doesn't need to hold their hand up
    - Need a way for the teacher to accept their request
- Needs more of a classroom setting
    - Felt claustrophobic
    - Need other students and desks there
- Work on on better way of displaying responses