

CS_568_Inclusive_Design

Final_Project_Installment

Online Learning Platform

Target Population – Deaf Middle Schoolers

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Use Cases

Underserved Population

1. I am watching an online lecture video where the screen looks cluttered with a lot of textual information, animations, slides, pictures, and subtitles which is making it difficult to focus on what is important
2. I have been watching the videos for quite a while by reading the subtitles and transcripts. The emotion and the voice modulation of the lecturer is non-existent which makes the lectures boring and monotonous
3. I find it difficult to participate in a group discussion with my peers or raise questions. I suffer from social anxiety due to hearing deficiency and I fear social situations that involve interaction with other students and teachers

Mainstream Population

1. I usually fail to keep up the pace with my peers which makes me nervous. This makes it hard to cope up with the class and stay up to date with all the assignments and tests. I prefer spending more time learning the concepts properly rather than rushing through
2. I am sharing a room with a roommate and can only watch lecture videos late at night after work. I do not have money to purchase a headset, so I usually watch the video with subtitles which makes it monotonous
3. I have recently caught a cold from a family member and have a severe sore throat and I find it difficult to speak loudly, also I do not want to spread it to other classmates. Therefore, I currently do not prefer to participate in a group discussion about school subjects with my peers or raise questions in an in-person class

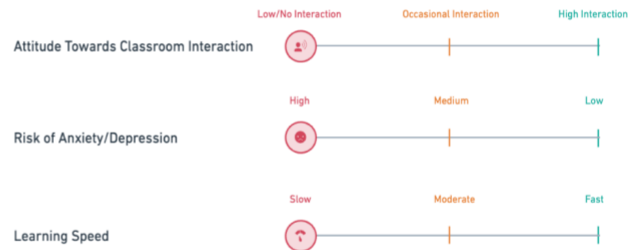
Hannah (Harry/Hazel) Persona Foundation

Hannah represents a fraction of people with backgrounds similar to theirs.

Note: All **yellow-background** portions are fundamental to Hannah. In contrast, the white-background portions can be customised to match your software's target audience.



Facet Scale



Background

- Hannah is a 7th grader studying at Linus Pauling Middle School, Corvallis because **her parents believe learning with other children who can speak will give her a normal life** 1 . Classes have been moved to Zoom after Covid-19 breakout.
- Hannah knows **American Sign Language (ASL)** 2 but she does not know lip reading 3 .
- Hannah can **concentrate for only about 10 minutes** 4 .
- In her free time, Hannah **likes to be alone** 5 and play games on her iPad.

Attitude Towards E-learning

- Hannah is **struggling to understand what teacher and classmates are discussing** in real time due to the **lag in the live transcription on Zoom** 6 .
- Hannah doesn't feel comfortable asking questions as she **doesn't want to draw attention to herself** 7 .
- Hannah sometimes **does not have access to speech to text features** 8 because her teacher forgot to turn on live transcription.
- She finds online lecture **videos become boring and monotonous** 9 after a long period of watching.

Risk of Anxiety and Depression

- Hannah is **made fun of and is usually subject to verbal abuse** 10 .
- Hannah also **experiences bullying** and thus suffers from **social anxiety** 11 .
- Hannah is **usually low/depressed** 12 because of lack of social interaction.

Learning Speed

- Hannah finds it **difficult to focus during online lecture** 13 videos as the screen looks cluttered with a lot of textual information, animations, pictures, and subtitles.
- Hannah **tends to fall behind in math class** 14 as she doesn't get a holistic learning experience.

Mike (Manisha/Mohammad) Persona Foundation

Mike represents a fraction of people with backgrounds similar to theirs.



Male
12 years old
Lives in Vancouver

Background

- Mike is an 8th grade student studying at Sir Winston Churchill Secondary School, Vancouver, Canada.
- Mike does not know any sign language nor heard of the American Sign Language (ASL).
- Mike has good communication skills and knows English and French.

Attitude Towards E-learning

- Mike is comfortable communicating with classmates using an online chat room.
- Mike likes to participate in Zoom discussions, and he does not hesitate to express his thoughts.
- He can confidently raise questions to teachers and speak up over the microphone when called upon.
- Mike will email the teacher outside of class if he is confused over the materials.

Risk of Anxiety and Depression

- Mike does not feel anxious when talking to his classmates and teachers.
- He has not experienced bullying or verbal abuse.

Learning Speed

- Mike can easily process multiple information on screen simultaneously.
- Mike understands all the concepts taught in the classroom and is one of the top students in class.

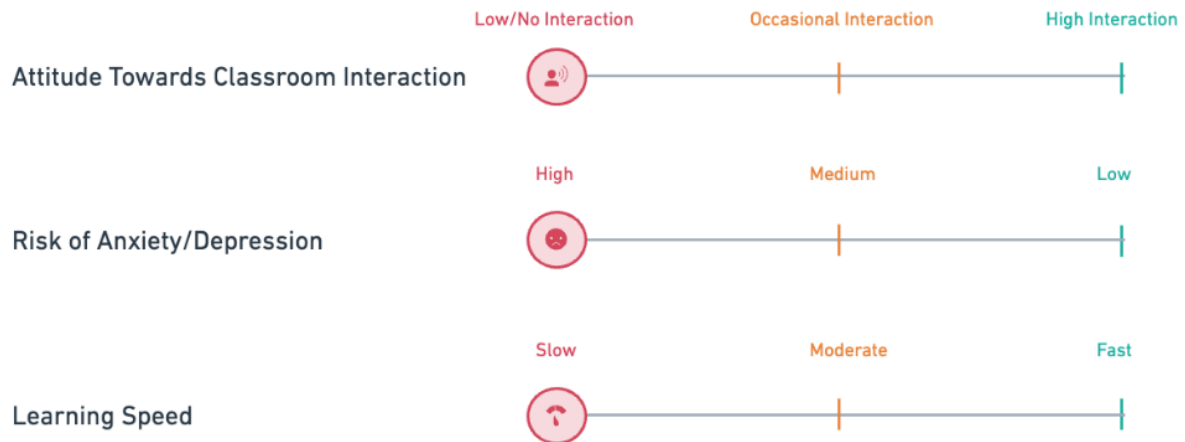
Footnotes

1. But parents want their children to be like them. So often parents of deaf children make decisions based on what they think is best to make the child ‘normal. [Source 1]
2. ASL stands for American Sign Language, a language with its own vocabulary and visual/spatial grammar [Source 2]
3. Teachers often hypothesize that their deaf students are capable of lip-reading [Source 3]
4. Students with hearing loss are not only learning by listening to computer quality sound (as opposed to live speaking) but doing so through a compromised auditory system and mechanical or electrical devices. As well, they may mishear but be unaware of their misunderstanding, adding another layer to their fatigue and cognitive load [Source 5]
5. Hearing loss can confound the diagnosis of isolation, autism because of overlapping characteristics, such as language delay, difficulties in social relationships, or ritualistic behaviors [Source 6]
6. Other than delays and low-quality video and audio, students are no longer in class with interpreters, and don't have the technology for amplification [Source 7]. Obstacles such as lack of real-time transcription services, technical issues, and unavailability of subtitles on videos [Source 8]
7. Children who are deaf often tend to feel uncomfortable in the classroom when drawing attention to their hearing problem [Source 3]
8. Sometimes my professors and TAs forget to let my captioners in (to the Zoom meeting), so I try to spam them through the Zoom chat setting or emails, but they just won't look until the end of class [Source 11]
9. The transcript CCLE automatically produces. But she said they're usually inaccurate, especially if the professor has an accent or uses field-specific jargon which makes the lectures boring and monotonous. [Source 11]
10. Deafness makes a child vulnerable to abuse, and linguistic deprivation compounds the abuse because the child is less able to report it [Source 12]
11. Studies reveal that deaf people are around twice as likely to suffer from psychological problems such as depression and anxiety [Source 10]
12. Deaf people had higher rates of depression and insomnia than did hearing individuals [Source 6]
13. Students with hearing loss may experience what has been coined as “Zoom Fatigue” [Source 5]
14. Deaf students often lag behind their hearing peers when it comes to number concepts, language and problem-solving skills. [Source 3]

Facet List

1. Attitude towards E-learning
2. Risk towards anxiety and depression
3. Learning Speed

Facet Scale



Use Case 1 – Design Decisions and Improvements

Problem Faced by our Underserved Population

1. Based on our research [5], we found out that deaf kids, like our persona Hannah, have relatively low attention span compared to their counterparts, like Mike
2. Constant eye movements between information on the board can be tiring and the cluttered information on the screen can confuse them as they take longer time on average to process the information compared to non-deaf children [3]

Proposed Solution

1. Immersive mode that blocks out all other distractions on the screen with color changed background with alert sign pop-up when important information is given by the lecturer to keep the user's attention span on the course
2. Minimalistic layout view throughout the application so user does not have to read and process a lot of information to use our learning platform

Immersive Mode

Problems Identified

1. From Design Gallery 2, we have received feedback saying that background color in immersive mode should be pulsate to better draw the students attention
2. From Design Gallery 3, we have received feedback that the alert icon may not be intuitive with the user, just replace it with "Focus" text in the top right corner

Improvements Made

1. We kept the color changed background to static instead of pulsing because we think it can be distracting to users as mentioned deaf kids have relatively low attention span [5]. Constantly changing background color can be distracting. Instead, we change the transition between regular background to red alert background from instant to fading in. This smooth transition should prepare the user to refocus up
2. The feedback we received for immersive mode in the design gallery suggested the alert icon can be seen as an internet connection error problem and might not be intuitive to some users. We agree the icon ambiguity can cause confusion and decided to change the icon to text message so all users can understand why the screen color has been changed

Minimalistic view

Problems Identified

1. From our Deaf-Middle-Schooler Mag, we found out the user does not know what the button below the media player does, does not use it
2. From our Deaf-Middle-Schooler Mag, we found out user does not remember the exact course number

Improvements Made

1. Based on research [7], deaf kids do not want to draw attention to themselves. If they are unsure about the functionality of the button, they will feel anxious and avoid using it in fear of exposing themselves to the class. To prevent it from happening, we have since changed the icon to a short text description button that users can click on with more confidence about the button's feature
2. We have added Course name along with course number, teacher's name, and lecture time to better assist users in knowing which course lecture they are entering when choosing from the dashboard

Prototype



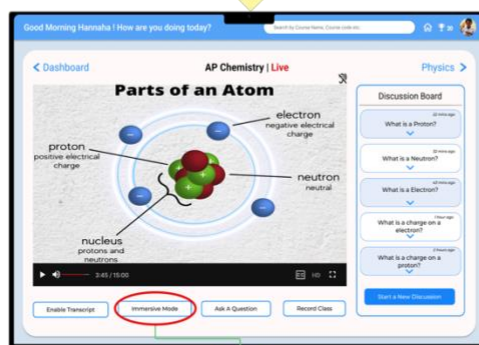
The user will enter their username and password to log into Online Learning Platform application. If they do not have an account previously, they can click on Sign Up hyperlink right below Login button

Select Log in



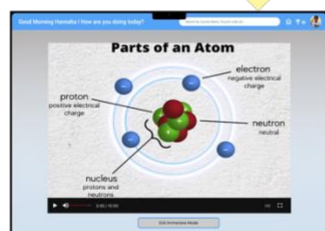
Select AP Chemistry live lecture

This is the dashboard where user can select the lecture course that they would like to attend (either live or previously recorded lecture), based on their needs. The user also have the ability to use the search toolbar on the top right of the screen to quickly narrow the course search criteria. Dashboard also has show the upcoming lecture to alert the user for future lecture.



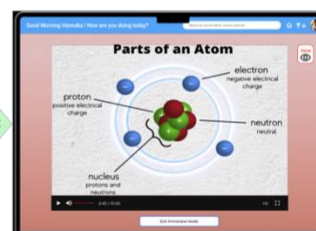
Select Immersive mode icon

This is the main lecture screen when they enter a lecture. It has media player, discussion board, interactive feature, hearing assistance and immersive mode etc.



Once the user click on Immersive mode, the media player will be center screened and all other information shown on main lecture screen will be blurred out to grey background. The background will remain grey background is the information presented by the lecturer is not been classified as extremely important

Screen background changes and alert signal shown when important info given



The background of the screen will be faded to orange when the information is been marked as important by the lecturer. The focus icon will be shown on the top right corner to reinforce the attention

Use Case 2 – Design Decisions and Improvements

Problems Faced by our Underserved Population

1. Based on our research [6], we found that deaf kids face difficulty maintaining attention since it requires the splitting of a student's visual attention
2. We also found that users have difficulty in processing the video lecture content and the subtitles simultaneously since the subtitle position is at the bottom of the screen while the video content is on the top of the screen
3. Based on our research [5], we found that deaf kids miss out on important information since they cannot hear the announcements made during the video lecture

Proposed Solution

1. Draggable subtitles, which provides users the ability to move the subtitles around the screen and position it at any location they feel comfortable
2. Alert sign to get user's attention back to the screen during important topics

Subtitle Position

Problems Identified

1. From design gallery 2, we received feedback that it is difficult to focus on subtitles and video lectures at the same time
2. We also got feedback that while reading subtitles, users tend to miss elements of the video since it requires splitting of the user's attention

Improvements Made

1. We made the subtitles to be draggable, so that the user can drag it to a comfortable position
2. Font size of important quotes from a lecture are bigger

Alert Sign

Problems Identified

1. From design gallery 3, we received feedback that the alert sign icon is not clear enough and can be confused for a network issue icon

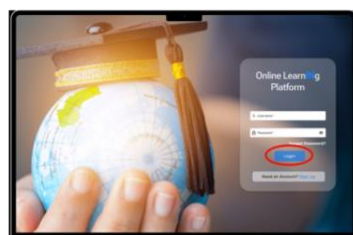
2. From design gallery 2, we received feedback that the alert sign icon was not recognizable and is not clear

Improvements Made

1. We changed the alert sign into pay attention “Eye” icon and added a description to avoid confusion
2. We also added the description “Focus” along with the icon so it's easy for users to recognize the icon

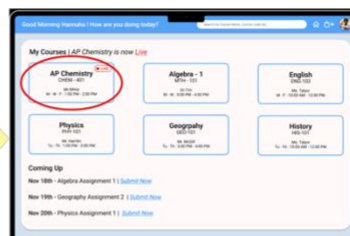
Prototypes

Alert Icon



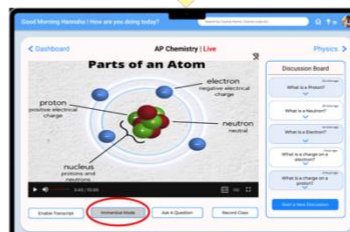
The user will enter their username and password to log into Online Learning Platform application. If they do not have an account, they can click on Sign Up hyperlink right below Login button and create new account.

Select Log in



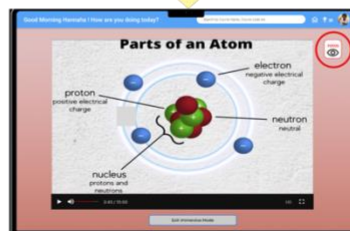
This is the dashboard where user can select the lecture course that they would like to attend (either live or previously recorded lecture), based on their needs. The user also have the ability to use the search toolbar on the top right of the screen to quickly narrow the course search criteria. Dashboard also has show the upcoming lecture to alert the user for future lecture.

Select AP Chemistry live lecture



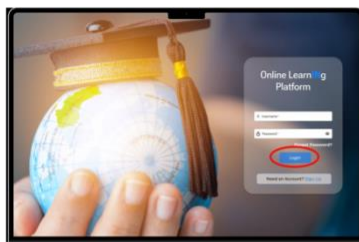
This is the main lecture screen when they enter a lecture. It has media player, discussion board, interactive feature, hearing assistance and immersive mode etc.

Select Immersive mode icon

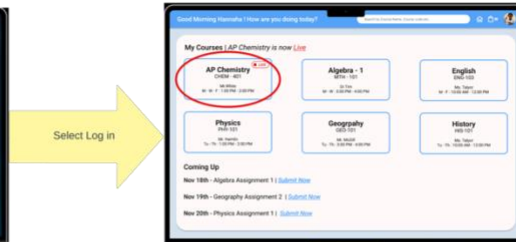


Once the user clicks on Immersive mode the background will be blurred, while the user in this mode if any important topic comes up, the screen will turn red and the alert icon is displayed on the screen to get user's attention back to the screen.

Subtitle Position

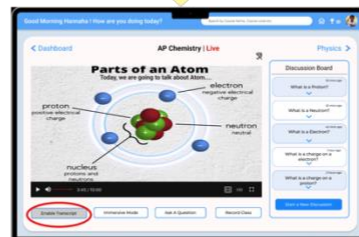


The user will enter their username and password to log into Online Learning Platform application. If they do not have an account, they can click on Sign Up hyperlink right below Login button and create new account.



This is the dashboard where user can select the lecture course that they would like to attend (either live or previously recorded lecture), based on their needs. The user also have the ability to use the search toolbar on the top right of the screen to quickly narrow the course search criteria. Dashboard also has show the upcoming lecture to alert the user for future lecture.

This is the main lecture screen when they enter a lecture. It has media player, discussion board, interactive feature, hearing assistance and immersive mode etc.



Select Enable Transcript icon



Once the user click on Enable Transcript icon, the transcript option will be enables and the transcript will be displayed on the top of the screen and can be dragged anywhere on the screen according to user's comfort.

Use Case 3 – Design Decisions and Improvements

Problem Faced by our Underserved Population

1. From our research [9], we identified that our underserved persona is afraid to ask questions during class time because her communication method is considered disruptive
2. From our research [11], we identified that our persona does not like to interact much with classmates during group activity time

Proposed Solution

1. An Interactive discussion board which has a list of previously asked questions to further validate the question. Also, the student is awarded participation points for asking questions which serves as an encouragement to ask questions. Also, the students can raise questions anonymously if they wish to do so
2. Including a hearing assistance option for two-way communication where the user can choose the option to communicate through text or any sign language of their choice

Discussion Board

Problems Identified

1. From Design Gallery 1, We have received feedback saying that the lecture/ presentation screen still looks cluttered and that it is hard to focus on what is happening in class because of other distractions
2. From our Deaf Middle Schooler Mag, we have noticed that the question mark in the discussion board is a little ambiguous
3. Another thing that we have noticed from our Deaf Middle Schooler Mag was that we had symbols for different functionalities like Asking a question, Immersive mode etc., Which might also be confusing to the user because they might not be familiar with the icons and must click on the icon to know what operation is being performed
4. From Design Gallery 3, We have received feedback regarding minimizing or closing out the discussion board tab when needed just to avoid further distractions

Improvements made

1. We have decided to move the discussion board to the right side of the screen to make it look cleaner
2. We have replaced the question mark in the discussion board to a slide bar where the student is given an option to answer questions anonymously if they want to. In addition to this, we have added time stamps of when the question was asked and a vote option to the questions. We have also created a feature where points are given to students when they submit a question through the discussion board which can be later redeemed to buy school supplies this would help the students to engage even more
3. The icons have been replaced to buttons with descriptive text to remove ambiguity of the buttons.

Hearing Assistance

Problems Identified

1. From our Design Gallery 2, We have received feedback which was that the “Not Sure” option on the To-Voice Translator window was ambiguous
2. Through our Deaf Middle Schoolers Mag evaluation, we have observed that when a student wanted to ask a question by signing to send it across and if a student wants to redo the sign gestures again there wasn't any redo option available on the same pop-up window
3. Through our Deaf Middle Schoolers Mag and the feedback, which was given to us during Design gallery 3, We have observed that if there was an absence of webcam, there was no alternate option for a student to know what sign language they use

Improvements Made

1. We have reduced the number of screens to 1 by Combining the Sign hello screen and the To-voice Translator screen and named it under “Hearing Assistance”, along with that we have also framed the “Not sure” option to “other” which appears to be more appropriate
2. While asking a question, earlier there wasn't any option of re-doing the sign gestures but now we have included a redo button for them to make any changes if needed
3. From our research, we have observed that most of our underserved population come from low-middle income countries. They might not have webcam access. So, to make it easier for them to know what sign language they use, along with identifying the language when it is signed with the help of a webcam, We have also given an option of “Upload a Recording” where the student can upload previously recorded files or any files that they find from the search engines to identify which sign language it is that they use

Prototype

Discussion Board

The User will log into their account



Login

The user will click on a live lecture and will join-in.



Select AP Chemistry live lecture

To start a new discussion, The user will navigate to the discussion board on the right side of the screen



Click on Start a new discussion



The user will click on Start a new discussion to be able to post their questions to the discussion board or they can check previously asked questions from the list

Choose to answer



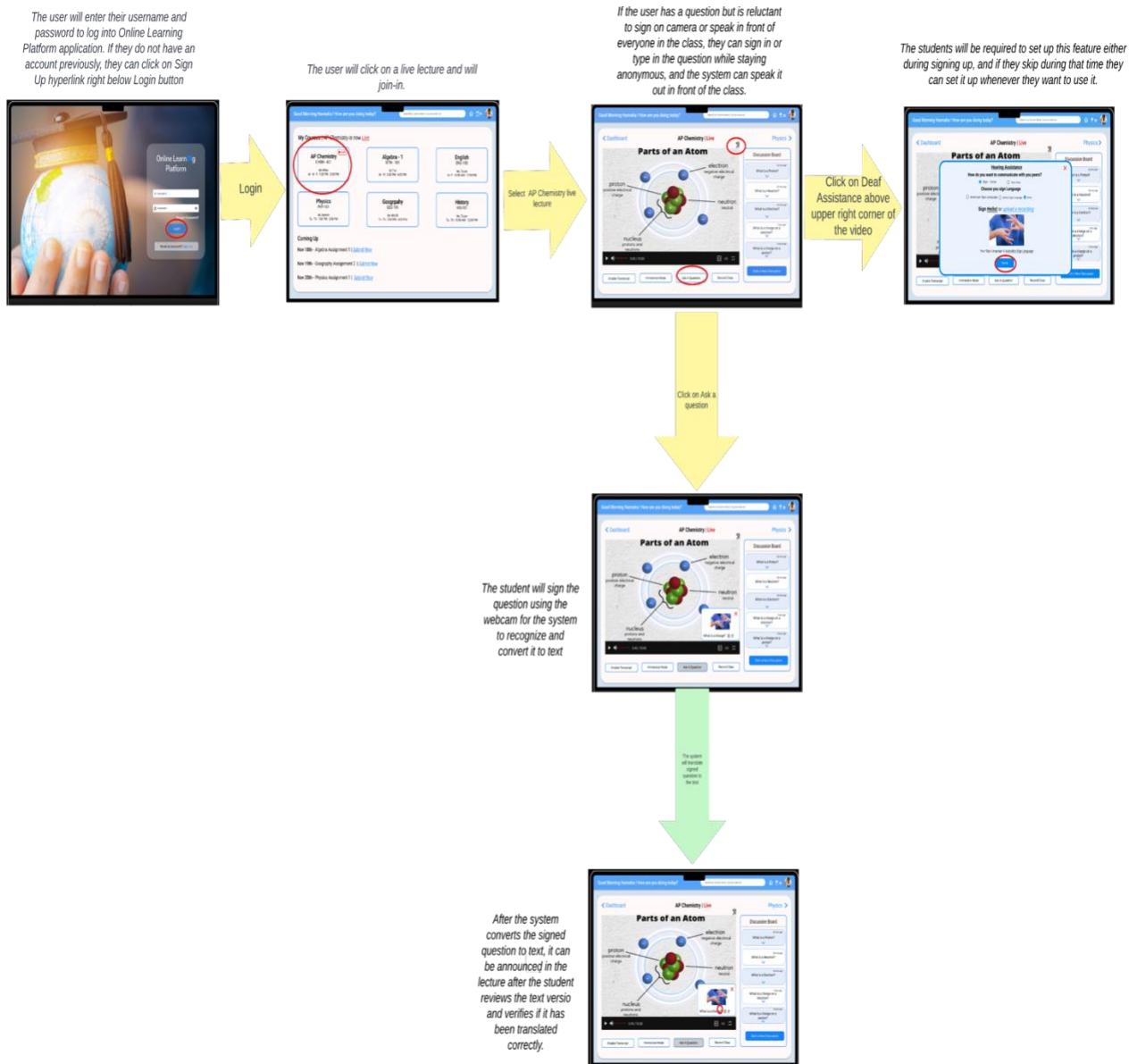
The user can stay anonymous while asking the questions just in case they do not want to draw any attention

Submit your Question



Participation points have been added You can redeem it and buy Stationary

Hearing Assistance



Scenario (Overall Goal): Hannah is watching an online lecture video where the screen looks cluttered with a lot of textual information, animations, slides, pictures, and subtitles which is making it difficult to focus on what is important.

Subgoal #1 : To access the learning materials from Online Learning Platform website

Will Hannah (deaf middle schooler) have formed this sub-goal as a step to their overall goal? Why?

• Yes	• Maybe	• No
Which, if any, of Hannah facets did you use to answer the question?		
<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above 	<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above 	<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above
Why?		
Yes, Hannah will be able to click on the sign up button to create an account for Online Learning Platform because she is falling behind in her math class [14] and all the classes have moved to online learning.	Maybe, because Hannah finds it difficult to focus during online lectures [13]. So, she might not find online lecture videos to be helpful resources.	

Action #1: Click 'sign in' button in the login page to enter Online Learning Platform

[BEFORE ACTION] Will Hannah do this? Why?

• Yes	• Maybe	• No
Which, if any, of Hannah facets did you use to answer the question?		
<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above 	<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above 	<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above
Why?		
Yes, Hannah will be able to access Online Learning Platform's material by signing into her account. In her background information, it does mention she uses an iPad during her free time, so she has basic technology proficiency.		Maybe, she might find watching lecture videos to be boring and monotonous after a long period of watching so she decides to look for alternate resources and not use Online Learning platform.
What in the UI helped/confused Hannah in this step?		
The 'Login' button is in blue to highlight to Hannah on what to click after filling out the username and password.		

Action #1: Click 'sign in' button in the login page to enter

[AFTER ACTION] *If Hannah does this, will they know they did the right thing and are making progress toward their goal? Why?*

• Yes	• Maybe	• No
Which, if any, of Hannah facets did you use to answer the question?		
<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above 	<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above 	<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above
Why?		
The dashboard screen does have the lecture name, course number and the lecturer's name below the video thumbnail. Hannah will be able to read and process the information to know she is on the right path to watch lecture videos.		
What in the UI helped/confused Hannah in this step?		
Course name and number below the video thumbnail, along with lecturer name and time of lecture will help Hannah know they are making progress towards goal		

Action #2: Click 'AP Chemistry' lecture video thumbnail in the dashboard page

[BEFORE ACTION] Will Hannah do this? Why?

• Yes	• Maybe	• No
Which, if any, of Hannah facets did you use to answer the question?		
<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above 	<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above 	<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above
Why?		
Hannah will perform this action because the information below the video thumbnail ensures she is entering the right lecture video. This will reduce her anxiety on clicking the wrong button feature [7]		
What in the UI helped/confused Hannah in this step?		
The information below the video thumbnail is very detail to allow her to make a correct judgment call		

Action #2: Click 'Algebra' lecture video thumbnail in the dashboard page

[AFTER ACTION] If Hannah does this, will they know they did the right thing and are making progress toward their goal? Why?

• Yes	• Maybe	• No
Which, if any, of Hannah facets did you use to answer the question?		
<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above 	<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above 	<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above
Why?		
Yes, once she enters the main lecture video screen, she will be able to watch the lecture video and review the material.		
What in the UI helped/confused Hannah in this step?		
Play button for the lecture video and discussion board on the right-hand side of the media player		

Scenario (Overall Goal): Hannah has difficulty in understanding a particular topic that is being explained in the online live lecture

Subgoal #1 : To access the discussion board to see if there is answer to her question about material

Will Hannah (deaf middle schooler) have formed this sub-goal as a step to their overall goal? Why?

• Yes	• Maybe	• No
Which, if any, of Hannah facets did you use to answer the question?		
<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above 	<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above 	<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above
Why?		
Yes, Hannah will form this sub-goal because the discussion board has been moved to the right side of the screen from the feedback that we have received from Design Gallery 3 and also because it does not involve social interaction so she will not feel anxious from using it [11]. By browsing the discussion board answer and not posting anything, she won't draw attention to herself too [7].		

Action #3: Use discussion board to look for answer to her question

[BEFORE ACTION] Will Hannah do this? Why?

• Yes	• Maybe	• No
Which, if any, of Hannah facets did you use to answer the question?		
<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above 	<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above 	<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above
Why?		
Yes, Hannah will be able to search for previously asked questions and the associated answers provided by the instructor and peers. Without physically having to speak or sign with people, it will assist in removing her perplexity.		
What in the UI helped/confused Hannah in this step?		
The title discussion board will help her navigate to the right part of the website.		

Action #3: Use discussion board to look for her question

[AFTER ACTION] If Hannah does this, will they know they did the right thing and are making progress toward their goal? Why?

• Yes	• Maybe	• No
Which, if any, of Hannah facets did you use to answer the question?		
<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above 	<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above 	<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above
Why?		
Hannah would know that she is at the right spot in the discussion board because all the questions that have been asked are presented along with the time stamps which avoid any confusions [11]		
What in the UI helped/confused Hannah in this step?		
The title named discussion board		

Subgoal #2: To focus on the lecture video with no distraction

Will Hannah (deaf middle schooler) have formed this sub-goal as a step to their overall goal? Why?

• Yes	• Maybe	• No
Which, if any, of Hannah facets did you use to answer the question?		
<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above 	<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above 	<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above
Why?		
Yes, she will form this sub-goal because she finds it difficult to focus during online lectures [13]. If there is a feature to help her minimize the distraction, she will look for it and use it.		

Action #4: Click 'immersive mode' button to minimize distraction when watching lecture video

[BEFORE ACTION] Will Hannah do this? Why?

• Yes	• Maybe	• No
Which, if any, of Hannah facets did you use to answer the question?		
<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above 	<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above 	<ul style="list-style-type: none"> • Attitude towards E-Learning • Risk of Anxiety and Depression • Learning Speed • None of the above
Why?		
Yes, Hannah will do this to keep herself from focusing during online lectures [13]. Hannah will also perform this action because the four assistive feature button on the bottom of the media player is well-defined so she can feel confident to use the tool and not feel exposed to the rest of the class when clicking on unknown feature button [7]		
What in the UI helped/confused Hannah in this step?		
Hannah will be able to spot the 4-feature buttons right below the media player (i.e. enable transcript, immersive mode etc.) and knowing that immersive is a vocabulary to help keep away from distraction		

Action #4: Click 'immersive mode' button to minimize distraction when watching lecture video

[AFTER ACTION] If Hannah does this, will they know they did the right thing and are making progress toward their goal? Why?

• Yes	• Maybe	• No
Which, if any, of Hannah facets did you use to answer the question?		
<ul style="list-style-type: none"> • Attitude towards E-Learning • <i>Risk of Anxiety and Depression</i> • Learning Speed • <i>None of the above</i> 	<ul style="list-style-type: none"> • <i>Attitude towards E-Learning</i> • <i>Risk of Anxiety and Depression</i> • <i>Learning Speed</i> • <i>None of the above</i> 	<ul style="list-style-type: none"> • <i>Attitude towards E-Learning</i> • <i>Risk of Anxiety and Depression</i> • <i>Learning Speed</i> • <i>None of the above</i>
Why?		
Yes, the background screen will be changed to gray and the media player will be centered in the screen. All other information from the main lecture screen will be blurred out by the background and produce minimal distraction [13]. The background color will slow transition to orange when important subject is given by the lecturer, this will recapture Hannah's attention [9]		
What in the UI helped/confused Hannah in this step?		
The zoom in on the screen with gray blurred out background will help Hannah know she's in the right mode. The exit immersive mode button below the media player is also another indicator for Hannah		

Percentage of usability issues

= *numerator 1 / denominator*

= **2/11 = 18.2%**

Percentage of Deaf-Middle-Schooler-Inclusion Issues

= *numerator 2 / denominator*

= **2/11 = 18.2%**

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