

Mental Health Challenges among Undergraduate Students

Introduction:

In recent years, the mental health of undergraduate students has received increasing attention. Especially for international students who are far away from home, they not only have to deal with academic pressure, but also face multiple pressures such as possible social isolation, cultural conflicts, overcoming language barriers, and rebuilding social circles. Their mental health conditions are often more complex and severe than those of domestic students. If not properly handled, it will further aggravate anxiety, depression and other problems, seriously affecting academic performance and daily life.

The purpose of this project is to design a speculative extended reality (XR) experience to help undergraduate students, especially international students who need to actively cope with mental health challenges. By using XR technology to provide a virtual platform, it can help students relieve stress, enhance psychological resilience, and promote connections between international and domestic students. At the same time, through this virtual environment, students can relax and interact with others anytime and anywhere and get emotional support and psychological comfort.

To address the above issues, this research will focus on questions such as how to design an XR experience that can prevent depression and improve psychology in undergraduate students under high-pressure situations? What design features and functions are essential to create an effective XR experience?

The main goal is to build a foundation for creating XR experiences that support mental health by deeply exploring primary and secondary research. Then, through researching existing literature and in-depth interviews with target users, multiple design options are proposed and tested to find the most suitable solution.

In this study, relaxation techniques through XR devices will be used as a coping strategy. The use of relaxation techniques is a widely recognized mental health strategy that can improve students' overall mental health by reducing stress and anxiety. Relaxation techniques include meditation, deep breathing exercises, and progressive muscle relaxation. These methods are not only easy to learn and practice but can also be performed at any time and place, which is very suitable for students to use in their busy academic lives.

In terms of XR types, the use of virtual reality (VR) may be able to improve this situation. Since VR technology can create a fully immersive virtual environment for students, it can obviously help students get rid of the pressure of the real world and focus on relaxation and psychological recovery more effectively.

In addition, VR can also provide interactive and gamified experiences in virtual environments to further enhance the effect of relaxation techniques. Students can not only participate in relaxation training, but also interact with other students online to share their experiences and feelings, thereby establishing a sense of belonging and support system in the virtual world. This immersive experience can better help students apply the relaxation techniques they have learned in real life, thereby improving their mental health.

Literature Review

According to the above Literacy review, it is easy to find that they will encounter many difficulties when studying in another country that domestic students will not experience. The research of Kristiana et al pointed out: Studying in another country requires more effort for most students. Apart from having to deal with academic work that is more challenging than in the previous education phase, international students also have to adapt to a new environment, even to a new culture [1]. This explains the additional challenges faced by international students studying abroad. The adaptation process to this new environment involves adjustments at multiple levels, including changes in lifestyle, cultural habits, and social methods.



Figure 1: "Woman Sitting in Front of Macbook" [3]

There are some challenges that are difficult to imagine for those who have not experienced studying abroad alone. Such as,

Challenges in adapting to academic and social environments may include difficulties with English and communication, developing friendships, and lack of knowledge of the culture of the country of study, along with changes in food, finance, housing, and social support [1]. Their research clearly visualizes the difficulties and embarrassment that international students may face when adapting to academic and social environments. Therefore, it also can be predicted from the research results that due to language problems, international students will basically read and answer questions much slower than domestic students when taking the exams in the host country, thus affecting the overall efficiency of studying.



Figure 2: "Upset woman thinking about next steps after quarrel"[4]

It seems that it is easy for international students to have mental health problems, but Larcombe's study pointed out that empirical studies have consistently found that international students report comparable or lower rates of depression and anxiety than their domestic counterparts [2].

This result may be unexpected to many people and seem to contradict previous studies, but it is not. In their subsequent research, they attributed the reason to the psychological preparation of students before studying abroad. International students are generally advised (pre-departure or during orientation) that studying abroad will not be easy: they should expect to experience some negative emotions including homesickness and loneliness as well as academic setbacks [2]. The results of the experiment pointed to the fact that “When students normalising such difficulties and advising that they will ease as familiarity with the host culture increases [2].



Figure 3: "*Men Sits of Sofa*" [5]

In addition, Kristiana et al. found that "Several different studies have shown the importance of social support from local friends for international students to reduce homesickness. Friendships with local residents help develop cultural knowledge,

while support from family and fellow countrymen maintains cultural identity and reduces homesickness [2].

In general, the active coping strategy is to let international students build a strong social network and obtain more emotional support and resources from domestic students to relieve psychological pressure at one time. Moreover, the research of Larcombe further showed that self-compassion is also an effective emotion regulation strategy. For example, normalizing these anticipated difficulties and preparing for them through meditation can significantly reduce depression and anxiety levels, and improve psychological resilience. AR technology can provide more environmental and technical conditions on this basis to enhance its effect.

Interview Analysis Sheet

Participant	Quote	Code	Theme
Participant 1	"The biggest challenge after coming to Canada has definitely been the language barrier. Language proficiency and fluency need to be developed from a young age, often through immersion, so a few years in Canada couldn't bring my language skills up to the level of domestic students. Cultural differences, like not having common topics or shared experiences, made it harder for me to connect with locals."	Online Support	Challenges in Adaptation
	"During the tough times when I struggled with communication, I often sought comfort by chatting with fellow countrymen online. Sometimes, I also tried to connect with local people through online games, like Sky, which is a calming social game."	Online Support	Coping Mechanisms
	"Adapting to the local culture was another big challenge. I forced myself to participate in school volunteer activities and muster the courage to use translation apps to try and start conversations, even though it often felt awkward."	Cultural Participation	Coping Mechanisms
	"I use activities like drawing, listening to music, and playing games as ways to relax and maintain my mental health. Going out with good friends and experiencing life also helps a lot in alleviating stress and providing psychological comfort."	Relaxation Activities	Stress Relief
	"In Canada, the pressure comes from adjusting to a new education system and culture, which requires a lot of adaptation. To manage my feelings of frustration, I turn to activities I enjoy"	Stress Management	Coping Mechanisms
Participant 2	"The biggest challenge is time management. Since moving out and living independently, I have to take care of my meals every day"	Time Management	Challenges in Adaptation
	"A significant part of my stress comes from academic pressure. My classmates in the same major have been very helpful..."	Peer Support	Coping Mechanisms
	"The academic pressure at university is overwhelming! However, it has helped improve my stress tolerance, time management, and adaptability."	Academic Pressure	Emotional Impact
	"Time management has always been an area for improvement for me. Since I enjoy sports and excitement, sitting in class all day"	Time Management Struggles	Strategies for Adaptation
	"When facing setbacks, I think I'm quite good at processing them. I don't negate my abilities because of a bad test or low assignment score."	Self-Compassion	Mental Health Maintenance
	"As local students, we don't have to worry too much about high tuition fees, but we value independence and freedom more due to cultural differences."	Cultural Differences	Access Barrie

Figure 4: Interview Analysis Sheet [6]

Interview Methodology

The interviews were conducted using a structured approach to gather detailed insights from university students on adaptation challenges and coping mechanisms. Participants included two students of similar academic level: one international and one domestic. The interviews were conducted via online voice calls and the audio was transcribed to ensure accuracy. To ensure privacy and confidentiality, the interviews were conducted anonymously. The aim was to compare and contrast the experiences of an international student from China and a domestic student from Canada, focusing on their adaptation to university life and its impact on their mental health.

Interview Participant Introduction

Participant 1 is a Chinese international student who has been studying in Canada since middle school and is now a third-year undergraduate student at Waterloo. Her study experience in Canada was fraught with significant challenges, especially in terms of language barriers and cultural adaptation. Despite these barriers, the participant showed resilience in adapting to her new environment. Her story highlights the courage of international students to face unique pressures, as well as the determination and actions that demonstrate their strategies to cope with these challenges.

Participant 2 is also a third-year domestic undergraduate Waterloo student in Canada. Her university experience also faced some challenges and pressures, mainly around time management and academic pressure. She's narrative provides insight into the pressures faced by local students and how they balance their studies

and personal lives. Her story also highlights the commonalities and differences between domestic and international student experiences.

Summary

Participant 1's Experience

The biggest challenge participant 1 faced after moving to Canada was the language barrier. Despite her efforts, her language skills were not as fluent as those of domestic students. Coupled with cultural differences, she usually felt more comfortable communicating with her classmates, which further slowed down her language progress. The participant's shy personality and language barriers made it more difficult to integrate into the group, which led to her frustration and stress. The extra time and energy required to complete homework and understand lectures also added to her emotional burden.

During the adaptation period, participants often sought comfort by chatting with classmates online and playing social games such as Sky. She also participated in school volunteer activities, used translation apps to ensure smooth communication and practiced language skills in activities, which gradually made her feel more comfortable in the new environment. She also memorized vocabulary and studied grammar in her spare time to improve her learning efficiency.

When she encountered setbacks, She would distract herself and relax herself through activities such as drawing, listening to music, and spending time with friends. These activities gave her great psychological comfort and helped her cope with stress.

Participant 2's Experience

The main challenge the participant faced in university was time management. Although the academic pressure of university made her feel overwhelmed at times, it often made her anxious and sleep deprived. Living independently and taking care of daily affairs such as eating increased her psychological pressure. But she believes that such an environment has also cultivated her stress resistance, time management and adaptability. The participant also received strong support from her classmates during her studies. Studying and facing challenges with her classmates made her feel less lonely and difficult, and joining the school dance group also helped her relax and regain confidence. However, it was difficult for the participant to balance her study time and personal interests. She spent a lot of extracurricular time participating in activities such as dancing to relieve stress, but this sometimes resulted in her lack of study time.

When facing difficulties, the participant believes that she is good at coping with setbacks. She does not let poor test or homework grades affect her self-worth. She uses positive self-talk and makes sure she gets enough sleep and exercise to manage stress and anxiety. The participant emphasized that domestic students, unlike international students, do not have to worry about high tuition fees. However, their cultural values centered on independence and freedom have led many people to work part-time, reducing rest time and hobby time.

Thematic Analysis & Conclusion

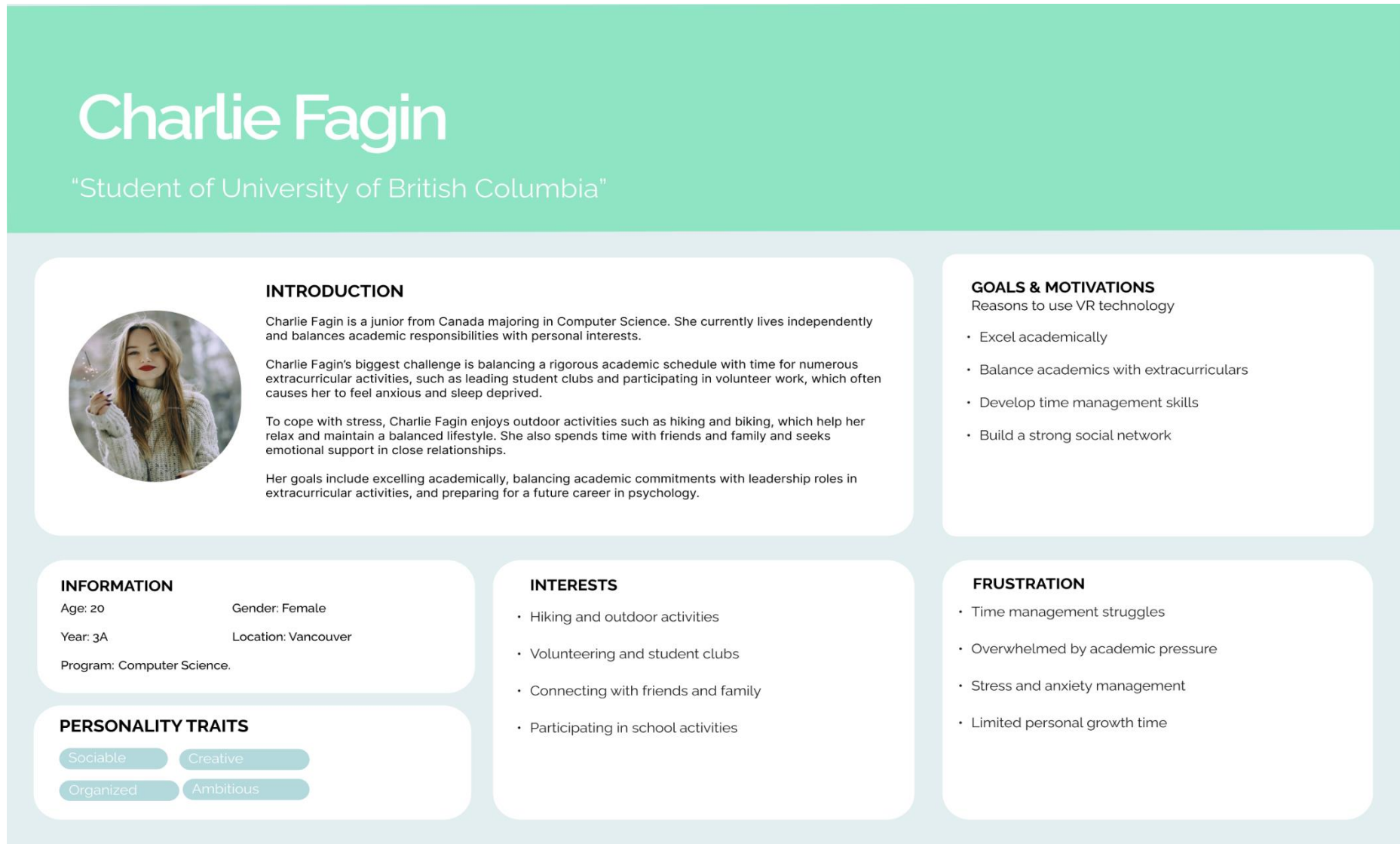
First, both students faced some common university challenges, but their experiences were shaped by different stressors and context-influenced strategies. Participant 1's struggles with language and cultural adjustment highlighted the unique challenges faced by international students, while Participant 2's concerns about

academic competition and balancing personal interests reflected typical stressors for domestic students. These differences highlight the different needs and experiences of students in the university environment, underscoring the importance of tailored support systems.

In addition, according to the interview results of both participants, although their backgrounds were different, they had several common points in their university experiences, such as both faced significant challenges in time management and great academic pressure, as they needed to work hard to balance academic responsibilities with personal interests and daily tasks. The constant tension has been affecting their mental health, causing stress and anxiety.

To cope with these challenges, both relied heavily on social support. Participant 1 found comfort in chatting with compatriots online and playing social games, while Participant 2 relied on the support of classmates and peers. Participating in extracurricular activities was another common coping mechanism; Participant 1 participated in school volunteer activities and the school dance group.

It was clear that both participants used personal strategies to maintain their mental health, such as engaging in hobbies and practicing self-compassion. They emphasized the importance of positive self-talk and reminded themselves that setbacks are part of the learning process. These common points highlight the universality of student life and the importance of students coping with the stress of university life.



Emily Li

"Student of University of Toronto"



INTRODUCTION

Emily Li came to Canada from China to pursue a degree in Business Administration.

Upon arriving in Canada, she faced significant challenges, especially language barriers and cultural differences. These barriers made it difficult for her to fully integrate into the local environment and affected her learning efficiency. Despite these challenges, Emily remained determined to succeed and make the most of her international experience.

To cope with the difficulties, Emily often sought comfort in online communities and social games. These platforms helped her stay connected to her home culture while adapting to her new environment. She also participated in cultural exchange programs and attended international student events to build a sense of community and practice her language skills.

Her goals included achieving academic success, improving her language skills, building connections among local students, and gaining international experience to enhance her resume.

GOALS & MOTIVATIONS

Reasons to use VR technology

- Improve English proficiency and fluency
- Succeed academically in a foreign education system
- Build a diverse social network and integrate into Canadian culture
- Gain practical experience to enhance her resume and career prospects
- Relieve homesickness

INFORMATION

Age: 19

Gender: Female

Year: 2B

Location: Toronto

Program: Business Administration

INTERESTS

- Online gaming and social media
- Volunteering and community involvement
- Travel and exploring new cultures
- Participating in recreational activities with good friends

FRUSTRATION

- Struggles with language barriers and cultural adaptation
- Feelings of isolation and difficulty integrating with local students
- High academic pressure and the need to understand a different educational system

PERSONALITY TRAITS

Resilient




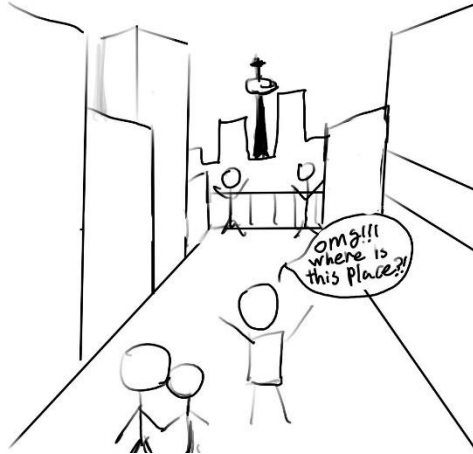
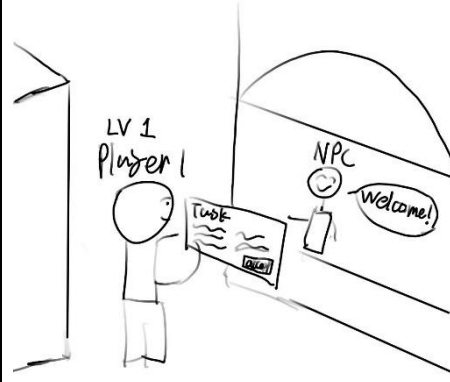
Adaptable

Determined

Open-minded






Speculative Technology Analysis

Technology 1 - HoloLens from Movie "Ready Player One"

Description:	Technical Details:	Feasibility:	Impact on User Experience:
<p>The HoloLens in Ready Player One is a reality headset that overlays digital objects onto the real world, allowing users to interact with virtual and physical elements. It is a virtual reality world where players can engage in a variety of activities, from gaming to socializing and learning.</p> <p>Figure 7: "Ready Player One Wade Watts" [9]</p> 	<p>Key features: The HoloLens headset features a high-resolution display, spatial audio, and advanced sensors for full-body tracking and gesture recognition. Enter virtual environments anytime, anywhere, because the headset is context-agnostic.</p> <p>Relevance: For this study, features such as full-body tracking and immersive VR environments can create engaging and beneficial XR experiences for mental health. In addition, you won't feel pain in the virtual world, therefore you can do anything which is adventurous.</p>	<p>Current developments: VR technology has made great progress, with products such as the Oculus Rift, and PlayStation VR providing users with VR experiences. However, these devices are not yet as advanced as the HoloLens shown in Ready Player One.</p> <p>The main challenges include advanced haptic feedback as depicted in the movies, full body tracking technology, making users feel immersive, reducing motion sickness, improving hardware performance, and making VR headsets cheaper and more accessible to the public.</p>	<p>HoloLens can provide a fully immersive environment, allowing users to participate in therapeutic activities or social activities without real-world distractions.</p> <p>Information can be displayed in an immersive way, allowing users to be immersed in the situation and freely understand the surrounding environment.</p>
			


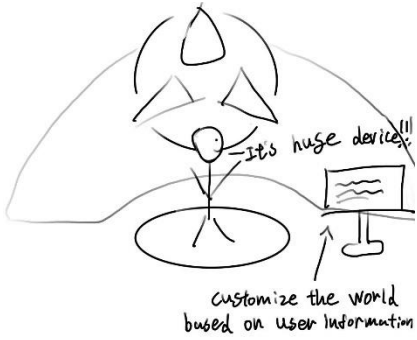

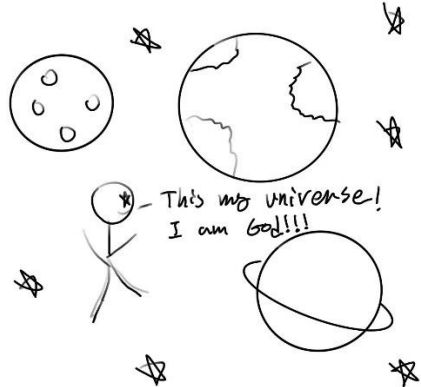
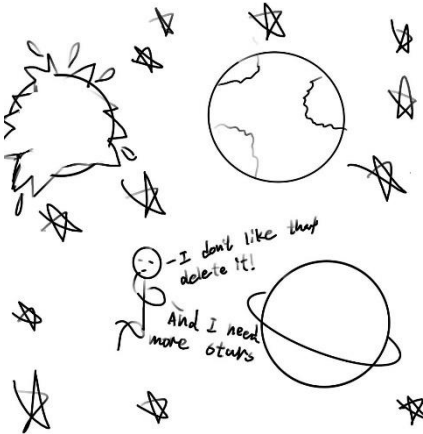
<p>P</p> <p>Government regulations will likely focus on the safe use of VR technology, particularly in healthcare and education. Currently, most governments' policies to promote technological innovation could support the adoption of advanced VR systems.</p>	<p>E</p> <p>The high cost of VR headsets may limit their popularity, but perhaps future production increases and technological advances could bring prices down over time, making them affordable for more people.</p>	<p>S</p> <p>VR technology can enhance online social interactions by providing users with an immersive shared experience. It can also facilitate remote collaboration and social interaction, bridging the gap caused by physical distance.</p>	<p>T</p> <p>As VR technology continues to advance, such as improved graphics, motion tracking, and tactile feedback, the realism and usability of VR systems will be enhanced, allowing VR to extend the possibilities of more virtual worlds.</p>	<p>E</p> <p>The production and disposal of electronic components in VR headsets raises significant environmental concerns. Sustainable production practices and effective e-waste management will become critical in the future.</p>	<p>L</p> <p>Privacy, data security, and visual environment safety are key issues in VR environments. Regulations need to ensure that user data is protected and that VR applications meet legal safety standards, and governments may introduce new regulations for VR scenarios to prevent unknown dangers.</p>
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Technology 2 - Soul Translator from "Sword Art Online"

Description:	Technical Details:	Feasibility:	Impact on User Experience:
<p>The Soul Translator (STL) is a device in "Sword Art Online: Alicization" used to enter virtual worlds by connecting to the user's Fluctlight (soul), providing an incredibly realistic and immersive experience. In the virtual world it creates, you can fully experience all the feelings of the real world, but at the same time you will also gain skills and systems that are not available in reality.</p> <p>Figure 8: "Ready Player One Wade Watts" [10]</p> 	<p>Main features: The Soul Translator includes a neural interface connected to the user's Fluctlight, advanced sensors for full sensory immersion, allowing people to feel all the five senses of the real world (such as pain, touch) in the virtual world, and the flow of time in the virtual world is very slow, so there is no need to worry about wasting time.</p> <p>Relevance: The idea of a deeply immersive experience can allow students to temporarily escape from the pressure of the real world and relax, such as traveling and exploring in the virtual world.</p>	<p>Current developments: While the scientific concept of interacting with human consciousness at such a deep level is beyond our reach, research in brain-computer interfaces (BCIs) and quantum computing could lay the foundation for future developments, and my favorite gaming company Mihoyo is investing in such research projects.</p> <p>The challenges of this technology are ethical, and the safety challenges in developing devices that interact with human consciousness. Potential risks include neurological damage, ethical concerns about manipulating consciousness, and ensuring user consent and data privacy.</p>	<p>As a device that allows users to lie flat, STL can provide therapeutic activities and social interactions directly in consciousness for patients who are in a coma or mental illness (such as vegetative state) to create a highly realistic and immersive virtual environment to improve poor mental state and treat diseases.</p>
<p>Jack plays in the virtual world while sleeping in reality</p> 			<p>I played the game for 24 hours, but only 8 hours passed in reality. Amazing!</p> 

<p>P</p> <p>Regulations for deep brain-computer interfaces are critical to ensuring safe and ethical use. Policies may also address public concerns and ethical considerations.</p>	<p>E</p> <p>The cost of developing and deploying such advanced technology would be very high. I personally think it is difficult to own such equipment.</p>	<p>S</p> <p>Future public acceptance of technologies that deeply interact with human consciousness will likely depend on views on safety, privacy, and ethical use.</p>	<p>T</p> <p>Advances in neuroscience, quantum computing, and brain-computer interfaces will be critical to developing this technology, which is destined to disrupt all industries.</p>	<p>E</p> <p>The procurement of materials and the management of electronic waste will be important considerations, as discarded batteries and materials will cause serious pollution to nature if they cannot be processed.</p>	<p>L</p> <p>The government is likely to introduce a robust legal framework to address issues of privacy, data security, user consent, and ethical use when using this product.</p>
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Technology 3 - Simulated Universe from Game “Honkai: Star Rail”

Description:	Technical Details:	Feasibility:	Impact on User Experience:
<p>The simulated universe in Honkai: Star Rail is an advanced virtual reality system that creates complex and dynamic virtual worlds based on the user's data and preferences. Players can explore different dimensions and levels in these simulated environments, recreate and explore the history of the game's storyline.</p>  <p>Figure 9: “Honkai Star Rail Simulated Universe Guide” [11]</p>	<p>Main features: The simulated universe is a system with advanced artificial intelligence algorithms, procedural generation technology and high-fidelity virtual reality display system. It does not require any equipment to be worn, and you can enter the virtual world by standing in the designated area of the device. Unlike the other two technologies, it customizes exclusive virtual experiences and levels based on user data and personal preferences.</p> <p>Relevance: In this study, this VR system device can create personalized and adaptive virtual environments according to the needs of college students to facilitate the recovery and treatment of students' mental health.</p>	<p>While creating a fully dynamic and personalized virtual world is beyond current capabilities, some of this technology can be seen in modern VR systems and AI-driven environments. AI-generated virtual reality can barely achieve the steps of such an immersive experience.</p> <p>The main challenges of this technology include developing AI that can create highly personalized and interactive environments in real time, as well as the computing power required to maintain such complex virtual worlds.</p>	<p>Simulated universes can provide highly engaging and tailored experiences, making interactions in virtual environments more meaningful and relevant to users.</p> <p>Information can be dynamically generated and presented based on the user's current state and needs, making it more relevant and engaging.</p>
			

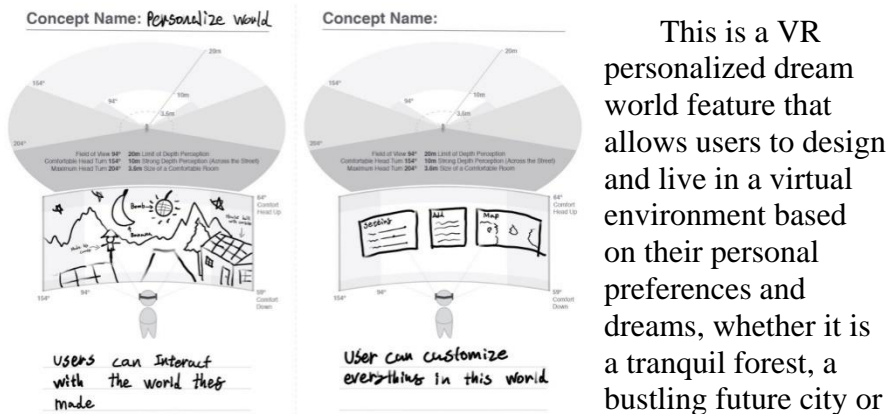
<p>P</p> <p>Government support for AI and VR technologies will likely drive the development of advanced simulated environments, as well as regulations to ensure the ethical use of AI and virtual environments.</p>	<p>E</p> <p>The high cost of developing and maintaining such virtual environment systems may initially limit accessibility. However, widespread adoption and economies of scale could reduce costs over time, making them accessible to the general public.</p>	<p>S</p> <p>The growing interest in personalized and immersive experiences is likely to drive demand for technologies such as simulated universes. Ensure that these experiences are inclusive and accessible to a diverse user base.</p>	<p>T</p> <p>Advances in AI, procedural generation, and VR technologies will be key to developing fully immersive and adaptive virtual environments. Improvements in computing power, machine learning algorithms, and user interface design will enhance the functionality and user experience of simulated universes.</p>	<p>E</p> <p>The development and maintenance of large virtual environments requires significant computing resources, which may impact energy consumption. Efficient coding practices for data devices to reduce energy consumption and the use of renewable energy will be important considerations to mitigate environmental impacts.</p>	<p>L</p> <p>The use of such systems will require a robust legal framework to address privacy, data security, and user consent. Regulations must ensure that user data is protected and that AI algorithms are used ethically.</p>
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XR Speculative Prototypes

Design ideas 1 - Personalized Dream World (Designed based on Simulated Universe and Soul Translator)

Introduction

Figure 10: Sketch of VR Interface for Prototype Idea 1 [12]



This is a VR personalized dream world feature that allows users to design and live in a virtual environment based on their personal preferences and dreams, whether it is a tranquil forest, a bustling future city or any other imaginary space, including everything from landscapes and architecture to ambient sounds and interactive elements, allowing people to be fully immersed in the new environment. This highly personalized experience ensures that users have a deep sense of belonging and connection to the virtual world.

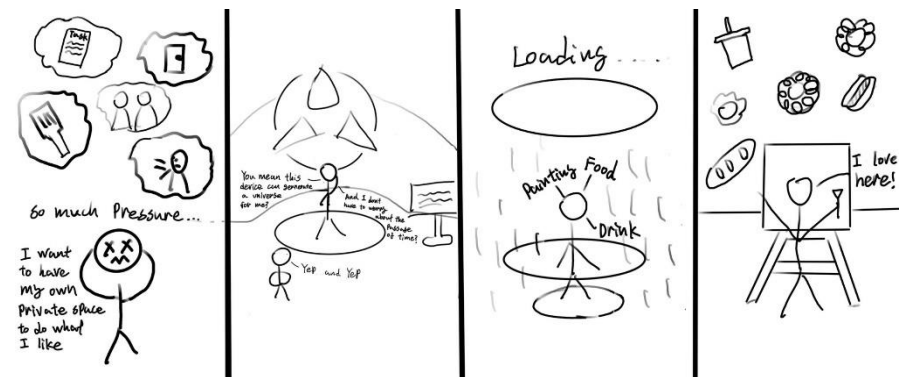
In addition, the time flow of the virtual environment is different from that of reality, and users can spend a lot of time in the customized world without affecting their real-life schedule. By experiencing a slower passage of time in the virtual world, users can engage in long periods of relaxation or creative activities, effectively relieving stress and rejuvenating their spirits while ensuring that they can complete their real-world commitments on time.

Solution to identified problems

To solve the problem that international students face severe social isolation and cultural adaptation challenges. This personalized world allows international students to create a familiar and comfortable virtual environment that reflects aspects of their home culture, which helps reduce isolation and provide a sense of belonging. As well as, students can spend more time creating their own space in the virtual world to practice their language skills, gradually helping them adapt to the new environment.

To solve the problem that domestic students face academic pressure and difficulty balancing personal interests and academic responsibilities. The customizable function of the personalized world allows domestic students to pursue their hobbies and interests in it. In addition, due to the different flow speed of the virtual world and the fact that it is not restricted by real-world time, this function allows students to better participate in creative and relaxing activities, providing necessary breaks from academic pressure and promoting a balanced lifestyle.

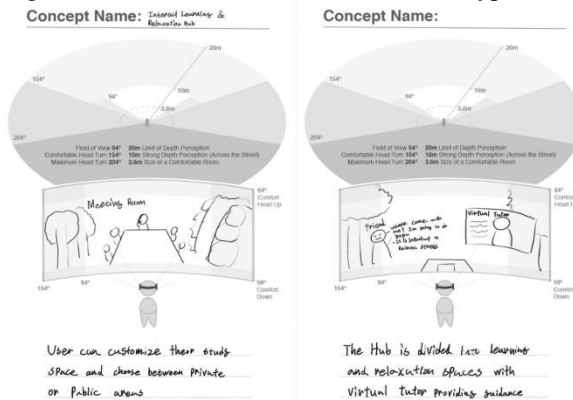
Figure 11: Storyboard for Prototype Idea 1 [13]



Design ideas 2 - Interactive Learning and Relaxation Hub (Designed based on HoloLens)

Introduction

Figure 12: Sketch of VR Interface for Prototype Idea 3 [14]



The interactive learning and Relaxation Hub provides users with the unique ability to access public and private VR spaces based on their personal learning style and preferences (This feature is

different from previous ideas, which is a more formal, learning-centric mode). In the private study area, users can choose from a variety of environments, such as a quiet library, a tranquil garden, or a meeting room, each designed to improve concentration and productivity. And users can also invite friends to join private spaces for discussions or group meetings or join public shared learning spaces around the world for learners to exchange cultures with domestic or international students.

In addition to learning and meeting areas, the hub also includes virtual areas dedicated to leisure and mental health activities. These areas offer relaxation exercises, meditation classes, and mental health workshops guided by virtual therapists. Users can participate in these activities between studies to help reduce stress and improve overall health.

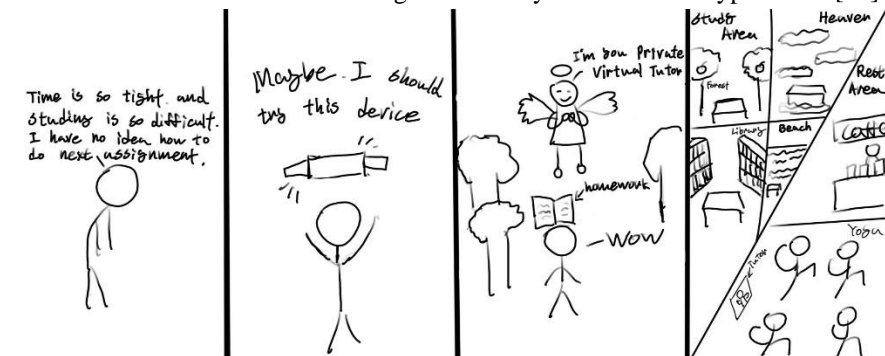
Finally, the Hub provides a real-time support system is a real-time academic and mental health support system. Virtual tutors can assist with learning according to user needs, provide explanations, answer questions, and provide learning suggestions. Mental health support is also provided, providing guidance on stress management, coping strategies, and emotional health.

Solution to identified problems

To address language barriers and different educational expectations for international students. Virtual tutors can provide academic assistance to international students, helping them understand complex concepts and improve language skills. This real-time support ensures students stay on track and feel more confident in their academic abilities and helps them reach out to domestic students in a public open learning space.

Domestic students who need help addressing challenges in managing academic stress and maintaining mental health will be supported by virtual therapists, who will provide guidance on stress management and coping strategies to effectively manage their academic workload, reduce stress and improve academic performance.

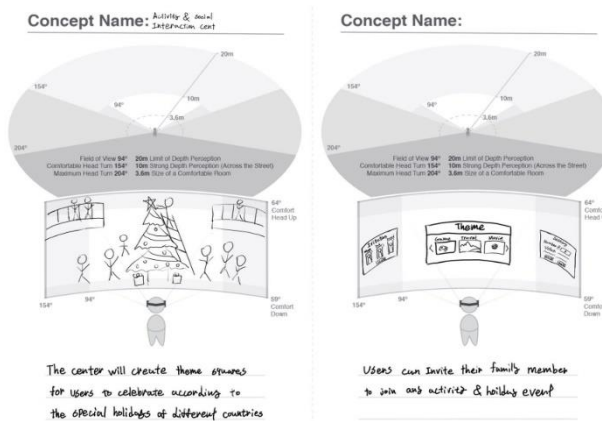
Figure 13: Storyboard for Prototype Idea 2 [15]



Design ideas 3 - Activity and Social Interaction Center

Introduction

Figure 14: Sketch of VR Interface for Prototype Idea 3 [16]



The Activity & Social Center offers a variety of public recreation areas (virtual worlds featuring entertainment and social activities) where users can participate in adventure social

activities such as virtual escape rooms, interactive quests, thrilling adventures, movie screenings, multiplayer games, and family gatherings. These spaces are designed to be dynamic and interactive, providing a platform for users to relax and socialize, promoting social connections and engagement to help users connect with people with common interests.

To access this virtual space, users can use VR devices such as the Simulated Universe and Soul Translator, which provide an immersive experience. The center regularly hosts inclusive group activities and events, including virtual concerts, quest-based adventures, dance parties, and collaborative art projects. In addition, special events are held around the plaza to celebrate various cultural festivals and promote cultural exchange and understanding. The system also has advanced social features such as floating chat boxes

and voice call boxes, which enhance the social experience and allow users to relax and socialize easily.

Solution to identified problems

To address the isolation, emotional distress and difficulty establishing social connections faced by international students, this virtual world activity social center provides a welcoming environment where international students can meet new people, chat with friends and form adventure groups. These spaces promote spontaneous interactions and scheduled gatherings, helping students build supportive social networks. And when you miss your family, you can invite your loved ones to join this space for fun and celebrate holidays together.

This VR space can also save energy and solve the academic pressure and social problems faced by domestic students. Interactive social spaces provide a virtual environment where domestic students can relax, chat with friends and participate in group activities. These spaces can relieve academic pressure and promote and build their own social connections.

Figure 15: Storyboard for Prototype Idea 3 [17]



Conclusion:

From the whole experiment and research analysis, the literature review first highlights the research and predicted problems and results of international students and domestic academics. It is obvious that both international and domestic students face significant challenges in college life, including social isolation, cultural adaptation, academic pressure and time management issues. In the post-study research process, the experiment gathered more information about undergraduate mental health by interviewing two college students, listing all the challenges and differences, then making relevant virtual characters, and finally creating solutions around XR technology to start solving the problem.

Based on the information from the interviews and personas, three XR speculative prototypes were created to address these challenges - Personalized Dream World, Interactive Learning and Relaxation Hub, and Activity and Social Interaction Center - which provide innovative solutions to these challenges. Personalized Dream World provides a customizable virtual environment to relax and be creative without the constraints of real-world time. Interactive Learning and Relaxation Hub combines personalized learning space with leisure areas and real-time support, improving academic performance and mental health. Adventure and Social Interaction Centre promotes social interaction and community participation through public entertainment areas, group activities and interactive social spaces. These prototypes promote student well-being through immersive, supportive and personalized experiences, effectively solving the semester design brief.

Despite the potential of these prototypes, they also face limitations such as the difficulty of breaking through VR technology, high

development and material costs. There are also limitations such as accessibility and ethical issues such as data privacy. Future design directions may focus on making XR technology more affordable and inclusive, improving user interfaces, and incorporating user feedback. Prioritizing ethical issues will ensure that these technologies are developed and used responsibly.

In conclusion, this study and the proposed XR prototypes provide a comprehensive approach to mental health issues to enhance the university experience of international and domestic students.

Reference

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Generative AI

Assessment: Mental Health Challenges among Undergraduate Students

Course: GBDA 301
GenAI Platform: ChatGPT

Date	Conversate on Label	Prompt	Response	References	Action	Other Notes
4-6-24	Mental Health Solution	What are some ways to cope with mental health challenges?	Here are some ways to cope with mental health challenges: <ul style="list-style-type: none"> - Therapy - Medication - Exercise - Meditation - Support groups - Sleep 	Start brainstorming around these keywords	Based on these ideas, I conducted in-depth brainstorming on my own	
		How to deal with homesickness among international students?	Here are some ways to deal with homesickness among international students: <ul style="list-style-type: none"> - Stay connected - Create a routine - Join clubs - Explore local culture 	Start thinking about more solutions to issues surrounding international students	These gave me inspiration to design solutions to international student issues	
		The best way to balance study and life	The best way to balance study and life is to make a reasonable schedule and stick to it. First, set clear study goals and tasks, and allocate appropriate time for each task to ensure efficient use of study time. Second, arrange rest and entertainment activities regularly to avoid fatigue caused by long-term continuous study.	Inspired me to solve balance problems through XR	Get inspired and start designing your own solutions	
		What VR features can improve mental health?	<p>Meditation and relaxation training: VR provides an immersive meditation and relaxation experience that can take users into a tranquil virtual environment, such as a beach, forest, or mountain, to help them relax and meditate deeply, thereby reducing stress and anxiety.</p> <p>Emotional regulation: By simulating pleasant and relaxing scenes, VR can help users regulate their emotions and improve their emotional state. This is particularly helpful for those suffering from depression or anxiety.</p> <p>Social simulation: VR can simulate social scenes to help patients with social anxiety practice social skills in a virtual environment, gradually improving their social skills and confidence in real life.</p>	Inspired my design ideas, and I started to expand my own design related functions myself	Think about how to design relevant scenarios and feature around these ideas	
						21

Appendix- Interview Transcript

International Student Interview Questions:

Q: What is the biggest adaptation challenges you have faced since you came to study in this country? How have these challenges affected your mental health?

For me, the biggest challenge after coming to Canada has definitely been the language barrier. Language proficiency and fluency need to be developed from a young age, often through immersion, so a few years in Canada couldn't bring my language skills up to the level of domestic students. Cultural differences, like not having common topics or shared experiences, made it harder for me to connect with locals. As a result, I found myself gravitating towards people from my own country, which slowed my language progress even more. When I first arrived, my shy personality and language struggles made it really hard to fit in. Feeling frustrated when I couldn't communicate properly, and having to spend way more time and effort on assignments than local students, only added to the stress. Not being able to understand lectures easily was particularly tough and led to a lot of suppressed emotions.

Q: Which people or groups have you received the most support from when adapting to a new cultural and academic environment? How has this support helped you relieve stress and homesickness?

During the tough days when I struggled with communication, I often sought comfort by chatting with fellow countrymen online. Sometimes, I also tried to connect

with local people through online games, such as Sky, which is a calming social game. These interactions helped alleviate my feelings of isolation and homesickness. Although these methods weren't perfect, they provided me with a sense of community and emotional support.

Q: What are the biggest difficulties you have encountered in adapting to the local culture? What strategies have you adopted to overcome these difficulties?

Adapting to the local culture was another significant challenge. I forced myself to participate in school volunteer activities and muster the courage to use translation apps to attempt conversations, even though it often felt awkward. Additionally, I dedicated my spare time to memorizing vocabulary and learning grammar to improve my language skills, though it's still an ongoing process. These strategies, although sometimes uncomfortable, gradually helped me feel more at ease in the new cultural setting.

Q: How do you rate the academic pressure here compared to the domestic education system? How does this academic pressure affect your mental health?

The academic pressure in Canada is quite different from that in China. In China, the competition for resources is fierce due to the large population, leading to a very intense education system with elimination processes starting from middle school. The pressure peaks with the college entrance exam, known as the "Gaokao," which heavily influences a student's future. Under this system, my parents pushed me to attend extracurricular classes from a young age. In Canada,

the pressure comes from adjusting to a new education system and culture, which requires a lot of adaptation. To manage my feelings of frustration, I turn to activities I enjoy, like drawing, listening to music, playing games, and spending time with friends. These activities provide significant psychological comfort and help me relax, though finding the time to engage in them can be challenging.

Q: How do you view and treat yourself when facing setbacks or stress?

When facing setbacks or stress, I try to be kind to myself, though it's not always easy. I often remind myself that it's okay not to be perfect and that everyone faces challenges. I use activities like drawing, listening to music, and playing games as ways to relax and maintain my mental health. Going out with good friends and experiencing life also helps a lot in alleviating stress and providing psychological comfort.

Q: Do you use any specific techniques or methods to maintain your mental health?

I didn't use my school's mental health services, mostly because I was hesitant about how to use them and didn't really want to open up to strangers. Instead, I relied more on my own strategies, like taking up hobbies and reaching out to friends and online communities for support.

Domestic Student Interview Questions:

Q: What has been the biggest challenge you faced in university life? How has this challenge affected your mental health?

The biggest challenge is time management. Since moving out and living independently, I have to take care of my meals every day. Figuring out what to eat next has been a tough task. Living independently has added psychological pressure, but it has also improved my life skills.

Q: Who has provided the most support for you in dealing with the pressures of university life? How has this support helped you cope with stress?

A significant part of my stress comes from academic pressure. My classmates in the same major have been very helpful during tough times. Studying and facing difficulties together has made me realize I'm not alone in this. Additionally, participating in the school's dance troupe helps me relax and regain confidence when I feel overwhelmed by life and studies.

Q: How do you evaluate the academic pressure at university? How has this academic pressure affected your mental health?

The academic pressure at university is overwhelming! However, it has helped improve my stress tolerance, time management, and adaptability. The academic pressure has negatively impacted my mental health, often making me anxious and sleep-deprived.

Q: Have you encountered difficulties in managing your study and life time? What strategies have you used to balance the two?

Time management has always been an area for improvement for me. Since I enjoy sports and excitement, sitting in class all day doesn't make me happy. I spend a lot of extracurricular time in the dance troupe and other hobbies to reduce stress. However, this sometimes leaves me with insufficient study time, often starting assignments at the last minute.

Q: How do you view and treat yourself when facing setbacks or stress? Have you used any specific techniques or methods to maintain your mental health?

When facing setbacks, I think I'm quite good at processing them. I don't negate my abilities because of a bad test or low assignment score. I tell myself to learn from my mistakes and do better next time. I often encourage and affirm myself, reminding myself that my personal value isn't only reflected in academics. My stress relief techniques include sleeping and exercising. When I'm too anxious, I sleep to reduce stress and anxiety. Ensuring enough exercise helps release more dopamine, which also reduces stress and anxiety.

Q: What pressures are more challenging for domestic students compared to international students?

As domestic students, we don't have to worry too much about high tuition fees, but we value independence and freedom more due to cultural differences. This leads many local students to take part-time jobs, which reduces their rest time and time for hobbies.