Mixed Reality experience of a University orientation program: A case study of The University of Miami app based on Magic Leap

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ABSTRACT
Student Affairs must reimagine program and engagement initiatives, especially with a new generation of students arriving on campus. In this aspect, Extended Reality Experiences can attract large audiences and positively impact students’ learning and engagement.

A Mixed Reality experience, called The U Experience, was developed on this project to help students familiarize with The University of Miami. The app, based on Magic Leap, will complement the freshman orientation programs by immersing students in an innovative experience which will allow them to learn about the different aspects of the University and help them adjust to college life.

KEYWORDS
Mixed Reality, Extended Reality, User Experience, Education, Magic Leap

1 Introduction
When students are admitted to college, brochures start arriving in the mail, they have probably visited the website of the University, but they might not have a real understanding of what it would be like to attend this University. Therefore, Universities offer different resources to help students adapt better to this new environment. Colleges are experimenting with different solutions to reimagine programs and initiatives for onboarding newly admitted students. Even more, freshmen students belong to a new generation called Generation Z. This new generation has different motivations and concerns that need to be addressed during these orientation programs. Thus, there is a need to strategize how to communicate information effectively to these students upon enrollment and throughout their educational journey [4].

In recent years, the use of 3D virtual worlds has been continuously increased, and adopting virtual worlds for educational settings is becoming more and more widespread [5]. Technological innovations have facilitated the access to virtual reality and augmented reality of anyone. In fact, several large companies such as Apple, Facebook, Samsung, Magic Leap, among others, have increased their investment to make these technologies to improve their accessibility within the next few years [1].

On this project, we developed a mixed reality app named “The U Experience”, which seeks to help incoming freshman students at The University of Miami to familiarize themselves with the University through an engaging and innovative experience. The app, based on Magic Leap, will complement the freshman orientation programs by immersing students in an experience that will allow them to learn about the different aspects of UM and help them adjust to college life. In the next sections, we will describe the conducted research and process that guided us to the design of this experience, and, at the end, an overview of the developed app is presented.

2 Research
2.1 Extended Reality (XR) in Education
Extended Reality (XR), a term that encompasses augmented reality (AR), virtual reality (VR), and mixed reality (MR) technologies, can offer much more than just gaming, which has been a traditional consumer sector of the technology. XR has been proven so far to be beneficial in several areas, such as medicine, industry, video games, tourism and education [1].

Extended Reality experiences can attract large audiences and positively impact students’ learning and engagement. The potential benefits of XR to conduct educational activities has been investigated during the last decade [1]. Some of the benefits of using AR/VR/MR in classrooms include increased content understanding, better grasp of spatial structures, long-term memory retention and increased student motivation [3]. In addition, studies have shown that immersion in a digital environment can enhance education in at least three ways: by allowing multiple perspectives, situated learning, and transfer. [2]

The more a virtual immersive experience is based on design strategies that combine actional, symbolic, and sensory factors, the greater the participant’s suspension of disbelief that she or he is “inside” a digitally enhanced setting. [2]
Taking into consideration that virtual 3D spaces for learning are likely to become the norm in the near future, it’s important for educators to have a plan and purpose for introducing XR in the classroom [3]. Educational institutions will benefit from better accessibility to virtual technologies due to the increased investment of several large companies such as Apple, Facebook, Samsung, and Magic Leap to improve the accessibility to these technologies. The huge possibilities of accessible virtual technologies will make it possible to break the boundaries of formal education [1].

2.2 Generation Z
There are currently four generations of legal adults in the American culture, as defined by a 2010 Pew Research study. The latest one, the Generation Z, includes people who were born between 1993 to 2005 [6]. The current youth of American society happens to be the new incoming students to college. Knowing and understanding the mindset and goals of this generation of college students is paramount to the ability to adjust curricular and co-curricular experiences and to support these students throughout their educational journeys [4].

The typical Generation Z person, or digital natives, was the first generation born into a globally (internet) connected world and therefore “live and breathe” technology [7]. According to [8], this generation spends time with the media more than any other activity besides sleeping. Some of the perceptions of a typical Gen Z person might include thoughts like “Facebook is for family; Twitter is for friends.” They don’t like using e-mail. They see email as a formal communication with Professors. They prefer instant communication such as Whatsapp or Snapchat [9]. The media and communications explosion have contributed to massive expansion of multitasking behaviors and, as a result, to continuous partial attention [10]. Although Generation Z youth demonstrate an apparent ease and familiarity with computers, they rely heavily on search engines, “view” rather than read, and may not “uniformly possess” the skills to assess the information they find on the web [11].

Some of the main concerns of Generation Z students when entering college are the higher cost of education and employment, racial equality and human rights, climate change, among others [9]. As a group raised in constant war, contemporary youth may view the world with the belief that the world is “unsafe,” yet at the same time, they may have greater global awareness as a result [10].

Faculty members must learn to tweak courses, redesign learning environments, and reevaluate their approaches to measuring and assessing learning; administrators must adapt processes; and student affairs practitioners must reimagine programming and engagement initiatives [4]. Not only will administrators need to continue to keep access and affordability as top priorities when recruiting these students, they will need to design marketing strategies that demonstrate how their institution will help them discover their purpose and construct a plan to live it out post-graduation [4] [9].

2.3 UM programs and initiatives for freshmen students

We conducted interviews with stakeholders at The University of Miami to find out current programs, resources, and initiatives for incoming students. We met with representatives of the UM Admissions Office and the Student Retention Office. The semi-structured interviews were focused on learning about current programs held at The U for recently admitted and freshmen students, finding out the main concerns of students and their families during campus tours, the challenges and concerns that students face during their college life, and initiatives for student retention.

It was found that UM offers several programs and resources for students (e.g. Canes for a Day, South Florida family day, Preview of The U, GPA Program, GPS Program, Road to UM, Cane's connect, among others). The main insight that students take from these initiatives is how accessible everything is. As one of the interviewees stated: “We have a lot of resources available on campus and all of them are very accessible for students”. Diversity at UM is also another topic that student affairs practitioners consider important to highlight, as they mentioned “UM allows you to find your place here. There is something for everyone at UM”.

When students attend tours on campus, besides having questions about majors and classes, their main concerns include how to connect with members of the community, they usually ask questions such as “How do I get connected with Professors?” or “How do I find my group of friends?”. What they do not know is that there are resources all across the campus for helping out students with all their questions and problems. Therefore, it is important to strategize the way they communicate all of these resources to the students.

In terms of student retention, one of the challenges that new students face is making their first step to engage with UM. The strategy that the Office of Retention uses for new students to overcome their college life is the “six pack of connections”, which means identifying six activities/resources at UM (e.g. couple peers, connection to an advisor or certain professor, outside activity, student employment job, etc.) for a smooth journey through their graduation.

2.4 Usability testing of a first version of the app

A first version of The U Experience app was developed during Summer 2019 and it was released in August of the same year. We planned, designed and conducted a usability study of this version of the app in order to identify usability problems and strengths of the experience. The findings provided recommendations and suggested ideas that informed the design of the second version.

The study was conducted with six participants in the Magic Leap Lab at Richter Library, University of Miami. Each test had a duration of 30 minutes. Participants signed a consent form and a demographics survey. Then, they performed 3 tasks with The U Experience App version 1.0 using a Magic Leap One device. At the end of the tasks and at the end of the study, participants filled satisfaction surveys. They received a $10 gift card for their participation. The interactions and comments were recorded through a mobile device and a streaming app in a Mac. One moderator and one observer were present during the study to guide the session and take notes.
Some of the main insights from this test were that most participants were novice to this technology (only 1/6 participants had previous experience with Magic Leap). Overall there was a high perception of app usability, thus, we identified it as a good practice to keep controller interactions simple by using only some buttons and maintain the interactions consistent through the app. The identified usability problems were related to lack of useful content and volume inconsistency across the experience.

Finally, we asked the participants to share their interests about UM things that they would like to see on the app. We categorized the obtained insights as information related to student admissions, campus environment, dining options, and interactive features.

3 System Overview

The previously stated processes allowed us to understand our target users and propose a solution to communicate information effectively, addressing their motivations and concerns, and increasing engagement of students upon enrollment and throughout their educational journey.

According to Rony Abovitz, Magic Leap’s CEO, spatial computing creates the power of place, of physicality with digital together. The Magicverse of a specific place (ex: a city) also defines a communal value for the digital resources of that place and community, in the same way that a physical place may have important natural resources and geography [12].

By translating the concept of Magicverse, we designed a mixed reality experience that shows different layers of information on top of a 3D map of the University of Miami Coral Gables campus. Each layer was carefully designed taking into consideration the motivations and concerns of students. The layers complement each other creating an experience that will allow students to learn about the different aspects of The University of Miami and will help them adjust to college life. Four layers were designed for this version: facts, resources, nature and memories.

After launching the app, the user scans the room and places the table containing the 3D map of the campus. The table then reveals all the layers of the experience. The first layer from the bottom, “Facts about The U”, presents interesting facts from a wide range of topics - all about the U. The visualizations were designed to represent the essentials of each topic, including: Academics, Engagement, Research, UM Identity, Athletics, Financials, Notable Alumni, The Mascot, and the story of the Coral Gables campus.

The second layer, “Resources”, offers a list of available resources for students. They are organized in 4 categories: Academics, Personal Development, Campus engagement, and Student Diversity. After selecting a category, the list of resources is displayed, and the user can select each of them to learn more about them and to locate them on the campus map.

The UM Coral Gables campus takes pride in its flora and fauna. Therefore, the third layer, “Nature” was designed to give the user a glimpse of what it is to be on campus surrounded by its nature elements. Users can grab animals and trees found on the campus and place them in their own environment.

The last layer called “Memories” was designed to trigger the emotional connection of the user with the University. It is, after all, emotions that inform behaviors and generate transformational value for experiences. Narrations of students telling their best memories at The U were collected and represented in memory spheres. Users can grab and listen to each of these memory spheres which contain an audio recording of UM students’ memories, along with their pictures, their names and major.

4 General Discussion

In this project, we developed an app using Mixed Reality technology, based on Magic Leap. It is intended to immerse freshmen students in an innovative experience which will allow them to learn about the different aspects of the University of Miami and help them adjust to college life. This was a process in which we learned about our audience and their concerns, the benefits of the technology and its integration in learning environments. The development was an iterative process where we built each layer and tested with users in order to ensure the usefulness and learnability of the app.

A mixed reality experience surely shines a new light on user-centered and visualized information on learning environments. It has the capability to significantly change the way in which information can be delivered to students. It is hoped that this project provides references for future development such as adding more layers of information, exploring new interactions with data visualizations, and testing the experience in other VR platforms.

In terms of user research, this project opens up opportunities for evaluation and comparison with traditional programs for freshmen orientation.

REFERENCES