Project Proposal

Wendi Ding, Chaitrali Gandhi

***Abstract*—We are students who study design, which makes us interested in education for design major. With Virtual Reality, how could we address the disconnection to real world existed in design education, providing a better training for future designers? This proposal shows how we did preliminary exploration and narrowed down, defined the project scope, then how we generated concepts and proposed 3 with details.**

I. Exploration

We started by exploring the problems in the environment which is closest to us.

A. Interview

We first interviewed Prof. Michael Nebeling to understand the AR/VR space and identify the problem areas. Online research made us come across some potential problems that designer face due to lack of access to the field or other designers working remotely. We interviewed 4 students major in environment architecture, architecture and user experience design to understand their design process and the challenges they've faced, we realized that immersion in the actual environment was the most lacking factor that yet had to be addressed in the education sector. We also found it is important for the students with design majors to empathise which goal is to have empathetic understanding of people students are designing for and problem they are trying to solve.[1] Here is the list of pain points we identified in the interviews:

- Limitation on choosing design exercise because of limited access to environments.
- Limited context information about user's real life and access to user's living environment.
- No practical information about the environment where the product is used.
- Only consider the ideal environment because of limited resources.
- Not enough information about constraints that exist in the real world.
- Not clear about how the environment will affect the feeling of people students are designing for.

B. Related work

There are research and project have been done in using virtual reality to help design and build empathy. Some mobile applications are aware of context, like application used in retail store, it shows that using virtual reality simulating retail store context when conducting prototype test with users, the match between user needs and solution form designers is better[2]. Google launched "Female planet" project to "normalise female leadership in all walks of life, open new worlds to young women everywhere by immersing the viewer into the lives of successful women. "[3]. A research published recently shows that it is proven that virtual reality perspective-taking increases cognitive empathy for specific others.[4] This finding can be used to explore methods to use virtual reality help designers empathise.

II. scope

Designers are trained to solve problem by generating design solution from applying design thinking and methodologies. A huge part of education for future designers that students majoring in architecture, industrial design, user experience design, art...is design exercise, which provides problems for students to put what they have learned into practice. However, we identified in school setting, there is disconnection between the real world and academic training. According to section I. EXPLORATION, The design exercises are often given as part of the training, yet students have strong feeling of not being able to do actual field studies in the early stage of design process with limited resources in school. Field studies are "research activities that take place in the users context rather than in your office or lab."[5] with the goal to understand problem context, understand user in depth in the early stage of design process. It is an indispensable design research method to help designers build empathy and understand the problem from users perspective. To address the situation that students can't physically immerse in problem's context/environment (field) with limited resource in school, we want to propose a few concepts that might be potential solutions.

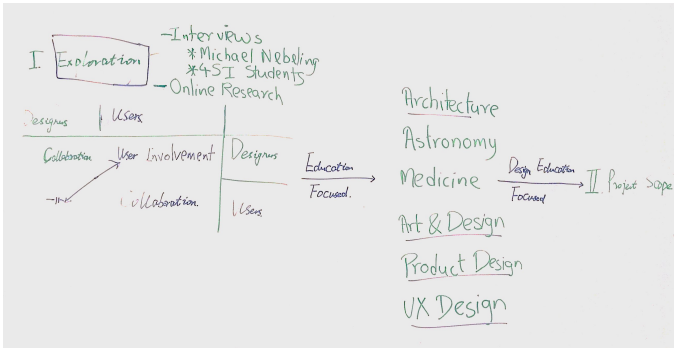

Fig. 1. From Exploration to Scope

III. Ideation process

Based on the information from section I. EXPLORATION, we brainstormed different concepts that would immerse students in the actual field and get them better information about the project. Through interviews and literature review we realized that field research experience for student in school

setting is very limited which deviated them from learning. We identified the following cons that lead us to choose the 3 best concepts:

1) No access to the field for research
2) Limited information about the field due to restrictive access
3) Lack of time to immerse in the environment
4) No interaction with the people present in the field
5) Limited information about the history of the field

By considering the above cons, we selected three best concepts that would help them get the most information about the field that would improve their end product efficiently preparing them for the industry. We thought of having a design exercise immersion that would make them understand the problem in the real world context in a more efficient way.

IV. Proposal of 3 concepts

A. Design exercise immersion

When instructor give a design exercise/assignment in a class, design exercise immersion, which is the context of design problem of the exercise built in virtual reality is also provided along with. This immersion mirrors real world environment where the design problem happens, also provides how the the environment changes in one day. Students are able to walk around the environment context (virtual reality) to explore and identified detailed challenges in the design problem.

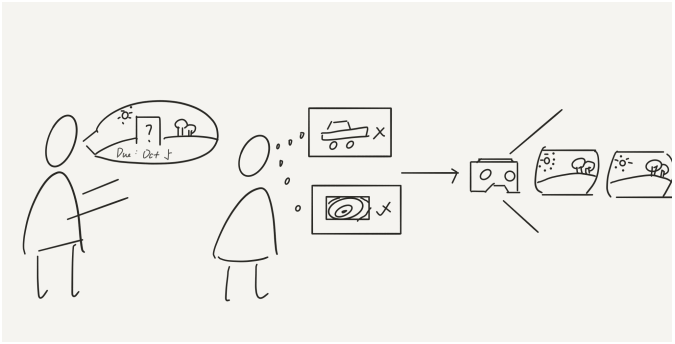

Fig. 2. Sketch for design exercise immersion

B. Interactive gallery

Interactive Gallery is like an exhibit that showcases all the photos of the field that you want to research for. Instead of going to the actual field, you can get all the information at just one place by going through the photos. It is not just restricted to displaying the photos but you can also also get more information about a photo by clicking on it. Even if it is not possible for you to visit the field physically, interactive gallery would help you get information about attributes like temperature,people, environment that designers will find super helpful while solving problems.

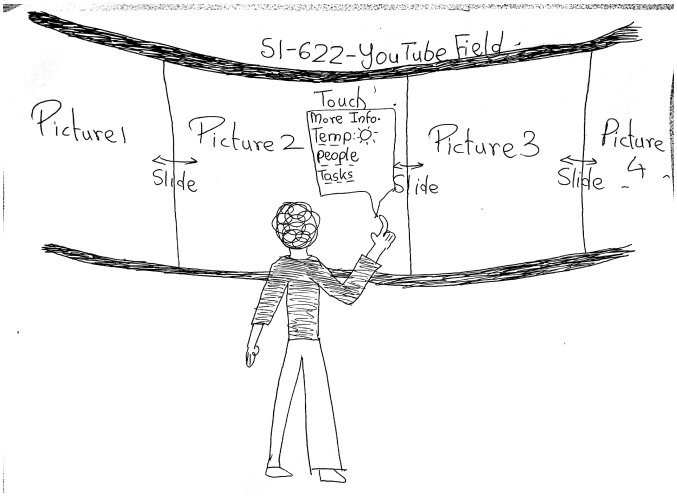

Fig. 3. Sketch for Interactive gallery

C. One day life

Different from *Design exercise immersion*, *One day life* provides experience of user's one day life from his/her own perspective. By immersing into the lives of people students are designing for, students could better empathise and gain great understanding for the people's behavior and environment change during a day. The advantage of this concept is it not only provides static environment context, but also let students to explore change of factor that may matter for the design solution during a day.

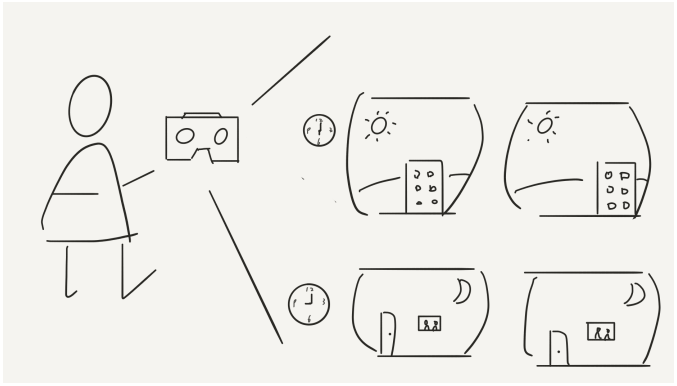

Fig. 4. Sketch for One day life

References

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[4] van Loon A, Bailenson J, Zaki J, Bostick J, Willer R (2018) Virtual reality perspective-taking increases cognitive empathy for specific others. *PLoS ONE 13(8): e0202442*. https://doi.org/10.1371/journal.pone.0202442
[5] Nielsen Norman Group, Field Studies. https://www.nngroup.com/articles/field-studies.