



Reflection on Museum Service Design Based on a UX Foundation Course

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Abstract. This is a reflection paper, based on empirical experience that articulates a new attitude towards the use of methods to stimulate creativity in first year UX master students. It describes reflections from UX Foundation, a project-based course of UX master program. A real project to enhance user experience of the Beijing Natural and History Museum. It was the first-time students teamed up and did a service design project. Based on previous two iterations of the course, teaching team carefully designed the curriculum, methodological logic and supplementary materials. This paper clustered series reflections which learned from a particular practical experience and feedback collected from teaching team and students. Benefits and improvements can help teaching team to improve the next iteration of the course.

Keywords: User experience · UX education · Service design · UX Foundation

1 Introduction

Beijing Normal University (BNU) is running China's first User eXperience (UX) master program in faculty of psychology. UX Foundation's course is a basic course in curriculum that equips classical design thinking process and foster user centered perspective. Students will divide into several groups and work on a same project. Every year the course will introduce different project into class. This year, UX Foundation course had a collaboration with Beijing Natural and History Museum.

1.1 UX Master Program in China

In 2016, a new master program titled "User Experience" (UX) was founded at Beijing Normal University (BNU). A rising number of students with multi-disciplinary undergraduate degrees apply for the entrance exam each year. However, not more than seventy students are admitted (Beijing Normal University 2015). This first UX master in China has - for Chinese education tradition - an innovative approach: it is interactive, practice- oriented, module based and project-based. UX Master aims to support the design and development of new products, services and systems in the conceptual design phase, by developing innovative methods and techniques, foster user centered designers and leading multi-disciplinary projects. Our main research and education

directions: User Research, Smart Living (Driving) and Working, Context and Concept, Interactive Technology, Embodied and Tangible Interaction, and Service Design. UX Master closely collaborates with both national and international innovation companies. And it focuses on user, context, emotion, interaction, technology and human factors, through practicing innovation design thinking (Sun and Teng 2017). Until the end of 2018, UX Master has collaborated over 20 companies which have different field.

1.2 UX Foundation Course

UX Foundation course is an integrated course in the first semester. Every year the course will combine with the latest research field and topic. It aims to equip students with UX theory while gaining practical experience in a real project setting. And it will invite experts to join in the project. This year, it was third iterations and collaborated with Beijing Museum of Natural History and topic was museum service design. This course promotes UX research and explore how psychology, design, technology, and business could integrate together. So, this course will combine four keywords together and help students to build a basic knowledge of user experience and give them a broad view of two years studies. Projects' topic comes from a real company and the course will use a real project setting that invites mentors to supervise each group and invites stakeholders to evaluate outcomes. And after this course, every group can provide designers, researcher, or developers at companies with first-hand data, insights, or mockups on new ways.

1.3 Beijing Museum of Natural History

Beijing Museum of Natural History grew out of the preparation department of National Central Museum of Natural History founded in 1951. Beijing Museum of Natural History was formally named in 1962 (Beijing Museum of Natural History 2018). Being the first large-scale museum of natural history founded on our own strength after new China was established, the museum bears three main functions: the specimen collection, the academic research and the science popularization of paleontology, zoology, botany. The permanent exhibitions in the Beijing Museum of Natural History are mainly arranged according to the evolutionary trend of organisms, showing the Biodiversity and its relationships with the environments and establishing a panorama of the emergence and development of life on Earth (Fig. 1).

1.4 Conclusion

It was the first collaboration with Beijing Museum of Natural History. The museum has small space rather than latest museums, and research found that interactive facilities are rarely used because of bad service design. So, the museum wanted to improve user experience of services.



Fig. 1. Front gate of Beijing Museum of Natural History

2 Setting

This course had 5 internal mentors who are teachers in UX master program and 5 external mentors who are from Beijing Museum of Natural History. And 68 students divided into 14 groups which worked on different target user groups and 3 design briefs during 1 and half months.

2.1 Mentors and Students

It had internal mentors who taught students user experience methodology and external mentors to critic solutions from stakeholders' perspective. Mentors are all from different background and have different expertise. Museum experts regularly joined the course, attended presentation sessions, and provided feedback, in order to make sure the end results can provide the museum with key designs and growth opportunities. 68 first-year students were divided into 14 groups, 4–5 students from different background worked together on a design brief assigned by museum.

As Fig. 2, showed, students are from various background: Science (45%), Engineering (26%), Management (12%), Literature (9%), Economics (3%), Law (3%), Art (1%) and Medicine (1%).

2.2 Design Brief and Resource

The Museum assigned 3 design briefs to 14 groups. Improve user experience of basic services, exhibitions hardware, educational activities. The project focused on service

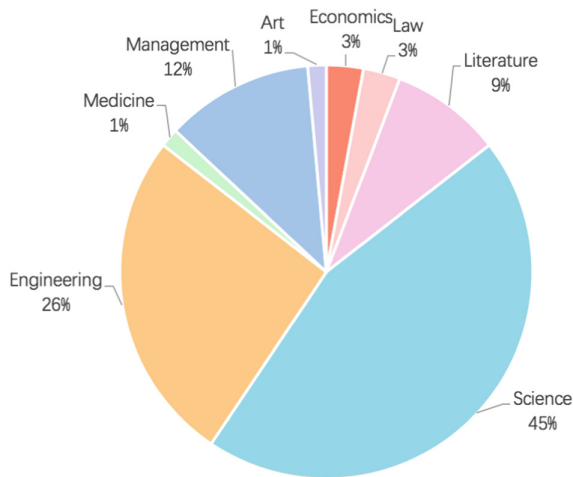


Fig. 2. Proportion of different majors during the undergraduate period

design. In the first topic, students should focus on general context in a service industry. In the second topic, students should concentrate more on hardware interaction includes text, layout, and embodied interaction. In the last topic, students should do a lot of research on existing educational activities. The museum designed exclusive identification to help students to interview participants. So, students had free entrance at any time to visit the museum and it was an official activity which authorized by the Museum. Teaching team set up review time for each group every week to make sure each group has a right direction and advised students.

2.3 Conclusion

Under guidance of internal and external mentors, each group started their first UX project and chose 1 or 2 topics. During these months, students worked hard to define target user groups and scenarios. The museum has good opinions on final outcome.

3 Design Process

To make this project more feasible, teaching team designed a whole process for students, as it was the first time they did a UX project. Research process can be divided into the following three design thinking phases: expropriation by interviewing and observing participants. Definition by connecting different kinds of user research results and prioritizing insights. And visualization by drawing storyboards, journey maps and shooting videos.

3.1 Exploration

In order to understand how museum services work, how visitors interact with exhibition (Folkman 2010), so that students can generally understand this field and

explore target user groups. As Figs. 3 and 4 shown, through field observing, experiencing products, interviewing with staffs and visitors, can deeply understand human-exhibition interaction and verified that the potential user group is researchable.

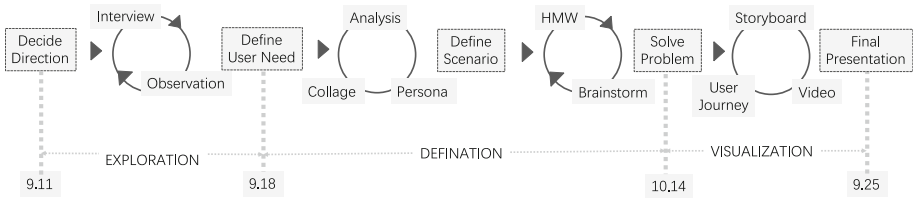


Fig. 3. Design process of Beijing Museum of Natural and History service design



Fig. 4. Students interviewing visitors in the Museum

Every group iterated interview outlines twice to dig out further information of target user’s pain points and user needs. For instance, in order to understand how users to approach the museum information, instead of asking that how do you know the information about Nature Museum, students asked what made you decide to visit the museum.

3.2 Definition

When students collected a large number of first-hand user research data. They combined all kinds of results together to analyze user needs. As Fig. 5 shown, it can help students to define for whom and for what problem or challenge they plan to design (Van Boeijen et al. 2014). Through previous understanding of target user group, divergent thinking and summarizing several key points of target user group. And then each group built a persona in order to help solve design questions. These personas need to be based on user research and can also be described in narrative form.



Fig. 5. Collage of a group

Based on persona to brainstorm potential scenarios and solutions. And according to feedback from mentors to prioritize solutions.

3.3 Visualization

Storytelling is increasingly used in user experience field today in order to use a vivid way to show ideas. This trend echoes the deeply rooted need of all humans to be entertained. Stories are illustrative, easily memorable and allow any firm to create stronger emotional bonds with the users (Hummels and Frens 2009). So, this course used user journey map, story board and video scenario to tell stories.

As shown in Fig. 6, story board is a graphic organizer in the form of illustrations or images displayed in sequence for the purpose of pre-visualizing a video and how to use main features.

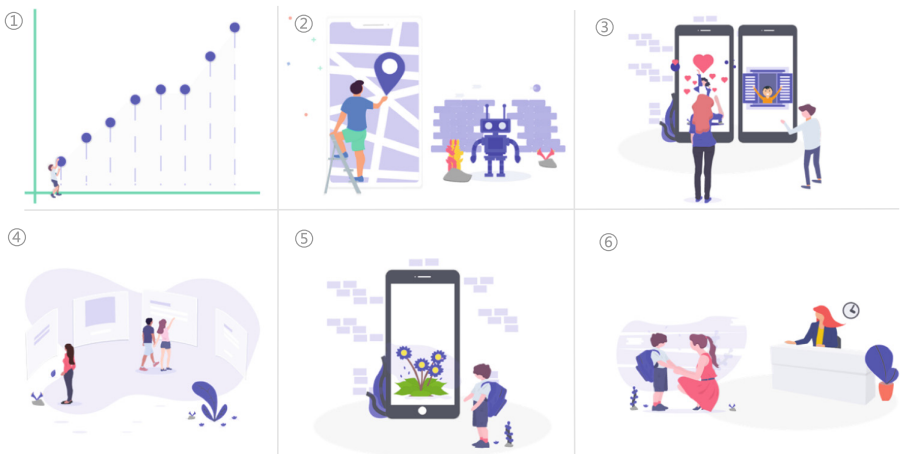


Fig. 6. Story board of a group

4 Reflection of Mentors

It can conclude following reflection by interviewing both internal mentors and external mentors.

4.1 Highlight of UX Foundation Course

This course has several highlights. This project had 14 groups which focused on different user group to understand their needs. It covered users from 6–65 years old and supplied a gap of variety (Kann 2014). And the museum will have more options. This project can generate more social benefit rather than other projects in UX Foundation Course, because Beijing Museum of Natural History is a nonprofit organization which main feature is servicing all of people.

After deploying some solutions of 14 groups, citizens will get the real benefit of user experience improvements. Service design is a popular branch of user experience which concentrates on touch points in the whole service process. Sometimes it will be invisible in our daily life but do affect a lot. This course gave students a chance to expose themselves to new development. Design briefs came from real need of the museum. Students can approach high quality information that collected from real users within a long period. Based on these opportunities, students had more suitable context to learn user experience methods and practice skills in real project setting.

4.2 Opportunities of Involving Stakeholders

It is a tradition of UX master program to involve stakeholders into projects, by face to face meeting or online meeting. It can help teaching team to bridge the differences between an academic field and a industry field. This course invited many stakeholders who have rich museums management and services design experience and abundant working experience. Based on rich experience in the museum industry, they brought a lot of opportunities to the course.

They reviewed solutions from museum experts' perspective and give more well-directed and useful comments. Stakeholders built a bridge between the Museum and students. They helped students to contact more users include visitors and staffs. It helped research was conducted very well and saved time. Stakeholders provided a lot of professional resources according to different progress of groups. So, students can reach out more targets information instead of misleading information.

4.3 Balance of Academic Research and Real Project

In both developed and developing countries, a gap exists between universities and industry (Baumer et al. 2014). In developed and industrialized countries. Universities are in the process of forsaking their ivory towers and forging strong links with industry, mainly through sponsored research and continuing education (Zaky and Elfaham 1998). Collaboration always needs to gap between companies and universities.

In this course, the museum didn't mention limitations such as money, technology and target user group. So, students had more space to come up with more innovative ideas. When students working on a project, the teaching team encourages them to think about a real-world limitation, but don't want to limit their innovation (Xin et al. 2018). Teaching team should keep a good balance between academic and industrial.

4.4 Conclusion

This course has several highlights that involved stakeholders into project and kept good balance between academic research and real project.

5 Reflection of Students

After this project, teaching team collected reflection from each group, including feedback, experience and suggestions.

5.1 Opportunities and Challenges in Multi-disciplinary Team Work

Teams work better when the team members know everyone has a voice and can express their dissent and support openly without concerns of retaliation. Some students were afraid of speaking their ideas and comments in a group. It is nice to let them know every opinion should be valued. One benefit of teamwork is its ability to promote unity within an organization. Every team was cross-functional, bringing in individuals from several different background. Many teams are insightful and creative because they draw on a variety of backgrounds in terms of expertise and experience. For instance, a group has a psychology background student who is good at user research, an engineering student who understands how to make it come true, and a marketing student to help them to build a business mode. This diversity can lend itself to innovative ideas and cutting-edge solutions that would not be possible without the combined skills and experience of the team.

Communication among team members often is difficult. This might be especially true of teams that have not had much experience working together in the past. In this case, it was the first collaboration. As a result, many groups spent a lot of time on team work but it was not effective. They can set a deadline to keep it effective. And some students need a *translator* or facilitator to translate language on their own. It will take some time, but they have to adapt themselves into a different context.

5.2 Improvement of Professional Skills

After the final presentation of this project, students thought they can improve their professional skills in two years. They found that progress control skill is very important to make sure project into a right arrangement. In this project, some group stayed up late until midnight before deadline, because they overestimated their ability. Based on performance of the final presentation, many groups thought that they can do it better.

Professionals need to be capable of speaking to others clearly and presenting information effectively. Almost every course requires some public speaking.

To think critically, students should learn how to put aside any assumptions or judgments and merely analyze the information they receive. They need to be objective, evaluating ideas without bias, especially when listen to experts' comments, it doesn't mean you are wrong. It means you should think more carefully.

5.3 Benefits of Project and Module Based Learning

This course used a new teaching and learning approach-project and module-based teaching and learning (PMBTL). The PMBTL approach incorporates the merits of project/problem based and module-based learning methods, and overcomes the limitations of these methods (Hou 2014). It introduced a real-world design brief for the project, and students' attention was attracted by discussions and hands on sessions. Students benefited a lot from practice class tutor, and achieved better outcomes of using the designed practice materials in practice classes (De Vos et al. 2018). And teaching team provided students with examples, reference materials, templates and samples in the assignment design. It greatly helped students understand the assignment requirements and ensure their assignments are on the right track. Students really like assignment assessment that is designed not only for the teaching team to assess the quality of student assignment work, but also for students to get a guidance of doing the project properly and professionally.

UX Mater Program create a module-based curriculum. So, each course will last 2–3 months. As a foundation of 2 years study, it connects User Research, User Interface Design, Experimental Design and Technology in Psychology, etc. Students studied UX Foundation course on weekends under guidance of the teaching team. During week days, every group did a lot of field research.

5.4 Conclusion

As a result, students were motivated to study and apply their knowledge and skills comprehensively and professionally. With this teaching and learning method, students can get an overall picture of the user experience design rather than individual facts, understand the teaching and learning content better, know how to apply what they have learned, and learn how to use these methods to solve real problems.

6 Discussion

Although the course was for most of the students an introduction to design thinking and UX design, the underlying idea was to let students discover by themselves that they can be creative and understand the general process of UX design. Overall, the learning outcomes of the course were largely met, but there is still an opportunity to improve them as well as the flow of the course. UX research always requires a larger sample size to ensure a representative distribution of the population and to be considered representative of groups of people to whom results will be generalized or transferred. But

because of lack of funding, students couldn't recruit participants from a wide range. Next year course should enhance observation and in-depth interview practice, so that students can dig more information from users. And select some desk research papers to students. Then they will know how to conduct a good literature review and it can help them to define their target user groups. Teaching team should set more time on reflection session, and assign an article to students to write down their feedback and reflections. Useful feedback can help teaching team to update the course setting. This course does not rely on any quantitative evidence or rigorous modeling, but on empirical knowledge. So, in the next iteration, the course can use some quantitative methods to combine qualitative research with quantitative research.

7 Conclusion

Based on the previous two iterations of the course, teaching team carefully designed the curriculum, methodological logic and supplementary materials. This project-based course had produced 14 schemes over 1 and half months. Beijing Museum of Natural History would implement several results. With an agile user experience design approach, the project is delivered via a series of iterations, continually evolving and improving, and delivering a robust, tried and tested solution that is fully-rounded and ready to present. And this course invited experts who have rich museums management and services design experience and abundant working experience. They brought a lot of opportunities to the course.

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