Reflecting on Industrial Partnered and Project Based Master Course of 'UX Foundation'

Xin Xin[✉], Wei Liu, and Menghan Wu

Beijing Normal University, Beijing, China
xin.xin@bnu.edu.cn

Abstract. This paper describes the reflection from project based course: 'UX Foundation'. A real project from Philips Lighting was integrated in and played a very aggressive role. This is the first time, students teamed up and do a real project from top company in the world. Series reflections have been listed in this paper, such as students got difficulty in defining target user; got unclear logic relationship between methods; lack of research experience and skills; not thorough understanding stakeholder's requirements; got challenge on briefing the presentation. The purpose of reflecting is to make project based course better in near future.

Keywords: User experience design procedure · Design method
Reflection · Logic

1 Introduction

Beijing Normal University (BNU) is running china's first User eXperience (UX) [1, 2, 3, 5] master program in faculty of psychology. Being educated as user experience researcher, the students have different background. As the first design course, 'UX foundation' plays a crucial role in their educational curriculums in their firs year. In order to equip the students with deign thinking and real project experience, the course brought a project from Philips lighting. The goal was to help students learn and practice user research methods and process.

2 Backgrounds

Beijing Normal University, one of the key comprehensive universities in China, is a renowned institution of higher education known for education science as well as other disciplines in the arts and the sciences. Faculty of Psychology is committed to cultivate both innovative research talents and entrepreneurial talents to build a world-class psychology faculty and support the national development.

The huge demand of psychology discipline in China and the rapid development of master of professional have laid solid foundation for the development of Master of Applied Psychology (MAP) in China. UX master program is one of the direction in MAP, and a first interdisciplinary program in BNU. This program is aiming at training for practical personnel. The curriculum is supported by four parts: psychology, design,

technology and business (Fig. 1). Students are from various background: psychology (32%), design (7%), economics (10%), engineering (29%), language (7%), medical science (6%), others (9%).
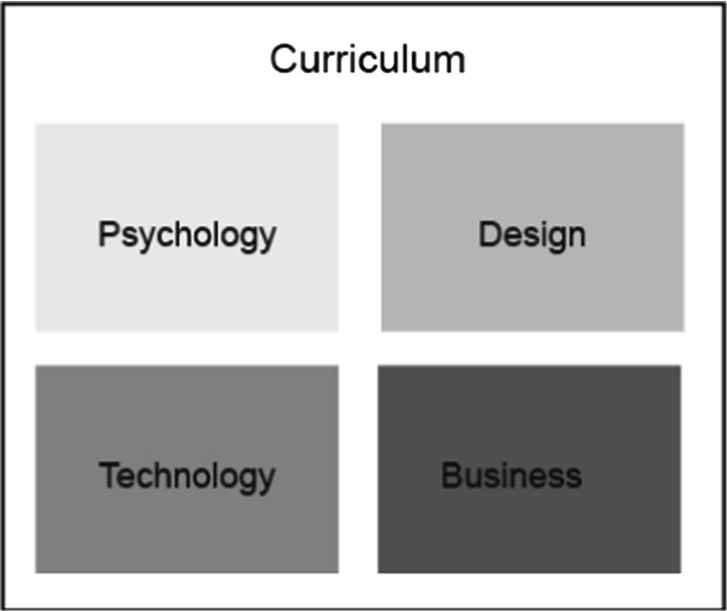

Fig. 1. Curriculum system of UX master program

'UX foundation' is one of the design courses, it has a very important mission to have students have design thinking and knowing well on procedure when they are facing an UX project. Industrial Partners were involved in 'UX foundation' to equip students with UX theory while gaining practical experience in a real project setting, which would provide students with great opportunities to learn and practice in the real world.

Philips is the number one company in lighting globally. The consumer luminaire business entered China few years ago and has been growing rapidly. Philips believes the key in winning the market is through better products and services, which start with innovation.

After a great effort made by the teaching team, Philips decided to set up a project based on low resolution lighting.

3   Approach

3.1   Requirements

69 students were divided into 12 groups, 5–6 students with different background worked together on a design brief assigned by Philips. The project is focus on designing interactive lighting experience with low-resolution facade through mobile

Fig. 2. Lighting reacts to people's movements in the Interference light tunnel in Kolding, Denmark. [10]
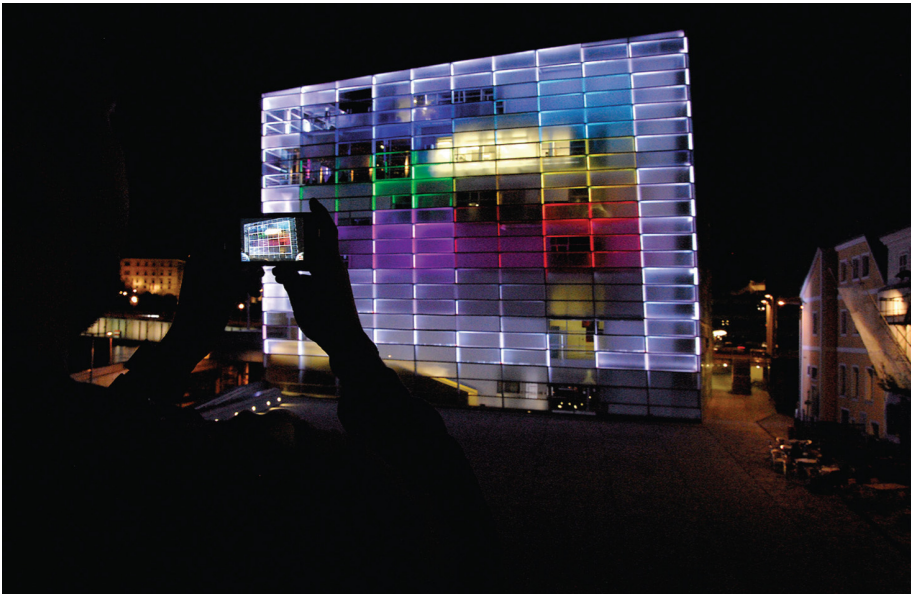

Fig. 3. iRiS uses live video to allow people to interact with a media façade [10]

social media. Philips provided project requirement in two key aspects: base on low-resolution technology, interaction controlled by mobile devices, including mobile phone, smart watch, pad and so on. Philips has done many projects in China market, but seldom of them are interactive lighting. Philips want to explore more context, which could utilize low-resolution technology. For example, lighting could reacts to people's movements in the Interference light tunnel in Kolding, Denmark (Fig. 2). Another example is iRiS uses live video to allow people to interact with a media facade (Fig. 3).

3.2 Analysis

Teaching team refined the requirements in four elements (Fig. 3):

- Medium: Mobile device. It emphasized by Philip, as mobile devices are common in people's daily life. Philip wants to explore interaction between personal devices and low-resolution interface.
- Solution: Interactive design. Interactive design can make people engage in interface, there would be more funny and interesting way to solve relation between people and technology.
- Technic limit: Low-Resolution technology. It is suitable for big interfaces for example the façade on building.
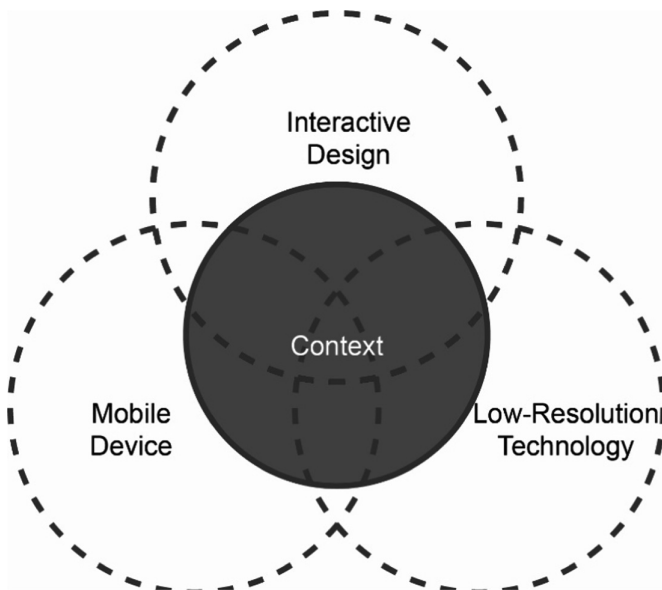- Context [4]. Students should explore users' need in certain context, context and target user must be clear.

Fig. 4. Four elements in project

Teaching team also clarified the title into goals and research questions to fit the requirements from Philips. These research questions could help students understand the context lucidly:

- What are the motivations, triggers, and insights for interacting with low resolution lighting media? What are the different user segments and user needs, and why?
- What are the main interaction styles between mobile-phone and low-resolution facade? Evaluate various current media, identify the pros and cons.
- What are the best contexts to use Philips low resolution interactive lighting media facade? What are the specific scenarios, and why?
- Given all the previous research and background, what types of interaction styles and functionalities would be designed to create or enhance UX, and why?

4   Settings

This project continued 45 days, although it is an only four-day course. Both teachers in BNU, coordinators from Philips and students paid a lot of time extracurricular. Teaching team were set up by two teachers and 3 senior student assistants. Coordinator team were set up by 3 scientists from developing department in Philips Lighting.

Teaching team designed the procedure before the kick-off meeting, taught the research method on the class, students did project work outside class. Teaching team also set up review time for each group every week, so that make sure each group have right direction and advised students.

Philips experts regularly join the course online and face to face, attend presentation sessions, and provide feedbacks, in order to make sure the end results can provide Philips with key designs and growth opportunities.

To make this industry based project more feasibility, teaching team designed the whole procedure for students, as this was the first time they did an UX project. Basically, the procedure in this project followed a design process, the core process was to find user's needs, transfer them into design opportunities, and finally solve these opportunities via low-resolution technic. This was the first time students discovered the problem and solved the problem for other people. The procedure went through four main stages: defining, context research, analysis and design. And there were many iterations in the process. Teaching team chose basic user research method to be used in this project to guide students. Series of research methods, design methods and business methods were used, such as observing, interviews, collages, user journey map, story boards, logic map and so on (Fig. 4).

5   Findings

As UX is interdisciplinary, cooperation is more important in team working, students with psychological background know research methods well, students with design background know process and visualization well, students with technical background know technology well, and students with economical background are doing well with data analysis and business model. But this was the first time they faced all these aspects simultaneously, they met many barriers during this project (Fig. 5).
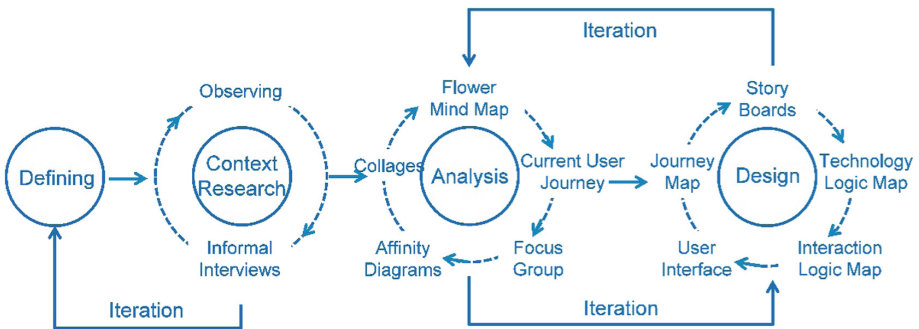

Fig. 5. Process of project

5.1   Difficult to Define a Target User

The first barrier they met was how to define a user. Philips gave a very broad target user group: young people. Students needed to narrow it down in a subdivision group. (Table 1).

Teaching team found there were three problems in this procedure:

- Most of target users were defined by brainstorming but not from desk research and context research. Because they didn't do enough iteration between defining and context research. Another reason is they did a lot document investigation on technic but less on anthropology and sociology, they paid too much attention on technic, but ignored people in the context.
- Exact age was needed in defining target user, but we can see from Table 1, 3 out of 12 groups didn't have it defined. Young people is a large target group, different age group has different lifestyle and experience. There's one group set age group, but didn't narrow down the characteristic, this team had a blurred user, the final plan was normal and had unclear core function, compared to the other group.
- It's better set a rough context when defining target user. Such as Group 5, they set airport as the main context and focused on people who were waiting for flight for a long time. Target user had very clear demand and easy to continue the analysis and design process.

Table 1. Target user defining in 12 groups

	Group 1	Group 2	Group 3	Group 4
Age	28-35 & 4-6	22-25		23-32
Characteristic	Parents and Preschool children	Students in master of applied psychology	Boys in love	
	Group 5	Group 6	Group 7	Group 8
Age	18-30	17-23	16 - 30	16-24
Characteristic	People have waited for the plane for over an hour.	Sociable	Fashionable lifestyle	Seeking for Entertainment
	Group 9	Group 10	Group 11	Group 12
Age			Post 95's	22-30
Characteristic	Business personage	Interns	Road Nerd	Female

5.2   Difficult to Understand Logic Between Methods

This was a challenge for students to use so many methods in one project. Teaching team also had mission of passing on knowledge. Either theory or practice is important in this course. Except method teaching, the best way to let student realize the relationship between methods is learning by doing [6]. Every step is based on the previous result. And any result could find support from desk research and theory.

For example, after passing on the method to do focus group and survey, students had been equipped with basic skills. But they couldn't handle well that the purpose for focus group is to expand interaction opportunities with lighting as qualitative research, and survey would check and verify the result from focus group. Only when they made a mistake, then they could understand why they should use such method, and what they want to get from this method.

5.3   Lack of Research Experience and Skills

Insight is very important for UX research [7], but capability of insight need a lot of experience. For the students from psychology, they have ample experience on psychology method, they might have known interview, questionnaire, observing very well, but usually they follow the procedure step by step. Teaching team found they were absent on sharp insight and find out the motivation behind the behavior. Without a sharp insight and looking back the behavior, they could not dig user's actual demand.

5.4   Not Thorough Understanding Stakeholder's Requirements

In this project, teaching team refined four key elements: Mobile device, Interactive design, Low-Resolution technology and Context. All the elements were crucial in this project. Beginners are easily immersed in their ideal world, but ignore stakeholder's requirement [8].

Low-resolution is the core requirements in this project, it affected the visualization style, and has special feature on screen showing. Although the low-resolution screen couldn't show fine picture, but it could be equipped very large, like the external facade of building, and easy to make interaction realized. User use mobile device to control or interactive with lighting

Group 4 designed a mosaic game in the context of people getting tired in shopping mall. They designed several functions in their low-resolution screen in the beginning, even battery charge. This function deviated seriously with interactive design. Teaching team found primary cause was inefficient focus group, and had a shallow analyze. That leaded to lack of pain points, to enrich their design scheme, they added so many functions. After several iterations, teaching team finally guided them to settle down the function on image interaction.

5.5   Briefing the Presentation

After 45-day's hard working, every team had a lot of original data and source material. A 20-page's report template had been given to students. An under 30-page power point, a video and an 8-minute's presentation was required for the final report.

Students needed to learn how to show the essence and result instead of narrate process, only key information could be shown in the report. All the data and result should be visualized, the story should be shot in a video in any style. Compressing report, making lo-fi prototype, shooting video and cutting, editing and so on, all this work was full of challenge, students must learn expression skills and software in a rapid way.

6   Discussion

This project-based course had produced 12 schemes; Philip Lighting would implement several results. As the first industry project, there were a lot of imperfect, but it's really valuable for both students and teachers.

6.1   Learning from Each Other and Self-learning Is Very Important

As an interdisciplinary program, students have different background, teaching team couldn't ask all students have same skill in a certain level, students need to learn from each other in the project, so that they could enrich their knowledge and prepare for the next project.

Self-learning is another key capacity, time in the class are always limited, explore knowledge by themselves are required to duly recruit knowledge, skills and follow the new technology.

6.2   Learning by Doing

UX program is project based, aiming at practical cultivation. Theory is a support for the project, so bring these theory into practical is more important for students. Learning by doing is a good way to enhance the understanding and experience the knowledge.

6.3   Technical and Requirement Limitation

All the real project has technical conditions to support feasibility. Stakeholders need to consider company culture, business model, cost and benefit to set up requirement limitation, this is what called stakeholders' demand. Students must fulfil all the requirement to let their design come to real. Teaching team should guide students do project in a right direction.

6.4   Keeping Unobstructed Communication with Stakeholders

To make sure doing the project appropriately, having efficient communication with stakeholders is important. Scientists came to class for kicking off, and regularly reviews happened every two weeks, Philips Lighting gave valuable feedback, from technical and design aspect. After each review, groups decided to continue or do one more iteration in stages. All the scientists came to the final presentation to evaluate designs and judge the team working. This two-week review really pushed this project and made a very pleasant cooperation.

6.5   Reflecting

Students did reflection after the project. The reflection focusses on: Desk research is important; Target user should be defined from desk research, and should be narrowed down; make stage target clear to control the overall progress and make sure everyone engaged in the project; toolkits are new for us, but very useful and efficient, we should use it more; from user's point of view (user empathy) [9] is really doable. Teaching team could learn students demand from reflection, then they could prepare the course much better than last year, to push project based course more operability.

The limitations of this course include the short amount of time, insufficient knowledge on interaction design from the students and lack of Usability evaluation.

7   Conclusion

The course successfully ran, stakeholders got ideas, students got to know the normal procedure and research method, teachers got reflections. We have seen this aggressively result oriented target user. Teaching team's finding will implications for the course for next year and will continue the project based course and promote the students to learn and practice in the master program.

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