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AN IMPROVEMENT IN METHOD: FROM USER STUDY FIRST TO FAST CONCEPT DESIGN FIRST

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Abstract: The most common design process in the interaction design industry is user research-concept design-prototype testing. This process can help designers to identify target users, design products, and services. However many students have trouble applying the results of user research to improve their design using this process. The Hunan Univ.-Nokia joint curriculum aims to improve this by combining fast concept design and user research into a single process. This new process features immersive teaching and individual-team alternating iterative method, which solves the problem without sacrificing the creativity of the student.

Keywords: *design method, fast concept design, design education, interaction design, immersive design, iteration*

1. Introduction

Interaction design education is still in its infancy. One of the biggest controversies in the education field is that can design really be taught. A standard education can only teach the students so much about design. In the end, coming up with a good design mainly relies on the creativity of the students. In the case of design education, particularly the interaction design course, we found that there are huge differences between commercial design which is conducted in major companies or corporate re-search institutes and education-oriented design which is inculcated by the teachers (Table 1).

Design is defined the process of creating new concepts or creating new concepts based on existing concepts. Commercial oriented design and educational oriented design use different degrees of creativity. According to Kirton (1976), there are two kinds of creativity: adaptors and innovators. Adaptors improve things. Innovators ignore or challenge the existing sys-tems, contribute radical proposals for change, and like ideas to proliferate. This theory expectedly coincides with the idea of "the classification of ideas", which are: (i) a new idea – a combination of two or more existing ideas; (ii) an old, existing idea applied to a new context; or (iii) other. This classification of ideas is similar to the one used by Benami and Jin. As a result, different design processes produces different ideas. For commercial design in the development departments, they either create new ideas by innovating or improve old ones by adapting; for commercial design in corporate research institute, they usually work on new ideas since most of their projects focus on innovation; for education-oriented design in design schools, the situa-tion is similar to that of the latter one.

Amabile (1983) distinguished the five stages of creative problem solving. The five stages are task presentation stage, preparation stage, response generation stage, validation stage, and outcome stage. The steps of the process are debated over time, but overall it is more or less the same. Upon examining the commercial oriented design process and the educational oriented design process, the two design processes have very different starting point. Unlike the educational oriented design, the commercial oriented design focuses on a marketing target for maximum profit in its early stage. The starting point of an educational oriented design on the other hand can vary depending on the academic focus of the project. During the preparation stage, commercial oriented design is determined by a pre-planned project outline. An educational oriented design on the other hand is geared toward creating a learning environment for the students. The teacher will mold the requirement for the design project according to the needs of the students. The response generation stage is where the two design methods truly differentiate them-selves from each other. Commercial oriented design tends to take a more traditional approach toward product design while educational oriented design uses fast concept design method to reach its goal. During validation stage, commercial design would focus on usability testing so they can improve and redesign; in school we precede user study after FCD. For outcome stage, both of them are expecting satisfying solutions after rounds of modification.

Table 1. Comparison of two kinds of design

stage of creative problem solving	Commercial Design	Education-Oriented Design
task presentation	fixed	random
preparation	more, corporative	less, immersive
response generation	problem analysis user study concept design	problem analysis Fast concept design
validation	usability testing redesign	user study (sometimes usability testing) redesign
outcome	solution	solution

2. Education-Oriented Design: The Necessity of Fast Concept Design

As we have explained in the introduction part, the design process of companies and that of corporate research institutes share lots common elements, while design education in college is in a different scale. We can tell the differences by looking into typical design approaches of the three kinds of design.

2.1. The "Waterfall" Design Approach (Fig. 1)

The design department in a business environment must follow strict working protocols and schedules set by the company. The Waterfall Design Approach is a technic-and-statistic-driven method that utilizes division of labor combined with strict time management to accomplish its task. The entire process is separated into three steps: user experience design, visual design, and development phase. Overall this approach is strict, organized, and time consuming.

2.2. The Agile Iteration Design Approach (Fig. 2)

The situation is slightly different in corporate research institutes. Take the Agile Iteration Design Approach for example, the researchers and designers move faster and go through several times of iteration in one task. Comparing to the "Waterfall" Design Approach, it is either user-centered or engineer-centered. The major advantage of this approach is that it is iterative and agile, so the designers can do quick modifications according to users' feedback. In a word, this approach is low-cost and less time-consuming.

The two above mentioned design approaches how interaction design is done in a business related environment. It is crucial for educators to understand that all the talents fostered at universities must be tested in corporations. Design education means to serve the people, to contribute to the

development and the evolution of the society. This is why it is very important for design students to get to know the approaches people apply in business condition.

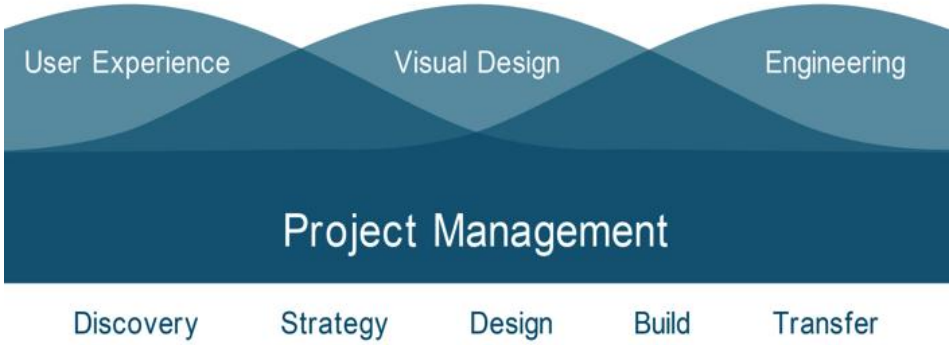

Figure 1. "Waterfall" Design Approach

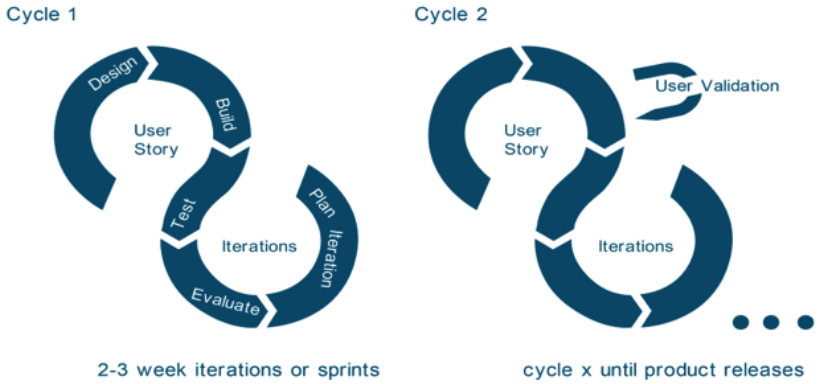

Figure 2. Agile Iteration Design Approach

2.3. The Mixed Design Approach

When it comes to design education, it is much easier yet much more complicated. It is easier because only teachers and students are involved (no client or manager). It is more complicated because many resources are lacking. So the design process applied by educators is a method that combines the advantages of the above two approaches.

2.4. The Origin of Fast concept design (FCD) Method

The situation is slightly different in corporate research institutes. Take the Agile Iteration Design Approach for example, the researchers and designers move faster and go through several times of iteration in one task. Comparing to the "Waterfall" Design Approach, it is either user-centered or engineer-centered. The major advantage of this approach is that it is iterative and agile, so the designers can do quick modifications according to users' feedback. In a word, this approach is low-cost and less time-consuming.

According to our previous experience, the students usually did problem analysis and user study perfectly well at the beginning of the Interaction Design course. They quickly decided on their target users and thoroughly analyzed the needs and wants by applying multiple design methods. Although they might have undergone a tough time finishing user study due to the lack of resources, most of the times the results turned out to be satisfying. Students presented records, photos and videos of user inter-views and discovered several practical design opportunities. But the following concept generation process got stuck when the students found it difficult to transfer users' data into feasible concepts. We have concluded the reasons for this inefficiency as follows:

One reason was that it took time and efforts to learn how to turn abstract information into concrete design, but the time for a single course was limited. The other reason was about the restricted imagination after doing user study. The students tended to be overly dependent on the results of user study, which usually ended up confining their thoughts.

Being trapped in a dilemma, we decided to change the way we traditionally educated the students and use a method that can quickly compel the students into massive concept generation. We transferred part of students' energy from user study to concept design by adjusting the steps of design process. In order to better connect all the participants of this Interaction Design course, we also made use of the internet as a means to exchange ideas and comments among teacher, students and experts.

3. Fast concept design (FCD) method

3.1. Definition and Process

Fast concept design (FCD) Method is a method that replaces the sequential place of user study with fast concept design as the first design step in a creative design process. This means that the problem-solving process has to give way to the innovation process at the beginning. FCD Method can be featured in education-oriented design for it takes less time to inspire the students in an unexpected way.

FCD method starts with brainstorming where group work is encouraged. Students in this stage will be brimmed with possible people, places, problems etc. They can simply pick what interests them the most, and make a brief analysis with the people they are about to focus on. Afterwards, the teachers will do a little help by informing the students with the latest technologies and design solutions (we name it the Immersive Teaching Approach). Next, the students are required to propose as many concepts as they could individually. In this stage, they could use multiple tools like sketches, diagrams, persona and storyboards etc. When everyone has presented their FCD proposals, all the students will comment on each other's works, teacher may get involved, but compelling orientation should be avoided. After a round of discussion, possible modification and improvement will be done, and then the students will consequently go on to the user study stage. The user study after FCD is slightly different from an ordinary one, a three-person group is recommended and each of them will share part of the works (Fig. 3).

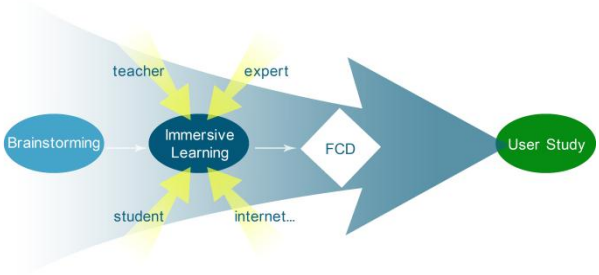

Figure 3. the process of FCD Method

3.2. Features of FCD Method

3.2.1. Immersive Teaching Approach

The Immersive Teaching Approach is a way to inspire students by introducing any possible information or solution related to the subject matter, it functions both in-class and off-class. Usually, the teachers do not give much thought to the potential value of the information to the students or the exact purposes, only quantity is the key. The best part of Immersive Teaching Approach is that, being stimulated by abundant information, students can quickly get into the mood of concept generation. We also introduced immersive learning via internet . Each of the participants of the Interaction Design course has a blog exclusively dedicated to the course. We share the latest information, ideas, solutions and comments based on the links we built with each other.

The Immersive Teaching Approach is highly demanding to the students. First of all, when large amount of information is given, the students must have strong ability and commitment to receive and digest new knowledge. Secondly, the students have to make full use of their analytical ability and imagination in order to abstract useful elements from massive data. Finally, the students may easily get confused and go off the point if they cannot establish a clear knowledge structure.

3.2.2. Iteration of Group- Individual Creativity (Fig. 4)

In education-oriented design process, innovation comes from both group creativity and individual creativity. During the Interaction Design course, a student has to collaborate with others and work independently as well. Comparing with the designers working for companies or corporate research institutes, the students is a totally different group of people. Colleges enroll students based on their previous study performance and learning ability rather than their cultural background and private life experience. This contributes to the fact that we may have students whose families are comes from different walks of life, or their personal interests and knowledge vary greatly from each other. The iteration of group work and individual work helps the students to learn how to share their unique experience and knowledge and benefit from others.

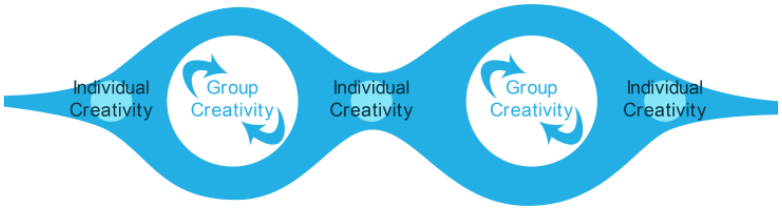

Figure 3. iteration of group-individual creativity

4. Purpose of FCD method with case study

By defining FCD Method, we do not mean to replace user study but just make FCD happen before it. FCD can be described as the warm-up activity of user study and the following design process. The purposes of FCD Method are fundamentally the same as other design methods. To sum up, there are three major purposes:

4.1. To Evoke Ideation

This is the motivation for starting FCD in class and the reason why we would like to apply Immersive Teaching Approach. Teachers and students collect and share useful information, and gradually establish a temporary database. When certain part of the data becomes the students' own knowledge, they generate new ideas from it. These new-born ideas continue to be shared in-class and off-class (internet) in order to further evoke ideation. During this process, data transformation has upgraded to the level of knowledge exchange.

4.2. To Enhance Design Efficiency

As we have mentioned before, a course has limited time span, so the best way to enhance design efficiency is to make sure that the students benefit from each other's unique knowledge and social experience. Only when the students as well as the teachers and the experts are willing to share these precious experience can they quickly find the relevant information they need and make FCD possible.

4.3. To Transfer the Result of User Study to Design Concept

The gap between user study and design concept exists not only in student's design work, it is a worldwide puzzle for designers. By introducing the iteration of group-individual creativity, we encourage the students to carry out user study in small groups. When the students have finished FCDs independently, they quickly transfer to collaborative mode and exchange ideas. Afterwards, when they move on with their individual designs, they developed the ideas and bring them to a higher level.

4.4. Case Study

We would like to take the work of Fu Lei, a student in the Interaction Design course, for example to demonstrate FCD Method in real situation.

In order to evoke ideation, we divided the students into three groups and asked them to list keywords about dynamic/static people and places they were interested in by brainstorming. Having a fairly long list of keywords at hand, Fu Lei chose sub-way—a dynamic place as his major keyword. Based on the chosen keyword, he did a brief research on subway phenomenon and started generate FCD. He quickly came up with more than 10 fresh ideas, such as turning the windows of the trains into game platform (Fig. 5) or a new way to make friends during subway ride.

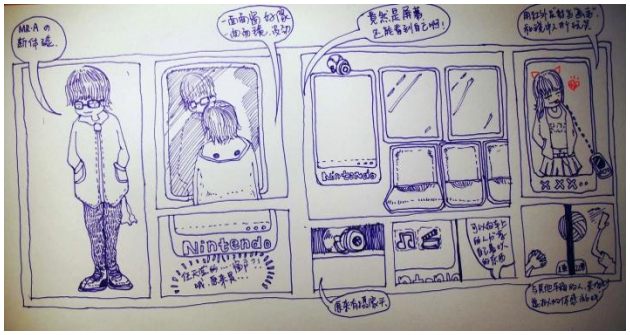

Figure 5. turning windows into game platform, sketch by Fu Lei

Followed the process, the whole class exchanged opinions on each other's concepts after FCD generation. At the same time, he kept updating his ideas on the blog so anyone involved in this course (teachers, experts, students) were allowed to leave their comments.

After what we called the iteration of group-individual creativity, Fu Lei revised his target users –the young white-collar workers and did the user study by videophone interview (since Changsha has no subway). Based on the result of user study, he refined his final four concepts:

- Music Chain (Fig. 6): making friends by the familiarity of the music they are listening to.
- Customized Mobile TV Content (Fig. 7)
- Personal Avatar (Fig. 8): making friends without recognizing each other's face.
- Virtual Tag (Fig. 9): identifying people or stuff by virtual tags rather than keywords.

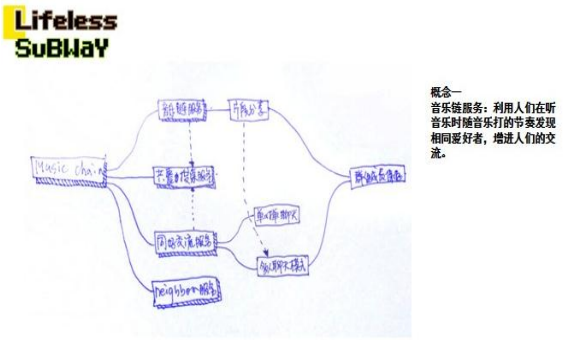

Figure 6. Music Chain

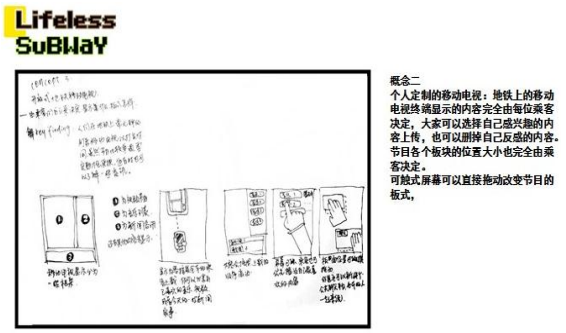

Figure 7. Customized Mobile TV Content

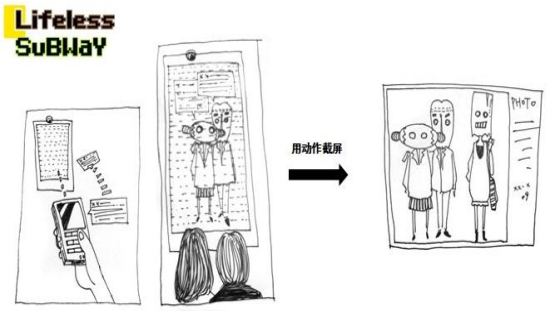

Figure 8. Personal Avatar

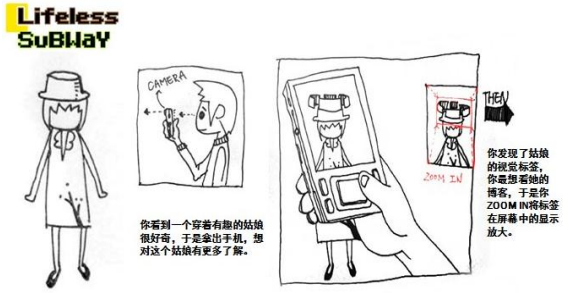

Figure 9. Virtual Tag

5. Future development of FCD method

Thanks to FCD Method, we are able to appreciate results from the students that are much more innovative and creative than ever before. However, the FCD Method does not entirely solve the problem of "transfer the result of user study to design concept". While paying more attention to the innovation and efficiency part, we need to further adjust the method to reconfirm that users are the center of our design thinking, and everything we do is built around target users. In the future, we will continue to work on the improvement of FCD Method in order to strike a balance between UCD and innovation.

6. Conclusion

In education-oriented design, especially in the Interaction Design course, we found that the traditional commercial design process does not fit in with college students. So we made a little step forward and move from user study first to FCD first. This method in a way successfully evokes ideation of the students, improves their design efficiency and helps them to transfer the results of user study to design

concepts. The FCD Method focuses on the creativity of the students during design education, which is the core of education-oriented design. Since the gap between user study and concept design still exists, further improvement is needed. This improvement is expected not only by the teachers and the students, but also by the commercial de-signers.

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