Thoughts on Methodology of User Experience Design

CS-E4900 - User-Centered Methods for Product and Service Design

5.10.2018

In the following essay I am discussing the methodology that is being used in the design process with the aim to improve the user experience. I also provide an explanation of my understanding of the basic concepts that form the foundations of what we are trying to achieve in this field.

Feasibility of the provided methods and their applicability, in the context of what we are trying to achieve within the practical constraints, remains to be a central topic throughout the paper. This combined with the theoretical classification of discussed methods and makes for an overview that is hopefully helpful for the reader when deciding which ones to include in the design process.

Fundamental Concepts

When discussing any topic, the basic terminology should be clear. That is the purpose of the following paragraphs. In order to talk about UX Design, we should first agree on what does user experience actually mean.

My understanding of user experience is in line with the following definition by Don Norman, who was the first person to coin the term and arguably made it so popular and widespread as we know it today:

> *"User experience encompasses all aspects of the end-user's interaction with the company, its services, and its products (Norman 2014)."*

He then notes that term user experience is often confused with usability and points us to Jakob Nielsen's definition.

Nielsen (2012) describes usability as a qualitative attribute that determines whether the user interface is easy to use by looking at its learnability, efficiency, memorability, frequency and ramification of errors and the user satisfaction.

Consequently, Nielsen introduces utility as an example of another qualitative attribute. Utility can be described as design's functionality or the existence of features that the user needs. Together with usability it makes a product useful.

The above-mentioned definition of user experience is definitely not the only one you might come around, nor is there only one way to think about usability. I see no point in arguing over definitions beyond establishing a common understanding. There is a value in learning how other people grasp these ideas as it may provoke us to think about aspects that we otherwise may miss. Hertzum (2010) gives us several so-called images of usability seeking to at least partially cover the similar, yet different meanings attributed to the term by various people.

Nevertheless, it is important to notice that user experience is a much broader term when compared to usability. I believe that the reason why usability and user experience are so often used interchangeably is that many people find it difficult to think what else should we design for if not usability. It is very important to first identify our objectives before going further in the design process.

We should ask ourselves, what sort of an experience do our customers or users want to have. That is why I find the ideas of Experience-Goal Directed Design Approach to be so interesting. Experience goal, as described by Yichen Lu (2014), is the "intended momentary emotional experience or a relationship that a person has towards a designed product or service". This could be for example security, surprise or fascination. Thinking about what sort of emotions we are trying to evoke and how to trigger them, opens up a new dimension that has the perspective to stimulate ideation of novel solutions and designs.

Characteristics of the Design Process

Individual methods would not be of much use without a framework or workflow in which to put them. There is a practical need to somehow manage the design process. Luckily, the ISO 9241-210 gives us the principles and outlines for this purpose. This standard was created by a collaborative work by some of the best experts in the field and represents a comprehensive guide without being too restrictive. It also contains an extensive checklist to facilitate a comparison of our design process against the standard.

User-centered design should be based on the needs of users and involve them in the actual design process. The process is iterative and it gathers user feedback during each cycle in order to improve the product. It should take into account all the aspects of user experience. This requires collaboration of a multidisciplinary team. (International Standard Organization [ISO], 2010)

The ISO standard is not the only framework worth mentioning though. Design thinking, that is now gaining increasing popularity, describes five distinct "modes" or process modules: Empathize, Define, Ideate, Prototype and Test. Empathy is the foundation of human-centered design and it is how we obtain findings out of which we define the user's needs. We then ideate on how to satisfy those needs, build a prototype and test it. (D.School, 2018).

Double Diamond model is yet another take on how to describe the design process. It divides it into 4 phases: Discover, Define, Develop and Deliver. The diamonds represent the two cycles of alternating divergent and convergent thinking (See Fig. 1). We discover the user needs and define how we will achieve them. We prototype and test during the development phase before finally delivering the finished product to market. (Design Council, 2007)

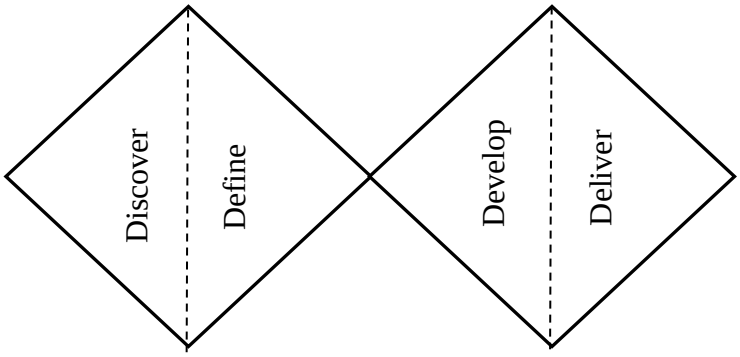

Figure 1. Double Diamond model

Just as we have many different methods to choose from, there are multiple perspectives on how to tie them together. These perspectives are definitely not mutually exclusive. Quite on the contrary their similarities are easily identifiable.

The mentioned frameworks also serve as a useful resource of new methods for us to try out.

Overview of UX Methodology

In this part of my essay I briefly describe the most commonly used methods in UX Design and their limitations with the focus on user research. However, I also touch upon prototyping of the user interfaces and the methods of their evaluation. Because only when put all together, they encompass the design process workflow as a whole.

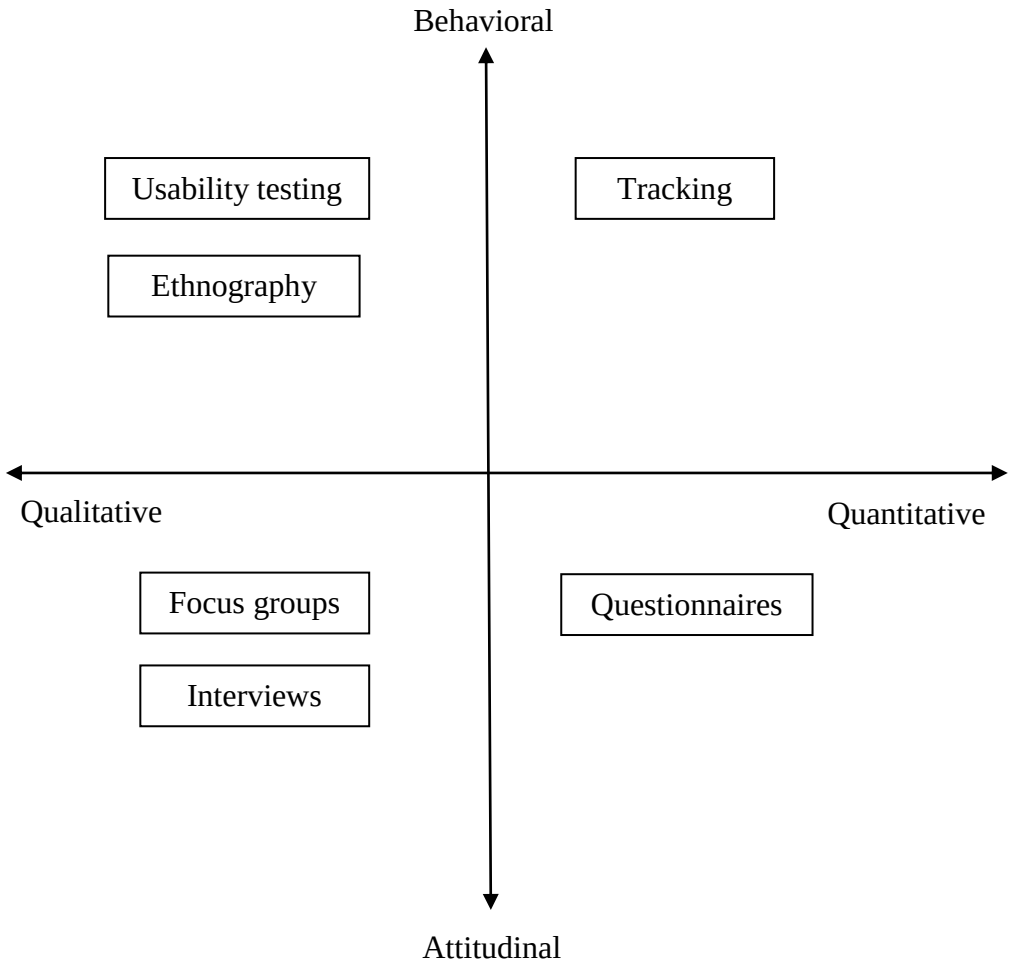

Figure 2. Dimensions of UX research methods

When making the decision considering the selection of user research methods for our particular design process, we should keep in mind what sort of information we are trying to obtain. Rohrer (2014) maps out these methods on 2 axes: quantitative (how many, how much) – qualitative (why, how to fix) and attitudinal (what people say) – behavioral (what people do) (See Fig. 2).

Wilson (2006) recommends combining the qualitative and quantitative methods in order to get better insights. He also mentions other possible ways of performing triangulation, such as applying the same methods with two or more groups of users. There are certainly many more options to combine various user research methods than the two above discussed axes.

Knowing our audience is essential, because even the best design could become a very bad one, just by changing the set of users. That is my reasoning behind the importance of user research and choosing the appropriate target group.

A good first step, before we conduct our user research, is to perform a stakeholder analysis. That means identifying the people, that have an influence or interest in the problem we are designing the solution for.

Questionnaires are a proven and cheap method to obtain quantitative data from a wide spectrum of users and determine their needs or current satisfaction. The creation of questionnaire is a complicated task though. Boynton and Greenhalgh (2004) give us some valuable advice and recommend using previously validated questionnaires, if possible. They also warn us when they describe questionnaires as the most commonly abused method of user research. That happens because the promised low cost of this method often comes in hand with a neglect for the quality of its preparation. We cannot rely on such poorly designed questionnaire to give us any valuable data whatsoever.

Interviews, on the other hand, provide qualitative data. The direct contact with an individual user allows us to go deeper into the topic and get specific, constructive suggestions. They are however more expensive to conduct when compared to questionnaires. There are many ways to conduct an interview. DiCicco-Bloom and Crabtree (2006) differentiate between unstructured and semi-structured interviews. They omit structured ones as those, similarly to a questionnaire, seek to extract quantitative data instead of qualitative.

Focus groups are somewhat similar to interviews. Together with group interviews they differ in scale as 5 to 10 persons and a moderator would typically take part in one focus group. The difference between a focus group and a group interview lies in the fact that focus group encourages discussion among the people participating (Kitzinger, 1995). When compared to an interview, this method allows for easier understanding of the business aspects and team dynamics. It is not a substitute for an in-depth interview though, as individuals may be deterred from sharing their personal insights among their peers.

Various methods that are tracking user behavior, such as web analytics, represent a valuable source for high volumes of real-world quantitative data. This of course assumes that we already have a product to track or at least a high-fidelity prototype.

Ethnography is the immersion in the natural environment of users and gathering knowledge during a long-time period. The researcher may ask questions and take part in the activities but should not interfere with the process. The goal is to obtain deep personal insights. Ethnography is however very time consuming and it is still easy to miss important information. Passing the knowledge further can also prove to be difficult. Today the development cycles are getting shorter and shorter, which is the reason for the emergence of methods like rapid ethnography (Millen, 2000), that tries to speed up this method without sacrificing too much of its benefits. Millen does so namely by narrowing the scope of research and by taking advantage of the knowledge obtained from key informants.

Cultural probes, as introduced by Gaver, Dunne and Pacenti (1999), represent another method related to ethnography. They use carefully crafted thought-provoking materials with the aim to facilitate interactive feedback from the users. They are however rarely used, as the time needed for preparation of this method does not seem favorable when compared with the results, which are more of a source for inspiration than an output worth analyzing.

Building personas is a way to combine the outputs of the above-mentioned methods of user research. Persona is representative model of a certain type of users and should only contain data relevant to the design process. In order to build a persona, we must use data obtained from real users. Their main benefit, as argued by Pruitt and Grudin (2003), lies in human psychology. It simply makes it easier for the designers and developers to empathize with the users while also allowing for a simpler communication of user's needs.

Prototypes are the essential deliverable of UX Design as they enable us to validate the design and they can also supplement the specifications for developers or serve as additional documentation, that is easy to grasp. When presenting them to the users we receive valuable feedback and from our customers we may get a clearer idea of the requirements. One criteria of prototypes that I would recommend for consideration is their fidelity. High-fidelity prototypes are interactive and represent a realistic platform for testing. This may seem as desirable, but it has also its negative aspects. When presented to customers, they may get the false idea that the product is almost finished, which can result in unrealistic expectations when it comes to deadlines for the actual development or its final price. Users may also feel more comfortable criticizing low-fidelity prototypes which is an opportunity to get more feedback.

It is good idea to prototype early, so that we have something tangible to test with the users. However according to Holtzblatt and Beyer (1993) this comes with a risk of the team becoming too focused on the appearance of the user interface while neglecting other important aspects. He tells us to think about the structure of user's experience and introduces the term user environment design.

While there is no such thing as correct design, there are certainly better and worse ones. Which is why we need to evaluate our designs in order to compare them and to identify opportunities for future improvements.

The most common method to evaluate a design is to test it with the users. Usability testing typically happens in a controlled environment (i.e. in a laboratory). This laboratory usually consists of a sound proof room behind a semi-transparent mirror through which the testing process is being observed. The user is provided with a list of tasks that we ask him or her to perform. These can focus on testing a new functionality or confirming some hypothesis of ours. The output of this test is a record of user's interactions with the interface. Needless to say, that it would be prohibitively expensive to perform extensive tests like this.

Expert methods such as guideline reviews, heuristic evaluation or cognitive walkthrough are another way to evaluate our design. They provide greater depth than usability testing, but lack direct user input. The factors that they measure are based on user research, but they can become outdated or may be a bad fit for our specific

problem. It is therefore advisable to adapt them as necessary and update them when needed.

As I previously mentioned, the design process is inherently iterative. Therefore, there is an overlap of methods that we use for evaluation and user research. As the information obtained during the evaluation phase serves as a source for feedback for the next iteration.

From what I saw in practice, surveys or questionnaires will only be conducted few times a year, even in a big company with lot of resources. Same applies to rounds of interviews and focus groups. This kind of user research will of course be more intensive when coming up with a new product. Otherwise the main feedback loop happens between prototyping and usability testing, which is combined with an in-depth interview. The more the company focuses on design, the more likely it is that they will have their own guidelines. When designing native apps, the guidelines of the chosen operation system should be followed on top of that. I have yet to see ethnography in action, as the costs can be hard to justify since the necessary know-how is hard to come by and additional workforce would therefore have to be hired. Personas are omnipresent, but they are often poorly communicated or have flaws as pointed out by Pruitt and Grudin (2003) such as low believability, which restricts their use to a mere entry in a form in the issue tracking software.

Concluding Remarks

When undergoing the design process, we will be inevitably faced with many caveats. Limited resources are from my experience among the most common ones. Either because the lack of money or the lack of time, we are forced to be picky about the methods that we use.

Any designer is only as good as the methods in his or her toolbox. It is of essential importance to know them throughout and be aware of their limitations. No method is truly universal, so that it would be possible to apply it in any context without making the necessary adaptations. Sometimes it may not be advisable to use it at all. And even if we have the perfectly suitable method, its poor execution can still ruin all our previous efforts. And no method is sufficient on its own. The methods that are cheaper to perform tend to be on the attitudinal side of the spectrum, i.e. they rely on what people say. It is however important to cover the above discussed dimensions as widely as possible and include behavioral methods as well.

We should therefore constantly seek ways to improve upon our design process. Try to incorporate new methods in your workflow and see how it goes, test them out. Oftentimes the costs will outweigh the benefits. But when the opposite is true, you just became a better designer.

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