

## Video 12-1 Human Centered Design

Hello there, welcome back. Did you have fun working on the tutorial activity embedded in the first series of videos? Since we are not meeting up physically for a tutorial class in the design segment, do share your experience on the wallet activity in the forum; it will benefit everyone in Q!

Different organizations, design firms and design disciplines will have their own design processes, dependent also on the type of problem they work on. In the tutorial activity you have experienced one of such processes, a very common and useful one based on the approach of Human Centered Design, which we often call “Design Thinking”.

For the task of designing a wallet, first you tried to understand the task, in this case by showing empathy towards the user, finding out what really matters to them (section 2 and 3). Then, you synthesized these findings and defined a problem statement, which became a challenge with clear objectives for your design to achieve (section 4 and 5). Thereafter, you ideated a variety of possible solutions based on the problem statement and developed your final solution based on feedback from your user. You also built a prototype to test and evaluate the solution. (sections 6 to 10).

Before moving further, for the sake of the economy of expression, from now on I shall use the word “product” to represent the general domains of design that includes “products, systems, services and experiences”, so that I don't sound repetitive.

The Design Thinking process places human experience at the core of the design objective, and it involves people in a co-design process. In the tutorial activity you have included your partner in the design process of a wallet, interviewing him and getting his feedback on your ideas and a prototype you built. You have also played the role of a keen observer, studying how he demonstrated the use of his own wallet, and how he interacted with your design prototype. Therefore in your comparison of the ideal wallet you designed with the final design you made for your partner, I can be quite sure that the latter will have probably met the needs of your partner more than the first! In design, we call this Empathy. By understanding what and how people see, feel, and experience, design can be used to make products that truly matter to people and produce inspirational improvements to the way we live.

In design, there is no such thing as the Ideal Product. Different versions of the same product are needed, as each version works for specific groups of people in different situations. Can you imagine if we only had 1 type of toothbrush? One generic, unbending, standard one. Then what about toddlers with small hands? What about people with different gum sensitivities? What about people with involuntary hand tremors or finger joint rheumatoid arthritis? What about people who travel often? Each of these user groups will certainly need a different toothbrush to fulfill their need of keeping their teeth clean!

Now, referring to the 3 senses of questions in the Philosophy segment, one could say that sense 2 is predominant here. You have used your ability to ask fellow humans questions to elicit information about them. I will go a step further to say that **design puts “users” to the question**, as we discover what works and what does not work for

the users that the product is intended for. As an example, in sections 4 and 5 of the design tutorial, from the information you acquired by observing and interviewing your partner, you had to capture findings and synthesize them into a problem statement that included the user's needs and insights. A designer not only "puts others to the question" by drawing out relevant information from people, he/she "puts users (as part of nature) to the question" by synthesizing the information into a meaningful challenge design can respond to.

Putting "users" to the question, designers are particularly interested in the Usability of a product. Usability refers to the ease of use and learnability of a product, where a product is designed with a generalized user's psychology and physiology in mind. Designers study human behaviours to understand the way people perceive and interact with products, and use these insights to generate creative solutions. In 1977, the psychologist James J. Gibson in his article "The Theory of Affordance" introduced the term "affordance" to refer to all "action possibilities" between the environment and an agent (which could be people or animals). This relationship is independent of an individual's ability to recognize them, but always in relation to agents and therefore dependent on their capabilities. For instance, a flight of steps to an adult affords many, probably countless action possibilities, such as walking up, sitting on, lying down, balancing on an edge, etc. On the other hand, the same flight of steps will afford less action possibilities to a crawling baby, which will not be able to perform most of those actions.

Don Norman, in his book "The Design of Everyday Things" published in 1988, built on this premise and proposed the notion of "Perceived Affordance" in design. "Perceived Affordance" refers to the **action possibilities that are readily perceivable by a user**. For designers, the visibility of affordances is important – by making affordances explicit, we can provide strong clues to the operation of things. In Don Norman's words, "Perceived affordances help people figure out what actions are possible without the need for labels and instructions." When designers commend a well-designed product as intuitive, we really mean that it has good perceived affordance that makes it easy to understand and use. For instance, the physical attribute of a button can signify how it should be used – its shape, details and texture can suggest that it should be pressed, pulled, pushed or turned.

Have you ever used a water faucet with poor perceived affordance where you had to figure out how to "turn on" the tap and then received a shock of hot water? On the other hand, a water faucet with good perceived affordance will be able to indicate to you how to activate it, without you having to think. Perceived affordance can even be critical in some context - imagine in an emergency situation where you need to stop an industrial machine immediately but you had to find the button and then got confused about how to trigger it! This could have led to a dreadful outcome!

Ikea instruction manuals are a good example of perceived affordance in the domain of communication design, where the instructions for assembling a piece of furniture are represented with such graphic clarity that words are not required to explain the procedures. The original multi-touch gestures on the Apple Mac trackpad or iPhone is another good example in the area of human computer interface design. The finger gestures designed for the operating system are based on common understanding of natural finger movements. We slide our fingers up and down to scroll, or pinch with

two fingers and spread to zoom in, which feels as if one is clearing out a spot to see better. When the gestures were first launched, it required very little learning to use, even young children knew how to use it without any instruction!

There are many interesting stories and principles of perceived affordances described in Don Norman's book, the first chapter being part of the design segment's readings. You may choose read the chapter before proceeding to the next video, and learn about the confusing "Norman doors". Have you encountered any?