

TECHNOLOGY AND INFORMATION SYSTEM

-SECP1513-11

DESIGN THINKING REPORT

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Introduction: Design thinking is a non-linear, iterative process that teams use to understand users, challenge assumptions, redefine problems and create innovative solutions to prototype and test. Design thinking has a human-centered core. It encourages organizations to focus on the people they're creating for, which leads to better products, services, and internal processes. It also allows those who aren't trained as designers to use creative tools to address a vast range of challenges. The process starts with taking action and understanding the right questions. It's about embracing simple mindset shifts and tackling problems from a new direction. Design thinking is applicable no matter what our role or industry. Whether we work in business, government, education, or nonprofit, design thinking can help us develop innovative solutions based on the needs of your customers. See case studies showcasing the impact of design thinking across a variety of industries and practices. Design Thinking is extremely user-centric. It focuses on humans first and foremost, seeking to understand people's needs and come up with effective solutions to meet those needs. It is what we call a solution-based approach to problem-solving.

Stages of Design Thinking: There are actually five stages of design thinking. They are:

- **Empathize:** Here, we should gain an empathetic understanding of the problem we're trying to solve, typically through user research. Empathy is crucial to a human-centered design process such as design thinking because it allows you to set aside your own assumptions about the world and gain real insight into users and their needs.
- **Define:** It's time to accumulate the information gathered during the Empathize stage. You then analyze your observations and synthesize them to define the core problems you and your team have identified. These definitions are called problem statements. We can create personas to help keep our efforts human-centered before proceeding to ideation.
- **Ideate:** Now we're ready to generate ideas. The solid background of knowledge from the first two phases means we can start to "think outside the box", look for alternative ways to view the problem and identify innovative solutions to the problem statement we've created. Brainstorming is particularly useful here.
- **Prototype:** This is an experimental phase. The aim is to identify the best possible solution for each problem found. Your team should produce some inexpensive, scaled-down versions of the product (or specific features found within the product) to investigate the ideas you've generated. This could involve simply paper prototyping.
- **Test:** Evaluators rigorously test the prototypes. Although this is the final phase, design thinking is iterative: Teams often use the results to redefine one or more further problems. So, we can return to previous stages to make further iterations, alterations and refinements – to find or rule out alternative solutions.

Overall, you should understand that these stages are different *modes* which contribute to the entire design project, rather than sequential steps. Your goal throughout is to gain the deepest understanding of the users and what their ideal solution/product would be.

On our design thinking project, we have planned to make a smart pen.

Our motive to make a smart pen is to solve many problems. The problem includes difficult calculations, incorrect spellings, voice translator, translating sentences etc. etc. When we were interviewing people about these issues, many of them pointed out these similar problems.

Our smart pen is actually a device which is able to solve all of these problems. Nowadays, our world is growing very fast and smart. So, we also need grow smart with it. People from different countries, different nations face one common problem when they travel another country or nation and that is communication problem. Our smart pen is designed to solve it very easily. It will have an audio voice recorder which will translate one language to another detected language. People will get many advantages by this.

It also solves the problem of incorrect spellings. When we are in a hurry, we often make mistakes to write correctly. Often, we don't have enough time to find the spelling mistakes or re-write it. Our smart pen is designed to solve this problem very easily. Whenever someone will make mistake while writing, our smart pen will detect it automatically and give signal to correct it. It will also show us the write spelling of any incorrect word. This will save many time and efforts. Students will be mostly benefitted by using this smart pen.

People also face many problems while calculating difficult equations and figures when there is no calculator around them. Our smart pen will help them here. This smart pen is able to solve difficult calculations in a very short period of time. It is easy to carry and has less weight than a calculator. So, people will obviously prefer to use a pen than a heavier calculator. In this case, our smart pen will save many time, money and space.

By considering these things, we have planned to make a prototype which will be able to give us some ideas about how the device is actually needed to be designed and to use it.

We know that prototype is actually an experimental stage where we can understand the device's problem or actual benefits.

After surveying on people's opinion, we have understood that our device has also some disadvantages or limitations which is needed to overcome. Some disadvantages may be the shortage standby time of the device's battery. Some may have problem with the charging of the device. So, we think we can solve the problem by improving the charging voltage system of the battery or making the standby time more long to use the device. We also need to consider about the minimum cost of this device so that everybody can afford this.

Reflection: By engaging with the complete design thinking process, we not only had a chance to learn by doing, but we also came to better understand the value of rapid prototyping, eliciting needs and empathizing by listening closely to our partner throughout each stage of the process. Rapid prototyping, exacerbated by the time constraints, helped us to generate many ideas, and to see how we could engage our 'user' as a collaborator in the building process. Reframing the process to see this emotional need as the goal of the design thinking process definitely helped us to change my perspective of how we can apply this process in a variety of circumstances.

We have learnt many important things while doing this design thinking project. We have learnt to not to get afraid to fail. Because failure often makes us think about our ideas in a different way or in a better way actually. It helps us to go on other paths of exploring. We have got a real understanding about how using empathy can aid in solving problems. Using empathy when interviewing someone made us focus in on the small aspects of solving things by talking to people and listening to what they had to say. We have learned how to brainstorm in a better and more fruitful way. Making a prototype and testing it will further help us with solving design challenges.