

Design Thinking Process – How to improve scientists’ well-being using color



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| School subjects |
| Design and Technology, Physics |
| Age of students |
| 12-14 year olds |
| Aim of the activity |
| This activity provides knowledge about the design thinking process in a real context application (well-being of scientists) within the topic of colors. |
| Background |
| <p>The design thinking process is a useful five stage process that provides solution-based approach to problem solving. Through the design thinking process the students can learn to reflect on the problem and consider different aspects of the problem, empathise with stakeholders and provide sustainable solutions. Specifically, the stages are the following:</p> <ol style="list-style-type: none"> 1. What is the problem – define the challenged and explore possibilities 2. Why is the problem important? – research, observe, understand, and create a point of view 3. How do we solve it? Brainstorm ideas 4. How do we create it? Prototype a solution 5. Testing: Does it work? Implement the solution and evaluate <p>https://www.interaction-design.org/literature/topics/design-thinking</p> |



Activity

The students were asked to think of ways to improve scientists' well-being focusing on color as a possible solution. First they had to go through the various stages of design thinking process and brainstorm on different levels: i.e. which scientists are you thinking about and what do they do in their professional lives, what kind of difficulties do they have and how can we help them, what are some possible ideas and can you prototype them? The students worked in groups of 3-4 and in each one of the design thinking stages they had to write down their ideas on posters and discuss them with the mentors. The first stages took place on day 4, and at the end of the day each group presented their idea and justified it and provided us with a list of the materials they will need to design a prototype. On day 5 all groups prepared their prototypes along with a 5 minutes presentation to pitch their product. As part of their pitch they had to present a name for their product, to show the working prototype and provide an estimate cost along with advantages and disadvantages. The groups provided the following solutions/products: a chair that will notify the scientist using different colors that is it time to stand up and walk, a lamp that will change colors and will use colors that make a more relaxing environment, a car/trolley that will operate using color codes and will bring materials to the scientists to help them with their work, and a pillow that will change colors based on the temperature of the lab. The students were free to use any template they wanted for their presentation but they had to present the following aspects: name of the product, description, advantages and disadvantages, estimated cost and a logo for the product.

Input

Through the design thinking process each group was provided the necessary information regarding scientists' lives, and then they explored how to implement the solution they proposed. The main input from the mentors and educators was on engaging them with the design thinking process and helping them to reflect, and then providing feedback on each one of the stages. An important part of the process was pitching their product on the last day, which involved preparing a brief and catchy presentation.

Time necessary

3 hours on the first day and 4 hours on the second day, most of it being group work. They became familiar with scientists and different professions before starting the design process.

Learning outcomes

Through this session participants learn

- the design thinking process
- problem solving
- entrepreneurial skills, including how to pitch their products
- depending on the solution they chose they developed different skills (i.e. some chose to develop the prototype using lego we do, others by constructing the product using real materials)

Costs

The cost depends on the solutions the students will chose plus the printing of the posters for the design thinking process.



Materials

Information on design thinking materials as used in the project:

<https://virtualhackathon.eu/en/roadmap>

Further information on design thinking process for educators:

<https://www.edelements.com/hubfs/Leadership%20Development%20Pillar/The%20Eucator%27s%20Guide%20to%20design%20Thinking%20by%20the%20D.%20School%20Stanford.pdf>

<https://www.makersempire.com/what-is-design-thinking-a-handly-guide-for-classroom-teachers/>

<https://www.celt.iastate.edu/instructional-strategies/teaching-strategies/design-thinking/>

