

DESIGN THINKING APPROACH TO ENGAGE STUDENTS IN ACHIVING HEALTHY AND SUSTAINABLE FOOD IN SCHOOLS

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Abstract

Design Thinking (DT) is a transdisciplinary, non-linear, iterative and user-centered method, oriented towards innovation in areas where challenges are typically ill-defined or unknown (Brown, 2008; Dunne and Martin, 2006). Most commonly, steps and terminology employed to identify solutions (Waidelich et al., 2018) follow those described by the Stanford School (empathize, define, idealize, prototype and test), IBM (understand, explore, prototype, evaluate) and/or IDEO (inspiration, ideation, implementation) (Micheli et al., 2019). One of the most important aspects at the heart of design thinking is collaboration as a means of expanding the innovation ecosystem and seeking new opportunities for value co-creation. Design Thinking techniques have been widely used to better understand user experience and behavior in a wide range of fields (Dunne and Martin, 2006, Olsen, 2015), however, there is still no clear evidence of their effectiveness when used with vulnerable populations, such as school-going children.

To explore how Design Thinking could be effectively used with vulnerable populations, we worked with pupils of Alto Minho primary schools to co-create a concept of healthy and sustainable food as part of the EU Horizon FEAST project (Food systems that support the transition to healthy and sustainable diets), This study presents a new conceptual process of collective mind mapping that uses design thinking to conceptualize healthy and sustainable

diets. The three objectives this study aimed to explore included: i) to identify the main barriers to the implementation of healthier and more sustainable food in the schools of the students who participated in the experience, ii) to co-create solutions for a future of healthier and more sustainable food in their schools, and iii) to define a concept of healthy eating.

Twenty-four students aged between 9-10, attending the 3rd and 4th years of a primary school in Viana do Castelo were included in an activity that lasted 3 hours. The students were divided into four groups of five students and one group of four students. The groups worked on the challenges related to the objectives; the results of their activities led to the co-creation of a collective mental map in a collaborative way, on a sticky note wall.

This study yielded several interesting insights. Methodologically, we used a novel design-thinking based approach, through the use of group conceptual maps, with a vulnerable population in Portugal. Through the use of this novel approach, we were able to reveal the students' understanding of the concepts of healthy and sustainable eating. Interestingly, we found the concept of 'sustainable food' was largely unknown to the children - only one of the 24 students verbalized the definition of the term, relating it to biological production and the preservation of scarce resources. From here, we worked with the pupils to co-design several solutions to promote healthier and sustainable eating in schools as well as potential barriers that would need to be overcome to ensure they were implemented.

The results of this study have provided novel insights into the methods and approaches that can be taken to ultimately build a community of conscious consumers in Portugal who are actively involved in healthy and sustainable actions across their life course.

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References

- Brown, T. (2008). Design thinking. *Harvard business review*, 86(6), 84.
- Dunne, D., & Martin, R. (2006). Design thinking and how it will change management education: An interview and discussion. *Academy of Management Learning & Education*, 5(4), 512-523.
- Micheli, P., Wilner, S. J., Bhatti, S. H., Mura, M., & Beverland, M. B. (2019). Doing design thinking: Conceptual review, synthesis, and research agenda. *Journal of Product Innovation Management*, 36(2), 124-148.
- Olsen, N. V. (2015). Design thinking and food innovation. *Trends in food science & technology*, 41(2), 182-187.
- Waidelich, L., Richter, A., Kölmel, B., & Bulander, R. (2018, June). Design thinking process model review. In 2018 IEEE International Conference on Engineering, Technology and Innovation (ICE/ITMC) (pp. 1-9). IEEE.