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PARTICIPATORY RESEARCH WITH REFUGEES – CAN INDUSTRIAL DESIGN ENGINEERS IMPLICITLY COPE WITH SOCIAL DESIGN PROBLEMS?

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ABSTRACT
In a rapidly and radically changing world, there are more and new complex problems, technical but also social and societal ones. Due to that change, the understanding of design has developed and design education should adapt to this new role. This paper examines design for social contexts as a project in an industrial design engineering program. Does the provided design education enable the students for coping with rather different design problems? The focus will be on a graduation thesis about the local refugee crisis in Germany 2015/16 as a case study. The project aimed to identify and address needs and problems faced by refugees in reception centres by improving their living conditions through a design.
In the case study, the undergraduate student chose a participatory research approach. Generative methods, like Day-in-a-Life, Collage and Lego Serious Play were used to make tacit knowledge from refugees explicit. The data analysis showed that absent occupation is the main problem in reception centres. Furniture concepts for the centres were generated, which refugees can build by themselves. Furthermore, a mobile kitchen prototype and a language independent instruction were developed.
Provided with literature, it was possible for the student to adapt and implement new methods and toolkits, as well as conducting the workshops to design for social contexts. Still, during the design phase, the student stayed in the product design discipline. This leads to the conclusion, that future student projects in the area of social contexts should be incorporated in the industrial design engineering program only if product solutions are required or reasonable. Further, applying participatory research approaches for the development of products for professional contexts should be investigated.

Keywords: Participatory design, generative methods, industrial design engineering.

1 INTRODUCTION

Whereas once industrial designers focused mainly on form, material and manufacturing, design has been refining claims to more complex and challenging social problem solving. In consequence, the design practice nowadays ranges from mere client service to holistic sustainable approaches and design for social change.
Accordingly, design education should adapt to this new role. In effect, there are many new design programs appearing all over the world, for example, M. A. in Transformation Design at Hochschule für Bildende Künste Braunschweig or M. A. in Eco Social Design at Universität Bozen. Still, it is important to convey social responsibility to design students in more traditional industrial design and even industrial design engineering programs [1]. At Technische Universität Dresden, industrial design engineering is taught [2], [3]. The graduate program focuses on design for professional contexts, industrial goods and complex products. Typical graduation project topics would be the design of industrial machinery or vehicles, for instance a harvester for the year 2030. Due to the focus and the limited scope and duration of the program, courses about, for instance, sustainability or system design cannot be incorporated reasonably into the program. Nevertheless, students are encouraged to work on these topics, driven by their own motivation. Due to teaching general fundamentals in methods for design research and designing plus background skills in economics and engineering, the students should be skilled to engage in different kind of problems.

This paper examines how design for social contexts can be a topic for a project at this design education program. The paper is based on the case study of a graduation thesis about local solutions for the refugee crisis in Europe 2015/16. Local authorities and relief organizations were confronted with the task of housing refugees in decent living conditions within short notice. Many reception centres were temporarily established across Germany. The graduation project aimed to identify and address needs and problems faced by refugees in reception centres by improving their living conditions through a design, no matter the discipline (product, service, system etc.).
This research paper should answer the following questions: Does the provided design education enable our students to adapt to a very different field of design problem? Does the student use different research and design methods than taught in the industrial design engineering program? Will the outcome of the project be located in the area of product design or in another design discipline?

2 CASE STUDY

2.1 Setting of the Case Study

The research presented in this paper has been derived from a case study of a graduation project in industrial design engineering. The duration of the graduation project was six months. During this time, every four weeks, the student has been supervised every four weeks. Preliminary results, as well as further steps were presented at each consultation. The student mostly worked independently and only little guidance has been given. Finally, the process and the outcomes were documented in a written thesis report. The following two paragraphs describe the observed student work in the case study.

2.2 Generative Workshops

The general approach and the specific choice of methods both depended on the kind of problem with its requirements and restrictions. In this case, the social problem was local. In close collaboration with the German Red Cross NGO, specific qualitative needs and requirements of refugees ought to be identified and subsequently addressed in concrete design concepts and proposals. Going as far as prototyping and implementation was no requirement. A purposeful combination of research and design activities was planned.
The student chose a participatory research approach, in particular a generative research approach, for the following reasons: First of all, generative research is a qualitative research method, which requires the participants to be reachable for conducting workshops. In Dresden were several temporary reception centres in reach and a close collaboration with the German Red Cross enabled controlled access and contact to the inhabitants. As a marginalized group of people, refugees in reception centres should be engaged actively as experts of their own experience in the design process. Their valuable perspectives can be empowered by generative design methods for creating products or services, which raise their quality of life in reception centres. Secondly, not only language, but also knowledge, experiences or needs of refugees differ in many terms from western imagination as well as within the different refugee groups. Generative research in general uses many intercultural material like pictures or crafting already, which can be easily adapted to fully work for intercultural expression.
For planning the generative workshop exercises and designing the project-specific toolkit, the path of experience (Figure 1) by Sanders [4] was followed. Before conducting the workshops with three different homogeneous groups of 3–5 participants (men from Albania, men from Afghanistan, women from Iraq), the student and each participant groups met for getting comfortable with each other. The meet-up as well as the workshops took place in the reception centres to create a comforting setting for the participants. One week before conducting the workshops, three sensitizing questions were sent out via email to all participants.

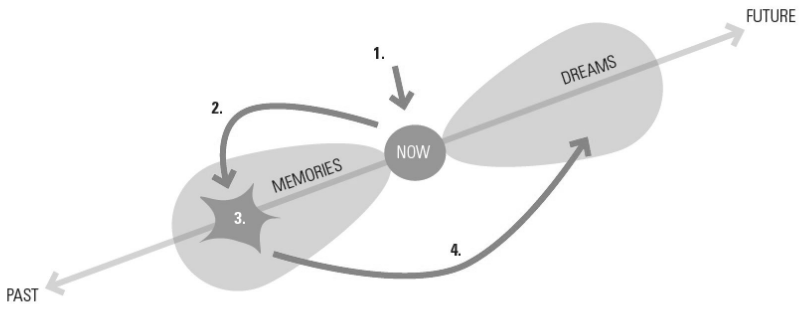

Figure 1. Path of Experience [4]

As first exercise in the workshops, "Day-in-a-Life" [5] the participants were asked to describe their everyday routines in order to gain insight about their life in reception centres. The participants were provided with a storyline toolkit consisting of an icon sticker set, coloured pens and a pre-structured backdrop. The participants used it to map their daily routine on a storyline, distinguishing between good and bad emotions. They supplemented the stickers with their own writing and drawings (Figure 2). For fully expressing themselves, the refugees were asked to write and speak in their own language. An interpreter from the German Red Cross NGO joined the workshops for translating the creative artefacts, as well as for translating the instructions and the verbal descriptions of participants.

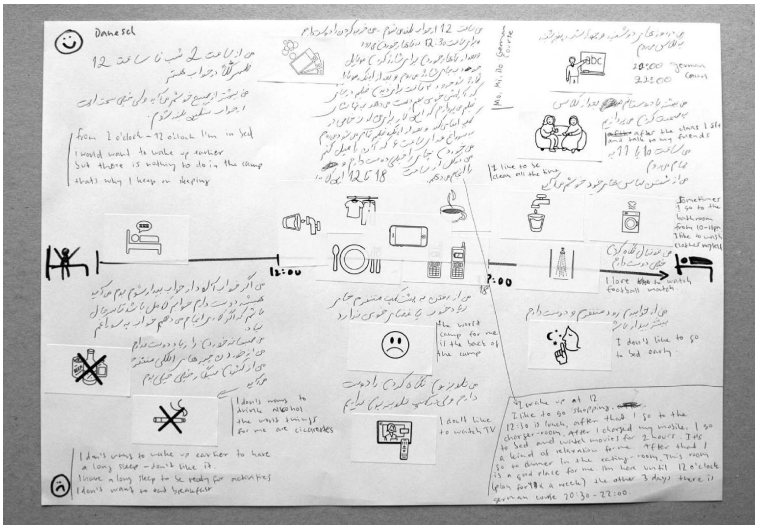

Figure 2. Result of "Day-in-a-Life" exercise

Afterwards, the participants were asked to express their feelings, wishes and problems in a collage [5]. Therefore, they were provided with a set of self-sticking pictures, which function as trigger to evoke memories and experiences and also to reflect on those.

In the last exercise in the generative workshop, the participants could create visions with Lego Serious Play [6], [7] based on their reflections in the previous exercise. The participants were therefore asked to build their desired reception centre (Figure 3). They were given the option between all levels of abstraction. All workshops were recorded with a voice recorder, which the student transliterated and qualitatively analyzed afterwards.

Figure 3. Participants using Lego Serious Play

2.3 Analysis and Design

In generative workshops, tacit knowledge from refugees was made explicit during creative exercises. The exercises gave good insight into the life in reception centres and also showed needs and problems of the refugees living there. The analysis showed that absent occupation is the main problem in reception centres. *„He goes to bed at 2 o'clock in the morning and wakes up at 12 for lunch. He would like to wake up earlier but there's nothing to do. Because of that he wakes up at 12."* is one example for this issue. It is followed by problems like noise during nights, fights or unappetizing food ("*More than four months I'm living here and in the morning and the evening there is the same food for months. And a lot of people can not eat it."*).

Accordingly, the project focused on developing opportunities for meaningful and sustainable occupation in refugee reception centres. The following concept phase combined occupation with missing interior equipment in the centres. Therefore, concepts were generated which consist out of do-it-yourself-construction sets giving refugees the opportunity to build useful products for the centres. An accompanying crafts training could be provided in advance to impart knowledge and teach German vocabulary in the field of the particular craft.

Based on an evaluation matrix involving the refugees, a mobile kitchen concept was chosen as a pilot for further elaboration. In addition to occupation during the phases learning, building and using, social cohesion within the groups can be strengthened. Contacts to locals can be established, while using the kitchen outside in the city. The mobile kitchen allows refugees to occasionally cook their own food in addition to the catering in the reception centres.

A mobile kitchen prototype was developed together with refugees (Figure 4). The steps of production were developed and evaluated for refugees without previous knowledge in woodworking. A course on theoretical and practical crafts training was outlined and a language-independent instruction was developed (Figure 5). Language-independent teaching materials were designed and organizational details for using the mobile kitchen in facility centres were developed.

Figure 4. Prototype of mobile kitchen

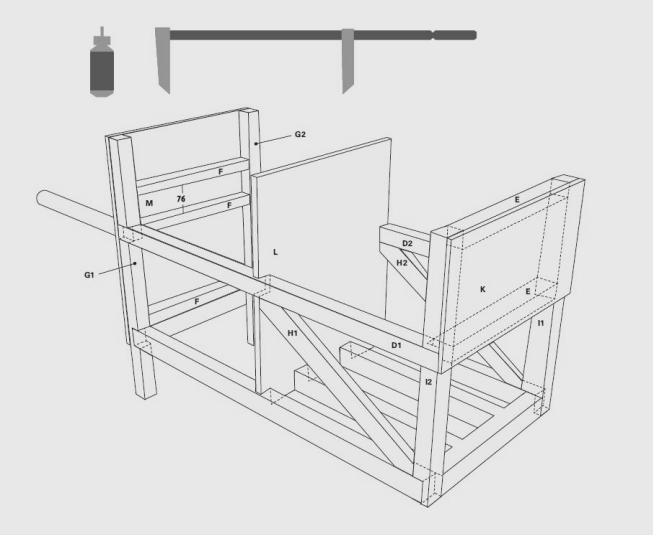

Figure 5. Excerpt from the building instruction

3 RESULTS

With this case study, is has been shown that the student was able to cope with a novel kind of design challenge, adapt new methods for this specific project and successfully implemented them by preparing the toolkits and conducting the workshops. The subsequent concept and design phases built on the derived strong qualitative data. However, during concept and design phase, the student stayed within the product design discipline.

Methods for generative design were chosen and adapted for universal, language-independent application with refugees. Although interpreter supported the workshops, this was intended to reinforce the non-verbal communication between student and refugees.

The first exercise concentrated on the use of icons for mapping daily routines. Pictures for the second exercise were carefully selected to be diverse and have variations in abstractions, content in general, cultural content and ethnos to adapt to the unique situation of refugees. Lego, as universal tool, was used to build future visions in the last exercise.

However, several aspects could be improved when planning to conduct further generative research. The language interpreters, for example, played a bigger role in the workshops then expected. They should have gotten a briefing about the objectives before the workshops to know the importance of exact one-to-one translation. The interpreter also should have attended the meet-ups to ensure that the participants are comfortable talking on front of the interpreter.

Additionally, the icon sticker set has not exploited its full potential. For an extensive use, it was too limited quantitatively. More universal symbols could have been incorporated. Although not every participant had used Lego before, this tool worked very well and the participants expressed themselves differently.

4 DISCUSSION

In general, it has been shown that in this case study the industrial design engineering student was able to adapt unknown methods for a – to her novel and – different field of design problem. The generative research methods have not been part of the education program before; instead, the student gained this knowledge from provided literature [5].

This student project has shown that participative, generative research methods generate excellent qualitative data for a design problem. For completion, basics of generative research methods could therefore be incorporated into the teaching program, as it already is at TU Delft [8]. However, applying participatory research approaches for the development of technical products for professional contexts should be further investigated.

Regarding the outcome of the project, the question arises whether this was the best solution or only the best known (product design) solution. The result of the project is a product for reception centres, a small-scaled solution, which only addresses the symptoms over the core of the problem. A large-scale solution on the other hand, like a service or system, could have changed the cause of the social

problem. This refers to the educational background of the student: industrial design engineering. The student went as far as adapting methods from neighbouring design disciplines, but stayed in the product design area during the design phase. This effect leads to the conclusion, that future student projects in the area of social contexts could be incorporated in the industrial design engineering program only if product solutions are required or reasonable.

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