



## People's empowerment in design process through product personalization for sustainability

*Research Through Design Case Study*

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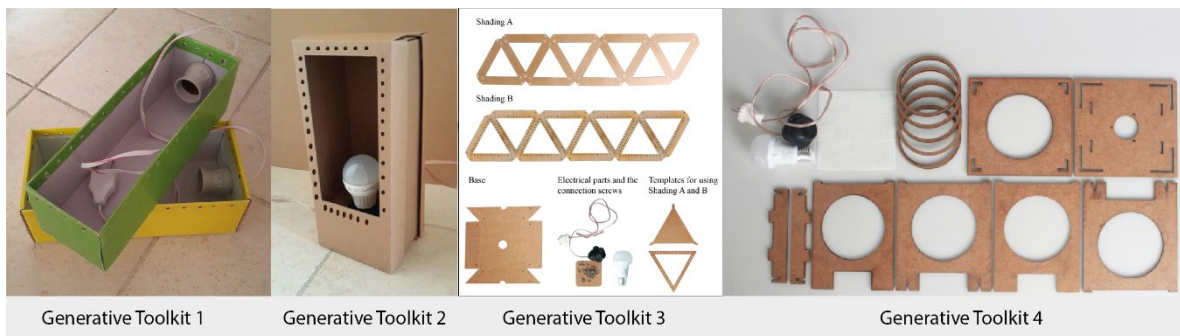
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### *Abstract*

Product personalization has potentials in prolonging product lifetimes through strengthening person-product relationship. While designing products for sustainability, the factors such as local production, maintenance, repair, re-use, upgrade, etc. also need to be considered. In this context, this study focuses on the ways of empowering people in the design process through product personalization at the local level, and the implications of this for product design for sustainability. The study adopts research through design approach and generative research is integrated into this methodology. The study consists of two main components which are the preliminary study and the generative research.



The preliminary study phase 1 and 2 explore the products personalized by people and the personalization process through semi-structured interviews and an online questionnaire conducted with people who personalize their products (e.g. furniture, electronics, etc.), respectively. In the generative research phase 1, a half-way lighting design exploration was developed and it was personalized by various participants in a

design workshop and follow-up generative sessions. In the second and third phases of the generative research, two lighting design explorations were developed based on



two diverse design scenarios, focusing on product personalization with the use of post-use materials and product personalization for practicing a craft skill, respectively. These were personalized by the participants addressed in these scenarios in the generative sessions. The study reveals the dimensions of personalization important for sustainability and their interrelationships, sustainable design considerations for product personalization, and the ways of incorporating product personalization into design research for people's empowerment.

### *Summary of research through design activity*

The study adopts research through co-design method during which generative research is integrated into research through design process.

In exploratory phase, people's product personalization practices were explored through interviews and an online questionnaire. Based on the results of this phase and a literature review on sustainable design considerations, a half-way lighting design was developed. This was personalized by ten participants with various skills in a 2-hour design workshop as the first generative study, focusing on developing design details enabling personalization. Data were collected through generative toolkits and questionnaires. Considering the insights gained from this phase, the generative toolkit was developed further and in the second generative study, it was personalized by two participants with repair and craft skills for one week. Generative toolkits, diaries, photo documentation by participants and interviews were used for data collection.

These studies revealed that, developing specific contexts and scenarios for the design process was needed. Two design scenarios (i.e., affordability and practicing a craft skill scenarios) were developed by analysing people's personalization goals and the related products gathered through the preliminary study.



Based on the previous phases and requirements of the affordability scenario, another design exploration enabling personalization using materials in the post-use phase was developed. It was personalized by six university students in a three-hour design workshop and at participants' homes for one week. Generative toolkits, questionnaires, focus group session, diaries, photo documentation by participants and interviews were used for data collection.

For the practicing a craft skill scenario, another design exploration which can be personalized using embroidery skills was developed. It was personalized by six women having embroidery skills for two weeks at participants' homes. Generative toolkits, diaries, photo documentation by participants, interviews and think-aloud protocols were used for data collection. In all phases, verbal and visual data were analysed with content analysis.

## *Underpinning research, context and summary of methodology*

The study began with a literature review on product personalization and its dimensions, and practices and sustainability approaches enabling personalization which revealed various sustainable design considerations. In parallel with the literature review, the exploratory phase involving semi-structured interviews and online questionnaire was conducted. This phase extended the dimensions of product personalization existing in the literature and the relationship between them and the sustainability considerations was revealed. Literature review and the exploratory phase informed the design phase. The exploratory phase also helped the researcher to generate design scenarios and personas for the design phase in generative study 3 and 4.

Four case studies were conducted in the study with the aim of theory building (i.e. developing sustainable design considerations for product personalization). In each case, a design exploration was developed and it was personalized by various participants in generative studies. Generative research was integrated into the research through design methodology, since it was necessary to explore people's interactions with the design explorations enabling personalization to understand the implications of product personalization for sustainability.

Grounded theory framework (Glaser & Strauss, 1967) was adopted in the study. Theoretical sampling, simultaneous progression of data collection and data analysis, open coding of the data, and cross-comparison of the cases involving generative research were the characteristics of the framework used in the study. Through the simultaneous progression of data collection and analysis, each phase determined the planning of the next phase. Thus, each case study informed the research design and



design phase of the subsequent study and various sustainable design considerations for product personalization were generated in each case. Theoretical sampling was used as a tool to identify the design considerations to be addressed in each study through comparing the results of a study with the previous one, and to select the participants based on the theoretical constructs developed through the previous exploratory and generative studies.

I was a designer/researcher while conducting the exploratory studies and designing the toolkits, while in the generative research phases, I also took on the role of the facilitator of the personalization process of the participants. This necessitated providing the right tools for the participants' creative involvement in both the personalization process, and more importantly, in expressing themselves. Thus, various data collection tools were used specific to the research contexts such as developing separate data collection tools for the design workshops (e.g. questionnaires, focus groups) and the individual generative sessions (e.g. interviews, think-aloud protocols, diaries). At the end of the research process, I collected many layers of data through the use of various data collection techniques for triangulation and to increase the credibility of my research.

The study revealed sustainable design considerations developed through the case studies, lighting designs exploring these considerations, and insight into incorporating product personalization into design research, which were presented in a written thesis.

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