

Extended research plan:

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From:

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Working title for my thesis:

Disabilities as resources for innovation;

Creative problem solving and product design for young disabled adults at home and in society

Background and purpose

Carefully designed products for use by people with reduced abilities in everyday life will increase the degree of independence and contribute to an increased degree of activity, well-being and self esteem. In addition to the products' specific functional characteristics, they need to have a design that will be experienced as considerate and pleasurable. These emotional product qualities are not as well investigated as the functional ones.

More independent and satisfied users do not need to rely as much on their family or care personnel. Products which, from the very initial stage, are designed to meet both functional and emotional needs, will be positively charged for users. In that way attractive products can be achieved which the user feel proud to use. Such products may also contribute to the Universal Design perspective, the possibility that they will appeal to a larger group of users than which was originally intended.

Universal design is a central concept in my research work. Universal Design can be defined as "the design of products and environment to be usable to the greatest extent possible by all ages and abilities" (Mace, 1990). Originally, the focus of Universal Design was mainly on the functionality of products. I would like to *integrate emotional dimensions of products with the functional within the frame of Universal Design*. The aim of my research project is to by means of user participation, develop and evaluate methods for integrating emotional and functional product dimensions. For my user group (young disabled adults) this would contribute to personal wellbeing, pleasure and to how others look upon and approach you. A coming part in my research work will be to evaluate methods for releasing creativity from complex constraints for product design, hence how one can use the requirements from disabled persons as sources for innovation.

Theoretical framework and scientific approach

My research project refers to several different areas considering the theoretical framework. Most central are, as mentioned above, theories around concepts such as universal design, inclusive design and design for all. How to make products more accessible for different groups of people in society and of benefit to most groups of users? Since these theories, especially universal design, are focusing on functional values of products, I would like to integrate emotional values in this discussion, which means that concepts such as emotional

design, perception by the five senses, cognition and product semantics are important for me to understand.

Users of the group chosen for my work have higher requirements regarding products in their surroundings, in that way that they often need some extra or assistive products to be able to take part of the ordinary product range. This means that to consider these requirements within product design and development, there is a possibility to use them as a source for innovation. Consequently theories around creativity and technical innovations also may be included in this project. During my first sub-project (mentioned in more details later on) I became aware about grounded theory as a scientific perspective. For now at least one part of my research has grounded theory as a scientific approach I have not decided yet if the whole work will have a grounded theory approach or just this first part.

Methods

Three stages could be summarized within my research work. The foundation is *literature studies and interviews*, now ongoing, with young adults with different types of disability. The interviews are about products in these persons' surroundings, products that they feel are lacking some functional and/or emotional dimensions or situations where products are missing. The aim of the interviews is both the product itself but also how the person describes a product's emotional dimensions. After and in some part parallel with the interview phase there will be a *case study* consisting of preliminarily five cases. Three of them (case A, B and C) consider different products from the interview study which all will be included in a design process where methods for integrating emotional and functional dimensions will be evaluated and further developed. Case D is ongoing, where I am a participant observer of the design process in a furniture company. I also consider having a fifth case (E) where I will follow our students' design process from a perspective of creativity, in order to introduce different methods for releasing creativity. Finally the findings of my thesis work will be *analysed and concluded* for future application in industrial design practice.

I started my research with the *literature study* on methods for user involvement in the design process; this study has partly resulted in an article to be submitted to a scientific journal. Focus is on methods and tools for communication with users. The article presents a review of different approaches for communication with users within the design process.

Next step is the *interview study* which is ongoing. Until now 7 persons were interviewed, they are all young adults with disabilities, aged between 18 and 30 years, living in Southern Sweden. Their disabilities are different regarding type and degree, for example visual, hearing, physical and cognitive impairment. The aim of the interviews is to find some products or product areas within these persons' surroundings, in both their home and their working environment, which they in some way are dissatisfied with. The focus is on everyday products and common assistive products, i.e. not impairment-specific products such as wheelchairs. In the interviews, especially emotional dimensions of products are included, besides more traditional functional qualities. The interviews are organized to be individually adjusted for each occasion, since each respondent's specific disability is different. The format of the interviews is semi-structured with thematic questions which allow free scope for the respondent to develop the themes. The initial conversation is performed at a neutral place in the surroundings of the respondent. Time for the conversation is 1 to 1 ½ hour. The interviews are analysed with inspiration from grounded theory. After 7 interviews the data have not

reached full saturation; new perspectives are still found. Three or four more interviews are planned, but if the material is still growing, more interviews may be considered.

The case study is in progress where methods for user involvement in the design process are focused. The case study consists of five different cases (A-E) which all will illustrate different perspectives of the design process. Case D has a company perspective; this study is running parallel with the interview study. As a participant observer, I am following a furniture design company and a new product project. The case started with an initial interview of the managing director. The geographic diary method is used for documentation. In the case, there are two different types of diary, one geographic, describing exactly what happens during the project and one more reflecting describing how different actors experience what happens. The data to analyse will be from two geographic and four reflecting diaries. The analyses will focus on how and to which degree users are involved in various phases of the process.

Case A, B, C will start from three different products or problem activities chosen from the earlier described interview study. These will be transformed through a design process. I will probably be the designer myself, at least in some of the three cases. The reason for doing that is to have a possibility to combine theoretical and practical design within one and the same thesis. If the results from the geographic diary from case D are good enough, this method for documentation will probably be used in case A, B and C. The analyses from these three cases will focus on both user-involvement and creativity. Case E will focus on creativity. The participants will be students from the undergraduate industrial design programme at LTH. Some of their student projects, and especially their design processes, will be documented and analysed. This will be done by creating a “green-house” for creativity; a kind of workshop, a physical room as other workshops in which the students usually work with different materials as wood, metal and plastic. In this room it will be possible for the students to use different techniques for creativity, and there will be a possibility for me to observe a range of different design processes.

Expected results

The expected outcome of my research project is methods that in some way can be used by industrial designers as professional and competence-increasing tools regarding involving users in the design process, especially how to pay attention to the requirements of young disabled persons, focusing on integrating emotional and functional aspects within universal design. As industrial design is a young research area, my work will also contribute with tools and methods for industrial design research not the least at our division. And hopefully my work will contribute with new knowledge about emotional relations between users and products.