

# NORM CREATIVITY IN STUDENT DESIGN PROJECTS - ONE APPROACH TO CREATING SUSTAINABLE SOCIETIES

**Therese ÖHRLING, Jörgen NORMARK and Åsa WIKBERG NILSSON**  
Luleå University of Technology

## **ABSTRACT**

Design Engineers are capable of changing inequality through a design approach and design solutions. Therefore we as design teachers should consider it our responsibility to educate students to recognise inequality as a dimension of emphasising with potential future use and users. We believe that there is a current societal need for educating our design engineer students about such matters, in order to create more sustainable societies. Norm Creative Design is described as design approaches that include critical thinking of current use and users, with special emphasis on challenging current norms. Thereby, Norm Creative Design challenges current inequality to explore broader what-if scenarios for innovative solutions ranging from radical and critical designs to inclusive design solutions. This paper exemplifies how Norm Creative Design approaches are implemented in a course at Industrial Design Engineering [IDE] at Luleå University of Technology [LTU]. In design projects the students discuss how norms and examples of unawareness can exclude and discriminate people. The students are also provided with a number of design strategies for challenging norms which range from radical designs with a dual intent of thinking new and diverse, and stimulating discussions of ethics and discrimination, to inclusive design-for-all, including a diversity of people in the design solutions. The course outcomes includes students becoming broad need finders, and inclusive design thinkers, with skills in conceiving, designing, implementing and operating design based on a broad ethical and norm critical perspective. In our view, such skills should be part of teaching and learning activities in all design/engineering educations.

*Keywords: Norm creativity, design thinking, social sustainability, gender inequality, student project*

## 1 INTRODUCTION

A design engineer has the possibility to challenge inequality through different design approaches and design solutions. One might even argue that this is an ethical and moral responsibility, as part of an engineering code of honour [1]. As teachers in an Industrial Design Engineering [IDE] programme, we consider it our responsibility to educate students to recognise inequality as a dimension of emphasising with potential future use and users. We believe that there is an urgent and current societal need of educating our design engineer students about such matters, in order to create more sustainable societies. Design students should hence be aware how norms, values, and other social constructs are produced and reproduced in society through design solutions and design interactions. For realising this, we need a teaching and learning practice in which students become aware of inequality, and in which they learn design strategies that challenge inequality. In this paper, we exemplify how Norm Creative Design approaches are implemented in a course at IDE at Luleå University of Technology [LTU].

## 2 NORM CREATIVE DESIGN

There are several different approaches, or ideologies, that address the normatively in products, services, and environments, e.g. ‘universal design’ [2], ‘inclusive design’ [3], and ‘critical design’ [4], [5]. There is a risk of such approaches addressing one perspective, at the expense of others. For example, addressing the perspective of people with reduced functionality might lead to problems for people with impaired vision, addressing only women, risks contributing to strengthening norms about women being different compared to men, and also risk not considering people who don’t address

themselves as man or woman, and so forth. An alternative is Norm Creative Design, which by Alves, Ehrnberger, Jahnke and Wikberg Nilsson [6] is described as a design approach that include critical thinking of current use, users, products, services, and environments, and creative use of different tactics and methods to address the particular context. The overall objective with the norm creative approach presented in this paper is to illustrate a diversity of strategies that includes different perspective, not stating that this is the one and only approach, but exemplifying a lot of different strategies that address various perspectives. Thereby, Norm Creative Design challenges current inequality to explore broader “what-if” scenarios [7], in order to create innovative solutions ranging from radical and critical designs to inclusive design solutions. Norms and values can be explained as both explicit and implicit principles that keep societies together [6]. However, sometimes they exclude or obstruct some people from interacting with products, services, or environments on equal terms. This is where the design responsibility comes in. Students should be educated in becoming more knowledgeable of how norms can contribute in excluding or including certain categories of people, and learn of different strategies to become more aware of this.

Norms and values that exclude are seldom outspoken. Rather they are often abstract and implicit in the way we categorise and address target groups, and in the way we design interactions. Norm Creative Design can have different objectives and draw on different tactics, such as highlighting unnoticed discrimination, or creating concrete solutions to well-known excluding solutions. Like Law [8], we emphasise that methods have a performative nature, contributing in shaping the world around us. The Norm Creative Design approach implemented in the current cases is a set of strategies called NOVA, which are tools to address various situations [6]. These design strategies range from radical designs [4] [5] [9] with a dual intent of thinking new and diverse, and stimulating discussions of ethics and discrimination, to inclusive design-for-all [10], for including a diversity of people in the design solutions.

One Norm Creative Design tactic included in NOVA is for example ‘*the plastering trowel*’ [6], which aims at creating solutions that are suitable and work for as many people as possible, with ergonomic, easy-to-use interactions, and creating forms, styles and interactions that are universal. The challenge in such an approach is to meet user needs without categorising. The idea is that as many people as possible should be included, e.g. public toilets that are not gender- or wheelchair segregated, also have changing tables for babies, and are designed for all, regardless of physical capability. When most people think of creating solutions that are not discriminating, such universal design approaches are usually what comes to mind. However, one should keep in mind that things that are considered as ‘neutral’ often reflect implicit norms. For example, in many Western countries white is often seen as a neutral colour, reinforcing a whiteness norm. Keep in mind that such tactics also risk trying to squeeze everybody into a new uniform one-size-fits-all solution. A contrasting approach, also included in NOVA, is the Norm Creative Design tactic ‘*the sledgehammer*’ [6], involving creating objects and situations that promote understanding through concrete experience. This tactic is a critical approach involving explorations of reversed bodily experiences, for example, how would it feel to be walking in an environment that has been fully adapted to fit people in wheelchairs, with for example very low doorways, instead of the other way around? Creating such an environment and inviting people to try out the experience can raise awareness of the everyday exclusion experiences of people in wheelchairs’. Another alternative, also included in NOVA, is the Norm Creative Design tactic ‘*the twirl whisk*’ [6], a tactic that aims at avoiding expressions that can be perceived as problematic, or counteractive to the goal. This tactic takes back, affirms, and reinvents problematic expressions. For example, blend or combine what is seen as problematic characteristics, e.g. combine stereotypical homogeneous expressions such as floral *with* dangerous laser beams, blend dark *with* glittery, and so forth. This tactic does not only recognise diversity as an expression of its own, but also creates opportunities for new experiences and outcomes.

### 3 IMPLEMENTING NORM CREATIVE DESIGN THINKING IN DESIGN EDUCATION

The course where Norm Creative design thinking is applied is a 15 ECTS design course for second year IDE students. About 45 students attend the course each year. The learning objectives in the course includes development of practical design knowledge in a number of areas; for example, form giving, product semiotics, aesthetics and colour, in order to develop understanding of how such design principles can be implemented to express, for example, obvious, informative, explanatory, or for some

users, even obtrusive design outcomes. We argue that even though common design principles can be highly helpful for the designer and a cornerstone in the design education they can to a high extent reflect current norms. In this course the students need to look beyond current norms and apply those principles in a design project, which aims to challenge these stereotypes and norms. To provide a bounded design space to explore and immerse within, the overall theme of the project is “exercise and wellbeing”. The final design solutions need to be represented in a physical artefact at the end of the course, based on learning objectives including both developing skills in model making and prototyping, and insights in, for example, form and aesthetic principles.

Before the actual project start the students have a lecture in Norm Creative Design [6] where good examples on Norm Creative Design solutions are given. The students discuss norms and examples of how not being aware of how norms can exclude and discriminate certain people, and they are also provided with a number of design strategies for challenging norms from the NOVA tool kit [6]. As the first step in the design project the teams, consisting of 4-5 students, apply a norm critical approach in a context immersion where they investigated the theme exercise and wellbeing. The students need to identify an actual problem or challenge, i.e. a situation where some people are excluded or disadvantaged based on existing norms regarding who can and will interact with a situation, product or service.

The second project phase includes literature reviews of current knowledge and examples, as well as interaction with stakeholders for the identified design challenge in order to better understand the situation and to verify that the problem or challenge actually is present. The student team’s then moves on to an ideation phase where they apply a variety of design methods learned in previous courses together with the methods for Norm Creative Design [6] in order to find solutions for the identified challenges. The project continues with an implementation phase where the students work with prototyping and mock-ups to visualise and explore their design solutions.

Throughout the design project the students are instructed to document the design process and to write down their individual reflections in a design workbook, which is also the examination of the course. The main purpose of the reflections is to contribute to the students overall learning processes in the course and to make the students more aware of what their design solutions might contribute to when challenging norms and how they can contribute to a sustainable society through inclusive design.

## 4 RESULT

Results on different levels are displayed in this paper, i.e. student learning, design outcomes from the student project, and course evaluations with survey questions directly addressing the norm creativity part.

### 4.1 Student learning and reflections on norm creativity

The first step in the design project, where the students need to create their own design briefs by identifying and evaluate situations with a norm critical approach, has resulted in a broader understanding of inequality based on norms and stereotypes among the students. The students identify different user needs, or finds that many people have the same needs but the way those needs can be fulfilled differs depending on e.g. physical differences. In the beginning of the project some of the students expressed insecurity about Norm Creative Design thinking, because these were new theories and methods for them. This can be exemplified by this quote from an early reflection in one of the student’s workbook:

*“Are we really supposed to be norm critical and still stick to the theme health and exercise? That sounds really hard. And are we on top of that in the same project, supposed to apply the design process we learned in the design method course?”*

In a later reflection the same student wrote:

*“To work with a norm creative approach in the project has been very rewarding now when I think about it after finishing the project. Since we put so much effort and time to identify the problem and user needs it felt that we did contribute to a good thing, and that it was carefully thought through.”*

Another student wrote as a late reflection:

*“The most important thing I have learned in this course is the part of norm creativity. It has broadened my view of what I as a designer can do. We as designers affect the society and that can turn out bad if we are not questioning today’s design solutions from a norm critical perspective. This course has been about how social issues can be brought into the light through design. I will take with*

*me that I need to be aware of norms, and not reinforce those norms through design but to challenge them in order to include everyone.”*

#### **4.2 Result of student projects**

The design briefs made by students displayed a wide range of identified problems and design outcomes and an equally wide array of design solutions. Initially, we as teachers believed that the student teams to a high extent would have chosen to address gender inequality. However, about half of the teams had instead identified situations which discriminated or excluded people based on different kind of physical variations e.g. people with balance issues, people using wheelchairs, short people, people with vision loss, and people with reduced hand function. One of the teams took for this course a somewhat different path and addressed the issues of the norm of being skinny in the ways of critical design [4] [5]. Their design solution turned out as a product that raises questions and demonstrate the absurdness of that norm in an interesting way rather than providing a solution to the problem. Figures 1 to 5 show some of the final design models that visualise norm creative solutions.



*Figure 1. Flower shaped dumbbells that challenge the masculinity norm at gyms. The heavier the dumbbell is the more traditional female coded it gets*



*Figure 2. A dumbbell with adjustable and hidden weight. Only the user knows how much weight is loaded in order to challenge the sometimes unhealthy and risky norm of too heavy lifting at the gym*



Figure 3. A unisex ski boot not coloured in traditional coded female or masculine colours and is available in both small and large sizes



Figure 4. A cane with a sporty expression in order to appeal to a wide range of users in sporty and active situations



Figure 5. Bottle designed for people with reduced hand function, yet a good example of design for all.

### 4.3 Course evaluation survey

A course evaluation with the response rate of 82% was conducted at the end of the course. The survey was based on both quantitative assessments and freeform questions. The qualitative questions were formulated as statements where the students graded their level of agreement on a six-grade Likert-type scale, where 1 represented “Strongly disagree” and 6 “Strongly agree”. According to the survey the students were overall pleased with the course as the mean ranking of the statement *My overall impression of the course is good* was 4,7. The statement *To formulate our own design brief did improve my learning* was ranked 4,8 and the statement *A norm creative approach in the design projects did increase my understanding for how design affect the society* was ranked 5,1. NOVA as a method was also evaluated with the statement *NOVA, as method, was helpful in the ideation phase in the project* and was ranked 4,5.

The students also answered a freeform question regarding working with norm creativity. Overall the students reported positive feedback. Students stated that they had been enlightened with a new area and way of thinking and that they now better understood the differences in user needs and the importance of a broader and more inclusive and norm critical mindset in the conceive phase. Some students also stated that they now got a better understanding of how different people perceive colour and form and also *why* that is. Students' also wrote that they got a bigger understanding for the importance of the conceive phase overall in the design process and how much work that lies behind a good design that fits and includes more people.

The students also perceived NOVA as a useful tool in the ideation phase and they found that a norm creative approach to be a good strategy to identify user need from a broader perspective.

## 5 DISCUSSION AND SUMMARY

The outcomes of the norm creative project show results that differ from other more traditional Industrial design engineering projects. In some other projects students either solve a design problem provided by a company or organisation or solve a hypothetical design problem delivered as a case. Both these approaches can generate suitable and well thought through solutions to these design problems. Another procedure is that the students find and formulate sometimes open-ended design problems themselves. This can lead to a rejection of the original ideas of what the problem consist of and instead generate a completely different set of suitable solutions. However, by introducing this norm creative approach both these aspects are considered: What is the most pressing actual issue with the identified design problem and how can a well-defined solution be delivered? These norm creative solutions have the possibility of being both more innovative and more usable for the intended target group. In addition, these design solutions have the possibility to incorporate previous course knowledge in form, colour, semantics, aesthetics and so on in a pedagogical way when the students have to constantly consider how these aspects affect the user and the current norm that they are trying to address instead of creating a solution based on the design teams own preferences.

We believe that the implementation of Norm Creative Design thinking in the course has resulted in students becoming broad need finders and inclusive design thinkers, with skills in conceiving, designing, implementing and operating design based on a broad ethical and norm critical perspective. In our view, such skills should be part of teaching and learning activities in all design/engineering educations, based on what kind of future society we would like to live in. We argue that knowledge about inequality as it comes to gender, ethnicity, sexual orientation, age or different kinds of disabilities, need to be acknowledge as important in our design educations in order to design a sustainable society.

## REFERENCES

- [1] The Swedish Association of Graduate Engineers (2017) Code of honour. Available at: <https://www.sverigesingenjorer.se/Global/Dokumentbibliotek/Hederskodex%20ENG%20till%20webb.pdf> (2017-11-23).
- [2] Law, Chris M., et al. (2008). "A systematic examination of universal design resources: part 1, heuristic evaluation." *Universal Access in the Information Society* 7.1-2, 31-54.
- [3] Keates, S. & Clarkson, J. (2003). *Countering design exclusion: an introduction to inclusive design*. London: Springer.
- [4] Dunne, A. (2005). *Hertzian Tales: Electronic Products, Aesthetic Experience, and Critical Design*. [Electronic resource]. Cambridge, Mass.: MIT Press.
- [5] Dunne, A. & Raby, F. (2013). *Speculative everything: design, fiction, and social dreaming*. [Electronic resource]. Cambridge, Mass.: MIT Press.
- [6] Alves, M., Ehrnberger, K., Jahnke, M. & Wikberg Nilsson, Å. (2015) *NOVA- methods and tools for norm creative innovation*. Stockholm: Vinnova.
- [7] Brandt, E. (2006) Designing Exploratory Design Games. *In Proceedings of Participatory Design Conference, Aug. 2006, Trento, Italy*.
- [8] Law, J. (2004). *After Method: Mess in Social Science Research*. London: Routledge.
- [9] Ehrnberger, K., Räsänen, M. & Ilstedt, S. (2012). Visualising Gender Norms in Design: Meet the Mega Hurricane Mixer and the Drill Dolphia. *International Journal of Design*, 6:3, 85-98.
- [10] Clarkson, J. (red.) (2003). *Inclusive design: design for the whole population*. London: Springer.