INTERNATIONAL CONFERENCE ON ENGINEERING AND PRODUCT DESIGN EDUCATION
7 & 8 SEPTEMBER 2017, OSLO AND AKERSHUS UNIVERSITY COLLEGE OF APPLIED SCIENCES, NORWAY

CHALLENGING BRIEFS; LEARNING THROUGH CLIENT AND DESIGNER ROLES IN FRESHMEN DESIGN EDUCATION

Philip EKSTRÖMER, Mats NÅBO, Vanja PAVLASEVIC, David EKLÖF and Renee WEVER
Division of Machine Design, IEI, Linköping University

ABSTRACT
This paper details an exploratory study of a design brief exchange method, using freshmen students in the beginner course Introduction to Design and Product Development at Linköping University as a case. In design projects for clients, the design brief, irrespective of whether it is an explicit document or not, is generally seen as a critical step towards successful outcomes. From a design didactical perspective, it is a relevant question how to empower design students to engage with client-drafted briefs. In the proposed design brief exchange method, a student group drafts a design brief which they hand to a second group, while receiving a brief from a third. Every group thus performs both a client and designer role. A study was conducted on twelve student groups of 6-7 students each to investigate if and how the proposed method supports teaching students to cope with ambiguity. The students were, at several times during the course, prompted by staff to reflect on the brief they drafted in the role of clients as well as the brief received in their role as designers. Reflections were based on a set of questions and written in their project journal used for documentation in the course. Students' and examiners reflections suggests that this is a promising approach to engage students in questioning client-drafted briefs and handle the ambiguity of design challenges.

Keywords: Studio-based learning, New Product Development, front-end of innovation, design brief.

1 INTRODUCTION

A brief, often called design brief, creative brief or mission statement, is a written description of a design project [1, 2]. It has several functions: agreeing on the scope of the project, making sure all parties are on the same page and for verification. But it is first and foremost a description of the design problem that needs to be solved. It is often considered as the formal starting point of a design process and is of great importance for the success of the project [1, 2, 3].
When handed an open ended design brief, design students often complain about uncertainty [4, 5, 6]. Professional designers on the other hand often wish their clients would be less restrictive and stop limiting their creative freedom. As real-life design problems are increasingly moving towards being ill-defined, requiring designers to handle insufficient information and making decisions based on contradicting requirements, it is a relevant question to explore how to teach students to develop a more professional relationship with design briefs and become more confident with handling ambiguity, here meaning uncertainty and multiple possible interpretations.
The current literature on design briefs mostly concern what to include in a design brief and how to write it, and design briefs in educational settings have so far not gained much attention in this literature. The difference between professional and educational design briefs is that the former is more concerned with the expected outcomes and how to achieve them while the latter also has a pedagogic focus on understanding the design process and students' reflection on the outcome [8]. In design engineering education the brief is traditionally developed by the teachers, to ensure reasonable project scopes for the students. Other, less common, approaches are to let students, or student groups, write their own briefs or have them write design briefs for each other.

Some important issues for educators regarding making design briefs for student projects are:

- Preparing new design projects for students is quite time consuming, time that could be spent on education or supervision
- Teacher-created projects make the teacher both supervisor and client, which may cause problems when supervising
- If students are doing projects based on target groups and problems they found themselves, there is no client they can interact with

At Linköping University, these problems were first addressed 10 years ago in a 4th year elective course on wood engineering where a method for brief exchange has been used since. In this course, the examiner assigns every student group a company (in this case a furniture company) and the students are to write a brief using that company as the client. This brief is then handed over to a second group. No structured data has been collected, but students in the course have found that it creates relevant design problems and that it is instructive to write a design brief for a real company. Bohemia et al. [7] used a similar way of exchanging briefs in a distributed studio course. In this course, they let student teams in two different countries develop a design requirement list and write a design brief for a product suitable for their own country, after which they exchange their design briefs [7].

The design brief exchange method described in this paper had its first use in the autumn of 2016. It was used in a basic design course, Introduction to Design and Product Development (IDPD), for first-year industrial design engineer students. Given the positive experiences in the wood engineering course for 4th year students, it was thought that it could also be used early in the industrial design engineering education to ensure that the students are prepared for ambiguous challenges in later years. In addition to teaching the students to write design briefs, the learning objectives were to teach them to handle ambiguity in design projects, which is explored in this paper, as well as the value of gathering data from real users. The brief exchange method used in the study is explained in detail below.

1.1 Design brief exchange method

The student groups were tasked with finding a target user group and a problem which they could base their design brief on. After writing a brief, every group handed over their brief to another student group in the course, see Figure 1 below. The groups were then clustered with two others to form a larger discussion groups (1-4 in Figure 2 below) so that the briefs where exchanged within a circle of three groups. The briefs in this study were both written documents and presentations, and ranged from a few sentences to half a page. Below are two examples, English translation by main author.

"At Kött&Rött, we value service. Without healthy and happy staff it is impossible to deliver a high quality service. We have discovered a nationwide problem, which is that the warm and heavy plates cause difficulties when serving. In some cases there have been wrist injuries and low degree burns. ***We are calling for a product that facilitates serving and aids in avoiding injuries."***

"Our cleaning staff experience frustration when they clean the floor and have to put down brooms, mops and vacuum cleaners to, for example, move chairs or open doors. The equipment is perceived as awkward and clumsy allowing these simple tasks to become stressful and time consuming. ***We at Mega Rent are looking for a product that solves this problem."***

One week after the first brief was written and handed over to the designer group, every group met up with their client group to discuss their interpretation of the design problem. After this meeting, the brief was considered final and the groups started working on their design problem. The groups stayed in contact during the whole IDPD course and the client group took part in the concept selection.

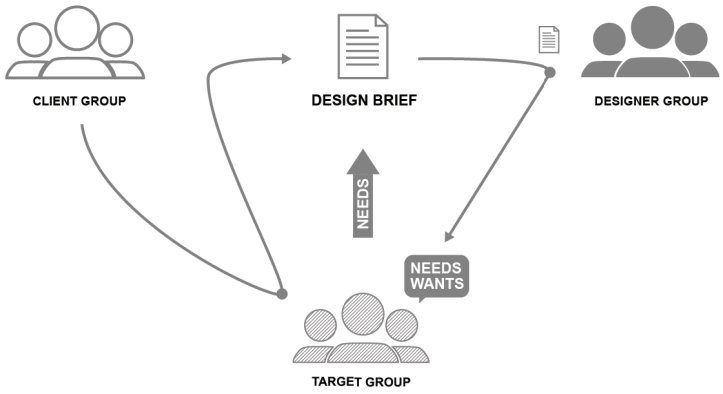

Figure 1. Creating the design brief. The client group collects needs from their target group which they form into a brief that is handed over to the designer group. The designer group then revisits the target group to gain additional information.

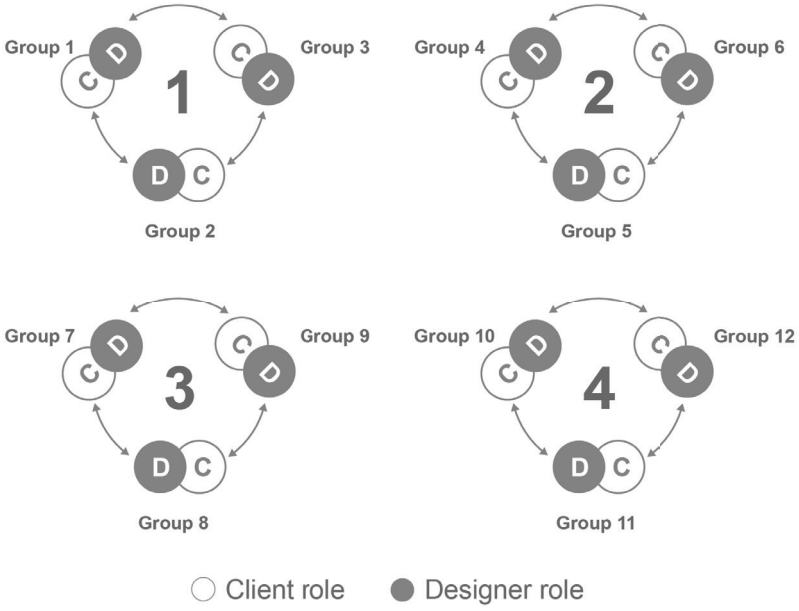

Figure 2. The four discussion groups (1-4) with 3 groups in each. Every group (1-12) adopts a client role (C) when they write the brief, and a designer role (D) when they develop the product that fulfils the brief.

2 CASE

The study was conducted on 79 first year design engineer student, divided into 12 project groups with 6-7 students in each. The project groups were then divided into four discussion groups with three project groups in each. The students were informed about the study during a lecture and the rest of the communication was kept via the online study platform Lisam. They were prompted by the staff to reflect upon their process, based on a set of questions, in their project journals used for documentation in the course. The questions were divided into two parts, a first part on the brief they wrote and the brief they received and then a second part on what happened with the design problem space after the meeting with their client group. The entries related to the study were extracted from the project

journals and the answers on the first part were sorted into themes that emerged during the sorting process. In the second part, concerning the change of the design problem space, the entries were sorted into one of the beforehand decided categories wider, same, narrower or changed.

2.1 Student reflections

The students made two separate entries devoted to the study in their journals. All groups except one wrote about one A4 page of text in two to four shorter paragraphs. The group that didn't wrote about half a page using a bullet list.

The reflections on the first part could be classified into two themes, Scope and Clarity. Scope is related to the size of the solution space and in the briefs that they wrote themselves, three groups reflected on the fact that they intentionally left the solution space wide to make sure that the other group had room for creativity and did not feel limited to a specific solution. One group thought that they had too many constraints, which they felt might be a restriction. Five groups thought that they should have been more specific and used more constraints to limit the solution space. One of them wrote that they *"could have added more demands on the product, but we did not want to limit their creative freedom"*. In the briefs that the students received, two groups felt that there were too few constraints. One of them stated it "*made the solution space very large, which made the selection of concepts more time consuming"*.

The second theme, Clarity, concerns the clarity of the information and the formulations in the brief. Six groups thought that they could have been more precise in their own formulations. In the briefs that they received, nine groups felt that they lacked important information or had vague or imprecise formulations.

In the second part, with predefined categories, ten groups found that their solution space became narrower, where five of them stated it was because of demands or wishes from the client group, one group found that it stayed the same and one group didn't answer the question. Nine of the groups also felt that their mission became clearer after meeting with their client group.

2.2 Teacher reflections

The examiner in the course, who is also the second author of the paper, was generally pleased with the brief exchange method. It yielded several interesting design problems with briefs that resulted in novel and exciting design proposals. Furthermore, the examiner found that this year's students gained more knowledge about the issues of design briefing than previous years. The major criticism was that several briefs were poorly formulated which resulted in inferior designs.

It was found that using the brief exchange method forced the students to more rapidly start thinking about, and look for, design problems and related target groups. This gave them new insights to why design is important and made them open their eyes for the myriad of design problems that surrounds them.

3 DISCUSSION, CONCLUSIONS AND FUTURE WORK

In this exploratory study, we have identified some of the potential strengths and challenges of learning through client and designer roles in freshmen design education. However, having the students reflect on the process might not be the best approach for this particular study. As they are first-year students and didn't receive much prior information on design briefs, it is not strange that they seek clear guidelines. Interviewing the student groups instead of letting them reflect on their own had allowed for follow-up questions and might have resulted in a deeper understanding of the students thoughts on and capabilities to cope with ambiguity in design challenges.

This method has several similarities to the approach used by Bohemia et al [7] in their distributed studio course. However, this brief exchange method is, unlike the aforementioned course, a stand-alone method, meant to be used as an alternative to the traditional way of creating design briefs for educational settings and could easily be incorporated into existing courses. Furthermore, it has more focus on finding "real" problems i.e ones that are voiced by the target groups.

There is still work to do on how to handle the assessment of projects given the diversity of briefs and outcomes. Although a diversity of design problems may be inspirational for the student it results in a variety of briefs with different types and quality, which leads to complications of fairly assessing the value of the resulting design. Receiving a brief with subpar quality could, if not challenged or corrected, have negative effects on the project and this might need to be considered in the assessment.

At this stage, the insights may not be strong enough support any definitive conclusions regarding if the students have learned to better cope with ambiguity, but they suggest a greater involvement in the design brief process and a more mature attitude towards some of the issues with ambiguity. When this method has been used in the first-year course for some years, it will be possible to verify if the students are better at handling ambiguous challenges by studying them in their bachelor project or final year project. As this was an exploratory study, we have refrained from analysing the data using statistical method. Instead we use our insights to inform future studies. We argue that, to truly understand the nature of how handling ambiguity is learnt and how it should be taught, more qualitative studies are needed. Interviewing students throughout the design process about how they approach ambiguity could be a way of evaluating potential teaching methods. However, we also believe that there is a need for futures studies which can quantify the learning effects of client and designer roles in design education. This could, for example, be a comparative study between two groups where one is using this method and the other receives a brief written by the teacher.

REFERENCES

[1] Phillips, P. L. *Creating the Perfect Design Brief: How to manage design for strategic advantage,* 2008 (Skyhorse Publishing Inc, New York)

[2] Eppinger, S.D, and Ulrich, K.T. *Product design and development*, 2008 (McGraw-Hill, New York).

[3] Jones, W. M., and Askland, H.H. Design Briefs: Is there a Standard?. In *DS 74: Proceedings of the 14th International Conference on Engineering & Product Design Education (E&PDE12) Design Education for Future Wellbeing*, Antwerp, Belgium, June 2012.

[4] Vaughan, S., Austerlitz, N., Blythman, M., Grove-White, A., Jones, B. A., Jones, C. A., ... & Shreeve, A. Mind the gap: expectations, ambiguity and pedagogy within art and design higher education. In *The student experience in art and design higher education: Drivers for change,* 2008

[5] Shedletsky, A-K, Campbell, M and Havskjold, D. Embracing ambiguity: a perspective on student foresight engineering. In *DS 58-10: Proceedings of ICED 09, the 17th International Conference on Engineering Design, Vol. 10, Design Education and Lifelong Learning*, Palo Alto, CA, USA, August 2009.

[6] Taajamaa, V, et al. Dancing with ambiguity design thinking in interdisciplinary education. In *Design Management Symposium (TIDMS), 2013 IEEE Tsinghua International IEEE, 2013.*

[7] Bohemia, E, et al. Designing Distributed Design Studio. In *DS 38: Proceedings of E&DPE 2006, the 8th International Conference on Engineering and Product Design Education*, Salzburg, Austria, September 2006.

[8] Sas, C, Dix, A. Enhancing creativity in interaction design: Alternative design brief. In *Creativity and HCI: From experience to design in education,* Boston, 2009.