INDUSTRIAL DESIGN SKETCHING FOR CONCEPT GENERATION

SKETCHING: A PARALLEL THINKING PROCESS

Nik Shahman Nik Ahmad Ariff[1], Petra Badke-Schaub[2],
[1]Delft University of Technology, Department of Product Innovation Management, Landbergstraat 15, 2628 CE Delft, The Netherlands / Universiti Malaysia Kelantan, Karung Berkunci 36, Pengkalan Chepa, 16100 Kota Bharu, Kelantan, Malaysia.
Corresponding Author: NikAhmadAriff@tudelft.nl / nikshahman@umk.edu.my
[2]Delft University of Technology, Department of Product Innovation Management, Landbergstraat 15, 2628 CE Delft, The Netherlands.

ABSTRACT

Designers largely use freehand sketching as the one way of communicating their ideas during the design process. This research aims at investigating the sketching in the conceptual design stage and to explore what measures and procedure might be appropriate method to improve the positive influence of sketching during the design process. A quasi-experiment study has been conducted with Masters students of Industrial Design Engineering at Delft University of Technology, the Netherlands. 3 control groups and 3 experimental groups consisting of 3 students underwent a design task in a given time. Whereas the experimental groups were not allowed to talk during the design process, the control groups did not received any restrictions. The experiments were recorded, observed and analyzed. This research shall contribute to a better understanding of how sketching affects creativity and quality of the final outcome, and in how far sketching enhances the value of idea development in design for Industrial Designers.

Keywords: Industrial designers, sketching, design thinking.

INTRODUCTION

Freehand sketching has traditionally been used as a primary conceptual tool in the early stage of a design process (Fish & Scrivener, 1990). It is also a preliminary exploration activity before final design is produced. Furthermore, traditional sketching technique is used to structure and design problems and for generating and exploring solutions, functions or/and forms, and thus to assist designers to develop visual ideas.

"…Sketches enable designers to handle different levels of abstraction simultaneously". (Cross, N. 2006) Whereas Cross mainly refers to the cognitive functions of sketching, Pipers (2007) points to the motivational aspects:

"Designers of products…have a special relationship with their drawings. For them, drawings must embody and convey information about complex three-dimensional shapes, endowing new products that may be unfamiliar to the consumer with personality and ease of use." (Pipes, A., 2007)

The introduction of digital software as concept generation tools has given distinctive impact on the traditional technique. Even though production of digital software shows its beauty and power, the system fails to assist visual invention. Thus researchers try to visualize the incorporation of the two methods affecting design output.

Computer software has been tagged as an advanced technique in this computer era. The emergence of new technology leads some perspectives to think sketching is a disappearing skill. Nevertheless, traditional or manual sketches and drawing are still extensively used in studios as methods to deliver idea. Sketches and drawings fulfill a fundamental task in the decision-making process, which had been used in the early stages of design, for example in brainstorming sessions, in the phase of research and exploring concepts, and in presentation.

"A designer's drawing has three main functions; 1) It is a means of externalizing and analyzing thoughts and simplifying multi-faceted problems to make them more understandable, 2) It is a medium

of persuasion that sells idea to clients, and reassures them that their brief will be understood correctly, 3) It is a method for communicating complete and unambiguous information to those responsible for the product's manufacture, assembly and marketing" (Pipes, A., 2007)

RESEARCH QUESTIONS / GOAL OF THE RESEARCH

This research project aims at the analysis of sketching during idea development, known as conceptual design stage during the design process. We focus on the following questions:

1. How does the quality of sketches (i.e. elaborateness of sketches) affect:
    a. the performance in terms of the amount, originality of ideas, etc.?
    b. the quality of the output (function, user-friendliness, etc.)?
2. Does the initial idea change or maintain throughout the design process through sketching? And if so how?
3. How does the team situation affect the sketching process and idea development?

In this paper, we will only focus on the question related to the quality of sketches and how does the social situation affect the sketching process and idea development.

RESEARCH APPROACH / INITIAL STUDY

The study was executed as quasi-experiment study. Two experiments were; Firstly, 3 groups of 3 participants – the control group and the experimental group. The experiment group, they were not allowed to speak to each other, which we call the "silent sketching" group and vice-versa for the control group. Both groups were assigned to 2 phases of designing.

In the first phase, they were given 45 minutes time to develop ideas for a given design brief. The task was to design products that help blind people to develop cooking experience. They were given 5 minutes for reading the design and in the next 10 minutes, they have to gone through an individual work of designing. In these 15 minutes of time, the participants of the silent sketching teams were not allowed to communicate. Next, in the last 30 minutes of the first phase, they were allowed to have a "silent conversation" in finalizing the first design task.

Later, after 10 minutes of a break, they were given another design brief, which we call it as "Stimuli phase". At this stage, the design brief was narrowing down with the helps of pictures and direction (please refer to Appendix…). In this phase they had to complete the design task in 25 minutes, which again, 5 minutes for reading the design brief and 20 minutes of collaborative work among group members. The final part of their task was to present their final idea in about 5 minutes. A questionnaire asking about the design task and individual evaluations was given after the presentation. All activities were recorded, observed and analyzed.

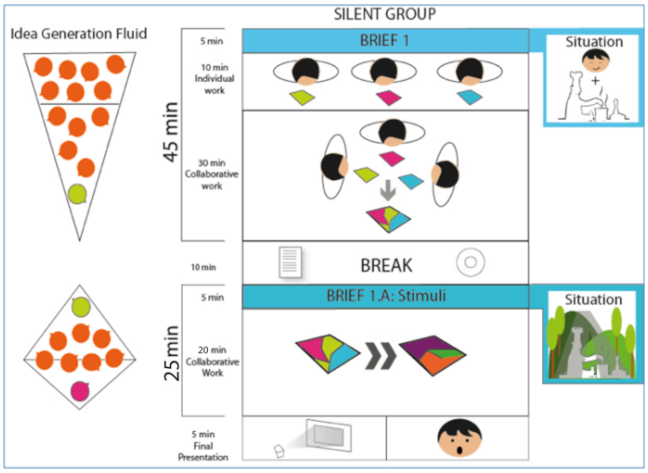

Figure 1. Overview of sketching tasks.

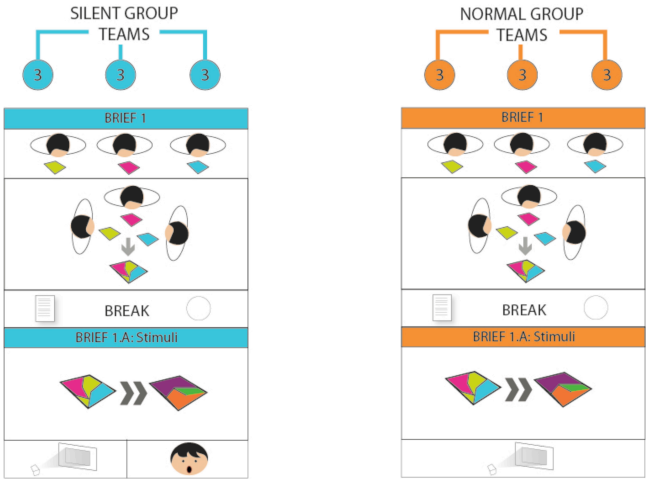

Figure 2. Overview of sketching tasks.

RESULTS

1. The silent sketching participants needed more time to understand and produce new ideas in the individual phase of designing.

2. In collaborative work, the participants of the silent sketching group started changing the sketches among them and try to understand each other's ideas. But, in the control group, participants start with the discussion onwards.

3. Instead of verbal talking the participants words written on paper became a kind of emergency medium of interaction between the group members in the silent sketching group. Fewer sketches have been found during the collaborative work.

4. The "aha" moment occurred when the participants started to understand each other's idea(s).

5. During the presentation, the participant that drew the final idea was the one that presented. The implication of this is, he/she knows better about the drawing.

Further analyses will deliver more detailed results of sketching as medium of communication in different context.

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