

A Study on the Design Communication Skills Based on Collaborative Overlapping-sketching Techniques

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Abstract: In the processes of team-based design group, designers must put forward one's ideas, and try every possible means to communicate others in order to reach team's goals. Frequent inter-dynamic communications not only could solve problems, but also stimulate team creative outputs. However, in reality, too many and unnecessary communications may lose the focus during the discussion process because of different perspectives or personal egos. Even more, due to the repetitions of information communication, it could lead to inaccuracy of idea interpretations. The causing results are administrators unwilling to see. In responding to the situation, the research first discussed the non-verbal communication technique (collaborative-sketching) to reduce unnecessary communication. However, C-sketching has its own deficits, such as unfocused design objectives or misunderstanding in hand-drawing sketches. Therefore, based on this fact, we invented the co-sketching (collaborative overlapping-sketching) for more effective ideas communication and stimulation. Through the set up experiments, we found that co-sketching could improve variety, quality, and originality of the ideas, which traditional c-sketching technique was difficult to achieve.

Key words: *Team communication, c-sketching, team-base creativity.*

1. Introduction

Most corporations today use team unit as a model to develop their creative product strategy. It can avoid high-risk decisions, get focus in short time, and finally achieve the best solution. Many organizations also utilize team work to train their employees' creative thinking skills, and hopefully increase the organizational creativity eventually (Mohrman, Cohen, & Mohrman, 1995). Amabile (1988, 1997) pointed out the most important factors that influence team creativity including motive, resource and leadership. However, without open communication channels, team corporations will never be a good shape. Basically, in the team base process, team members use communication exchange information, and build up their inter-trust. Through the frequent interactions, not only people can spread out ideas, but also persuade others to accept their ideas. Nevertheless, too many communications might also cause conflicts unavoidably and jeopardize team cooperation. For example, brainstorming is considered one of the best practices for generating creative ideas for years. However, according to recent research, the creative output from brainstorming is significant less than individual work alone

(Goldschmidt, 1995). The reason might cause from the unnecessary unfocused communications. In additions, designers always have their own thinking logic, strong personal egos or attitude. It makes communication more complicated and cost more uncertainty. Design managers in some way try to elevate quality of team creativity through frequent communication, but conflicts arise when they feel unnecessary communication might waste time and cut down team performances.

For solving above mentioned problem, collaborative-sketching (c-sketching) is considered a useful strategy to stimulate ideas, since it reduces time consuming of verbal communication and still work as a team. General speaking, for design profession, drawing skill is considered the most essential tool for designers to communicate ideas. Without any other unnecessary communication, the c-sketching basically use only written words and hand drawing sketches to generate ideas. Designers are stimulated by reviewing other colleagues' ideas, and then sketch their new thoughts. By accumulating these ideas through several cycling processes, designers can acquire the ultimate result in the shortest period of time (Shah, 2001). However, the procedure could cause other problems like unfocused design objectives or misunderstanding in hand drawing sketches among designers, if design managers lose control of sketching flows. According to the observations, our study first tried to investigate non-verbal skills (c-sketching) regarding to sketch stimulation among designers. By conducting designed experiments, we later improved it as collaborative overlapping –sketching (co-sketching) skills for seeking more effective team creativity performance.

2. Method

2.1 C-sketching technique

For team base design profession, designers usually under time pressure when developing their ideas. Collaborative-sketching (c-sketching) is able to respond it timely. Basically, like brainstorming, it's able to accumulate many ideas in a short period of time but without oral conversations. So, team players can concentrate more on the image sketch in hands, and squeeze ideas more efficiently. During c-sketching process (fig.1), designers develop idea according to the given problem. When they finish up their sketching, they pass the sketch to the next person and continue revising the idea from previous designer's drawing till time is up. However, the c-sketching still has its defects. Because the technique was developed originally from engineering thinking, appearance is not the primary concern. Therefore, designers are unable to get new ideas in terms of styling or aesthetic design. In additions, as the process moves toward the end, the sketch looks too much information to understand. The later the more difficult for people figure out the contents of the drawing. The invented collaborative overlapping- sketching (co - sketching) could make the original c- sketching more effective (fig.2). By utilizing translucent paper, not only designers could easier modify the contour outlines through underlay drawings of previous designers, but also trace the course of the idea developments unmistakably.

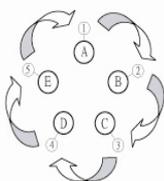


fig.1 Process of c-sketching 5-1-4

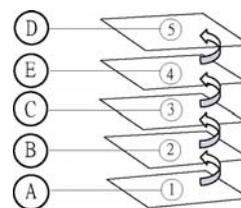


fig.2 Process of co-sketching

2.2 Experiment design

We used quasi-experimental as layout strategy to simulate design procedures and environments. 10 junior designers are tested subjects, who have at least 1 year professional working experience. These designers are teamed up randomly in two groups. The two test groups were given two conditions. The control group is treated with c-sketching procedure, and the experiment group is treated with co-sketching procedure. The control group (c-sketching) based on Shah's (1993) 5-1-4 experiment's design, where "5" indicates number of the designer in a team, "1" means 1 problem (sketch) needed to be worked at a time, and finally "4" indicates the number of times of each idea passing through these 5 designers. In the other hand, the experiment group was also treated with 5-1-4 formation, but with co-sketching procedure. The two skills illustrated as above diagrams (fig. 1 and fig. 2), where letter A, B, and C... stand for designer A, designer B, and designer C... The numbers next to the letters stand for sketch 1 to 5 drawn by designers A to E respectively. The duration of time for each sketching session is 3 minutes, and each sketch will last 4 cycles, 5 designers, and the finally 19 times of modifications for each original ideas. The given problem is city bike design. Designers worked on sketch in hand after reviewing previous designers' ideas. When time is up, they are forced to pass the sketch to the next tester, and ready to reviewing the new coming sketch.

2.3 Experiment evaluation

In terms of experiment assessments, we also took the idea evaluation of Shah's (2001), which includes quality, originality, and variety of the ideas. We invited 3 professional design practitioners for evaluating the 10 designers' idea sketches. From the analysis of grading scores, we can further understand the difference between two types of communication skills and how they relate to the creativity of the ideas. The free hand sketches and how it process are demonstrated as following (fig.3 and fig.4).



fig.3 Record of co-sketching process

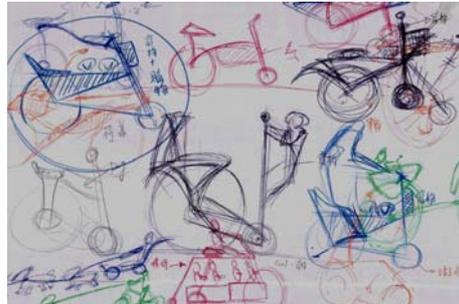


fig.4 Hand drawing of c-sketching

3. Result and discussion

According to the experiment and evaluations of the sketches, the results showed that the co-sketching technique is better than the traditional c-sketching technique in overall creativity performance. Most of the scores of sketches from designers (A-E) in control group (c-sketching) are lower to the experiment group (co-sketching) (fig.5). In the other hands, after we get into further in the differences between the two tested groups regarding to the originality, variety, and quality of the creativity of the idea sketches. We found that experiment group is better than control group in every perspective (fig.6). Therefore, we conclude that the co-sketching skill is better than the traditional c-sketching technique in improving idea's originality, variety, and quality. However, since we do not have enough time and resource to re-test the subject in different type of problems, or re-mix the test group

for better validity. Therefore, the study result may alter in different conditions, which we will investigate further in the next stage.

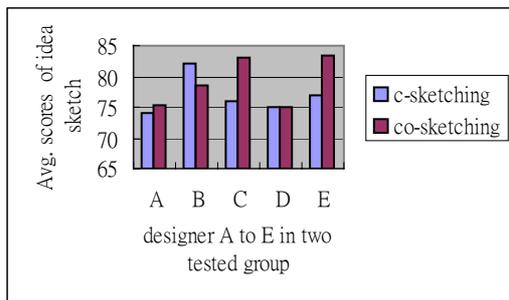


Fig.5 Scores of sketches in two tested groups

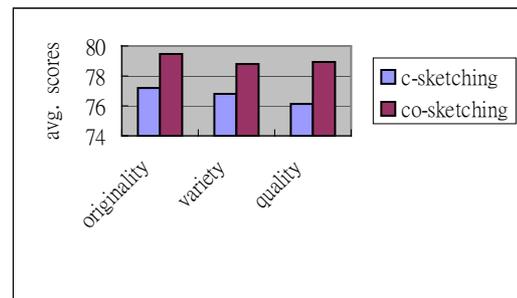


fig.6 Scores of originality, variety, and quality of the sketches in two tested groups

4. Conclusions

The objective of this research first clarified how designers develop the ideas through different communication channel. For more effective idea development, we tried to improve non-verbal communication skill (c-sketching) to avoid unnecessary communication. Based on this thought, we improved it by overlapping the hand drawing sketches on the tracing paper (co-sketching) in order to eliminate some drawbacks in the c-sketching technique. In the experiment result, the scores of evaluated sketches indicated that the originality, variety, and quality of the idea from co-sketching technique is better than the traditional c-sketching technique, and especially favored styling at tributes. Therefore, we concluded that revision technique could have better effects for developing creative ideas. For further research directions, time factor, subject factor, and team up strategy are the future research approach, since these factors also play important roles in the research scope.

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