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Using Group Brainstorming in Industrial Design Context: Factors Inhibit and Exhibit

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Abstract

Brainstorming is a series of procedures designed to maximize the productivity of groups. This study examines two main factors, production loss and ownership of the topic that influence the performance in group brainstorming. 115 groups from 6 different universities have participated in this experiment study. The data is analyzed at group-level. Results reveal that production blocking is negatively related to the group brainstorming performance whereas evaluation apprehension is positively related to the performance of group brainstorming. Ownership of the topic is related to the performance too. The results are of potential interest to industrial design context, educators, and researchers.

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Keywords: Industrial design; brainstorming; production loss; ownership of the topic; group level analysis

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1. Introduction

Industrial design is the area that contributes the services in terms of creating and developing concepts and specifications for both user and manufacturer (The industrial Design Society of America (IDSA), 2004). The term of Industrial design that is always used interchangeably with product design involves both engineering and aesthetic design (Ekberg, 2005) but it emphasizes more on users' consideration (Roozenburg & Eekels, 1995). Therefore, Industrial Designers are not the people who handle the things that are involved with engineering directly, but they deliver the idea to an engineer (Hannah, 2004). For instance, Alexander Graham Bell was the person who was responsible to invent the telephone, but Henry Dreyfuss as an Industrial designer was the person who is responsible to give the modern form to the phone (Hannah, 2004). Hence, in industrial design context, creativity is needed and it plays an important role to come up with the ideas and solutions (Takala, Keinonen, & Mantere, 2006). In Malaysian industrial design context, Rahman (2005) has revealed that Malaysian designers are preferred to have a strong attitude in dynamic team such as brainstorming practice in terms of explicit knowledge in the organizations.

In an organizational setting, the essential of group creativity cannot be denied (Paulus, Larey, Putman, Leggett, & Roland, 1996; Paulus, 2000) because organizations use it to overcome the problem or invent a new product (Paulus & Brown, 2007). This group creativity can be enhanced through brainstorming. For instance, in IDEO, Kelly (2001) has emphasized that creativity in design firm is not coincidental or mysterious, but it could be gained. Moreover, brainstorming is one of the most well-known tools for creative thinking (Isaksen, 1998). Therefore, small group always contribute a good result for many practitioners in the field of Creative Problem Solving (Dorval, 1999) and imaginative tasks (Nickerson, 2003).

Malaysian designers are known to have a strong attitude in dynamic team such as brainstorming practice in terms of explicit knowledge and creation in the organizations (Rahman, 2005). He states that "…. management practices such as metaphor and analogy application, work with expert, design manager power, and brainstorming are the high preferences by designers that contribute towards explicit knowledge" (Rahman, 2005 p. 31). Moreover, brainstorming is the technique that emphasizes on the thinking activities. Nevertheless, most of literatures as discussed above are lack of intention in industrial design context. Even though Rahman (2005) has stressed on brainstorming technique to gain new ideas, there is no empirical evidence to support Rahman's (2005) finding of brainstorming especially in industrial design education in Malaysia. Moreover, there is lack of group-level of analysis in personality and group performance (Bolin & Neuman, 2006) which lead to the perfect finding to be concluded in the study. Therefore, the objective of this study is to examine the influence of process on group brainstorming performance at group level among industrial design students.

2. Literature Review and Hypotheses Development

2.1. Group Brainstorming

Brainstorming is a series of procedures (rules) designed to maximize the productivity of groups engaged in idea generation by reducing production loss, popularized by Osborn an advertising executive. The main concern of the development this tool is to increase creativity in organization (Osborn, 1963). Brainstorming is also identified as a technique of a variety tools for generating ideas (Isaksen, 1998) and that many people could produce many ideas compared to working alone (Osborn, 1963). The study on brainstorming has begun when Taylor, Berry, and Block (1958) examined the empirical study to prove the effectiveness of brainstorming as claimed by Osborn in his influential book, Applied Imagination