

## **The combination of design media and design creativity — conventional and digital media**

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### **Abstract**

*Creativity* is always interested in many fields, in particular, creativity and design creativity have many interpretations (Boden, 1991; Gero and Maher, 1992, 1993; Kim, 1990; Sternberg, 1988; Weisberg, 1986). In early conceptual design process, designers used large number of sketches and drawings (Purcell and Gero, 1998). The sketch can inspire the designer to increase the creativity of the designer's creations (Schenk, 1991; Goldschmidt, 1994; Suwa and Tversky, 1997). The freehand sketches by conventional media have been believed to play important roles in processes of the creative design thinking (Goldschmidt, 1991; Schon and Wiggins, 1992; Goel, 1995; Suwa et al., 2000; Verstijnen et al., 1998; Elsas van and Vergeest, 1998). Recently, there are many researches on inspiration of the design creativity by digital media (Liu, 2001; Sasada, 1999). The digital media have been used to apply the creative activities and that caused the occurrence of unexpected discovery in early design processes (Gero and Maher, 1993; Mitchell, 1993; Schmitt, 1994; Gero, 1996, 2000; Coyne and Subrahmanian, 1993; Boden, 1998; Huang, 2001; Chen, 2001; Manolya et al. 1998; Verstijnen et al., 1998; Lynn, 2001). In addition, there are many applications by combination of conventional and digital media in the sketches conceptual process. However, previous works only discussed that the individual media were related to the design creativity. The cognitive research about the application of conceptual sketches design by integrating both conventional and digital media simultaneously is absent.

The research explored this in a protocol analysis of retrospective reports; participants worked on a design task while drawing sketches by using required design media and later reported verbal data they had been thinking of during the design task. The data is analyzed from two aspects of design processes and results.

The results show that using both conventional and digital media simultaneously can help to arouse design creativity of the wider and deeper creative thinking than only using individual media in the stage of conceptual sketches design. In particular, the interaction of manipulating both conventional and digital media even more complements each other and pushes creative thinking forward to the broader field.

**Conclusion:** We can know using conventional and digital media at the same time can get more creative ideas in the stage of conceptual thinking. The findings suggest that the integration of the diverse design media not only provides a kind of feasibility ways to inspire creativity, but also opens more possibility of the design study of new media.

**Keywords:** design creativity; conventional and digital media; sketching; design cognition

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