

Chapter 24

Learning Opportunities and Outcomes of Design Research in the Digital Age

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ABSTRACT

Computer and Internet technology has spread all over the world. As design research is a fast-growing discipline, it is worthwhile to examine its relationship with technology. Subsequently, this chapter aims to discuss the influence of computers and the Internet on design and design research in the digital age. Two kinds of design research, designerly and scholarly research, are defined. The influence of technology on them is examined. The chapter also finds that digitalization, computer software and hardware and Internet technology have facilitated the development of design research. They have created more learning opportunities and resulting in better learning outcomes in the field. However, despite these positive results, there are some drawbacks. These technologies may also limit some learning outcomes and pose risks to the development of design research.

INTRODUCTION

Research is a protocol used to extend knowledge today. To extend or explore knowledge, researchers use a process rooted in that which is already known. Based on previously developed knowledge, new findings may be obtained from a well-planned and systematic data collection process. The findings have to be verified repeatedly by other independent parties before it can be considered genuine

information or a theory. For instance, in most practical cases, before a researcher can collect data for the research questions, he/she has to study and review a large volume of literature and find out what has been done in the area. A researcher has to conceptualize all theories and thought, and thus build a theoretical framework. Based on the framework constructed, the researcher will have collected data from the research subjects and generate new information that addresses the research

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questions. The new information is then able to contribute to the body of knowledge in the field and enhance the understanding in the specified disciplines. The new information, knowledge or thought has to be replicated, verified or tested by different researchers and scholars before it can be considered genuine and acceptable. The information and knowledge have to be reliable and valid in the situation proposed by the researcher. Research provides opportunities for people to acquire knowledge from other researchers and generates outcomes that contribute to the literature and general knowledge. The relationship between learning opportunities and outcomes is cyclical in that more learning and research opportunities will be available for learners when more learning or research outcomes (i.e., the verified knowledge) are accessible, and these opportunities will generate more research outcomes. This cyclic interaction has become more active because information sharing and verification are much easier today than in the past.

Since the late 1980s, when computer and Internet technology started to spread across the world, information sharing has become easier. Constant, Kiesler and Sproull (1994) already noticed that “as technology for information access improves, people have more opportunities to share information” (p. 400). Computer and Internet technology is the “technology for information access”, and sharing methods such as Peer-to-peer (P2P) networking was invented, for this purpose allowing to access information easily. Through the Internet, people can use a keyword to use a search engine online. Related information from across the world will appear on their screen in less than 0.1 second. Computer technology advances allow us to research different topics effectively. Researchers can use references from previous experimental results and such literature can be used to support new experimental designs. Research and conference papers are now issued in digital

formats, and most journals are now published online to allow easier and faster access. Lossau (2004) summarized the impact of computer and the Internet technology as the following:

The digitization of publishing and the advent of the World Wide Web have resulted in the proliferation of a vast amount of content types and formats that include, but are not limited to, digitized collections, faculty and research groups' websites, conference web servers, preprint/e-print servers and, increasingly, institutional repositories and archives, as well as a wide range of learning objects and courses. (para. 3)

Technology in the digital age facilitates information sharing and the growth of knowledge and research in any sense in different disciplines. It has also affected the field of design research. Design research is the systematic enquiry of design knowledge. Its objective is to study and investigate the outcomes generated by human and its process of generating them (Cross, 2006). Since the 1960s, design research has been expanding and growing (Roworth-Stokes, 2011). Many universities now offer doctoral programs in the field (Feast & Melles, 2010). Although some universities still focus on the practical aspect of designing, it is a global trend that design research has become more important. There is also a tendency that the development of design discipline is constructed on the basis of design research. The wide use of computers and the Internet in research may be one of the key factors in the rapid growth and development of design research. As an increasing maturity has been observed in this discipline, the chapter examines its recent relationship with technology. This chapter also aims to discuss the influence of computer and Internet technology on design and design research in the digital age.

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