

Chapter 11

Interface Design, Positive Emotions and Multimedia Learning

Chaoyan Dong
New York University, USA

ABSTRACT

In social psychology, “what is attractive is good” means that a physically attractive person is perceived to be more favorable and capable. In industrial design, the interface is one of the three elements that influence users’ experience with a product. For multimedia learning, does the interface design affect users’ experience with learning environments? Does attractive interface enhance multimedia learning? Research in multimedia learning has not yet sufficiently investigated this issue. In this chapter, I propose that attractive interface design does indeed promote multimedia learning. This hypothesis is based on the review of the following theories and related empirical studies: 1) an interface impacts a user’s experience; 2) beautiful interfaces induce positive emotions; 3) positive emotions broaden cognitive resources; and 4) expanded cognitive resources promote learning. The Model of Emotional Design in Multimedia Learning is proposed to highlight how emotions regulate multimedia learning. Suggestions regarding designing attractive interfaces are provided.

INTRODUCTION

Multimedia learning refers to learning from multimedia design, which is the presentation of materials both in words and pictures. Multimedia design has been widely used in educational settings. Research on multimedia learning has been looking at how to design effective and efficient multimedia environ-

ments. For example, in *The Cambridge Handbook of Multimedia Learning* (Mayer, 2005), thus far the most comprehensive research on multimedia learning, 17 multimedia learning principles are presented, for example, spatial contiguity principle, temporal contiguity principle, coherence principle, modality principle, and redundancy principle. All of these principles are about the design of text, audio and video, each of which is assumed to be a multimedia design element that affects multimedia learning

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outcomes. Unfortunately, the assumption is only partially true when the design is targeted for one group of learners. In reality, the idea of “One size fits all” probably never works. Besides the design of the multimedia learning program, it is critical to consider the roles of both multimedia designers and learners when talking about the quality of multimedia learning. Multimedia designers determine other aspects of interface design in addition to texts, audio and video.

Interface design refers to designing the interaction between a human and a machine (Raskin, 2000). The interface design induces certain emotions from users while they interact with the design. In other words, interface design is the visible surface that users experience while interacting with a design, while emotions are the underlying, invisible media between the users and the design. Research on emotions indicates that emotions play as important a role as cognition does in learning. It is widely agreed that positive emotions enhance cognitive activities, although the cognitive activities do not necessarily entail learning or multimedia learning. Therefore, when talking about the quality of multimedia learning, we must address the issue of how the interface design affects multimedia learning and should consider the emotions induced from experiencing the multimedia design. The discussion in this chapter helps to identify interface design and emotions as influences in multimedia design that is not subsumed by the influences on efficiency and effectiveness that have traditionally been investigated by multimedia learning researchers.

The following section explains the theoretical framework of how interface design affects users’ experience as well as their emotional states, especially how positive emotions influence cognition, and how changes in cognition regulate multimedia learning. Based on the theoretical framework, the Emotional Design Model in Multimedia Learning is proposed. Since positive emotions facilitate cognitive activities, as suggested by the theoretical framework, design features that intend to induce

positive emotions are discussed. Future trends in research of emotional design in multimedia learning are also discussed.

BACKGROUND

Interface design is the first thing users experience when interacting with a multimedia design. Emotions are induced before initiation of cognitive activities to process in users’ brains. In other words, interacting with the interface design induces emotions and also activates cognitive activities from users. Emotional change is a rapid activity, preceding the cognitive activities. Norman (2004) proposes a theoretical framework to explain how interacting with an interface design affects users’ emotions, and also suggests that attractive designs induce positive emotions from users. Fredrickson’s (1998) positive emotion theory elucidates how positive emotions facilitate cognitive activities. The goal of multimedia learning research is to afford effective and efficient learning experience. The question we should ask is: Do positive emotions promote multimedia learning? Mayer’s cognitive theory of multimedia learning explains the general process of multimedia learning. One of Mayer’s assumptions is that working memory has a limited capacity, but he does not consider the possibility that positive emotions broaden cognitive resources. Does it mean that positive emotions promote multimedia learning by expanding the capacity of working memory? The discussion is illustrated in the following figure by connecting the four theories, which are combined to form the conceptual framework for the chapter. The details of each theory and the connections between these theories are explained in the following section.

How does interface design affect learners’ experience in a multimedia learning environment?

Norman (2004) proposes a framework to describe what happens when users interact with a design. According to Norman, a design presents three aspects to its users: the attractiveness, the

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