

## Chapter 79

# Theory and Application: Construction of Multimodal eLearning

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### ABSTRACT

*Demand for online learning continues to grow at a strong pace as learners become more diverse in many ways. It is important that we use learning and design theories to shape this learning environment for success. This chapter discusses the use of multimodal design in the creation of online courses based on the science of human learning. Information processing, sensory, working, and long-term memory are discussed in terms of course design. Individual differences and similarities are explored. The question in education remains how we can match what we know about human learning to the technology modes around us to create better learner-centered environments. This chapter explores the theories applicable to multimodal eLearning and how to apply these theories in the creation of learning experiences.*

### INTRODUCTION

The technology explosion in the last 50 years has created many different modes of learning delivery but the basics of human learning have stayed the same. The pace of eLearning is still growing at a rapid rate and has become a staple in higher education and the workplace and now has a strong expansion into the K-12 classroom. Research shows that we are limited in the amount and type of information we can process at a time. Large amounts of information enter through our

sensory memory; we focus our attention to further process only some of this information. This much smaller amount of information passes onto working memory to reach our goal as educators which is long term memory. Strategies such as chunking information, practice and dual coding help us get larger amounts of information through the bottleneck of working memory. So the question in education remains how we can match what we know about human learning to the technology modes around us to create better learner centered environments. This chapter will explore the theo-

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ries applicable to multimodal eLearning, how to apply these theories in the creation of learning experiences.

## BACKGROUND: GROWTH IN ONLINE LEARNING

*Online College Students in 2013* (Aslanian, 2013) noted that nationally 32% of college students were taking at least one online course and three million students were enrolled in fully online programs in 2012. Online learning continues to grow with over 6.7 million students taking at least one online course during the fall 2011 term, an increase of 570,000 students over the previous year (Allen & Seaman, 2013). Online college education growth rate is “three to four times that of classroom enrollment” (Aslanian, 2013, p. 3). For many adults, the face-to-face classroom model does not work due because of the lack of access to the courses, their life schedules with family and careers, and in some cases their personal preferences to be more anonymous within the learning environment. “The greatest advantage of online study continues to be scheduling flexibility and the freedom to manage

other responsibilities (Aslanian, 2013, p. 5)” and students with some online study experience are more likely to enroll in fully online programs (Aslanian, 2013, p. 5).” More of today’s digital natives prefer online education because it allows the opportunity to study when and where they want to study and on a variety of platforms and mobile devices.

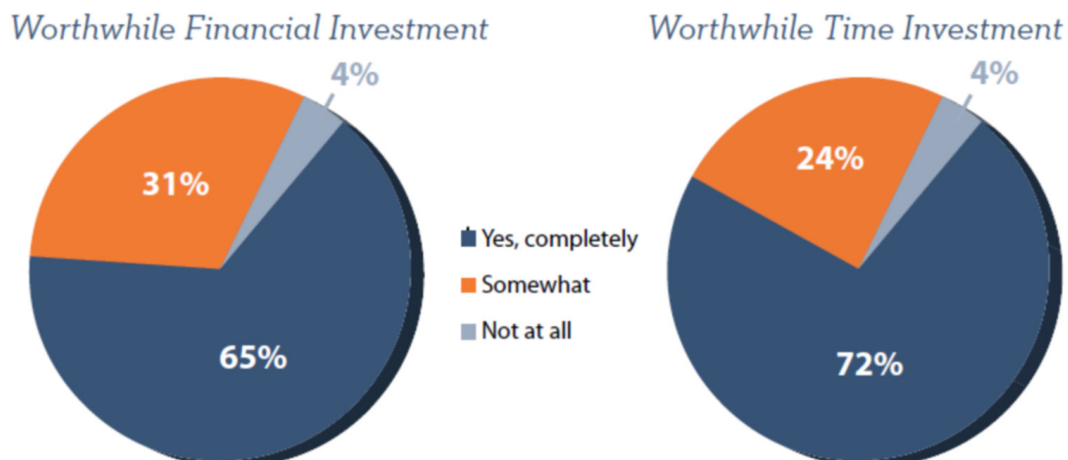
In 2013, the Aslanian Market Research and Learning House surveyed 1,500 individuals nationwide who have recently enrolled, are currently enrolled, or plan to enroll in the future in online undergraduate or graduate study. The results of the study are reflected in Figure 1.

Individuals in this study felt that online courses were both a worthwhile financial investment (65%, “Yes, completely”) and worthwhile time investment (72%, “Yes, completely”). People in this study also noted that having had online education helped to improve their employment opportunities for their first job and their opportunities for higher salary and promotions.

The stress in the market produced by continued growth in online learning has produced some new delivery options. Recent trends include Massive Open Online Courses (MOOCs) which have swept

Figure 1. Value of online learning

(Aslanian, 2013, p. 6). Retrieved from <http://www.learninghouse.com/files/documents/resources/Online-College-Students-2013.pdf>



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