



Chapter X

Digital Video in Education

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"Tis education forms the common mind:
Just as the twig is bent the tree's inclined."
-- Alexander Pope

INTRODUCTION

Use of technology to support education is by no means a new concept. Educators have for centuries looked for tools to help stimulate the senses and enhance their students' learning. Though lectures are still the predominant means of delivering material, multimedia is pervasive in educational institutions. For clarity, multimedia is considered the combination of text, graphics, audio, animation and video through electronic means (Vaughan, 1998). This chapter is concerned primarily with video.

The methods for creating videos and the means of delivery continue to change with technological advancements. The earliest educators brought sample objects or hand drawn representations to the classroom in order to provide a visual perspective and enhance understanding. In the mid-1900s, educators began to use analog video signals to show tapes or live shows that were again intended to enhance students' understanding. Today, computing systems are capable of storing and presenting video content on a one-to-one or one-to-many bases.

The key issue is whether the expense and effort associated with multimedia, and specifically, digital video is worthwhile. In this chapter, we discuss the use of digital video in the modern classroom

with a focus on learning. Specifically, we base the discussion on Felder's Learning Model, Bloom's Taxonomy, and Kolb's Learning Cycle. First, the Background Section briefly describes these theories and provides some basic information on digital video. Second, we describe a classroom that was constructed to support digital video and detail performance issues. Finally, we discuss the synergy of video in education. The underlying questions that will be explored are (1) How should we use digital video? and (2) What are the technological constraints?

BACKGROUND

Learning Styles

Have you ever had a classroom experience that stimulated your curiosity or perhaps inspired you to explore, to create? Alternately, how often have you daydreamed in a class or been confused by the style of your instructor? How do we best relate to students? What happens in the classroom that causes some students to daydream while others become actively engaged?

Research indicates that students do not all learn or receive information in the same manner. Some respond to aural cues while others

The motivation for this work is a research project funded by the Army's Training and Doctrine Command (TRADOC). In 1995, TRADOC initiated a plan to reduce expenses incurred when soldiers travel for training. Through distance learning, TRADOC hopes to leverage technology to provide quality, centralized instruction to soldiers located all over the world. Their plan has two components central to this paper. The first is Classroom XXI, where soldiers at a training post will be able to access digital materials. The second is the Distance Learning Program. Those soldiers not located at training centers will access multimedia-training materials from a digital library through a distributed database. These materials will consist of text, graphics, audio, and video files accessed through either a Hypertext front-end or as a stand-alone application.

TRADOC requested that the Department of Electrical Engineering and Computer Science at the United States Military Academy, West Point, New York, review current technology and assist with the planning and design for Classroom XXI. This initiative will result in the creation and fielding of over 500 classrooms during the next few years.

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