Chapter 9
3D Technology in P12 Education:
Cameras, Editing, and Apps

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EXECUTIVE SUMMARY

3D technology has progressed dramatically. The compelling question driving this research was, "Will 3D technology really benefit students?" After much of the research was completed, both in discovering the various technologies available, and the testing of equipment obtained, some new ideas have come about to answer this question. It has become a tool used by many industries, from television to business. Recently, 3D technology has become increasingly popular in the field of education. New 3D education technology has been developed to assist students with learning. With more 3D technology available than ever before, teachers are able to help their students visualize content in new ways. The history of 3D traces from the mid-1800s to the present movie-based and visually based technologies. The visually based technologies utilizing either DLP enabled projectors and/or 3D computer programs have become the most common of graphically enhanced materials for P-12 schools. Teachers have also begun construction of some of their own 3D materials using

either movies or still photos. While the technology is relatively recent, the advances to enable uses in the classroom have brought 3D to a viable place in the schools. This chapter provides a brief history of 3D technology, research of a teacher-friendly 3D camera (Aiptek), and a free 3D construction program, Google SketchUp.

INTRODUCTION

Through the years, people have seen many advances in technology and have been impacted by them in every aspect of life: in their homes, businesses, schools, etc. Many of the advances have been in the attempt to grasp realistic, more life-like, visuals in two-dimensional imagery. People have always felt a strong need for visualization; it has been a key aspect in everyday life. From great painters to modern photographers or moviemakers, we have seen the impact and need of visualization in our world. This craving for enhanced visualization has not been limited to any particular part of life. In homes, images decorate each room describing a person's life with either photographs or works of art. In businesses, visuals are used to advertise, to demonstrate growth and other changes, to continue progressing, and many times these visuals are the selling point for a business. One of the most important areas that visualization has been incorporated is education. In *Visualizations in Scientific Computing*, Nielson and Shriver (1990) contend that if textbooks are to teach, the textbooks need significant use of illustrations that have both instructional value and aesthetic appeal. The incorporation of visuals is crucial to the ever-changing learning abilities of students.

In today's world, not only is the incorporation of visualization key, but also new technologies. Something that many people have tried to grasp in order to enhance the realism in images is the third dimension. Students today crave interaction and visualization to learn. With the constant progression of technology, the modes and methods of teaching in our education system are continually advancing. We have seen the incorporation of computers—desktops, laptops, tablets and hand-helds—and the Internet into schools. Due to this, we see the learning abilities of students change as well. With computer technology, they are able to receive many opportunities to learn with visualization. However, many times the materials that they use are limited to two-dimensional images, keeping it as just an image, not a real world experience.

HISTORY OF 3D

Understanding of 3D imaging has been around longer than most would believe. In fact, in 1838 Sir Charles Wheaton invented the first patented stereoscope. The stereoscope was used to view two similar images, which were just slightly differ-

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