

Chapter 6

3D Science and Social Studies in Grades 5–6: Virtualization Expanding Instruction

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EXECUTIVE SUMMARY

Technologies available for the classroom range from interactive whiteboards to 3D instruction. Given the state of 3D for classrooms in its use of specialized goggles (Spencer & Lennex, 2011), projectors (TI instruments), and scarcity of published research (Elliot & Mikulas, 2011), its value as a teaching tool is being weighed by educators. In this study, apps for mobile computing (laptops) and Internet tools (iPads) were researched. Both the literature review and the classroom research have shown that students retained content knowledge and possibly improved overall achievement.

INTRODUCTION

3D technology has progressed dramatically over the past decade. It has become a tool used by many industries, from television to business to medicine. Recently, 3D technology has become increasingly popular in the field of education. New 3D education technology has been developed to assist students with their learning experi-

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ence. It has inspired them to become immersed with new interest and vitality in their studies. With more 3D technology available than ever before, teachers are able to help their students visualize content using fascinating, interactive three-dimensional images. Learning through visualization is one of the best ways to understand, as well as remember, a concept. Due to the many benefits of 3D technology, such as its potential to increase students' interest in course material, more teachers are using 3D technology in their classrooms. Children are familiar with using technology constantly in their lives (Prensky, 2008), and incorporating 3D technology in schools is beneficial to them. Technology savvy students are able to excel, and help other students. Even in using children's toys like a Nintendo 3DS, an installed 3D camera is capable of taking amazing photos/ video, or creating stop-motion animation. This device is very simple to use and relatively cheap to purchase, thus rendering it a useful product in the classroom. 3D and iPad technologies hold great promise as an educational boost for learning and achievement. The iPad holds great promise for not only replacing textbooks but also in generating 3D applications (apps) of curriculum. Quite a number of apps in 3D science for anatomy, physiology, and Earth and space systems exist. Schools and textbook writers are just beginning to explore the curriculum and learning results from using 3D.

LITERATURE REVIEW

While textbooks have been the main learning tools in education for decades, new educational technology has been brought into schools more recently. Technology that incorporates 3D images has become increasingly popular in schools, either for use along with textbooks, or instead of them. Some schools are using iPads in their classrooms in the place of textbooks. In the article "Many US Schools Adding iPads, Trimming Textbooks," Burlington High School is introduced. This article explains that "...more than 600 districts have launched 'one-to-one' programs, in which at least one classroom of students is getting iPads for each student to use throughout the school day" (Reitz, 2011, para. 3). These schools have therefore limited the number of paper textbooks they use by simply downloading the texts onto the iPad itself. There are 3D textbooks for the iPad from Kno, Inkling, and other companies that allow students to view images that would be flat pictures in a regular textbook as 3D, interactive content (Truta, 2011, para. 2). Interactive quizzes, images, games, and other learning materials available in 3D textbooks help students grasp concepts more fully, especially in difficult courses such as science. Students can use the 3D textbooks to view chemistry figures in a close up, interactive fashion that makes learning fun and easy. In addition to this, some virtual textbooks include quizzes

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