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Technology and the Homeschooler

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Abstract

Homeschooled populations have been studied for socialization and academic preparedness, but there are few studies on the use of technology among homeschooled families. However, in one such study it was found that homeschooled students who used computers tested significantly higher in reading skills over those who did not use computers. In his doctoral dissertation, another researcher focused on the use of technology among homeschooled families in the greater Albany, NY area. He found that the use of technology had a positive influence on the decision to home school and to allow homeschooled families to create and maintain groups of like-minded homeschoolers in their quest to educate their children. The objectives of this study are to investigate which technologies are being used by homeschooled families (in the central Texas area) as well as homeschoolers' perceptions of their ease of use and usefulness in four categories of application: 1) to build social networks, 2) acquire and share knowledge, 3) administrative actions and 4) instructional activities.

Keywords: technology, homeschooling, computers, education, technology acceptance model

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INTRODUCTION

The education of students is critical to the success of any nation. The Carnegie Foundation for the Advancement of Teaching has been working to bring educational excellence to students across the nation ("Five Foundations Fund Initiative", 2010). The need to provide a college-trained work force in our technology-savvy economy has become acute. One option in the education of students is home schooling.

Homeschooling is a phenomenon that regained popularity in the 1980's and has been growing ever since. There are an estimated two million homeschooled students in the United States according to Brian Ray, one of the leading researchers on Home Schooling (2010, p. 1). Homeschooling is the educational option, utilizing either parent-directed or parent-controlled methods in the course of the traditional school hours during the traditional school days (Ray, 2000, p. 71), that can be observed throughout history in many people groups.

Technology has influenced all kinds of education, homeschooling included. Farris and Woodruff note, "the Internet is transforming how we think about commerce, it soon will transform how we think about education" (2000, p. 246). E-learning, or web-based learning, built on the technology of the Internet, has been growing and becoming popular among students of all types. International Data Corporation (IDC) estimated that the international e-learning market grew four times as large between 2002 and 2006 to be a 23.7 billion dollar market (Chiu, Sun, Sun and Ju, 2007, p. 1225).

The goal of this research is to measure in a selective study how some homeschooled students and parents are utilizing technology in the pursuit of their educational choice. While there are studies that discuss the socialization of homeschooled students and their academic preparedness for college (Ray, 2000, p. 75-76; Ray, 2010, p. 1-2), this study will focus more on the use of technology: the computer, the internet, DVD's and CD-ROM's, in the course of their homeschooled experience. The popularity of web-based learning has been explored in respect to college-aged students, but not as much among high school students.

BACKGROUND LITERATURE

Because of the fact that the homeschooling movement is growing by "leaps and bounds" (McDowell and Ray, 2000, p. 1), the editors of the *Peabody Journal of Education*, dedicated an entire issue to the Homeschooling Movement. In reviewing both the positive and the negative commentaries on the practice, it was concluded that the home education movement is "experiencing a growing acceptance in the popular culture" (McDowell & Ray, 2000, p. 1). Their goal was to offer a "scholarly, balanced evaluation of the movement and the issues surrounding it" (McDowell & Ray, 2000, p. 7).

In a review of homeschooled research, Brian Ray (2010) found that homeschooled students are exceptionally prepared for college and the workforce. Research was found to support the premise that homeschooled students, in general, did as well as or better than their public-schooled counterparts in standardized tests and graduation from college (p. 2). Ray's research found that homeschooled graduates engaged in more community service activities than did the general public. The conclusions reached by Ray provided support for the proposition that, generally, homeschooleding "is associated with relatively high academic achievement, healthy social, psychological, and emotional development, and success into adulthood" (p. 2).

In an earlier study Ray reported that homeschooled students who used computers gained

a three percent improvement in their reading skills over those who did not use computers. This was a significant difference according to Ray. (2000, p. 87). In the same journal, authors Farris and Woodruff state "the Internet's first benefit to home schooling is near-instant access to information and knowledge" (2000, p. 246). A second benefit included the ability of the internet to engage in e-learning – or web-based classrooms (p. 247). For those parents who are hesitant to allow their younger children to have free access to the internet, there are software programs that "adeptly perform both routine drills and advanced instruction and give instant feedback" (p. 248). A further option addressed by Farris and Woodruff is the use of direct-broadcast satellite television – which involves both "strong visual impact" and often a "high-caliber instructor". This option makes the homeschooled experience more like a traditional public-school classroom (p. 248). These authors conclude, "technology and home education will help each other grow" (Farris and Woodruff, 2000, p. 248).

While there hasn't been as much research related to homeschooling and technology – there has been quite a bit in the area of web-based learning among college-aged students. Chiu, et al., suggested, "the success of web-based learning depends largely on learner's satisfaction and other factors that will eventually increase learner's intention to continue using it" (2007, p. 1224). Chiu, et al.'s research found eight factors that contribute to a student's desire to continue using a web-based learning method (pp. 1230-1234). However, further research is needed to determine the generalizability of their conclusions (p. 1241). Additional research is also needed to show the relationship between homeschooling and web-based learning. Web-based learning could offer lots of options to home school students.

Alvai and Leidner's study on Technology Mediated Learning (TML) in the post secondary environment, suggest that there are only mixed results from the use of TML. This may partially be due to the lack of adaptation of instructional material to different learning styles (2001, pp. 3-4). Information technology is an important source of new learning methods and there are a "plethora of start-up companies for the market" (p. 1). The authors indicate that while more research is needed in this field, information technology can "provide enhanced capabilities for the execution of instructional strategies" which can "influence learning through direct support of underlying psychological processes" (p. 6). These conclusions support the use of TML in the homeschool environment as long as parents and students can adapt them to the student's specific learning style.

There are many technologies that can be utilized today in education. Some of these technologies have been cited by Shreiderman, Borkowski, Alavi and Norman (1998): email, bulletin boards, newsgroups, chat rooms, web sites with digital libraries, CD-ROMS, educational software, video/audio conferencing (p. 23-24). Since the publication of this research, DVDs could be added to this list along with smartphones, tablets, and other technologies. As pointed out in the article by Shreiderman, et al. (1998) "the plethora of technologies is matched by the diversity of pedagogical philosophies" (p. 24). One of the concerns stated by the authors is that there are high costs involving these technologies (p. 25). And although they are concerned about the cost, the goal of their paper is whether these technologies are a "tool for promoting effective learning" (p. 25). Although their study is focused on the aspect of a classroom environment rather than a home school environment there is still much to be gained from their findings, particularly in the area of active individual learning. In addition, homeschoolers who are prepared to utilize technology will be more ready for a technology-rich college experience, as Shreiderman, et al. (1998) states: "electronic classrooms seem likely to become more common across our campus and at other universities, even though the cost is high" (p. 41).

Saade and Bahli (2005) (in their work on the Technology Acceptance Model (TAM) and Internet Learning Systems (ILS)) have commented on the rise of academic and business use of ILS because of the pressures to utilize technology. As they sought to model ILS and gain an understanding of the "individual's attitudes and behaviors in using ILSs" (p. 317), they used a TAM model that included cognitive absorption's three dimensions, "temporal dissociation, focused immersion and heightened enjoyment." They studied the "influence of the three major cognitive absorption dimensions of the TAM constructs: perceived usefulness, perceived ease of use, and the behavioral intention to use ILSs" (p. 318). The use of the Internet allows for rapid exchange of information and knowledge – Saade and Bahli (2005) discovered that teachers can "provide learners with new and innovative virtual environments in an attempt to stimulate and enhance their learning process" (p. 319). They concluded that cognitive absorption had a major influence on perceived usefulness, but not on perceived ease of use, and a positive impact on behavioral intent to use ILSs.

In order for a technology to be adopted, it has to have a "good fit with the task for which it supports" (Goodhue and Thompson, 2005, p. 213). The technology acceptance model has been applied and joined with the task-technology fit model in a unique study by Holden & Rada (2011) in which they combine "perceived ease of use and usability" (p. 362). The focus of their study is on the acceptance of technology by teachers. It was concluded that more training would improve the acceptance of technology by teachers (Holden & Rada, 2011, p. 365). Ma, Andersson, and Streith (2005) studied student teachers to determine their acceptance of computers. Building on the technology acceptance model (TAM), these researchers examined student teachers' "subjective perception of computer technology usefulness and ease of use, in conjunction with his or her subjective norm" to determine their "intention to use computer technology" (p. 389). They concluded that it was the teacher's acceptance of the technology that determined its use in the classroom (Ma, et al., p. 393), similar to Holden and Rada's findings mentioned above.

The topic of technology and homeschooling has been studied from the aspect of the rise of homeschooling by Andrade (2008). This doctoral dissertation focused on the "relationship between the wide-scale diffusion of computer and communication technologies and the growth of home education in the U.S." (p. 3). The sample population was comprised of "27 practicing and former homeschooled parents from the greater Albany, NY region" (p. 3). There were several interesting conclusions drawn by the author that highlighted the positive influence of technology on the decision to home school. In addition, technology was employed to create and maintain groups of like-minded homeschoolers in their quest to educate their children. The technology allowed the parents to feel like they had the ability to satisfactorily rear their offspring in a nurturing environment. Andrade (2008) points out many factors that have caused the growth in the homeschooling movement. Furthermore, Andrade called for more research aimed at determining how "modern technology" interacts with these other factors for better understanding of the "modern homeschooling phenomenon" (p. 4).

METHODOLOGY

This research builds upon Andrade's 2008 study by examining not only homeschoolers' general use of technology, but also their beliefs and attitudes toward the use of technology in four distinct categories of application. This will be a quantitative study that will utilize a descriptive, comparative design. Cantrell (2011) categorizes the use of this type of research as a

means “to determine the relationship among variables” (p. 188). She notes that the key difference between a descriptive, comparative design and an experimental design is that there “are no control (manipulation) of the independent variable (IV) and no random assignment of study subjects to the intervention or control group” (2011, p. 188). In his work on an “interactive model” Maxwell (2005) proposes five components: goals, conceptual framework, research questions, methods, and validity (p. 215-216). Making use of these five components, the methodology will follow Maxwell’s interactive model.

Study participants will complete a web-based questionnaire. The first two sections of the survey utilize questions from Andrade, 2008, (Appendix A, p. 185-190). In section one of Andrade's questionnaire there are basic demographics that allow some understanding of those participating in the study. Question 19 (p. 188) will be eliminated, since the motivation to begin homeschooling will not be covered. In Section II (p. 188) of Andrade's questionnaire the technology profile is covered.

To examine factors relating to homeschoolers’ intention to use technology the third section of the questionnaire has questions from Ma, et al. (2005) in (Appendix I, p. 394). The questions used are the first twelve questions, adapted from Davis (1989, p. 324). The Davis questions originally dealt with the perceived ease of use and perceived usefulness of email, which Ma, et al. adapted to focus on using computers in their work environment. Andrade categorized four areas in which technology was used by home school families: 1) build social networks, 2) acquire and share knowledge, 3) administrative actions and 4) instructional activities (2008, p. 137-138). The questions of Ma, et. al, will be adapted to determine perceived ease of use and perceived usefulness of technology in these four categories.

RESEARCH QUESTIONS

The proposed study uses the TAM model (Ma, et al. ,2005, p. 389). Perceived usefulness is defined as ‘technology benefiting the parent’s (or student’s) home school experience’ and perceived ease of use is defined as ‘the degree to which a parent (or student) thinks the technology is free of effort’.

The following hypotheses will be tested.

H1 A homeschooled parent’s (or student’s) perceived ease of use of technology will directly influence his or her perceived usefulness of technology.

H2 A homeschooled parent’s (or student’s) perceived usefulness of technology will directly influence his or her intention to use the technology.

These two research questions will be applied to the four categories identified by Andrade (2008) for the use of technology by homeschoolers (p. 138-139).

By asking the questions of both parents and students, this study will also investigate whether there is a significant difference between parents and students in terms of perspectives on technology usage and usefulness. This could provide insight into the possibility of generational differences and the need for further research specific to these differences.

EXPECTED CONTRIBUTION

The major objective of this study is to investigate the use of technology by homeschoolers and their perceptions related to its ease of use and usefulness in four categories of application. By exploring these factors, the study will shed light on which technologies have

been found to be most useful (and least useful) in each category of application. A secondary objective is to determine if there is a significant difference in attitude between the homeschool educator and homeschooled students. By examining acceptance factors from both perspectives, we hope to gain a better understanding of how to incorporate various technologies into the home school environment in a way that will enhance the homeschooler's learning experience. It is expected that the findings of this study will provide valuable information to aid organizations such as CHEACT (Central Home Educators of Austin and Central Texas). CHEACT is an organization consisting of home school parents who provide assistance to parties interested in pursuing homeschooling in the central Texas area. Understanding how to utilize technology and how others are utilizing technology to overcome barriers to homeschooling will benefit any who are considering homeschooling as an educational option.

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