The Integration of Hardware, Software, and Technology Tools into the Classroom of Business/Marketing Educators in Alabama

by

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Abstract

This study was designed to investigate: (a) the degree to which business/marketing education teachers in Alabama integrate technology into their classrooms; (b) if technology is not integrated, the barriers preventing integration by business/marketing education teachers; (c) the degree of perceived competency of business/marketing education teachers in Alabama to integrate technology into the classroom. Data were analyzed using the following statistical procedures: Descriptive, Analysis of Variance (ANOVA), and t-test. The majority of respondents were female (84.5%). The highest reported age category was between the ages of 51 to 60 (31.9%). The largest percent of respondents taught at a county school (56.9%). Most respondents have been teaching for 6 to 10 years (25%).

The majority of respondents reported barriers as extrinsic. The leading barriers in all categories were budget constraints and Information Technology limitations.

There were no differences in use of hardware and technology tools based on their type of school, highest degree earned, or certification level. However, there were

differences in the use of hardware and technology tools based on years of teaching experience. There were no differences in the use of software.

Taken as a group, the business/marketing teachers responded that they perceived themselves as less than moderately competent in the use of software (M = 28.03) and technology tools (M = 29.41). However, teachers responded that they perceived themselves as moderately competent in the use of hardware (M = 40.71).

In this study, business/marketing educators indicated the need for professional development in the area of effectively integrating technology. They also indicated a need for professional development for increasing their competence level and overcoming barriers of integrating technology.

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I. NATURE OF THE PROBLEM

Introduction and Background

> Unless one has lived in a cave for the last decade or two, the fact that global information and knowledge has exploded in all content areas is beyond denying. The growth of the Internet, coupled with falling technology prices in the 21st century, has brought knowledge to the fingertips of tens of millions of people for whom education was once only a dream. The availability of knowledge and the availability of Internet-based resources have substantially increased the amounts of information available to classroom teachers both as an integral part of their curricula and as extra materials to enhance their curricula (Mark, 2009, p.47).

Thomas Jefferson once said, “As new discoveries are made, new truths discovered, and manners and opinions change with the change of circumstances, institutions must advance also to keep pace with the times.” These words are etched on the Thomas Jefferson memorial in Washington D.C. Although these words were spoken over 200 years ago, they are still relevant in today’s society. Statement No. 71

issued by the Policies Commission for Business and Economic Education (PCBEE) (2002), recommend that business educators must teach students to learn, think, and embrace the challenges of the 21st century and educational changes must be top priority.

To define technology integration is not a simple task. Technology can be defined as incorporating resources and practices into the classroom. However, the U.S. Department of Education National Center for Education Statistics (2002) determined that having the technology available is just part of the process. Integrating technology is the next step, making the technology obtainable and accessible should remain a continuous goal. Teachers must commit to being lifelong learners and be willing to embrace change with both current and future technologies. Earle (2002) discussed the reason for technology integration to include the prospect of new developments, quick accessibility, innovation, Internet access, ease of communication, and the promise of impact on learning.

Over a decade ago, the leading barriers for integrating technology into the classroom were lack of equipment, unprepared teachers, and risk of hardware or software failure (Houseman, 1997). These are not leading barriers in today’s education world, but unfortunately they

are still factors. Hewitt (2008) suggests that schools are better equipped than ever before. In addition, teachers are encouraged to invest in professional development for technology. Most schools now have Information Technology departments to help with technology issues. Even with all the technological enhancements to the educational classroom, teachers may still fail to integrate technology into the classroom.

Theoretical Framework

In response to the possibility that teachers may ineffectively integrate technology into the classroom Koehler and Mishra (2008) developed an adaptation to Shulman's theoretical framework of Pedagogical Content Knowledge (PCK) to include the use of technology. Their newfound theory, Technological Pedagogical Content Knowledge (TPACK), best describes how teachers' understanding of technologies and pedagogical content knowledge work together with one another to produce effective integration of technology with both teaching and learning. TPACK is based on the understanding that teaching is an extremely complex skill that depends on many kinds of knowledge: content, pedagogy, and technology. Equally important are the interactions between each knowledge base, including pedagogical content knowledge, technological

content knowledge, technological pedagogical knowledge, and technological pedagogical content knowledge (Mishra and Koehler, 2006).

Koehler and Mishra (2008) delineate the three knowledge bases of the TPACK framework as follows: Content knowledge (CK) pertains to the knowledge of subject matter, Pedagogical knowledge (PK) is the understanding of the methods of education, Technology knowledge (TK) is a fluctuating definition because technology is ever-changing. TK requires a deep appreciation and skill of information technology and interestingly can include such standard technologies as books and chalkboards to more advanced technologies such as Internet and digital media.

Understanding the interactions of TPACK are just as important as understanding the knowledge bases. Pedagogical content knowledge (PCK) is the interaction of pedagogical and content knowledge. The interaction of PCK covers a realm of information, including: teaching, learning, curriculum, assessment, feedback, and linking information. Technology content knowledge (TCK) is the interaction of technology and content knowledge. TCK promotes an understanding of the manner in which technology and content can control and restrain one another. Within TCK, teachers should not only have an understanding of content knowledge,

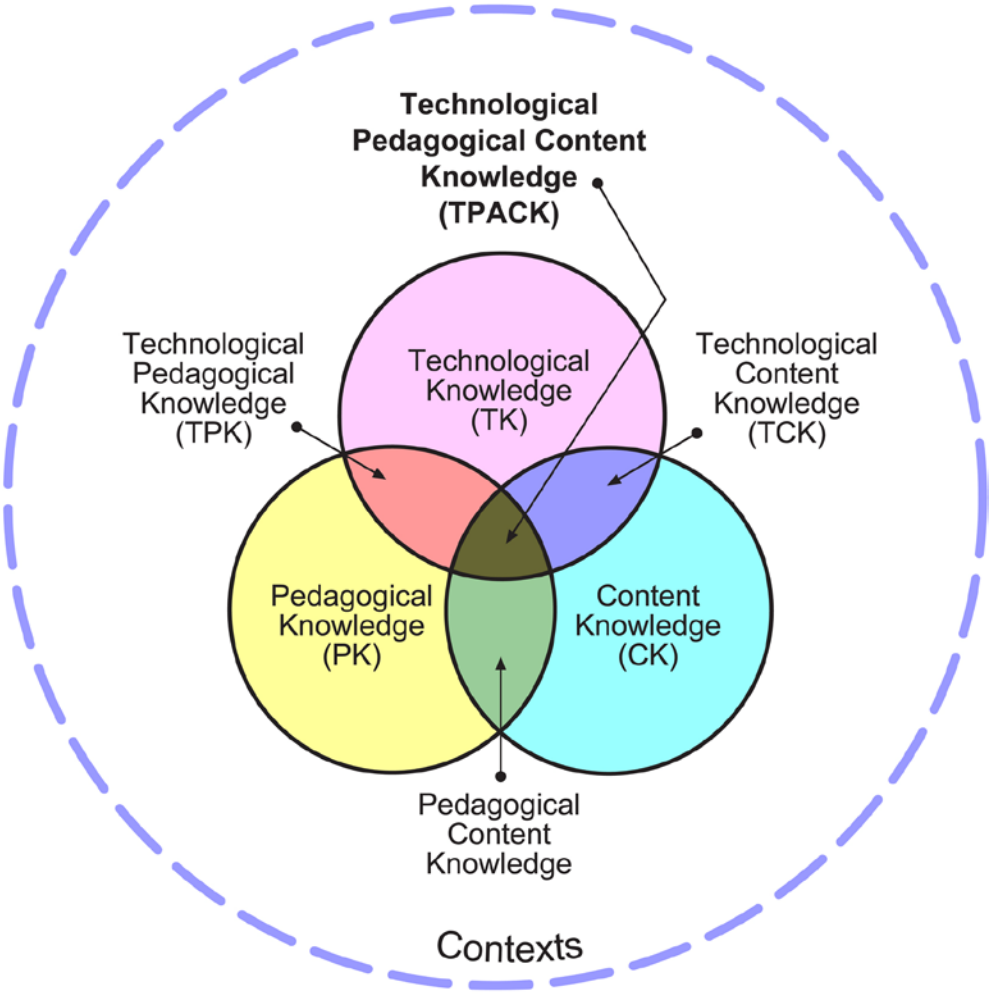
but they should also have an appreciation of how their subject material can be changed by the application of technology. Technology pedagogical knowledge (TPK) is the interaction of technology and pedagogy knowledge. Within TPK teachers must understand the influence that technology can have with teaching and learning and changes that will occur. TPK interaction is the assertion that teachers can identify the benefits and restraints when incorporating technology into the classroom in relation to discipline and instructionally sound designs and strategies. Technological pedagogical content knowledge (TPACK) is the interaction between the three knowledge bases: technology, pedagogy, and content knowledge. Koehler and Mishra (2008) state that:

> TPACK is the basis of effective teaching with technology and requires an understanding of the representation of concepts using technology; pedagogical techniques that use technologies in constructive ways to teach content; knowledge of what makes concepts difficult or easy to learn and how technology can help redress some of the problems that students face; knowledge of students' prior knowledge and theories of epistemology; and knowledge of how technologies can be used to build on existing

knowledge and to develop new epistemologies or strengthen old ones (pp. 18-19).

Mishra and Koehler (2006) firmly believe that the basis of the TPACK framework is the understanding that teaching is very multifaceted and relies heavily on many different representations of knowledge. It is essential for every teacher to understand the importance of each knowledge component individually, and to also understand the complexity and importance as it relates to the three bodies of knowledge interact. The TPACK theoretical framework is changing the way that educators view technology in the classroom. The question is no longer about using technology, but more about how to effectively use technology to teach. Figure 1 is a visualization of the TPACK framework.

Illustration 1. TPACK Framework



Note. From Technological pedagogical content knowledge, by M. Koehler and P. Mishra, Retrieved from http://tpack.org/. Reprinted with permission (Appendix A).

Purpose of the Study

This study was designed to investigate: (a) the degree to which business/marketing education teachers in Alabama integrate technology into their classrooms; (b) if technology is not integrated, the barriers preventing integration by business/marketing education teachers; (c) the degree of perceived competency of business/marketing education teachers in Alabama to integrate technology into the classroom. The purpose of this study is to provide information that may be utilized to improve the availability of hardware, software, and technology tools in business/marketing education programs and to increase the competence level of business/marketing educators to integrate technology in the curriculum.

Statement of the Problem

Integrating technology in the classroom has been a top priority at the state and national levels. “Alabama’s students are expected to graduate and compete among graduates, not only within the southeast, but with students across the nation and the world, as information technologies permeate all professions globally” (Alabama Department of Education, 2009, p. 3). The Alabama state technology plan, Indicators for Measuring Progress in Advancing Classroom Technology (IMPACT), recognized that

school administrators, teachers, students, and parents feel strongly that technology is critical to the preparation for 21st century school and work (Alabama Department of Education, 2009). The International Society for Technology in Education (ISTE) is a not-for-profit organization devoted to supporting the use of information technology to assist in improving teaching and learning of K-12 students and teacher education (International Society for Technology in Education [ISTE], 1997). The main goal of ISTE was to develop national standards for educational uses of technology to enhance educational and literacy improvements in school (Lam, 2007). ISTE promotes the effective integration of technology by teachers and students.

The research problem for this study was to ascertain the degree to which business/marketing educators of Alabama integrate technology into the classroom. Specifically, the problem was to identify barriers associated with integrating technology in the classroom, and to determine perceived competence of business/marketing educators of Alabama to integrate technology in the classroom.

Significance of the Problem

The study is valuable to administration in planning, budgeting, and implementing technology in their school systems. This study may also be used to provide data to be

used in the continuing professional development of business/marketing education teachers in Alabama to decrease intrinsic barriers and increase perceived competence.

Research Questions

The following research questions were designed to address the statement of the problem:

1. What are the demographic characteristics of the business/marketing education teachers in Alabama who participated in this study?
2. Which hardware and software technologies are available for business/marketing education teachers in Alabama?
3. What are the perceived barriers preventing integration of hardware and software technologies by business/marketing education teachers in Alabama?
4. Which technology tools are available for business/marketing education teachers in Alabama?
5. What are the perceived barriers preventing integration of technology tools by business/marketing education teachers in Alabama?
6. To what extent do business/marketing education teachers of Alabama differ in their frequency to use (a) hardware technology, (b) software technology, and (c) technology tools based on: (1) school type (city or county); (2)

highest degree earned (Bachelor, Master, Specialist, Doctorate); (3) certification level(B, A, AA, Alternative, Emergency); and, (4) years experience (1-5, 6-10, 11-15, 16-20, 21+)?

7. To what extent do business/marketing education teachers of Alabama perceive that they are competent in integrating technology into their teaching practice?

Definition of Terms

Blog – A Web log is a written commentary on issues the author deems important. Readers can reply and participate in discussion (Solomon and Schrum, 2007).

Business/Marketing Educators – A term used to identify teachers who teach Business/Marketing Education. This term is used interchangeably with business educators and business education.

Hardware – The physical parts of a computer or related equipments (Oliverio, Pasewark, & White, 2007).

Integrating Technology – Knowing how technology should be used to facilitate overall learning (Newby, Stepich, Lehman, & Russell, 2006).

Internet – A global network with the largest group of interconnected networks in the world (Whitehead, Jensen, & Boschee, 2003).

National Business Education Association (NBEA) – The largest professional organization devoted exclusively to serving individuals and groups engaged in instruction, administration, research, and dissemination of information for and about business (Scott, 2008).

Podcast – Digital media files such as music or speech used for audio playback on mobile devices and personal computers (Solomon & Schrum, 2007).

Policies Commission for Business and Economic Education (PCBEE) – "A national committee that is jointly sponsored by the Business Division of The Association for Career and Technical Education (ACTE), Delta Pi Epsilon (DPE), and the National Business Education Association (NBEA). The PCBEE identifies and defines existing and emerging issues in business and economic education" (PCBEE, 2010, p. 41).

Social Networking – An Internet based social structure connected by one or more specific types of interdependency, such as friendship or school. MySpace and Facebook are examples (Szul & Woodland, 2010).

Software – A term for the programs or instructions that tell the computer what to do (Newby, Stepich, Lehman, & Russell, 2006).

Technology – An ever-changing definition, but is a tool created by humans to produce products, solve problems, fulfill needs, or satisfy wants (Koehler & Mishra, 2008).

Technology Tools – A web-based application used for collaboration, communication, reflection, research, teaching, and/or learning (Solomon & Schrum, 2007).

Web 2.0 – An invented term that includes the new and emerging Web-based tools (Solomon & Schrum, 2007).

Webquest – "A WebQuest is a Web site that organizes students' work and use of on-line resources for a curriculum unit. The WebQuest template includes an introduction to hook the student, a task with clear goals, a process that describes what students will do including hyperlinks, evaluation guidelines, and a conclusion" (Wiske, Franz, & Breit, 2005, p. 51).

Wiki – A web page that allows collaboration by supporting readers to add, edit, and change the Web page's contents at any time (Solomon & Schrum, 2007).

Limitations

Limitations are the conditions beyond the control of the researcher that may place restrictions on the conclusions of the study and applications to other situations. Limitations in this study include: (a) number of teachers responding to the survey; and (b) self-reporting survey instrument.

Delimitations

Delimitations are the boundaries beyond which the study is concerned. This study involves only secondary business/marketing educators of Alabama teaching grades 6-12.

II. REVIEW OF LITERATURE

The review of literature consists of the following major topics:

Introduction

History and changes in technology

Integrating technology into the classroom

Barriers associated with integrating technology

Required competencies for integrating technology

Summary

Introduction

PCBEE Policy Statement No. 83, *This We Believe about the Transformation and Future of Business Education,* identifies the instructional approaches that business educators must take, such as work-based, project-based, collaborative, constructivist, and contextual learning; online and web-based delivery methods; and other innovative instructional strategies. Business/Marketing educators are expected to demonstrate high-quality instruction by implementing and integrating technology into the classroom in a variety of ways.

In addition, PCBEE Policy Statement No. 61 (1997) noted that societal changes are accentuated by

technological advances which bring about shifts in both learners' needs and instructional delivery in schools, business, labor, and government. Redmann and Kotrlik (2004) describe how the traditional learner would listen to a class lecture, take notes, and prepare for a written test. This type of traditional environment does not prepare the learner for the contemporary work world that exists today. Technology-based learning environments are essential for helping students acquire the type of knowledge, skills, and attitudes needed for success in today's society. Parents are anticipating that their children will graduate with skills that prepare them to either enter the workforce or advance to higher levels of education and training. Employers are hiring employees who are dependable, educated, able to reason, communicate, problem solve, and are technically savvy (Lam, 2007).

The U.S. Department of Education National Center for Education Statistics (2000) has been tracking the integration of technology for over a decade. The study indicated that only half of the public school teachers who had computers or the Internet available at their school systems used them for classroom instruction. Teachers reportedly assigned students to use technology more often for word processing or creating spreadsheets (61%),

followed by Internet research (51%), practicing drills (50%), and solving problems and analyzing data (50%). More recently, the U. S. Department of Education National Center for Education Statistics (2010) reported that 100% of public schools had internet access and of those schools 97% had Internet access on computers used for instructional purposes.

Solomon and Schrum (2007) discussed that in the beginning of the 21st century, the Internet transitioned from linking and clicking to creating and sharing. This transformation was designated as Web 2.0 in which the user can not only research information, but can also create and share thoughts and ideas. The globalized society of the 21st century allows teachers and students the opportunity to communicate and collaborate at any time. Businesses have the opportunity to allow their employees to work from diverse locations with the availability of advanced technology enabling employees to connect at any place and any time.

History and Changes in Technology

Many technological changes have come about over the years, each of which were presumed would change the educational system of that era. Mehlinger (1996) acknowledges that in the 1920s, radio was expected to have

a major impact on schools; in the 1930s, it was to be film; in the 1950s, television; and in the 1960s, teaching machines. The only piece of technology that remains in the classroom today is the overhead projector that was introduced in the 1940s by the military.

Shelly and Vermaat (2008) describe the Internet as a tool that has exceeded expectations over the decades since it originated in 1969. The Internet began as a networking project started by the Pentagon's Advanced Research Projects Agency (ARPA). ARPA is an agency of the U.S. Department of Defense whose purpose was to develop a network that allowed scientists at different locations to collaborate and that could function even if part of the network were damaged. In September 1969 the network, called ARPANET, became operational. The components of the ARPANET consisted of four main computers, which were host computers on the network. Many realized the great potential and benefit of using ARPANET.

According to Solomon and Schrum (2007), the ARPANET proved to be a success and in the 1980s the National Science Foundation (NSF) invested in a network to link scientists at major universities so that they could join forces to communicate and share research. By 1984, the network had more than 1,000 computers linked as host

computers to the network. The Internet came to be in 1986 when the NSF connected its network of five supercomputer centers to ARPANET.

The Internet continues to grow at an exceptional rate. Even with this growth, it remains public, cooperative, and an autonomous network. The Internet is not controlled or owned by a single person, company, institution, or government agency. “The World Wide Web Consortium (W3C) oversees research and sets standards and guidelines for many areas of the Internet with the mission to contribute to the growth of the web” (Shelly, & Vermaat, 2008, p. 70).

The PCBEE (2001) identifies business education as being a critical contribution to the American educational system that has implemented an unyielding foundation of knowledge and skills. According to Robles (2009) business education has seen continuous change, beginning with the typewriter in the late 1800s and electronic data processing in the early 1900s. Business education continued to grow during the 1960s with the offering of typing, note taking, and accounting courses and during the 1970s with the demand for word processing from business and industry. The 1980s began an era of standards development and the need for accountability in business education, which has been a continuous process since then.

Hosler and Meggison (2008) reported that business education has evolved from a discipline that taught typewriting, shorthand, and bookkeeping at the secondary level in the twentieth century to a multi-level discipline that embraces technology beginning at the elementary school level in the twenty-first century. Students are developing technology skills at intermediate levels and the curriculum must strive to accommodate and reinforce such skills. The business teacher should no longer be referred to as the keyboarding teacher and the business education classroom should no longer be referred to as the typing class. Business education will also change as society continues to change. The workforce skills that businesses seek from employees today will eventually be replaced with a new set of skills. Hosler and Meggison (2008) suggest that transformations are inevitable and will occur in course content and delivery methods, but the dual objectives of providing education for occupational skill and economic competence have always been and will continue to define the parameters of business education.

President George W. Bush signed the No Child Left Behind Act of 2001 on January 8, 2002. Part of this law implemented the program, Enhancing Education through Technology (Ed Tech) – Title II-D-1&2, directed at

integrating technology into the classroom. The primary purposes were to:

> provide assistance to implement and support technology; increase access to technology for students and teachers; promote initiatives that provide school teachers, principals, and administrators the resources needed to integrate technology effectively into curricula and instruction; and to provide training, support evaluation, and to support local efforts using technology to promote parent and family involvement (U.S. Department of Education, 2002).

The Department of Education recognized the essential role of technology in 21st century and initiated a plan of action to expand the use of technology in the educational setting. Bruett (2006) suggests that it is vital that students are prepared to be competitive in the global economy, an economy that would not be possible without current technology. Students must also prosper and make meaningful contributions to society; they will need the knowledge of twenty-first century skills such as self-study, problem solving, communication and collaboration, and technology proficiency. The ability for students to utilize technology in the educational setting to prepare them for the work

environment is crucial. Technology skills in the work environment are not only expected, but mandatory.

Marcoux and Loertscher (2009) indicate that No Child Left Behind measured performance by the use of standardized tests. However, the new era of Race to the Top designates finances to flow toward the innovation of multiple measures of achievement which provides new opportunity for teachers of technology if they realize they have the power through technology to move into the heart of teaching and learning. United States Secretary of Education Arne Duncan (2009) introduced Race to the Top at the 2009 Governors Education Symposium by encouraging states to advance reforms around four specific areas. However, the fourth area of reform is the only area that related to technology. Area four suggests that states should adopt standards and assessments that prepare students to succeed in college, the workplace, and the global economy. In order for area four of Secretary Duncan's reform act to succeed, teachers must ensure that the integration of technology prepares students to enter the workforce of the twenty-first century. The historical method of teaching was presentation style in which the teacher presents information and students are then tested. That style of teaching simply prepares student to follow instructions. In today's competitive job market, students

need to be prepared to enter the workforce with the ability to make decisions and adapt to the changing technological needs of society. Integrating effective technology tools promote creativity, collaboration, and communication. This innovative way of teaching is collaborative, with information shared, discussed, refined, and understood (Solomon, & Schrum, 2007). The new method of teaching will ensure that the students of the 21st century are ready to compete in the job market upon entering their field.

Integrating Technology into the Classroom

Integrating technology is not a simple execution if the teacher strives to integrate technology effectively. Simply having technology available is a disservice to the students if it is not going to be utilized in an enriched learning environment. Teaching effectively with technology to a diverse population of students can prove to be cumbersome. Young (2005) proposes the real question that business educators face is not should technology be integrated, but how technology can be integrated effectively. According to Gorder (2008), in order to effectively integrate technology many factors have to occur, but the most important factor is the teachers' competence and the ability to shape instructional activities to meet the students' needs.

Johnson and Maddux (2006) outlined four conditions that need to be present for full technology integration to occur:

1. Capacity – the hardware, software, and connectivity must be of a sufficient quality.
2. Accessibility – both students and teachers must have sufficient access to technology.
3. Implementation – effective teaching and learning strategies for capitalizing on the technology must be implemented in the classroom.
4. Support – policymakers must encourage and support the wise use of technology. As difficult as it is to satisfy capacity, accessibility, and implementation aspects of full integration, we have seen examples where even with all other conditions being present, policymakers can stifle integration efforts (p. 15).

In 2004, Redmann and Kotrlik reported that some Louisiana teachers did not have access in their classrooms and labs to the latest technology, which would enable them to effectively integrate technology. Over two-thirds of teachers (81%) reported having an email account and 52% reported they had an office computer with Internet connection. When asked about technology available for their use in teaching 27% had interactive CD equipment, 18% had

laser disc players or standalone CD players, and 13% reported their students had e-mail accounts.

Interestingly, Redmann and Kotrlik (2008) conducted a follow-up study five years later indicated that teachers did increase their technology usage within that time span. Most teachers (97%) reported having an email account, but few students (9.9%) had school email accounts. Technology use had increased to include digital cameras (66.3%), laser disc players or standalone DVD or CD players (60.4%), interactive DVDs or CDs (60.4%), and video cassette/CD/DVD players (57.4%).

Gorder (2008) conducted a study of teacher perceptions of instructional technology integration in the classroom. The research investigated three phases of technology integration. Phase 1 identified teachers that used technology for professional use. Phase 2 identified teachers that used technology to facilitate and deliver instruction. Phase 3 identified teachers that integrated technology into student learning. Teachers answered using a five point Likert-type scale, with choices being: 1 – never, 2- seldom, 3-sometimes, 4- often, 5 – always. The mean was highest for Phase 1 (M = 4.01). The mean for Phase 2 (M = 3.83) was in the middle, and the mean for Phase 3 (M = 3.07) was the lowest. The results indicate that the

teachers use of technology for integration into teaching and learning was the lowest.

In addition, Gorder's (2008) study focused on teachers' use of technology for teaching and learning in the classroom. Teachers answered using a five point Likert-type scale, with choices being: 1 – never, 2- seldom, 3-sometimes, 4- often, 5 – always. According to the study, the most commonly used software in the classroom was the common applications of word processing (M = 4.14), Internet browsers (M = 3.68), presentation software (M = 3.65), digital cameras/scanners (M = 3.37), and graphics program (M = 2.84). The least commonly used softwares in the classroom were video conferencing (M = 1.69), web-based collaboration programs (M = 1.64), and blogs – weblogs – podcasts – Wikipedia (M = 1.49). A one-way ANOVA test compared the means of teachers by grade level taught, which indicated a statistically significant difference for technology integration based on grade level taught [$F(4,169) = 3.693$, $p = .007$]. Teachers that taught grades 9-12 (M = 3.84) indicated they integrate technology more than those in K-5 (M = 3.42) or 6-8 (M = 3.39).

Students are using technology like never before. The reality of teachers learning technology one step ahead of students is constant in this digital age. Klopfer and Yoon

(2005) asserted that constructively promoting the educational advancement of today's young technology confident students requires implementing new technological tools creatively. Remarkably, Web 2.0 is transforming into a fully collaborative space and the control of content has been decentralized to allow everyone to create, publish, subscribe, and share information (Asmus, Bonner, Esterhay, Lechner, & Rentfrow, 2005).

Solomon and Schrum (2007) stated the three basic and most commonly used Web 2.0 tools in the teaching community are blogs, podcasts, and wikis. A blog is considered to be an important means of communication in the classroom. The communication can be from many sources including teacher, student, administration, and parent. The implications for students using blogs in the classroom include writing about current trends/issues and thus improving writing skills, reading skills, critically thinking skills, and peer editing skills. Teachers can create blogs to communicate with both students and parents. Parents find classroom blogs beneficial for upcoming events, assignments, and tests. Students find classroom blogs beneficial for open dialogue, reminders, and classroom information. Administrators can utilize blogs in school systems for

weekly announcements, agendas, and as a communicative device.

Solomon and Schrum (2007) identified that podcasts are gaining popularity in the teaching and learning environment. There are several reasons for both teachers and students to utilize a podcast. Teachers use podcasts as a way to replay the audio of traditionally delivered information, such as discussion or lecture, to allow students to review or catch up on missed classes. Podcasts can be beneficial for special needs students that may need to hear the discussion or lecture more than one time. Most students have access to listen to podcasts easily with the use of a personal MP3 player or and iPod. Students may also access a podcast on a classroom computer. Students can use podcasts as a way of sharing their expertise and opinions, keeping notes, and reflection. Podcasts are a great way of reaching the auditory learner in the teaching and learning environment.

Wikis are similar to web pages and blogs, yet different in the extent that they allow for users to collaborate by adding, editing, and changing contents. Solomon and Schrum (2007) describe the use of wikis in education for students to include group collaboration and problem solving, peer editing during the writing process,

and electronic portfolios. Wikis have a tracking system which allows teachers to identify the contributions of each student. Teachers can use wikis for teacher-to-teacher collaboration or teacher-to-student collaboration on any given topic.

Video sharing, such as YouTube, allows people to post, comment, tag, and watch videos. Video sharing is a great resource to utilize in the classroom allowing students to create and edit effective presentation. Solomon and Schrum (2007) elaborate that students can produce momentous videos that look professional and warrant an audience for their work. Many business/marketing teachers incorporate this resource into their marketing classes and have students create commercials using video sharing software. Students may collaborate on a video assignment by filming individual videos and editing them to make a single movie. Teachers can also integrate video sharing into their teaching practice, either by finding a video that is already created or creating a video themselves.

Szul and Woodland (2010) describe social networking as a shift in how people discover, read, and share news, information, and content. Facebook and Twitter are two examples of social networking that students are using on a daily basis in their personal lives. The perspective

between academic views of technology and student views of technology are relatively different. Educators intend for technology to further student's education and prepare them for workforce readiness. Students view technology as a means of entertainment and/or communicating. The dilemma with social networking is deciding the appropriateness and how to integrate effectively in the classroom. Facebook may be used in the classroom as a source of communication. Students can chat, share ideas, and post responses. Students can also join groups of other academic areas to integrate sharing and learning. Twitter can be used to contact experts, focus on research, and examine multiple points of view.

According to Nworie and Haughton (2008) "emerging technologies have brought about innovation and flexibility in instructional delivery systems resulting in improved online and distributed learning, mobile computing and learning, engagement in multimedia instruction, use of wireless communication, and an increase in interactive and collaborative instructional tools" (p. 53). Information technology is often viewed as either a tool or content. Mundrake (2008) described the trend of including information technology in course titles, indicating that teachers spent much of their time teaching the details of

how to use the tool. The teaching paradigm is shifting to a more problem-solving approach, which teaches students how and when to use technology to perform tasks more efficiently.

Barriers Associated with Integrating Technology

With the development of technology increasing at rapid speeds, there is no surprise that barriers will occur when integrating technology. Even the most dedicated teachers committed to integrating technology into the classroom will encounter challenges along the way. Ertmer (1999) defines barriers as any dynamic preventing or restricting teachers' use of technology in the classroom. Ertmer also discussed the differences between first-order and second-order barriers:

> First-order barriers to technology integration are described as being extrinsic to teachers and include lack of access to computers and software, insufficient time to plan instruction, and inadequate technical and administrative support. Second-order barriers are intrinsic to teachers and include beliefs about teaching, beliefs about computers, established classroom practices, and unwillingness to change (p. 48).

First-order barriers can make it very difficult for teachers to integrate technology into the classroom. Without the proper hardware, software, time and support teachers find it difficult to effectively integrate technology into the classroom. These barriers are easy to identify and easy to eliminate once funds are allocated. Second-order barriers are more personal and ingrained in teacher beliefs and customs. Many teachers are unsure about their changing role in the classroom. Ertmer (1999) expressed that at some points first-order barriers will lead and at other times, second-order barriers will present more critical challenges, but inevitably barriers will remain.

Redmann and Kotrlik (2004) found that Louisiana business education teachers experienced minor barriers with their efforts to integrate technology into the classroom. In this study a four point Likert-type scale was used with 1 indicting “not a barrier” and 4 indicating “major barrier”. There were 11 items answered. The results indicated that teachers were encountering minor barriers as they attempted to integrate technology ($M = 1.88$, $SD = .64$). The highest mean score of the 11 items ($M = 2.58$, $SD = 1.01$) suggested that teachers felt they did not have adequate time to develop lessons to integrate technology.

The Louisiana business education teachers also expressed some anxiety when thinking about using technology in their instruction. When asked how they felt when thinking about using technology in their instruction, they responded by using a four point scale, with 1 indicating “no anxiety” and 4 indicating “high anxiety.” The results indicated that teachers were experiencing some anxiety ($M = 1.50$, $SD = .64$), but only 6% reported moderate or high anxiety.

In addition, Redmann and Kotrlik (2008) reported results of a follow-up study that indicated the barriers were significantly lower in 2007 when compared to 2002 ($t = 3.89$, $P < .001$, $d = .51$). The highest rated barrier was the same as in 2002, which was adequate time to develop lessons that utilize technology ($M = 2.18$, $SD = 1.04$). Louisiana business education teachers also reported that they were still experiencing some anxiety ($M = 1.63$, $SD = .59$). Although the overall results indicate that barriers were reduced, an individual analysis shows that the same barriers were still prevalent. The results also indicated that teachers are still feeling somewhat anxious about integrating technology into the classroom. Interestingly, the results were higher for the 2007 study ($M = 1.63$) than for the 2002 study ($M = 1.50$), indicating that teachers were slightly more anxious in the more recent study.

Earle (2002) discussed restraints of technology integration to include barriers such as technical support, teacher expertise, time for planning, or pedagogical applications. Technical support can include an assortment of issues from information technology personnel not being available to stringent rules applied to the school system resulting in inadequate ability to integrate technology tools. Teacher expertise is a barrier resulting from the lack of proper training and professional development when new technology is implemented. Professional development must provide training on not only how to use the technology, but also how to effectively integrate the technology into the teaching and learning environment. When school districts initiate the integration of technology, appropriate time must be allocated for teachers to revise and develop lessons. Accordingly, George (2000) indicated that the barriers to incorporating technology into the teaching learning process were lack of expertise, time, and funds. Whitehead, Jensen, and Boschee (2003) identified a barrier preventing technology integration as state educational agencies lacking resources and funding.

Whitehead et al. (2003) stated as a barrier the lack of awareness of school administrators as to the role of technology in the classroom. Many administrators are

unaware of the advancement and need for technology in the classroom. In addition, Budin (1999) suggested that school systems were more concerned with acquiring the hardware and software technology instead of implementing staff development and planning for integrating technology effectively. Teachers have also expressed a high level of anxiety when technology was placed into the classroom without proper professional development and curriculum considerations.

Required Competencies for Integrating Technology

> Machines and technologies are tools, valuable only when a human intelligence organizes their use in a productive way. In the classroom, that human is the teacher, who controls the nature of the environment and what happens there. Good classroom tools extend the teacher's power to create a rich learning environment. If the teacher does not know what to make of the tool, or fears it, or misconstrues its uses, it will be used badly or not at all. If the teacher perceives the machine or technology as a master, not as a servant, its potential will never be realized (Callister, 1992, pp. 324-325).

Redmann and Kotrlik (2004) conducted a study of Louisiana business education teacher's perceived competence

integrating technology into the classroom. There were four technology integration scales (exploration, experimentation, adoption, and advanced technology integration) and a five-point Likert-type scale was used with 5 an indicator for “just like me” and 1 an indicator for “not like me at all.” The two scales that received the highest ratings from the teachers were Adoption (M = 4.09, SD = .74) and Exploration (M = 3.84, SD = .85). The results indicated that teachers perceived that they have adopted technology and are exploring new ways to integrate technology. As a result of the study, recommendation was made that business education teachers should continue to utilize workshops, conference, and self-directed learning to develop their skill of effectively integrating technology into the classroom. State departments, school systems, and teacher education programs should also take responsibility in providing technology training for teachers.

Mainwaring and Bergman (2006) described South Carolina’s innovative ePortfolio system which is aimed at helping educators integrate new technology into their classroom. A teacher technology competence pre-assessment is used to develop teacher improvement plans. Professional development resources are put into effect to accommodate

each individual's improvement plan. Throughout the process teachers create verification of proficiency as they excel in technology integration. The final evaluation includes a teacher technology competence post-assessment. The results indicated an improvement in teacher competence after the training. Of the 395 teachers that were at Entry Level 1 (indicating a basic level of knowledge) at the beginning of the evaluation, 135 of them had advanced to Progressive Level 2 (indicating an intermediate level of knowledge). Interestingly, the progression of many Proficient Level 3 (indicating a moderate level of knowledge) teachers progressed to Exemplary Level 4 (indicating a proficient level of knowledge); the results display an increase of 65 percent in the number of Level 4 teachers.

Professional development should be set as a high priority when integrating technology into the classroom. When a teacher is not trained on the use of technology in the classroom, many of the fears and barriers are understandable. There are many teachers that are aware that technology has the capability to enhance teaching and learning, but there are just as many teachers that are not aware of the benefits technology can offer them as professionals in carrying out the implementation of the curriculum in their classrooms (Whitehead et al., 2003).

Redmann and Kotrilik (2004) found that integrating technology was more prominent with teachers that had a higher perception of their overall teaching ability. Teachers that felt confident and competent in their teaching ability were more likely to integrate technology and try new innovative techniques.

According to Young (2005), for professional development to be successful, the proper equipment, software, and technical support services should be available. Simply having technology in the classroom is not enough; faculty must be proficient in the use of technology tools as well as the learning strategies supported by technology. Effective professional development needs to accommodate the existing level of competency of the teacher, the available technology and the goals of the educational institution. Whitehead et al. (2002) suggests in-service programs should aim for teachers and administrators to develop competencies in using a variety of technology applications. Competencies should include hardware, software, and technology tools that can be utilized in both administrative and teacher roles.

The 1997 Report to the President on the use of technology to strengthen K-12 education in the United States identified six recommendations related to

integrating technology into the classroom. The following six recommendations were made and considered the most important:

1. Focus on learning with technology, not about technology. Although both are worthy of attention, it is important to distinguish between technology as a subject area and the use of technology to facilitate learning about a subject area.
2. Emphasize content and pedagogy, and not just hardware. Particular attention should be given to the potential role of technology in achieving the goals of current educational reform efforts through the use of new pedagogic methods focusing on the development of higher order reasoning and problem-solving skills.
3. Give special attention to professional development. The substantial investment in technology will be wasted if teachers are not provided with the preparation and support needed to effectively integrate technology into their teaching.
4. Engage in realistic budgeting. The panel suggested that five percent of public K-12 spending be earmarked for technology-related expenditures.

5. Ensure equitable, universal access. Access to knowledge-building and communication tools based on computing and networking technologies should be made available to all.
6. Initiate a major program of experimental research. Rigorous and systematic research is needed to ensure both the efficacy and cost-effectiveness of technology within our nation's schools. (U.S. Department of Education, 1997, p. 35).

Teachers also need to be confident in their knowledge of content. Change occurs at a rapid rate with technology and business/marketing educators must continue to learn and to grow with their knowledge. Educators must engage in lifelong professional development that is critical for keeping up with changing professional demands, technology integration being one (Scott, 2008). The PCBEE Policy Statement No. 60 (1997), states that "educating students for technological change and complexities of the workplace, as well as their personal business lives, compels business educators to commit themselves to continuing professional renewal" (p.14).

According to Young (2005), the entire cycle of faculty proficiency development is complex because of the emphasis of developing technical skills without improving

instructional practices that lead to enhanced learning. Teachers need to acquire technical skills, but at the same time they should also be learning to effectively integrate that skill into the learning environment. Professional development should be designed to allow faculty to utilize technology and the resources it makes available to improve teaching and learning, not to create independent technical experts. Professional development regarding integrating technology should be to support and enhance the teaching and learning cycle and should not be aimed at substituting for information technology specialists.

Rakes, Fields, and Cox (2006) suggested that the teacher's confidence level of integrating technology and their beliefs of the impact on student achievement is a considerable factor of what takes place in the classroom. Teachers that are not confident in using technology will choose not to integrate technology into the classroom. Teachers that believe that technology hinders their teaching ability and/or student success in the classroom will also not integrate technology. Business education teachers must be competent in both their content area and instructional practices to effectively integrate technology into the classroom.

Summary

The literature reviewed indicated that business educators should effectively integrate technology to prepare students for the twenty-first century work-force. The role of the business educator is emerging to embrace the technological advances that are happening daily. The PCBEE Policy Statement No. 71 (2002), states that “teaching professionals need to meet global accountability standards in an era when basic skills competence and technological literacy are desperately needed” (p. 15). According to the PCBEE (2008) business educators must promote the use of new instructional approaches such as online and web-based delivery methods and participate in professional development that entitles business educators to use new skills and knowledge to revolutionize the learning environment.

> Technologies must be pedagogically sound and go beyond information retrieval to problem solving; allow new instructional and learning experiences not possible without them; promote deep processing of ideas; increase student interaction with subject matter; promote faculty and student enthusiasm for teaching and learning; and free up time for quality classroom

interaction – in sum, improve pedagogy (Earle, 2002, p. 7).

Shepherd and Mullane (2010) described technology as "the elephant in the classroom that everyone is trying to ignore and no one, including the school board, the educators, the parents, or the students, are willing to confront this behemoth" (p. 69). Everyone must come to terms with the realization that technology is here to stay and all personnel within educational institutions must collaborate to effectively integrate technology. Okojie and Olinzock (2006) suggested that teachers develop a positive attitude toward using various technologies in the classroom and extend their desire to explore new technologies as they emerge and apply new-found skills into the teaching and learning environment.

Research indicated that business educators are still hesitant when utilizing technology tools in the classroom (Gorder, 2008). Several researchers (Earl, 2009; George, 2000; and Whitehead et al., 2003) found technical support, teacher expertise, time for planning, budget and pedagogical applications to be barriers when integrating technology into the classroom. There was no study found on the level of technology integration into the classroom by business/marketing education teachers in Alabama.

Furthermore, no study was found on the level of perceived competence to integrate technology into the classroom of business/marketing education teachers in Alabama. Therefore, this study concentrated on the available technology, how often the available technology is used, barriers preventing technology, and perceived competence of business/marketing education teachers of Alabama to integrate technology into the classroom.

III. METHODS AND PROCEDURES

Introduction

The focus of this study was to investigate the degree to which business/marketing education teachers in Alabama integrate technology into their classrooms. If technology was not integrated, the barriers preventing integration by business education teachers were identified, as well as the degree of perceived competency of business/marketing education teachers in Alabama to integrate technology into the classroom.

Permission to conduct the study was granted from the Auburn University Institutional Review Board (Appendix B). Permission was also granted from the participants by the submission of their completed survey.

Population

The participants for this study were the secondary business/marketing educators in Alabama. The Alabama Department of Education 2009-2010 Business/Marketing Education Directory provided the roster of names and e-mail addresses.

Instrumentation

Data were collected through a researcher-designed survey (Appendix C) entitled Technology Integration of Business/Marketing Educators of Alabama (TIBMEA). The researcher developed the survey instrument after an appropriate instrument was not revealed in the review of literature. However, the literature was referenced when developing the survey questions. The survey includes the following components: (a) demographic data; (b) degree of availability, usage, and barriers of hardware and software technology; (c) degree of availability, usage, and barriers of technology tools; (d) degree to which business/marketing educators of Alabama are prepared to integrate technology into the classroom for hardware, software, and technology tools.

The demographic data in section one includes age group, gender, type of school, highest degree held, highest certification level, grade levels taught, and years teaching business/marketing education. Section two of the survey instrument includes information regarding hardware and software technology. Subsection one and two contain questions relating to availability and usage of hardware and software in the participant’s classroom. In the first column, participants were given a variety of hardware and

software. In the middle column, participants were instructed to indicate the availability of hardware and software available in the classroom. In the last column, participants were asked how often it is used. A five point Likert-type scale was utilized for this question with the following scale: Never; Rarely; Sometimes; Very Often; and Always. Subsection three asked participants to identify barriers preventing the integration of hardware and software technology in the classroom. The choices included both intrinsic and extrinsic barriers.

Section three of the survey instrument included information regarding technology tools. Subsection one contained questions relating to availability and usage of technology tools in the participant's classroom. In the first column, participants were given a variety of technology tools. In the middle column, participants were instructed to answer whether technology tools were available to them in the classroom. In the last column, participants were asked how often it was used. A five point Likert-type scale was utilized for this question with the following scale: Never; Rarely; Sometimes; Very Often; and Always. Subsection three asked participants to identify barriers preventing integration of technology tools in the

classroom. The choices included both intrinsic and extrinsic barriers.

Section four of the survey instrument asked participants to indicate the degree to which they were prepared to integrate the specific technology into their classroom. Section four has three parts: 1) Hardware; 2) Software; and, 3) Technology Tools. A four point Likert-type scale was utilized for this question with the following scale: (1) No Competence – you do not have the knowledge or skill to integrate this technology into the classroom; (2) Basic Competence – you have minimal skill and knowledge to integrate part of this technology into the classroom; (3) Moderate Competence – you have reasonable knowledge and skill to integrate most of this technology into the classroom; (4) Expert Competence – you have an in-depth knowledge and skill to fully integrate this technology into the classroom.

Participants received an informational e-mail explaining the purpose of the survey, the need for the study, and the importance of participation. A readable font style and format was used. Specific directions for responding and submitting answers for each section were clear and direct.

The survey process included: An information letter (e-mail) (Appendix D), as required by the Auburn University Institutional Review Board, describing the study to the potential participant and outlining the procedures to be followed in completing the survey. This information e-mail included a link to the survey via Survey Monkey.

Data were collected anonymously. No IP addresses or e-mail addresses were collected during the delivery or submission of the survey instrument. Responses were maintained on a secure database provided by Survey Monkey.

Researchers at Auburn University, where the study was conducted, must obtain permission from the Institutional Review Board (IRB) to use the response of human subjects. Protocol, a request for exempt status, an information letter, and a copy of the survey instrument were forwarded to the IRB for approval prior to the continuation of the study. The Board reviewed the protocol and granted the necessary permission on April 27, 2010 (Appendix B).

Validity and Reliability

The foundation for the items of the survey was derived from the research objectives and the review of literature. The areas included in the review of literature focused on topics such as the history and changes in technology, integrating technology into the classroom, barriers

associated with integrating technology, and required competencies for integrating technology.

A panel of expert judges was used to evaluate the survey instrument to determine content validity and usability. The panel of experts consisted of university faculty members and a selected group of educators and researchers known for their experience in descriptive survey research design, survey instruments, and/or data collection. The panel of experts was asked to review the survey instrument for clarity of directions, concepts, and definitions.

Cronbach's alpha determines the internal consistency or average correlation of items on a survey instrument (Santos, 1999). Cronbach's alpha was calculated in this study to ascertain reliability coefficients for the following sections of the research instrument: frequency of use of hardware, software, and technology tools; and perceived competence in hardware, software, and technology tools. Reliability coefficients for each scale suggested that the items had relatively high internal consistency for all scales except one. The scale for frequency of use of software yielded a coefficient of .50. Since Cronbach's alpha ranges from 0 to 1, with 1 indicating perfect reliability and 0 indicating no reliability, the scale for

frequency of use of software was acceptable as a reliable scale. The results are shown in Table 1.

Table 1

Reliability of Scales

Item	N	Cronbach's alpha
Frequency of use		
Hardware	13	.77
Software	15	.50
Technology Tools	11	.79
Perceived Competence		
Hardware	13	.85
Software	11	.87
Technology Tools	11	.91

Data Collection

Each member of the sample received an e-mail including (a) information letter describing the study (Appendix C); and (b) a link to the survey instrument (Appendix D).

Participants were asked to complete the survey within a two-week time period. Because submissions were anonymous, each member of the sample received a follow-up e-mail asking for their help in satisfying research requirements by completing the survey if they have not already done so. Participants were only contacted once through the use of follow-up.

A total of 772 emails were sent asking for participation. Two-hundred thirty one (231) email addresses were returned as undeliverable. Eight (8) surveys were submitted that were not usable. At the conclusion of data collection, 116 surveys were returned, which resulted in a 22% participation rate.

Data Analysis

Statistical treatment of the data included the use of the software application Statistical Package for the Social Sciences (SPSS) 18.0. Descriptive statistics were used to analyze, organize, summarize, and describe the collected data.

Research questions one, two, three, four, and five were analyzed using descriptive statistics to calculate frequency counts and percentages. According to Gall, Gall, and Borg (2005) descriptive statistics serve a useful purpose by summarizing all the data in the form of a few simple numerical expressions.

Research question six was analyzed using Analysis of Variance (ANOVA) tests to determine the difference in business/marketing educators frequency of use of hardware, software, and technology tools and: school type (city or county); highest degree earned (bachelor, master, specialist, doctorate); certification level (B, A, AA,

Alternative, Emergency); and, years experience (1-5, 6-10, 11-15, 16-20, 21+). According to Green and Salkind (2008) the general purpose for ANOVA is to test for significant differences between means.

Research question seven was analyzed using three one-sample *t-tests* to ascertain whether or not the mean score of perceptions of confidence of business/marketing educators to integrate technology into the classroom fell above or below the expected value. Green and Salkind (2008) explained that a one-sample *t-test* evaluates whether the mean on a test variable is significantly different from a constant, called a test value by SPSS.

IV. STATISTICAL ANALYSIS AND RESULTS

Introduction and Restatement of the Problem

This study was designed to provide information regarding the degree to which business/marketing education teachers in Alabama integrate technology into their classrooms, identify the barriers preventing integration by business/marketing education teachers, as well as, the degree of perceived competency of business/marketing education teachers in Alabama to integrate technology into the classroom. Reviewed literature in Chapter two revealed the necessity for business educators to effectively integrate technology into the classroom to prepare students for workforce readiness. This chapter presents the analysis of the data collected for Alabama business/marketing educators utilizing the researcher-developed Technology Integration of Business/Marketing Educators of Alabama (TIBMEA) instrument.

Descriptive Data Analysis and Results

Descriptive statistics, including frequencies and percentages, were conducted in SPSS to organize, summarize, and describe the data. The descriptive data were used to answer research questions one, two, three, four, and five.

Research Questions

Question 1: What are the demographic characteristics of the business/marketing education teachers in Alabama who participated in this study?

The first section of the Technology Integration of Business/Marketing Educators of Alabama survey was used to address research question one. Demographic characteristics for Business/Marketing Educators were summarized by age group, gender, school type, highest degree level, highest certification level, grade level taught, and years of teaching experience. The majority of respondents were female (84.5%). The highest reported age category was between the ages of 51 to 60 (31.9%). The highest reported grade level taught was 11^{th} grade (67.2%). The largest percent of the respondents taught at a county school (56.9%). Most respondents have been teaching for 6 to 10 years (25%). The majority of respondents held a master's degree (67.2%). The highest reported certification level was Class A (56%). The results are shown in Table 2.

Table 2

Demographic Data Reported by Business/Marketing Educators

Item	*f*	%
Age Group		
20 to 30	11	9.5
31 to 40	33	28.4
41 to 50	31	26.7
51 to 60	37	31.9
More than 61	4	3.4
Gender		
Male	18	15.5
Female	98	84.5
School Type		
City	50	43.1
County	66	56.9
Highest Degree		
Bachelor	22	43.1
Master	78	67.2
Specialist	15	12.9
Doctorate	1	.9
Highest Certification		
B	24	20.7
A	65	56.0
AA	22	19.0
Alternative	5	4.3
Emergency	0	0.0

(Table continues)

(Table 2 continued)

Demographic Data Reported by Business/Marketing Educators

Item	*f*	%
Teach 6th grade		
No	113	97.4
Yes	3	2.6
Teach 7th grade		
No	110	94.8
Yes	6	5.2
Teach 8th grade		
No	101	87.1
Yes	15	12.9
Teach 9th grade		
No	45	38.8
Yes	71	61.2
Teach 10th grade		
No	51	44.0
Yes	65	56.0
Teach 11th grade		
No	38	32.8
Yes	78	67.2
Teach 12th grade		
No	44	37.9
Yes	72	62.1
Years Teaching		
1 to 5	25	21.6
6 to 10	29	25.0
11 to 15	22	19.0
16 to 20	11	9.5
More than 21	29	25.0

n = 116

Research Question 2: Which hardware and software technologies are available for business/marketing education teachers in Alabama?

The first question in section two on the Technology Integration of Business/Marketing Educators of Alabama survey addressed available hardware technologies. The hardware most available were a Projector (93.1%), Scanner (91.4%), Digital Camera (86.2%), and Headphone (83.6%). The hardware least available were iPad (6.9%), Tablet PC (26.7%), Student Response System (32.8%), and Webcam (37.9%). The results are shown in Table 3.

Table 3

Availability of Hardware

Item	*f*	%
Projector		
No	8	6.9
Yes	108	93.1
Scanner		
No	10	8.6
Yes	106	91.4
Digital Camera		
No	16	13.8
Yes	100	86.2
Headphone		
No	19	16.4
Yes	97	83.6
Laptop		
No	25	21.6
Yes	91	78.4
Microphone		
No	42	36.2
Yes	74	63.8
Music Video Player		
No	42	36.2
Yes	74	63.8
Digital Video Camera		
No	51	44.0
Yes	65	56.0

(Table continues)

(Table 3 continued)

Availability of Hardware

Item	*f*	%
Smartboard		
No	55	47.4
Yes	61	52.6
Webcam		
No	72	62.1
Yes	44	37.9
Student Response System		
No	78	67.2
Yes	38	32.8
Tablet PC		
No	85	73.3
Yes	31	26.7
iPad		
No	108	93.1
Yes	8	6.9

n = 116

The second question in section two on the Technology Integration of Business/Marketing Educators of Alabama survey addressed available software technologies. The software most available were Education Data Management (89.7%), Testing (70.7%), Microsoft Office Suite 2007 (65.5%), and Electronic Messaging (57.8%). The software least available were Microsoft Office Suite 1997 (2.6%), Microsoft Office Suite 2000 (5.2%), Microsoft Office Suite 2002 (5.2%), and Microsoft Office Suite 2010 (10.3%). The results are shown in Table 4.

Table 4

Availability of Software

Item	*f*	%
Education Data Management		
No	12	10.3
Yes	104	89.7
Testing		
No	34	29.3
Yes	82	70.7
Microsoft Suite 2007		
No	40	34.5
Yes	76	65.5
Electronic Messaging		
No	49	42.2
Yes	67	57.8
Photo Editing		
No	52	44.8
Yes	64	55.2
Web Design		
No	61	62.6
Yes	55	47.4
Microsoft Suite 2003		
No	62	53.4
Yes	54	46.6
Video Editing		
No	71	61.2
Yes	45	38.8
Audio Editing and Recorder		
No	80	69.0
Yes	36	31.0

(Table continues)

(Table 4 continued)

Availability of Software

Item	*f*	%
Screen Recording		
No	93	80.2
Yes	23	19.8
EBook		
No	93	80.2
Yes	23	19.8
Microsoft Suite 2010		
No	104	89.7
Yes	12	10.3
Microsoft Suite 2002		
No	110	94.8
Yes	6	5.2
Microsoft Suite 2000		
No	110	94.8
Yes	6	5.2
Microsoft Suite 1997		
No	113	97.4
Yes	3	2.6

n = 116

Research Question 3: What are the perceived barriers preventing integration of hardware and software technologies by business/marketing education teachers in Alabama?

The third question in section two on the Technology Integration of Business/Marketing Educators of Alabama survey addressed research question three. The highest perceived barriers were Budget Constraints (84.5%), Information Technology Limitations (48.3%), and Lack of Time for Learning (44.0%). The lowest perceived barriers were Lack of Motivation (9.5%), Lack of Support from Administration (13.8%), and Fear of Technology (14.7%). The results are shown in Table 5.

Table 5

Perceived Barriers to Integrating Hardware and Software

Item	*f*	%
Budget Constraints		
No	18	15.5
Yes	98	84.5
Information Technology Limitations		
No	60	51.7
Yes	56	48.3
Lack of Time for Learning		
No	65	56.0
Yes	51	44.0
Lack of Time for Implementation		
No	72	62.1
Yes	44	37.9
Lack of Understanding		
No	78	67.2
Yes	38	32.8
Lack of Professional Development		
No	78	67.2
Yes	38	32.8
Fear of Change		
No	96	82.8
Yes	20	17.2

(Table continues)

(Table 5 continued)

Perceived Barriers to Integrating Hardware and Software

Item	*f*	%
Fear of Appearing Incompetent		
No	98	84.5
Yes	18	15.5
Fear of Technology		
No	99	85.3
Yes	17	14.7
Lack of Support from Administration		
No	100	86.2
Yes	16	13.8
Lack of Motivation		
No	105	90.5
Yes	11	9.5

n = 116

Research Question 4: Which technology tools are available for business/marketing education teachers in Alabama?

The first question in section three on the Technology Integration of Business/Marketing Educators of Alabama survey was used to address the fourth research question. The technology tools most available were the Internet (98.3%), Wiki (58.6%), and Blog (54.3%). The technology tools that were least available were Vodcast (10.3%), Social Networking (15.5%), and Video Sharing (28.4%). The results are shown in Table 6.

Table 6

Availability of Technology Tools

Item	*f*	%
Internet		
No	2	1.7
Yes	114	98.3
Wiki		
No	48	41.4
Yes	68	58.6
Blog		
No	53	45.7
Yes	63	54.3
Simulation		
No	54	46.6
Yes	62	53.4
Webinar		
No	54	46.6
Yes	62	53.4
Internet Modules		
No	60	51.7
Yes	56	48.3
Webquest		
No	65	56.0
Yes	51	44.0
Podcast		
No	72	62.1
Yes	44	37.9

(Table continues)

(Table 6 continued)

Availability of Technology Tools

Item	*f*	%
Video Sharing		
No	83	71.6
Yes	33	28.4
Social Networking		
No	98	84.5
Yes	18	15.5
Vodcast		
No	104	89.7
Yes	12	10.3

n = 116

Research Question 5: What are the perceived barriers preventing integration of technology tools by business/marketing education teachers in Alabama?

The second question in section three on the Technology Integration of Business/Marketing Educators of Alabama survey was used to address research question five. The highest perceived barriers were Budget Constraints (60.3%), Information Technology Limitations (53.4%), and Lack of Time for Implementation (41.4%). The lowest perceived barriers were Lack of Motivation (10.3%), Fear of Technology (10.3%), Fear of Change (10.3%), and Fear of Appearing Incompetent (10.3%). The results are shown in Table 7.

Table 7

Perceived Barriers to Integrating Technology Tools

Item	*f*	%
Budget Constraints		
No	46	39.7
Yes	70	60.3
Information Technology Limitations		
No	54	46.6
Yes	62	53.4
Lack of Time for Implementation		
No	68	58.6
Yes	48	41.4
Lack of Time for Learning		
No	73	62.9
Yes	43	37.1
Lack of Understanding		
No	86	74.1
Yes	30	25.9
Lack of Professional Development		
No	86	74.1
Yes	30	25.9
Lack of Support from Administration		
No	88	75.9
Yes	28	24.1

(Table continues)

(Table 7 continued)

Perceived Barriers to Integrating Technology Tools

Item	*f*	%
Fear of Appearing Incompetent		
No	104	89.7
Yes	12	10.3
Fear of Change		
No	104	89.7
Yes	12	10.3
Fear of Technology		
No	104	89.7
Yes	12	10.3
Lack of Motivation		
No	104	89.7
Yes	12	10.3

n = 116

Research Question 6: To what extent do business/marketing education teachers of Alabama differ in their frequency of use of (a) hardware technology, (b) software technology, and (c) technology tools based on: (1) school type (city or county); (2) highest degree earned (Bachelor, Master, Specialist, Doctorate); (3) certification level(B, A, AA, Alternative, Emergency); and, (4) years experience (1-5, 6-10, 11-15, 16-20, 21+)?

The sixth research question was analyzed using higher-way analysis of variance (ANOVA) tests to ascertain the difference in business/marketing educators use of hardware, software and technology tools based on: (1) school type (city or county); (2) highest degree earned (bachelor, master, specialist, doctorate); (3) certification level (B, A, AA, Alternative, Emergency); and, (4) years of teaching experience (1-5, 6-10, 11-15, 16-20, 21+).

Use of Hardware

Participants responded to the use of hardware items on a six-point Likert-type scale ranging from zero to five with five indicating always used, four indicating very often used, three indicating sometimes used, two indicating rarely used, one indicating never used, and zero indicating that a specific type of hardware was not available. The hardware items listed were: Digital Camera, Digital Video

Camera, Headphone, iPad, Laptop, Microphone, Music Video Player, Projector, Scanner, Smartboard, Student Response System, Tablet PC, and Webcam. A total score for each participant could range from 0 to 65 for the 13 items related to hardware, with the highest possible mean value of 32.5. The mean scores and standard deviations for differences in business/marketing educator's use of hardware are shown in Table 8.

Table 8

Mean Scores and Standard Deviations for Use of Hardware based on: School Type, Highest Degree, Highest Certification, and Years of Teaching Experience

Item	*M*	*SD*
School Type		
City	26.64	10.85
County	27.24	10.21
Highest Degree		
Bachelor	26.36	11.24
Master	26.42	10.42
Specialist	30.33	9.61
Doctorate	26.98	
Highest Certification		
B	26.25	10.96
A	26.14	10.52
AA	30.09	10.31
Alternative	27.80	6.98
Emergency	0.00	0.00
Years Teaching		
1 to 5	24.12	9.12
6 to 10	31.00	9.81
11 to 15	28.64	12.62
16 to 20	29.73	11.08
More than 21	23.14	8.56

n = 116

There were no statistically significant differences in use of hardware for teachers based on their type of school [F(1,77) = .15, p = .70], highest degree earned [F(3,77) = .62, p = .60], or certification level [F(3,77) = .39, p = .76]. Results showed statistically significant differences for teachers based on their years teaching experience [F(4,77) = 3.05, p = .02]. Pairwise Comparisons revealed statistically significant differences between teachers who had 6 to 10 years of teaching experience and those with more than 21 years of teaching experience (p = .04). The mean score for teachers with 6 to 10 years of teaching experience was 31.00 compared to the mean score of 23.14 for teachers with more than 21 years of teaching experience, with standard deviations of 9.81 and 8.56 respectively.

Use of Software

Participants responded to the use of software items on a six-point Likert-type scale ranging from zero to five with five indicating always used, four indicating very often used, three indicating sometimes used, two indicating rarely used, one indicating never used, and zero indicating that a specific type of software was not available. The software items listed were: Audio Editing and Recorder, EBook, Education Data Management, Electronic Messaging,

Microsoft Office Suite 1997, Microsoft Office Suite 2000, Microsoft Office Suite 2002, Microsoft Office Suite 2003, Microsoft Office Suite 2007, Microsoft Office Suite 2010, Photo Editing, Screen Recording, Testing, Video Editing, and Web Design. A total score for each participant could range from 0 to 75 for the 15 items related to hardware, with the highest possible mean value of 37.5. The mean scores and standard deviations for differences in business/marketing educator's use of software are shown in Table 9.

Table 9

Mean Scores and Standard Deviations for Use of Software based on: School Type, Highest Degree, Highest Certification, and Years of Teaching Experience

Item	*M*	*SD*
School Type		
City	22.02	8.91
County	20.86	8.10
Highest Degree		
Bachelor	19.18	7.84
Master	21.19	8.21
Specialist	25.73	9.61
Doctorate	17.00	
Highest Certification		
B	19.71	7.35
A	20.97	7.94
AA	25.41	9.54
Alternative	16.60	10.62
Emergency	0.00	0.00
Years Teaching		
1 to 5	18.28	8.38
6 to 10	24.52	8.02
11 to 15	23.09	9.34
16 to 20	19.64	11.19
More than 21	20.21	5.84

n = 116

There were no statistically significant differences in use of software for teachers based on their type of school [F(1,77) = .43, p = .51], highest degree earned [F(3,77) = .36, p = .78], certification level [F(3,77) = .36, p = .78] or years teaching [F(4,77) = 1.17, p = .33].

Use of Technology Tools

Participants responded to the use of technology tools on a six-point Likert-type scale ranging from zero to five with five indicating always used, four indicating very often used, three indicating sometimes used, two indicating rarely used, one indicating never used, and zero indicating that a specific type of software was not available. The technology tools listed were: Blog, Internet, Internet Modules, Podcast, Simulation, Social Networking, Video Sharing, Vodcast, Webinar, Webquest, and Wiki. A total score for each participant could range from 0 to 55 for the 11 items related to hardware, with the highest possible mean value of 27.5. The mean scores and standard deviations for differences in business/marketing educator's use of technology tools are shown in Table 10.

Table 10

Mean Scores and Standard Deviations for Use of Technology Tools based on: School Type, Highest Degree, Highest Certification, and Years of Teaching Experience

Item	*M*	*SD*
School Type		
City	18.46	9.45
County	14.68	8.19
Highest Degree		
Bachelor	13.95	8.66
Master	15.73	8.10
Specialist	23.20	10.75
Doctorate	10.00	
Highest Certification		
B	14.46	8.26
A	16.32	7.85
AA	20.18	11.62
Alternative	8.00	3.39
Emergency	0.00	0.00
Years Teaching		
1 to 5	12.60	7.24
6 to 10	18.45	8.73
11 to 15	18.09	9.59
16 to 20	18.55	10.56
More than 21	15.17	8.61

n=116

There were no statistically significant differences in use of technology tools for teachers based on their type of school [$F(1,77) = 1.19$, $p = .28$], highest degree earned [$F(3,77) = .95$, $p = .42$], or certification level [$F(3,77) = 1.09$, $p = .36$]. Results showed statistically significant differences for teachers based on their years of teaching experience [$F(4,77) = 3.21$, $p = .02$]. Pairwise comparisons revealed statistically significant differences were revealed between teachers who had 1 to 5 years of teaching experience and those with 6 to 10 years of teaching experience ($p = .02$). The mean score for teachers with 1 to 5 years teaching experience was 12.60 compared to 18.45 for teachers with 6 to 10 years of teaching experience, with standard deviations 7.24 and 8.73 respectively.

In addition, pairwise comparisons revealed statistically significant differences between teachers who had 1 to 5 years of teaching experience and those with 16 to 20 years of teaching experience ($p < .01$). The mean score for teachers with 1 to 5 years of teaching experience was 12.60 compared to 18.55 for teachers with 16 to 20 years of teaching experience, with standard deviations 7.24 and 10.56 respectively.

Moreover, pairwise comparisons revealed statistically significant differences were revealed between teachers

between teachers who had 6 to 10 years of teaching experience and those with more than 21 years of teaching experience ($p = .04$). The mean score for teachers with 6 to 10 years of teaching experience was 18.55 compared to 15.17 for teachers with more than 21 years of teaching experience, with standard deviations 8.73 and 8.61 respectively.

Furthermore, pairwise comparisons revealed statistically significant differences were revealed between teachers who had 16 to 20 years of teaching experience and those with more than 21 years of teaching experience ($p = .02$). The mean score for teachers with 16 to 20 years of teaching experience was 18.55 compared to 15.17 for teachers with more than 21 years of teaching experience, with standard deviations 8.73 and 8.61 respectively.

Research Question 7: To what extent do business/marketing education teachers of Alabama perceive that they are competent in integrating technology in their teaching practice?

Research question seven was analyzed using three one-sample t-tests to ascertain whether or not the mean score on perceptions of confidence of business/marketing educators to integrate hardware, software, and technology tools into the classroom fell above or below the expected value. The expected value was set at three for each item on the hardware, software, and technology tools sections. The test value of three was set because a response of three indicated moderate competence for the selected item.

Perceived Competence to Integrate Hardware

A one-sample t-test was conducted on hardware perceived competence with the highest possible mean score by item was four and the lowest possible mean score by item was one. A total of 8 out of 13 items had mean scores greater than a value of three (moderate competence). The two highest scores being laptop perceived competence and projector perceived competence ($M = 3.83$, $SD = .42$) and ($M = 3.8$, $SD = .44$) respectively. The lowest mean score ($M = 1.92$, $SD = .95$) was for perceived competence of an iPad.

Taken as a group, the business/marketing teachers responded that they perceived themselves moderately competent in the use of hardware. The mean score for the teachers was 40.71 compared to the expected mean of 39. Teachers' perceptions met the expected value (a mean score of three by item) on eight of the 13 items. Those eight items and their respective mean scores are displayed in Table 11. The five items and their respective mean scores that did not meet the expected value of three are displayed in Table 12.

Table 11

Hardware, Software, and Technology Tools That Met the Expected Value of Perceived Competence

Item	*M*	*SD*
Hardware		
Laptop	3.83	.42
Projector	3.80	.44
Headphone	3.79	.54
Scanner	3.63	.65
Microphone	3.59	.72
Digital Camera	3.58	.61
Digital Video Camera	3.26	.79
Music Video Player	3.23	.81
Software		
Microsoft Office 2007	3.43	.78
Education Data Management	3.39	.78
Technology Tools		
Internet	3.81	.49

n = 116

Table 12

Hardware, Software, and Technology Tools That Did Not Meet the Expected Value of Perceived Competence

Item	*M*	*SD*
Hardware		
iPad	1.92	.95
Student Response System	2.22	1.01
Tablet PC	2.43	1.08
Smartboard	2.69	.92
Webcam	2.72	.93
Software		
Screen Recorder	1.87	1.03
Audio Editor and Recorder	1.95	1.03
Microsoft Office 2010	2.01	1.08
Video Editing	2.25	1.01
EBooks	2.27	1.03
Web Page Design	2.50	.98
Photography Editing	2.53	.96
Electronic Messaging	2.87	1.05
Testing Software	2.97	.86

(Table continues)

(Table 12 Continued)

Hardware, Software, and Technology Tools That Did Not Meet the Expected Value of Perceived Competence

Item	*M*	*SD*
Technology Tools		
Vodcast	1.71	.90
Webquest	2.34	1.08
Podcast	2.36	.99
Video Sharing	2.52	.98
Webinars	2.54	.92
Internet Modules	2.72	1.06
Blog	2.73	.97
Wiki	2.77	.91
Simulations	2.91	.97
Social Networking	2.99	.97

n = 116

Perceived Competence to Integrate Software

A one-sample t-test was conducted on software perceived competence with the highest possible mean score by item was four and the lowest possible mean score by item was one. Only 2 out of 11 items had mean scores greater than a value of three (moderate competence). These items were education data management software perceived competence and Microsoft 2007 software perceived competence with mean scores and standard deviation (M = 3.39, SD = .78), and (M = 3.43, SD = .78) respectively. The lowest mean score (M = 1.87, SD = 1.03)) was for perceived competence of screen recorder software.

Taken as a group, the business/marketing teachers responded that they perceived themselves as less than moderately competent in the use of software. The mean score for the teachers was 28.03 compared to the expected mean of 33. Teachers' perceptions met the expected value (a mean score of three by item) on only two of the 11 items. Those two items and their respective mean scores are displayed in Table 11. The nine items and their respective mean scores that did not meet the expected value of three are displayed in Table 12.

Perceived Competence to Integrate Technology Tools

A one-sample t-test was conducted on technology tool perceived competence with the highest possible mean score by item was four and the lowest possible mean score by item was one. Only 1 out of 11 items had a mean score greater than a value of three (moderate competence). This item was Internet perceived competence with mean score and standard deviation (M = 3.81, SD = .49). The two lowest mean scores were for vodcast perceived competence and webquest perceived competence (M = 1.71, SD = .90) and (M = 2.34, SD = 1.08) respectively.

Taken as a group, the business/marketing teachers responded that they perceived themselves as less than moderately competent in the use of technology tools. The mean score for the teachers was 29.41 compared to the expected mean of 33. Teachers' perceptions met the expected value (a mean score of three by item) on only one of the 11 items. That item and its respective mean score is displayed in Table 11. The ten items and their respective mean scores that did not meet the expected value of three are displayed in Table 12.

V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

Effectively integrating technology into the classroom has been identified as an effective tool for business/marketing educators. In preparation for the 21st century workforce students must adapt to an environment of problem-solving, self-directed learning, communication, and collaboration. Business/marketing educators can play a role in preparing students for the 21st century workforce. A research survey instrument was developed to assess the integration of technology of business/marketing educators of Alabama. Analyses were conducted to determine the frequency of use for specific hardware, software, and technology tools, barriers preventing integration of technology, and perceived competence of Alabama business/marketing education teachers to integrate technology into the classroom.

In the previous chapter, data collected from business/marketing educators of Alabama utilizing the researcher-developed Technology Integration of Business/Marketing Educators of Alabama (TIBMEA) survey instrument were presented and analyzed. This chapter

includes a discussion of the findings, conclusions, and recommendations.

Summary of Findings

The majority of business/marketing educators in Alabama that participated in the study were female (84.5%). The highest reported ages were between 51 to 60 (31.9%). The main reported grade level taught was 11th grade (67.2%). The largest percent of respondents taught at a county school (56.9%). Most respondents reported that they have been teaching for 6 to 10 years (25%). A master's degree (67.2%) was the highest reported degree held by respondents. Class A (56%) was the highest reported certification level held by respondents.

Business/marketing educators were asked to identify which hardware and software technologies were available for use in the classroom. The respondents reported that the most available hardware was a projector (93.1%). A scanner was identified as the second most available hardware by respondents (91.4%). The least available hardware reported by respondents was an iPad (93.1%). The results indicate that new and emerging hardware is not integrated into the classroom and more antiquated hardware is readily available. The respondents reported that the most available software was education data management software (89.7%) and

testing software (70.7%). The least available software reported by respondents were the three oldest versions of Microsoft Office Suite, including: 1997 (97.4%), 2000 (94.8%), 2002 (94.8%), as well the newest version, 2010 (89.7%). The results indicate that the respondents have relatively up-to-date software in the classroom. The majority of respondents are using Microsoft Office 2007 suite (65.5%) and only 10.3% of teachers reported using the most current version, Microsoft Office 2010.

Business/marketing educators were asked to identify barriers that prevented integration of hardware and software in the classroom. The respondents reported the highest barriers as budget constraints (84.5%) and information technology limitations (48.3%). The majority of respondents reported that the lowest perceived barrier as lack of motivation (9.5%). Results indicate the leading barriers for hardware and software integration are extrinsic. Interestingly, the respondents reported the two highest barriers (budget constraints and information technology limitations) and the lowest perceived barrier (lack of motivation) as preventing the integration of technology tools as well.

Business/marketing educators were asked to identify which technology tools were available for use in the

classroom. The respondents reported that the most available technology tool was the Internet (98.3%). Many respondents reported that wikis (58.6%) and blogs (54.3) were available. The least available technology tools reported by respondents were vodcast (89.7%), social networking (84.5%), and video sharing (71.6%). The results indicate that technology tools are integrated into the classroom; however, the more dated technology tools are integrated more than the cutting-edge technology tools.

Business/marketing educators were asked to identify barriers that prevented integration of technology tools into the classroom. The respondents reported the highest barriers as budget constraints (60.3%) and information technology limitations (53.4%). The lowest reported barrier is lack of motivation (10.3%). Results indicate the leading barriers for technology tools integration are extrinsic.

Higher-way Analysis of Variance (ANOVA) was used to ascertain the difference in business/marketing educator's use of hardware, software, and technology based on: school type, highest degree earned, certification level, and years of teaching experience.

Hardware

There were no statistically significant differences in use of hardware based on their type of school [F(1,77) =

.15, p = .70], highest degree earned [F(3,77) = .62, p = .60], or certification level [F(3,77) = .39, p = .76]. Results showed statistically significant differences for teachers based on their years teaching experience [F(4,77) = 3.05, p = .02). Pairwise comparisons revealed statistically significant differences between teachers who had 6 to 10 years of teaching experience and those with more than 21 years of teaching experience (p = .02). Teachers with 6 to 10 years of teaching experience integrated hardware more frequently than teachers with more than 21 years of teaching experience (M = 7.86).

Software

In addition, there were no statistically significant differences in use of software for teachers based on their type of school [F(1,77) = .43, p = .51], highest degree earned [F(3,77) = .36, p = .78], certification level [F(3,77) = .36, p = .78] or years teaching [F(4,77) = 1.17, p = .33]. Although not statistically significant the data indicates teachers with higher education levels, either by degree or certification, integrated technology more than those with lower education levels.

Technology Tools

Furthermore, there were no statistically significant differences in use of technology tools based on their type

of school [F(1,77) = 1.19, p = .28], highest degree earned [F(3,77) = .95, p = .42], or certification level [F(3,77) = 1.09, p = .36]. Results showed statistically significant differences for teachers based on their years of teaching experience [F(4,77) = 3.21, p = .02]. Pairwise comparisons revealed statistically significant differences between teachers who had 1 to 5 years of teaching experience and those with 6 to 10 years of teaching experience (p = .02). Teachers with 1 to 5 years of teaching experience integrated technology tools less frequently than teachers with 6 to 10 years of teaching experience (M = 6.71).

In addition, pairwise comparisons revealed statistically significant differences between teachers who had 1 to 5 years of teaching experience and those with 16 to 20 years of teaching experience (p < .01). Teachers with 1 to 5 years of teaching experience integrated technology tools less frequently than teachers with 16 to 20 years of teaching experience (M = 9.25).

Moreover, pairwise comparisons revealed statistically significant differences between teachers who had 6 to 10 years of teaching experience and those with more than 21 years of teaching experience (p = .04). Teachers with 6 to 10 years of teaching experience integrated technology tools

more frequently than teachers with more than 21 years of teaching experience (M = 6.07).

Additionally, pairwise comparisons revealed statistically significant differences between teachers who had 16 to 20 years of teaching experience and those with more than 21 years of teaching experience (p = .02). Teachers with 16 to 20 years of teaching experience integrated technology tools more frequently than teachers with more than 21 years of teaching experience (M = 8.61).

Business/marketing educators of Alabama were asked to classify their perceived level of competence to integrate technology into the classroom using the following scale: 4= Expert Competence, 3= Moderate Competence, 2= Basic Competence, 1= No Competence.

Hardware

The majority of respondents reported the highest perceived competence of hardware being a laptop (M = 3.83) and projector (M = 3.8). The lowest perceived competence reported was for an iPad (M = 1.92). Taken as a group, the business/marketing teachers responded that they perceived themselves moderately competent in the use of hardware. The mean score for the teachers was 40.71 compared to the expected mean of 39.

Software

The majority of respondents reported the highest perceived competence of software being education data management software (M = 3.39) and Microsoft Office Suite 2007 (M = 3.43). The lowest perceived competence reported was for screen recorder software (M = 1.87). Taken as a group, the business/marketing teachers responded that they perceived themselves as less than moderately competent in the use of software. The mean score for teachers was 28.03 compared to the expected mean of 33.

Technology Tools

The majority of respondents reported the highest perceived competence of technology tools being Internet (M = 3.81). The two lowest perceived competence reported was for vodcast (M = 1.71) and webquest (M = 2.34). Taken as a group, the business/marketing teachers responded that they perceived themselves as less than moderately competent in the use of technology tools. The mean score for the teachers was 29.41 compared to the expected mean of 33.

Conclusions

The following conclusions were based on the findings of the study.

1. Business/marketing educators in Alabama perceive barriers to integrating hardware, software, and

technology tools as pervasive. The majority of respondents reported barriers to integrating hardware, software, and technology tools into the classroom as extrinsic. The leading barriers in all categories were budget constraints and information technology limitations.

2. The number of years of teaching experience impacts the occurrence in which hardware and technology tools are integrated into the classrooms of business/marketing educators in Alabama. When analyzing demographic information, the data revealed that the years of teaching experience (1-5, 6-10, 11-15, 16-20, 21+) was the only category that showed a significant effect on the frequency of use for integration of hardware and technology tools.
3. Business/marketing educators in Alabama have reasonable knowledge and skill to integrate hardware into the classroom, but do not have reasonable knowledge and skill to integrate software and technology tools into the classroom. Respondents indicated a self perception of moderately competent to integrate hardware into the classroom. However, respondent’s self

perception of integrating software and technology tools into the classroom was less than moderately competent.

Recommendations

Based on the conclusions, the following recommendations are made:

1. Business/marketing educators of Alabama should begin to look for resources, grants, and community efforts to overcome budget constraints in the classroom.
2. Administration and Information Technology departments should be informed of the available technology that is currently being restricted and the benefits of making this technology available to educators.
3. Consideration should be given to implementing a plan to prepare both pre-service and in-service business/marketing educators of Alabama to effectively integrate technology into the classroom. With training, more teachers would integrate technology; therefore, increasing students knowledge of technology and preparing the students to enter the 21st century workforce.
4. Consideration should be given to implementing a plan to prepare both pre-service and in-service business/marketing educators of Alabama to increase

perceived competence in areas of software and technology tools based on this study.

5. A follow-up study should be conducted to determine the degree of information technology limitations that are prohibiting business/marketing educators from integrating technology into the classroom.
6. A follow-up study should be conducted in two years to determine progress toward the goal of preparing business/marketing educators of Alabama to effectively integrate technology into the classroom.
7. This study should be completed in other states.

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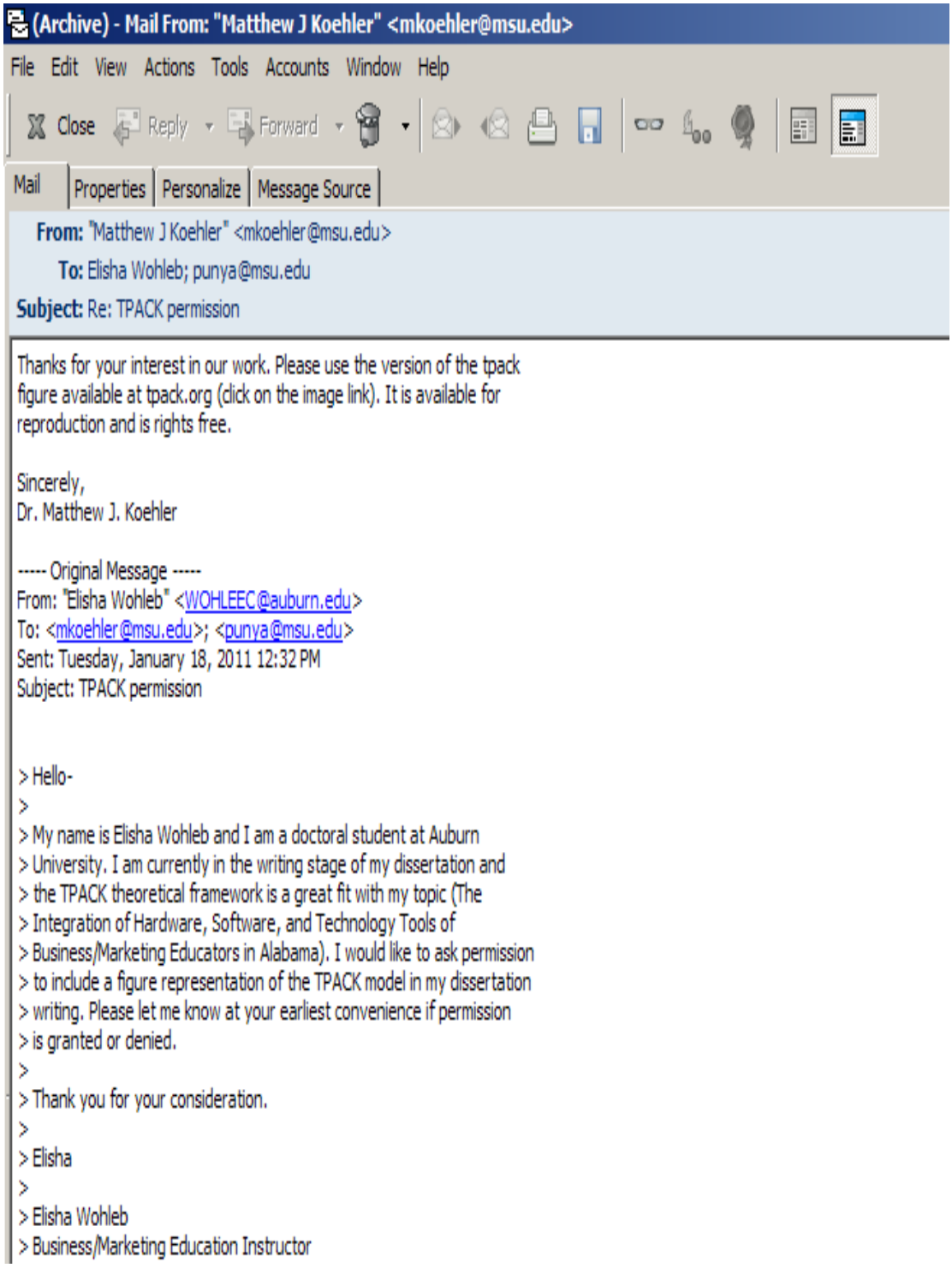
APPENDICES

APPENDIX A

PERMISSION TO USE TPACK ILLUSTRATION (Illustration 1)



(Archive) - Mail From: "Matthew J Koehler" <mkoehler@msu.edu>

File Edit View Actions Tools Accounts Window Help

Close Reply Forward

Mail | Properties | Personalize | Message Source

From: "Matthew J Koehler" <mkoehler@msu.edu>

To: Elisha Wohleb; punya@msu.edu

Subject: Re: TPACK permission

Thanks for your interest in our work. Please use the version of the tpack figure available at tpack.org (click on the image link). It is available for reproduction and is rights free.

Sincerely,
Dr. Matthew J. Koehler

----- Original Message -----
From: "Elisha Wohleb" <WOHLEEC@auburn.edu>
To: <mkoehler@msu.edu>; <punya@msu.edu>
Sent: Tuesday, January 18, 2011 12:32 PM
Subject: TPACK permission

> Hello-
>
> My name is Elisha Wohleb and I am a doctoral student at Auburn
> University. I am currently in the writing stage of my dissertation and
> the TPACK theoretical framework is a great fit with my topic (The
> Integration of Hardware, Software, and Technology Tools of
> Business/Marketing Educators in Alabama). I would like to ask permission
> to include a figure representation of the TPACK model in my dissertation
> writing. Please let me know at your earliest convenience if permission
> is granted or denied.
>
> Thank you for your consideration.
>
> Elisha
>
> Elisha Wohleb
> Business/Marketing Education Instructor

APPENDIX B

AUBURN INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

AUBURN
UNIVERSITY

Office of Research Compliance
307 Samford Hall
Auburn University, AL 36849

Telephone: 334-844-5966
Fax: 334-844-4391
hsubjec@auburn.edu

May 5, 2010

MEMORANDUM TO: ElishaWohleb
Department of Curriculum and Teaching

PROTOCOL TITLE: "The Integration of Technology Hardware, Technology Software and Technology Tools of the Business Education Teachers in Alabama"

IRB FILE NO.: 10-120 EX 1004

APPROVAL DATE: April 27, 2010
EXPIRATION DATE: April 26, 2011

The referenced protocol was approved "Exempt" by the IRB under 45 CFR 46.101 (b) (2):

> "Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
> (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and
> (ii) any disclosure of the human subjects' response outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation."

You should retain this letter in your files, along with a copy of the revised protocol and other pertinent information concerning your study. If you anticipate a change in any of the procedures authorized in this protocol, you must request and receive IRB approval prior to implementation of any revision. Please reference the above IRB file number in any correspondence regarding this project.

If you will be unable to file a Final Report on your project before April 26, 2011, you must submit a request for an extension of approval to the IRB no later than April 6, 2011. If your IRB authorization expires and/or you have not received written notice that a request for an extension has been approved prior to April 26, 2011 you must suspend the project immediately and contact the Office of Research Compliance.

A Final Report will be required to close your IRB project file. Please note that you must use only the IRB-approved information letter to recruit participants.

If you have any questions concerning this Board action, please contact the Office of Research Compliance.

Sincerely,

Kathy Jo Ellison, RN, DSN, CIP
Chair of the Institutional Review Board
for the Use of Human Subjects in Research

cc: Dr. Nancy Barry
Dr. Leane Skinner

APPENDIX C

RESEARCHER-DEVELOPED SURVEY INSTRUMENT

TECHNOLOGY INTEGRATION OF BUSINESS/MARKETING EDUCATORS IN ALAMBAMA (TIBMEA)

1. Section One - Demographics

Please provide your response to the following questions.

1. What is your age group?

◯ 20-30 ◯ 31-40 ◯ 41-50 ◯ 51-60 ◯ 61+

2. What is your gender?

◯ Male ◯ Female

3. Is your school a city or county?

◯ City ◯ County

4. What is your highest degree held?

◯ Bachelor ◯ Master ◯ Specialist ◯ Doctorate

5. What is your highest certification level?

◯ B ◯ A ◯ AA ◯ Alternative ◯ Emergency

6. Please indicate the grade levels of the majority of students in the courses you are currently teaching. (check all that apply)

☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12

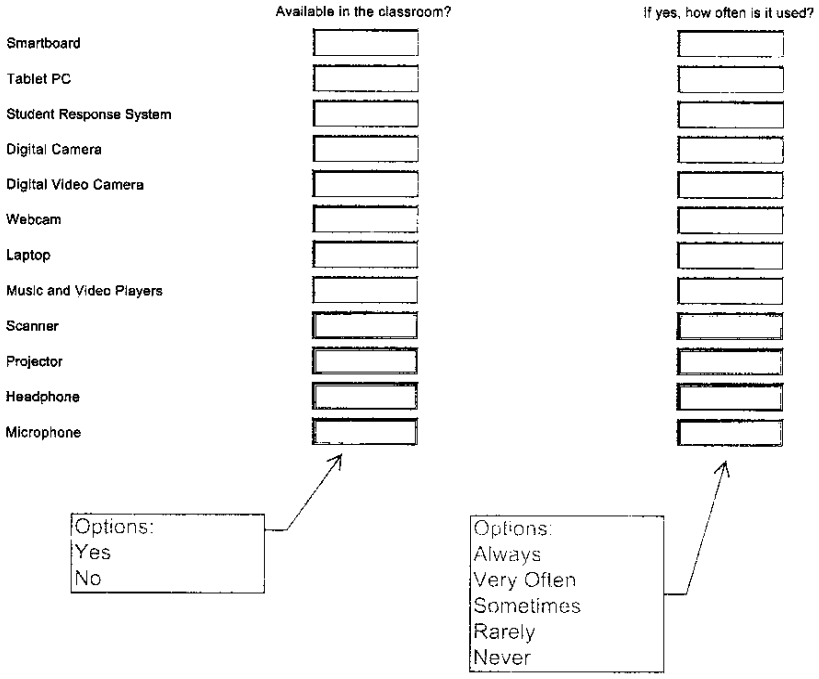
7. How many years have you been teaching Business/Marketing Education?

◯ 1-5 ◯ 6-10 ◯ 11-15 ◯ 16-20 ◯ 21+

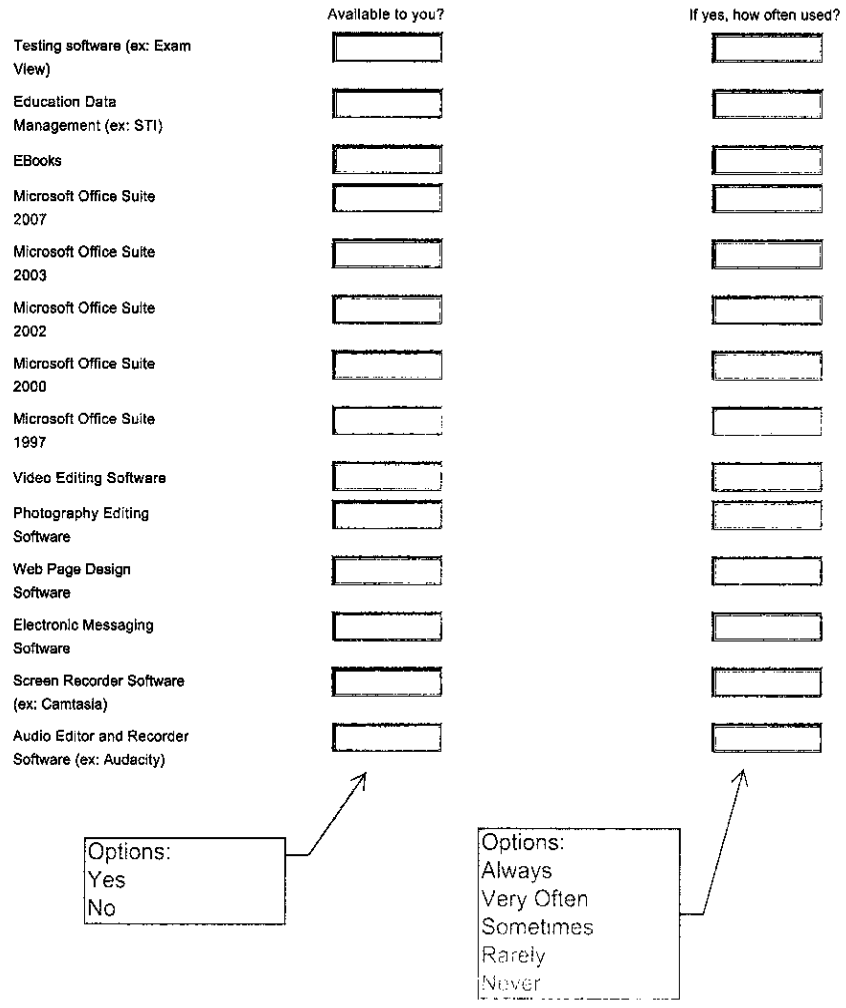
2. Section Two - Hardware and Software Technology

Please select the hardware and software technology available to you and how often it is used in the classroom.

1. Is the following hardware available to you for use and how often is it used in the classroom?



2. Is the following software available to you for use and how often is it used in the classroom?



3. Please identify barriers that you perceive prevent integration of hardware and software technology into the classroom. (check all that apply)

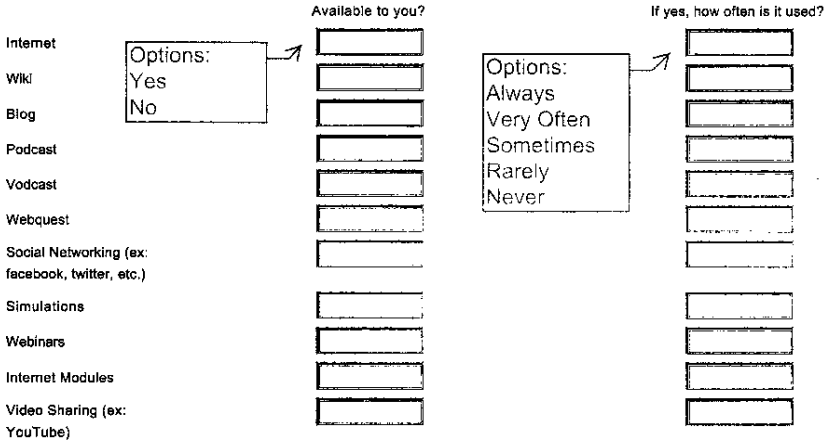
- [ ] Lack of understanding
- [ ] Lack of motivation
- [ ] Fear of technology
- [ ] Fear of change
- [ ] Fear of appearing incompetent
- [ ] Lack of time for learning
- [ ] Lack of time for implementation
- [ ] Budget constraints
- [ ] Lack of professional development opportunities
- [ ] Lack of support from administration
- [ ] IT limitations

Other (please specify)

3. Section Three - Technology Tools

Please select the technology tools available to you and how often it is used in the classroom.

1. Is the following technology tool available to you for use and how often is it used in the classroom?



2. Please identify barriers preventing integration of technology tools into the classroom. (check all that apply)

- ☐ Lack of understanding
- ☐ Lack of motivation
- ☐ Fear of technology
- ☐ Fear of change
- ☐ Fear of appearing incompetent
- ☐ Lack of time for learning
- ☐ Lack of time for implementation
- ☐ Budget constraints
- ☐ Lack of professional development opportunities
- ☐ Lack of support from administration
- ☐ IT limitations

Other (please specify)

4. Section Four - Perceived Competence

Please indicate the degree to which you are prepared to integrate technology into the classroom.

4. Expert Competence: you have an in-depth knowledge and skill to fully integrate technology into the classroom.
3. Moderate Competence: you have reasonable knowledge and skill to integrate most of this technology into the classroom.
2. Basic Competence: you have minimal skill and knowledge to integrate part of this technology into the classroom.
1. No Competence: you do not have the knowledge or skill to integrate this technology into the classroom.

1. Hardware:

	4 - Expert Competence	3 - Moderate Competence	2 - Basic Competence	1 - No Competence
Smartboard	◯	◯	◯	◯
Tablet PC	◯	◯	◯	◯
Student Response System	◯	◯	◯	◯
Digital Camera	◯	◯	◯	◯
Digital Video Camera	◯	◯	◯	◯
Webcam	◯	◯	◯	◯
Laptop	◯	◯	◯	◯
Music and Video Players	◯	◯	◯	◯
Scanner	◯	◯	◯	◯
Projector	◯	◯	◯	◯
Headphone	◯	◯	◯	◯
Microphone	◯	◯	◯	◯

2. Software:

	4 - Expert Competence	3 - Moderate Competence	2 - Basic Competence	1 - No Competence
Testing Software (ex: Exam View)	◯	◯	◯	◯
Education Data Management (ex: STI)	◯	◯	◯	◯
EBooks	◯	◯	◯	◯
Microsoft Office Suite 2007	◯	◯	◯	◯
Microsoft Office Suite 2003	◯	◯	◯	◯
Microsoft Office Suite 2002	◯	◯	◯	◯
Microsoft Office Suite 2000	◯	◯	◯	◯
Microsoft Office Suite 1997	◯	◯	◯	◯
Video Editing Software	◯	◯	◯	◯
Photography Editing Software	◯	◯	◯	◯
Web Page Design Software	◯	◯	◯	◯
Electronic Messaging Software	◯	◯	◯	◯
Screen Recorder Software (ex: Camtasia)	◯	◯	◯	◯
Audio Editor and Recorder Software (ex: Audacity)	◯	◯	◯	◯

3. Technology Tools:

	4 - Expert Competence	3 - Moderate Competence	2 - Basic Competence	1 - No Competence
Internet	◯	◯	◯	◯
Wiki	◯	◯	◯	◯
Blog	◯	◯	◯	◯
Podcast	◯	◯	◯	◯
Vodcast	◯	◯	◯	◯
Webquest	◯	◯	◯	◯
Social Networking (ex: facebook, twitter, etc.)	◯	◯	◯	◯
Simulations	◯	◯	◯	◯
Webinars	◯	◯	◯	◯
Internet Modules	◯	◯	◯	◯
Video Sharing (ex: YouTube)	◯	◯	◯	◯

5. Thank You

Thank you for taking the time to complete this survey. At this time if you wish to submit your responses, please click the done button at the bottom of the page. If you wish to withdraw from the survey, simply exit your browser.

APPENDIX D
INFORMATION LETTER

AUBURN
UNIVERSITY

COLLEGE OF EDUCATION

CURRICULUM AND TEACHING

INFORMATION SHEET
FOR
The Integration of Technology Hardware, Technology Software and Technology Tools of the Business Education Teachers in Alabama

Dear Professional Alabama Business Educator:

You are invited to participate in a research study designed to investigate the degree to which business education teachers in Alabama integrate technology into their classrooms. If technology is not integrated, the barriers preventing integration will be identified, as well as the degree of perceived competency of business education teachers in Alabama to integrate technology into the classroom. This study is being conducted by Elisha Wohleb, a doctoral candidate, under the supervision of Dr. Leane Skinner, an Associate Professor in the Business Education Program at Auburn University. You were selected as a participant because you are listed as a business education teacher in the 2009-2010 Alabama Department of Education Business Education Directory and are 19 years or older.

The Auburn University Institutional Review Board has approved this document for use from 4/27/10 to 4/26/11 Protocol # 10-120 EX 1004

Your participation is completely voluntary. If you decide to participate in this research study you will be asked to complete and submit an electronic survey. Your total time commitment will be approximately 15 minutes.

Your input, as a professional Business Educator, is vital to the success of this research. Although there are no guarantees of personal benefit by participating in the study, there is a potential of utilizing the revealed information to improve Business Education in the state of Alabama.

Any data obtained in connection with this study will remain anonymous. We will protect your privacy and the data you provide by not collecting IP addresses and e-mail addresses when the survey is submitted.

If you change your mind about participating, you can withdraw at any time by closing your browser window. Once you have submitted anonymous data, it cannot be withdrawn since it will be unidentifiable. Your decision about whether or not to participate or to stop participating will not jeopardize your future relations with Auburn University, the Department of Curriculum and Teaching or your school system. Information collected through your participation may be used as partial fulfillment of the requirements for the Doctor of Philosophy Degree and future presentations and publications.

If you have questions about this study, please contact Elisha Wohleb at (334) 844-3800 (wohleec@auburn.edu) or Dr. Leane Skinner (334) 844-3800 (skinnal@auburn.edu).

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Human Subjects Research or the Institutional Review Board by phone (334) 844-5966 or email at hsubjec@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION ABOVE, YOU MUST DECIDE IF YOU WANT TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, PLEASE CLICK ON THE LINK BELOW. YOU MAY PRINT A COPY OF THIS EMAIL TO KEEP.

Elisha Wohleb 4.6.10

Elisha Wohleb — Date
Doctoral Candidate
Principal Investigator

The Auburn University Institutional Review Board has approved this document for use from 4/27/10 to 4/26/11. Protocol # 10-120 EX 1004

LINK TO SURVEY

5040 HALEY CENTER
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334-844-6789

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