Measuring faculty satisfaction and motivation to use podcasts: A pilot study

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Measuring Faculty Satisfaction and Motivation to Use Podcasts: A Pilot Study

by

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Dedication

My research is dedicated to my family, in particular to my loving wife, without whom I could not have attempted this journey, and to my two sons, who have been my biggest fans and a large part of my support system and whose patience and encouragement has been steadfast. Gratitude is also extended to my committee chairperson, Dr. Denise Pilato; without her guidance and perseverance I could not have completed this passage. Thank you to my committee members, whose knowledge and guidance have helped me throughout the years. Special thanks to Dr. Boone, the person who has inspired me to achieve more than I could have ever dreamed possible.
Abstract

Modern society is constantly evolving, affecting the creation and use of technology. Concurrently, technology is relentlessly developing and expanding, influencing the very society to which it is introduced. In a rapid-paced, globally influenced educational community, podcasts are among the latest and promising innovations being introduced into the educational arena to reach technology-savvy students.

Information in various technological formats is not new, nor is their application to the educational process unique. Many past technologies such as the record player, tape player, radio, television, and computers were all believed to exhibit enormous potential to transform education. However, in almost every instance, they have failed to live up to the hype and promises made by their advocates. In some cases, they failed because something newer and better appeared; in other cases, it was the lack of resources and poor implementation or failing to understand the many challenges required to implement them.

Although podcasting technology is not new, it is still in the formative stages as an educational resource. Recognizing the potential value of podcasts to the field of education, this study investigated factors that inhibit or influence the creation and use of podcasts as an educational resource. In addition, the study examined faculty’s satisfaction in the use of podcasts as a resource to achieve learning objectives and outcomes.

Recognizing the potential value of podcasts to the field of education, this study investigated factors that inhibit or influence the creation and use of podcasts as an educational resource. In spite of the fact that most participants believed that podcasts...
would produce positive results, improve student engagement, and motivation, and that podcasts would improve their effectiveness as instructors, the majority of participants did not employ podcasts. In addition, most believed that there were inadequate incentives in exchange for the time and effort required to create and use podcasts.
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Chapter One

The challenge for educators...is to integrate technologies in such a fashion as to engage critical thinking, stimulate intellectual growth, and encourage reflection in students who must fully embrace twenty-first-century literacies in order to succeed as global citizens in an increasingly diversified and technologically dependent world. (Sullivan, 2008, p. 11)

Aided by the effects of globalization and fueled by the information revolution, education and the way students learn are constantly changing. Dramatic advancements in technology and how we connect to the Internet metamorphose the ways students learn and interact with each other (Larsson, 2003). These ubiquitous devices promote exchanging, evaluating, and accessing information; they encourage and facilitate learning away from a physical campus or any specific location (Valentine, 2004).

Society constantly evolves; technology constantly develops. The interaction of one with the other has a profound effect upon each. The theory of social constructivism states that social interactions and constructs determine individual behavior. Some argue that it’s the constant evaluation of technology and its use in new and different functions that influences an individual’s behavior (Bijker, 2001; Ling, 2005). Social constructivism is understood to be the counterpart of technological determinism.

Technological determinism is the premise that social change comes about as a result of new capabilities enabled by new technologies. These characteristics of a given technology will determine why and how it is used by the society, thereby determining how society develops. Bijker (2001) and Heilbroner (1967) argued that society forms the concepts by which technology is created in the first place. Today, many social
interactions take place via the abilities of the Internet, email, blogs, and networking sites such as MySpace, Facebook, Twitter, and LinkedIn (Facebook, 2012; LinkedIn, 2012; MySpace 2010; twitter, 2012). Technology has affected the way we learn, altered the delivery methods, and affected the ways we access information, altering our understanding about how to teach and learn.

“The rapid speed of technological development and its effect on organizational strategy, structure and processes has created a critical need for systematic approaches to managing technology” (Bellamy, 2007, p. 32). Technology comes in many forms, formats, shapes, sizes, and appearances. It includes not only devices and machines used for manufacturing and productive processes but also the application of technical knowledge, as demonstrated by the use of skills and processes (Technology, 2010). Technology also comes in electronic formats, such as the audio we hear from a radio, and audio/video devices such as cell phones, iPods, iPads, and handheld PCs. Technology comes from data/information learned from books or accessed and learned from the Internet via web pages, spreadsheets, word processing, and presentation and audio/video files.

In today’s rapid-paced, globally influenced educational community, it is necessary to have up-to-date technology to capture students’ attention, to maintain their interest, and to encourage tech-savvy students to discover things on their own (Barrios, Ambler et al., 2004; Blodget, 2000).

Over the years, various technologies that promised revolutionary change have been introduced into the educational arena. For example, Thomas Edison described the
The educational benefit of his phonograph, which was invented in the late 1800s. Edison’s list of potential applications for the phonograph include:

- As an elocutionary teacher or as a primary teacher for children, it will certainly be invaluable. By it, difficult passages may be correctly rendered for the pupil but once, after which he has only to apply to his phonograph for instructions. The child may thus learn to spell, commit to memory, a lesson set for it, etc. (Edison, 1878, p. 533)

Radio was introduced to education sometime in the summer of 1920, with Marguerite Hood heralded as one of the first champions or pioneers promoting the use of radios in education (Cooper, 2005). Radio gained greater popularity in the 1930s; educational experts speculated that students would love the radio, saying, “We can put radios in every classroom…” (M. G. Jones, 2005, p. 4). Other technologies promoted as having the potential to revolutionize education included the tape player (reel-to reel, 8-track, and cassette), and the television (Archer, 1939; Bianchi, 2008; Carlin, 2002; Cipriani, 1912; Cooper, 2005; Craig, 2004; Edison, 1878; Hoare, 2007; Salisbury, 1935; Symes, 2004).

More recently, podcasting has been explored as a resource to radically change education (McGee & Diaz, 2007; Richardson, 2006). While podcasting is not new, its entry into the educational arena is still in the pioneering stages (Molina, 2006). The focus of this study is to determine whether faculty are satisfied with the technology when podcasts are used to achieve learning objectives and to determine what factors impact faculty’s decisions about whether to use podcasts. In addition, this study seeks to establish whether podcasts are another educational fad unable to live up to the hype.
When the educational community first became aware of the Internet, few envisioned the learning opportunities that would become available (R. Abel, 2005b; Kahn & Cerf, 1999). Today, educational resources are available in a large variety of formats (printed and electronic) on just about any subject matter. Information can be downloaded from the Internet as text, images, graphics, pictures, audio, and video files; some information can be viewed as a document file or as resource web-pages (Mardis, 2001; Swartz, 2008; Valentine, 2004).

As seen in the images in Figure 1, information is available in various formats; today the common link is that they are all available in electronic format and can be accessed via the Internet.

![Figure 1. Technologies introduced into the educational arena. (Backus, 2010; DeBartolo & Laporte, 2010; "Films Beat Books," Says Edison - Using motion pictures in the classroom, 2012; Phantom's reel to reel tape recorder online museum, 2012; Phonographs, 2012; B. Taylor & Kashinski, 1998; R. Taylor, 2004)](image)

Many of the pros and cons of various technologies are shown in Table 1, listing some of the technologies that have been introduced into education over the years.
### Table 1

**Factors Affecting Past Technology Utilization**

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Purpose-Pro</th>
<th>Cons</th>
</tr>
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<tr>
<td>Record Player/Cassette Player/Reel to Reel/8-track</td>
<td>Can be heard over and over. Outside information or speakers can be brought in.</td>
<td>Tapes break, stretch, jam. Setup took time. Resources are limited. One way flow of information.</td>
</tr>
<tr>
<td>Movie Projector</td>
<td>Permits wider audience. Provides new resources for a faculty. Outside information or speakers can be brought in.</td>
<td>Original projectors dangerous as fire hazards. Quantity of equipment was limited. Directors were known to change plots and give a different interpretation of history. One way flow of information.</td>
</tr>
<tr>
<td>Television</td>
<td>Reaches a wide audience. Provides new resources for a faculty. Outside speakers may be brought in.</td>
<td>Limited access to equipment. Topics not always suited for audience. Directors were known to change plots and give a different interpretation of history. One way flow of information.</td>
</tr>
<tr>
<td>Radio</td>
<td>Reaches a wide audience. Provides new resources for a faculty. Outside speakers can be brought in.</td>
<td>Access to equipment limited originally. Some equipment required batteries; lots of upkeep and costs. Subjects not always suited for audience. Directors were known to change plots and give a different interpretation of history. One way flow of information.</td>
</tr>
<tr>
<td>Computers</td>
<td>Great for repetitive work. Programs improve each day. Untiring, relentless.</td>
<td>Impersonal. Difficult to adapt to students individual needs</td>
</tr>
</tbody>
</table>
History of Technology as Applied to Education

Creating, sharing, and saving information has always presented various challenges to humans (Allen & Seaman, 2009; Caladine, 2008; Grover, Jeong, & Segars, 1996). Doubt, distrust, skepticism, and supposition are nothing new with the entry of new or different technology, especially when it is introduced as a method to augment or transform the educational process. While many technologies did have a significant impact on education, many have failed to live up the promises made by their promoters (DeBoer, Johnson et al., 1950; Eastman, 1996; Edison, 1878; Reed, 1941). Many of the failures can be attributed to limited resources, little or poor training, inappropriate application, and/or misunderstanding about the uses of the technology. The present research explored whether podcasts are perceived by faculty to be of value as an educational resource in an effort to determine whether faculty are satisfied with the technology when used to achieve learning objectives, to determine what factors impact faculty’s decisions about podcasts, and to establish whether podcasts are just another educational fad unable to live up to the hype and promises.

Progression of Technologies in Education

Transformational technologies warrant important consideration as institutions attempt to accommodate the educational needs of increasing numbers of nontraditional students who have grown up in the information age (Cramer, 2007; Elliott, 2009; Milne, 2007; Prensky, 2001; Report of the technology enhanced learning committee, 2004; Roschelle, Pea et al., 2000; Watson & White, 2006). Today's students present an emerging profile of a mature, experienced, independent learner; many are employed, are highly mobile, study remotely, and recognize that learning should be viewed a life-long
Podcasts entered the educational arena with the potential to change how instructors disseminate information. Podcasts are portable, digital media files that can be either audio or video; currently they usually include both. These digital media files can be downloaded and played on almost any MP3/MP4-capable device anywhere at any time (Bongey, Cizadlo, & Kalnbach, 2006; Boulos, Maramba, & Wheeler, 2006; Campbell, 2005; Copley, 2007; Cordes, 2005; T. D. Green, Brown, & Robinson, 2008; Kothe, 2006; Torrone, 2007; Villano, 2008; Williamson, 2011). An MP3 file is an electronic audio file, whereas an MP4 file is an electronic file that includes both the audio and video output components (Curtis, 2007; Kothe, 2006). The main advantage of podcasts over previous technologies is that their smaller file size increases portability over the Internet. The ability to be accessed and played on a vast assortment of portable Internet-enabled devices makes podcasts very attractive to educators and students alike (Bongey et al., 2006; Chan & Lee, 2005; Making a podcast, 2010).

The original definition of podcasting specified that Really Simple Syndication (RSS) technology be included in order for any updated or new podcast to be automatically downloaded to an end-user’s device (Hendron, 2008; McIntyre, 2009; PCMag, 2011; Really Simple Syndication, 2009; Ykoon, 2010). RSS is a standardized content subscription format that automatically downloads web content by using a variety of software such as iTunes, Juice, RSS Reader, and so on (iTunes, 2010; Juice, 2011; Making a podcast, 2010; Ykoon, 2010). RSS programs are designed so that they
periodically check and automatically download any new content, which may be played at
the subscriber’s discretion.

RSS technology is useful for anyone who is attempting to simplify and take
advantage of the abundance of podcasts and podcast-enabled devices (Curtis, 2007;
Ralph & Olsen, 2007; Torrone, 2007; Williamson, 2011). The use of podcasts with RSS
technology has become an accepted resource within the educational environment because
it allows faculty to easily upload content, and subscribers to effortlessly download it
(Kvavik, Caruso, & Morgan, 2004). The augmentation of RSS gives podcasts the ability
to be disseminated automatically, quickly, and with little effort (Cebeci & Tekdal, 2006).
However, the requirement to include RSS has changed over time, and today podcasts
may or may not include RSS technology (Hendron, 2008; History of podcasting, 2005;
Kothe, 2006; M. Miller, 2007).

Some educators have jumped on the podcast bandwagon for pedagogical reasons
such as easy recording of classroom lectures, thereby allowing students to review lectures
as many times as they would like. Faculty can use podcasts for (recorded) pre- and post-
weekly briefings; others have adapted podcasts to be used as additional informational
resources or have used podcasts to explain and assign homework (Bongey et al., 2006;
Campbell, 2005; Evans, 2008).

Podcasts offer three important pedagogical advantages: learning through listening
(audio), learning by seeing (visual), and learning on demand. In addition, by providing
supplemental and alternative resources in the form of podcasts, faculty can attempt to
address some of the challenges faced by students who cannot attend classes, can’t read, or
have attention deficit disorder (ADD) or other disabilities that might interfere with traditional classroom learning (Cebeci & Tekdal, 2006).

Today, the definition of podcast includes, but is not limited to, pre-recorded radio and television shows, recorded lectures, PowerPoint slides with or without audio, supplemental instruction, recorded homework, and lecture experiments. A podcast is defined as “a program made available in digital format for automatic download over the Internet” (podcast, 2010). The Oxford English Dictionary defines podcast as “a digital recording of a broadcast, made available on the Internet for downloading to a computer or personal audio player” (Podcast, 2009).

Podcasting is sought by today's highly mobile students (Molina, 2006; Valentine, 2004). Students use podcasts for reviewing course material, viewing material when a class is missed, or to reconfirm what they heard in class. Podcasts are desirable educational resources that can be used within and outside of the classroom, both online and offline, and are considered to be on demand technology (Bongey et al., 2006; T. D. Green et al., 2008; Islam, 2007; Schmit, 2007).

Podcast advantages for the instructor include ease of creation, distribution, and portability. While in most cases the producer and creator are the same, some universities have staff to help edit and publish podcasts. Possibly the greatest benefits or advantages are the convenience factors or the ability to be used at the subscriber’s discretion and to be played over and over (Evans, 2008; Valentine, 2004). A podcast can be easy to generate, as anyone with a computer camera (aka web cam), video camera, or even a smart phone with a microphone can create a podcast (Dagys & Hedtke, 2006). In addition, a podcast’s relatively small file size makes it fairly easy to upload and
download. These attributes make them desirable to students and educators alike (Bongey et al., 2006; Brittain, Glowacki, Van Ittersum, & Johnson, 2006; Cebeci & Tekdal, 2006; Torrone, 2007; Villano, 2008; Worcester & Barker, 2006).

For podcasts to be successful, they should be interesting, and the message should be direct and to the point (Brittain et al., 2006; Gribbins, 2007; Popova & Kirschner, 2007). Podcasts should be durable; able to survive the arrival of new or upgraded operating systems, media programs, and learning platforms; and able to be accessed by just about any Internet-enabled device (Kothe, 2006; Schmit, 2007; Torrone, 2007). A podcast should be developed with potential reuse and repurposing in mind, allowing it to be effective not only for the faculty member who created it but also for other faculty to use or incorporate (Busetti, Dettori, Forcheri, & Ierardi, 2007; Emanuela, Giuliana, Paola, & Maria Grazia, 2007; Metros & Bennett, 2002, 2004; Nash, 2005; D. Wiley, Waters et al., 2004; D. A. Wiley, 2000a, 2000b).

Experts have also recommended that podcasts include *enhanced metatags*; these are informational tags that describe the data and are associated with every electronic file. The addition of enhanced metatags stored with the file allows for faster and more efficient searching for appropriate files, without having to manually search within the file (Bolettieri, Falchi, Gennaro, & Rabitti, 2007; Turner & Brackbill, 1998).

**Statement of the Problem**

As an emerging educational resource, podcasts have the potential to influence education when they are systematically and appropriately integrated within educational platforms. It is necessary to determine what factors create effective podcasts and
encourage their use and to assess faculty satisfaction when podcasts are used to achieve learning objectives.

There is ample research about podcasts from the students’ perspectives about podcasts’ perceived usefulness and students’ desires to have them (R. Abel, 2005a; R. J. Abel, 2007; Bloom & Hough, 2003; Bongey et al., 2006; Carr, 2000; Caruso & Salaway, 2007; Christensen, 2002; Copley, 2007; Emanuela et al., 2007; Hazari, 2004; Lang, 2005; Prensky, 2001; Roper, 2007; Simpson, Payne, Munro, & Lynch, 1998; Yavuz, 2007). Bongey et al. (2006) found that “the large majority of students used podcasts to increase their understanding of material covered in specific lectures” (p. 362). In addition, Copley (2007) found

... an overall enthusiasm for podcast lecture materials, with 93% of survey respondents indicating that they would like to see more lecture material available in podcast form, even respondents who did not download podcasts during the experiment. By having access to podcast records of lectures, 86% indicated that they would also like podcasting of supplementary stand-alone materials, such as short revision summaries and briefings for assignments. (p. 393)

From faculty’s perspective, there is a gap in the literature and research about the factors surrounding podcasts and faculty satisfaction with podcast use. Little is known about the impact of podcast technology on faculty; the literature and research generally fail to address faculty use and satisfaction with podcasts.

*Educational transformation* is a phrase commonly heard in conversation about educational change, particularly when such change involves newer technologies and education for the information society (Fisher, 2006). Christen (2009) stated that
educational transformation should align the *how* and *what* of learning with the learner, preparing him or her to work in the real world. Although the term *transformation* implies fundamental changes to the structures we teach and learn, it appears that what we may observe is little more than the same process done somewhat differently (Fisher, 2006).

Transformation often implies positive implication of change; generally and usually it is for the better. When a process concerns education, the perception is open to a critical investigation that examines the roles of faculty as facilitators, resource managers, and educational agents to determine whether the process is truly going to be effective and/or transformational. Podcasts could be part of an educational transformation, but there is a question about whether podcasts have the capability needed to transform education and whether faculty will embrace podcasts. Will incorporation of podcasts systematically and appropriately within different educational platforms have the potential to positively influence education? Will podcasts achieve learning objectives, and will faculty be satisfied with them when they are created as reusable resources?

**Purpose of the Study**

The purpose of this study was to investigate the factors that influence collegiate faculty’s decision to create and use podcasts, to determine the barriers encountered when developing podcasts, and to determine faculty overall satisfaction with podcasts when used to achieve learning objectives. Questions addressed in this study looked at the factors that motivate faculty to create podcasts. Was the use of podcasts mandated by department heads or university administration? Did use of podcasts evolve from student demand or result from peer pressure? Further, this study attempted to determine whether
faculty was satisfied with use of podcasts to achieve learning objectives. Did faculty see a difference in student participation, engagement, and learning as a result of podcasts?

Systematically integrating podcasts into the learning environment to promote the transfer of specific skills and knowledge requires additional planning and effort to achieve the pedagogical needs of today’s technology-savvy students. However, the study questioned whether faculty believed that the additional planning time and effort was worth it. This study examined the factors and barriers that were encountered when developing podcasts to be more easily reused, repurposed, and integrated within online instructional platforms to promote learning. Finally, this study attempted to determine whether podcasts could be part of learning environments or whether podcasts are another temporarily popular educational trend. Will the level of personal satisfaction in achieving learning objectives increase among faculty who took the time to develop and create podcasts?

**Significance of the Study**

Determining the various factors that surround the planning, creation, and use of podcasts will help both administrators and faculty understand the barriers that inhibit or promote podcast creation and use. Understanding the factors contributing to an effective podcast will increase faculty satisfaction when podcasts are used to achieve learning objectives.

This study was built upon the body of knowledge that describes the uses of podcast technology in teaching and the effects on faculty. This research contributed to the existing body of knowledge exploring the factors that influence faculty to create or not to create podcasts. Further, this study describes how incorporating podcasting technology
can benefit faculty in today’s global education revolution led by the mobile, tech-savvy student.

**Conceptual Framework for the Study**

This study used the technology assessment model (TAM) developed by Fred Davis Jr. (Davis, 1985, 1989; Davis, Bagozzi, & Warshaw, 1989) and was further supported by the research of others (See Figure 2). It was designed to explain user adoption of technology (Davis, 1985; Davis et al., 1989; Szajna, 1996). TAM is based on the theory of reasoned action (TRA) and attempts to explain the relationship of beliefs to behaviors. It suggests that beliefs lead to behavioral intentions that, in turn, lead to enacted behavior (Fishbein, 1967; Fishbein & Ajzen, 1975, 1980; Sample & Warland, 1973).

![Diagram of Technology Assessment Model](image)

*Figure 2. Technology Assessment Model (Davis, 1985)*

The TAM suggests that when users are presented with a new technology, a number of factors will influence if, how, and when they will use it. Two factors Davis thought to be important were perceived usefulness (PU), defined as “the degree to which
a person believes that using a particular system would enhance his or her job performance,” and perceived ease-of-use (PEOU), defined as “the degree to which a person believes that using a particular system would be free from effort” (Davis, 1989, p. 320). Davis refined these concepts in subsequent papers entitled *Perceived Usefulness, Perceived Ease of Use and User Acceptance of Information Technology*, and *User Acceptance of Computer Technology: A Comparison of Two Theoretical Models* (Davis, 1985; Davis et al., 1989).

In a more recent study of TAM, Lee, Kozar, and Larsen (2003) traced the history of the model to its present form and looked at possibilities for the future. The authors conducted a meta-analysis of 101 articles published between 1986 and 2003. Their study found that TAM evolved during that time, and many of its limitations were resolved. They further indicated that although TAM was the dominant theory, it was not the only theory, and there is still much to be researched.

Theory of Planned Behavior states that there is link between attitude and subjective norm and perceived behavioral control that influences intention that determines a person’s final behavior (Ajzen, 1991, 2010). The theory of planned behavior was proposed by Ajzen as an extension of the theory of reasoned action; it has been one of the most predictive and persuasive theories applied to studies of the relationship among attitudes, beliefs, behavioral intentions, and behaviors results.

This study attempted to quantify the concept that faculty know when podcasts are effective in meeting learning outcomes, as opposed to the technology being merely interesting. In particular, the study documented evidence that supports impressions that
podcasts are useful to faculty as an educational resource and that the use of podcasts increases a faculty’s level of personal satisfaction.

A suggested application of the TAM model is shown as Figure 3 with the variables measured in this study. These variables can drive motivation and satisfaction that drive the planning, creation, and use of podcasts.

*Figure 3. TAM model for Podcasting (Mitchell, 2010)*
Research Methods

A survey based on the TAM model was developed for the assessment of podcasts. Using a modified version of the TAM questions, this study probed faculty’s level of knowledge about podcasting and their comfort in planning, creating, and using podcasts. The survey questioned how frequently faculty used podcasting to promote learning and assessed factors that motivated and promoted or inhibited and limited podcasts use. The survey also attempted to assess faculty satisfaction when using podcasts.

Definition of Terms

For purposes of this study, the following terms are defined:

- **Distance Education**: Distance Education occurs when a faculty and students are in physically different locations. Instruction is conducted via voice, video, computer technologies, or print (Carr, 2000).

- **Globalization**: Globalization refers to increasing global connectivity, integration, and interdependence in economic, social, technological, cultural, political, and ecological fields (Lechner, 2000-2001).

- **Hybrid Course**: A Hybrid Course comprises an Internet component or location away from the classroom where students learn in addition to what is taught in a traditional brick and mortar classroom (Hollandworth, 2006).

- **Internet**: The Internet is an electronic communications network that connects computer networks and organizational computer facilities around the world (Internet, 2012).

- **Instructional Design**: Instructional Design is the systematic development of instructional specifications using learning and instructional theory to ensure the
quality of instruction. It is the entire process of analysis of learning needs and goals and the development of a delivery system to meet those needs. It includes development of instructional materials and activities and tests and evaluation of all instruction and learner activities (Emanuela et al., 2007; McCallie & McKinzie, 1999; Yavuz, 2007).

- **MP3**: An MP3 is an audio-specific format. The compression removes certain parts of sound that are outside the hearing range of most people (Chan & Lee, 2005; Kothe, 2006).

- **MP4**: An MP4 or MPEG-4 Part 14, is a multimedia container format standard specified as a part of MPEG-4. It is most commonly used to store digital audio and digital video streams, especially those defined by MPEG, but can also be used to store other data such as subtitles and still images. Like most modern container formats, MPEG-4 Part 14 allows streaming over the Internet. The official filename extension for MPEG-4 Part 14 files is .mp4, thus the container format is often referred to simply as MP4. Devices that play .mp4 files are referred to as MP4 players (iPod classic technical specifications, 2006; iPod Notes Feature Guide, 2006).

- **MPEG**: An MPEG is the Moving Picture Experts Group, commonly referred to as simply MPEG, a working group of ISO/IEC charged with the development of video and audio encoding standards (iPod classic technical specifications, 2006; iPod Notes Feature Guide, 2006).

- **Pedagogy**: Pedagogy generally refers to strategies of instruction or a style of instruction. Pedagogy may also refer to the correct use of teaching strategies.
Correlating to teaching strategies, the faculty's own philosophical beliefs of teaching are harbored and governed by the pupil's background knowledge and experiences, personal situations, and environment, as well as learning goals set by the student and faculty (J. Green, 1998; Hiemstra, 1990; Thompson & Deis, 2004).

- **Podcast**: A podcast is an audio broadcast that has been converted to an MP3/MP4 file or other audio/video file format for playback in a digital player or computer (Aldrich, Bell, & Batzel, 2006; Kothe, 2006; McGee & Diaz, 2007; McIntyre, 2009; Torrone, 2007; Williamson, 2011).

- **Podcasting**: The term *podcasting* is believed to have derived its name from Apple's iPod. Podcasting is a type of online media delivery, usually an MP3 or MP4 format. The owner publishes selected files via the internet and allows users to subscribe via an RSS feed to automatically receive new files (Torrone, 2007).

- **RSS**: **RSS or Really Simple Syndication** is a family of web feed formats used to publish frequently updated content such as blog entries, news headlines, or podcasts. An RSS document is called a feed, web feed, or channel and contains either a summary of content from an associated web site or the full text. RSS makes it possible for people to keep up with their favorite web sites in an automated manner that is easier than checking them manually. RSS content can be read using software called an RSS reader, feed reader, or an aggregator. The user subscribes to a feed by entering the feed's link into the reader or by clicking an RSS icon in a browser that initiates the subscription process. The reader checks
the user’s subscribed feeds regularly for new content, downloading any updates that it finds (Really Simple Syndication, 2009; Ykoon, 2010).

- **Theory of Planned Behavior**: The theory of planned behavior (TPB) was presented by Icek Ajzen in 1985. TPB was developed from the theory of reasoned action (TRA), proposed by Martin Fishbein and Icek Ajzen (1975), and was based on various theories about attitude (Ajzen, 1991; Lin, 2005).

- **Theory of Reasoned Action**: According to the theory of reasoned action (TRA), if people evaluate a suggested behavior as positive (attitude), and if they believe their peers or significant others would want them to perform the behavior (subjective norm), then this would result in a higher intention (motivation) and therefore they are more likely to do the action in question (Davis, 1985; Lin, 2005).

- **Technology Assessment Model**: The Technology Assessment Model (TAM) was “…developed with two major objectives in mind. First, it should improve our understanding of user acceptance processes, providing new theoretical insights into the successful design and implementation of information systems. Second, TAM should provide the theoretical basis for a practical ‘user acceptance testing’ methodology that would enable system designers and implementers to evaluate proposed new systems prior to their implementation” (Davis, 1985, p. 3).

- **Virtual Classroom**: A virtual classroom, located in an electronic space, is a computer-mediated communication system that utilizes the educational methods reflecting asynchronous communications and a collaborative approach to education (Mardis, 2001; McCallie & McKinzie, 1999).
• **World Wide Web**: The World Wide Web (WWW or Web) is an Internet-based system design that allows for easy retrieval of documents from linked multimedia sites (Burrows, 2008; Hinman, 2002).

**Organization of the Study**

The literature review in Chapter Two includes research findings that support the theoretical framework and each variable under consideration. Past uses of similar technology are examined together with a discussion of how they failed and possible explanations for such failures. Finally, the review follows the evolution of the field of podcasting, documents the present situation and current notions, and discusses projections for the future of podcasting.

Chapter Three includes further discussion of the underlying conceptual framework, the study design, hypotheses, and definitions of variables and theories, as well as data collection procedures, methods of data analysis, human subject review, and study limitations.

Survey data collected and a detailed analysis of findings are presented in Chapter Four. Research conclusions and implications of how they may be used by current educators and ways that future research may build upon this work are included in Chapter Five.

**Summary**

The incorporation of technology in higher education is not new; neither is the use of audio and video files. These ideas have been proposed and encouraged in a number of social transformations and expectations; many continue to challenge the traditional framework of higher education. Transformational technologies were and are important as
institutions attempt to accommodate the educational needs of an increasing number of non-traditional students (Cramer, 2007; Elliott, 2009; Milne, 2007; Prensky, 2001; Report of the technology enhanced learning committee, 2004; Roschelle et al., 2000; Watson & White, 2006). These students are part of an emerging profile of a mature and independent learner who is also employed, considered to be highly mobile, and working remotely, and who recognizes that learning is a life-long pursuit (Benshoff, 1993; Brown, 1994; Elliott, 2009; Evans, 2008; A. Jones, 2003; Stephenson et al., 2007; Valentine, 2004).

Podcasts are an emerging educational resource that have the potential to influence education when they are systematically and appropriately integrated within educational platforms. There is a need to determine what factors affect a faculty’s creation and use of podcasts. In addition, there is a need to determine if the use of podcasts increases a faculty member’s personal satisfaction.
Chapter Two

Literature Review

This literature review was drawn from a search of books, journals, and the following databases: Proquest: ABI/INFORM GLOBAL, ACM Digital Library, FirstSearch: Academic Search Premier, ArticleFirst, ERIC, CSA Illummina, Chronicles of Higher Education, ERIC, Gale PowerSearch, and Wiley Interscience. GALE CENGAGE, Learning-Academic OneFile, Google Scholar, JSTOR, Premier, WorldCat - via FirstSearch, WorldCat.org, Springerlink, CSA Illummina -PsycINFO, Science Direct, and CSA Illummina -PsycARTICLES.

Database searches included keywords and/or combinations of keywords such as distance education, online education, technology acceptance, podcasts, podcasting, educational technology, perceived usefulness, attitude, intention to use, audio, pedagogy, lecture, Technology Acceptance Model, Theory of Reasoned Behavior, undergraduate, graduate, higher education, eLearning, self-efficacy, faculty satisfaction, and faculty motivation.

Given the potential value of podcasts, some faculty members incorporate podcasts into today's learning environment, yet others do not. There are a variety of ways to create and implement podcasts; some are better than others. There are various types of uses, student learning styles, and pedagogical methods; therefore, determining the real effectiveness of any podcast can be challenging. Further, there is a need to investigate whether faculty members who use podcasts are satisfied with students’ achievement of learning objectives and whether faculty are satisfied using podcasts created by others.
Many factors could motivate faculty to create or use a podcast to achieve learning objectives: students’ requests, a requirement for teaching online, or a necessity for managing large class sizes. Production of podcasts can be a benefit to data-intensive courses where the information does not often change, such as those in the medical field, physics, and mathematics.

As faculty plan and create podcasts, many look at the benefits of podcasts to students and to themselves. Faculty may find by offering Internet-based resources that self-directed learners will have more opportunities for reaching intellectual goals that seemed impossible just a few years ago. Internet-based resources should be developed with two major objectives in mind. First it should improve our understanding of user acceptance processes, providing new theoretical insights into the successful design and implementation of information systems. Second, TAM should provide the theoretical basis for practical user acceptance testing methods that would enable system designers and implementers to evaluate proposed new systems prior to their implementation (R. Abel, 2005a, 2005b; R. J. Abel, 2007).

Shirley Waterhouse (2005), University Director of the Centers for Teaching and Learning Excellence, believed that “technology is a means to an end, not an end in itself” and that “pedagogy must drive technology, not the other way around” (pp. 3-4). Educators must plan the creation, management, and utilization of podcasts if the technology is to be used successfully to achieve pedagogical objectives.

Beginning with a short overview of the advances in educational technology that have led to the emergence of podcasting (Hallett, 2005; Kopcha, 2010; Steinbronn & Merideth, 2008), the literature review explored and examined faculty attitudes and
acceptance of podcasting as an educational technology, the level at which faculty are motivated to make use of podcasting technology to expand the reach and effectiveness of their courses, and faculty satisfaction when utilizing podcasts to achieve learning objectives (Ulrich & Karvonen, 2011).

The review examined the Davis (1985) Technology Acceptance Model (TAM), one of the most popular and robust models for explaining motivation for using or not using technology, based on the constructs of perceived usefulness and ease of use (Abuhamedieh & Sehail, 2007; Chang & Tung, 2008; Chen, 2009; Davis et al., 1989; Lockhart & Lacy, 2002; Park, 2009; Yuen & Ma, 2008). Over the years, many researchers have fine-tuned or made revisions to the TAM and conducted empirical studies demonstrating the robustness of its explanatory power with regard to technology and its acceptance (Cohen, Ebeling, & Kulik, 1981; King & He, 2006; Y. Lee et al., 2003).

Podcasting was originally developed as a way to deliver short episodes and, by use of Real Simple Syndication (RSS), as the means to quickly deliver its contents to subscribers (History of podcasting, 2005; Making a podcast, 2010; Podcast, 2009). There have been many differences of opinion about the value of podcasting, yet as with other introductions of technology into classrooms, literature has been inflated with claims being made for podcasting that have not been empirically proven (Holtz & Hobson, 2007; McGarr, 2009; Molina, 2006; Richardson, 2006; Tavales & Skevoulis, 2006; Worcester & Barker, 2006). For example, the idea that podcasting will allow students to expand the arena of learning beyond the classroom has apparently not been borne out by experience, and although students use podcasts and appreciate the flexibility allowing them to review
class materials whenever they want, some studies have shown that students tend to make
limited use of podcasts (Bairstow, 2006; Bennington, 2007; Berger, 2007; Brittain et al.,
2006; Tavales & Skevoulis, 2006; Webster, 2008).

Some faculty resist using podcasts because they believe that students will think
that it means that they do not have to attend class; this fear has been proven to be
unfounded in empirical studies (R. Abel, 2005a, 2005b; Benshoff, 1993; Carvalho,
Moura, & Crux, 2008; Hew, 2009; Lang, 2005; Molina, 2006; Williams, Hricko, &
Howell, 2006).

At the undergraduate level, a number of developments in podcast use are
examined and reviewed, including studies that demonstrate the degree to which podcasts
are being used, what faculty and students think of them, whether the Technology
Acceptance Model explains usage patterns and, most important, whether podcasting has
any measurable impact on student outcomes (Copley, 2007; Gribbins, 2007; Hew, 2009;
Lau & Woods, 2008; M. Lee & Chan, 2007; McGarr, 2009; O'Toole, 2007a, 2007b;
Rosell-Aguilar, 2007; Sandars, 2009; Steinbronn & Merideth, 2008).

Technology Integration in the Classroom

A brief examination of promises and problems. It is often difficult to ascertain
how or where the word podcast originated. Some believe it comes from a combination of
the Apple iPod and the word broadcasting; the first generation iPods had the capability to
play audio files, and later models could play both audio and video files, hence iPod and
cast (History of podcasting, 2005; Torrone, 2007). Some credit Adam Curry (MTV DJ)
and David Winer (programmer) with creating the concept (Carvalho et al., 2008).
Whatever its origins, today’s definition of podcasting has been expanded to include
almost any media file (generally in MP3/MP4 format) and any digital media file(s) or series of files that can be quickly distributed over the Internet for playback at a subscriber's convenience. The key elements are digital media files that can be quickly and easily uploaded and downloaded and can be played at a subscriber's convenience on a variety of media enabled devices.

Podcasts have entered the educational arena behind other technologies, leaving behind a record of mixed successes and failures (Hallett, 2005; Kopcha, 2010; Steinbronn & Merideth, 2008). Television and radio, the phonograph, and tape players were all introduced to education with mixed success; many failed to live up to expectations and hype by supporters (DeBoer et al., 1950; Eastman, 1996; Frontiers of radio, 2006; Hoare, 2007; Molina, 2006).

Today, some undergraduate level classes use a classroom response system (CPS) also called clickers, a device that allows students to electronically answer pop-quizzes or questions periodically presented on a screen during class, in the manner of, as one student described it, “Who Wants to be a Millionaire?” (Hallett, 2005, p. 1). Hallett argued that technology integration is now fairly common in course websites and online classes, but some technologies, such as podcasts, remain experimental, even though this newer technology seems assured to be able to “revolutionize the learning process” (p. 1). Hallett also observed that although some professors are using podcasting technology, a great many more resist, unsure of how effective the podcast will be, concerned that podcasts will take up valuable time and distract from traditional learning. Some professors express concern that the end results in terms of student learning may not be worth the effort to plan, create, introduce, and use podcasting technology.
Two factors described in the Technology Acceptance Model (TAM) seem to be of major concern to faculty: perceived usefulness and ease of use. In education, much of the technology introduced is only tested while being practiced; in some cases this is done somewhat haphazardly, resulting in only limited truly effective integration of the technology.

Podcasts, as such, are not new or revolutionary. They have existed in various formats for years. It is the amalgamation with another technology, Really Simple Syndication (RSS), that has helped establish podcasts as a prominent and promising educational resource with the characteristics demanded by students in today’s technological and mobile society.

The introduction of podcasting technology as an educational resource elicits trepidation, questions, and concerns about whether faculty are satisfied with podcasts when they are used to achieve learning objectives, and whether podcasts could be just another educational fad doomed to the fate of past technologies, which have been unable to live up to the hype and possibilities. These concerns are part of the focus of this study.

Hallett (2005) interviewed a number of professors and students who preferred to stay with the traditional lecture, believing that listening to lectures resulted in a more effective learning environment. Some educators are concerned that introducing more technology may change the lecture-based class into a format with limited positive results. There is some evidence to support this. Cornell University’s practice of offering laptops to students in class to permit instant research of related material online failed because they found that “most students used the laptops to email friends and browse the web for
non-class-related materials” (p. 2). Hallett (2005) remained optimistic about the potential of podcasting because it allows for the quick and easy distribution of lectures.

Studies on the effectiveness of podcasts remain mixed. One study found that most students used podcasts to listen to audio books or hit songs during class. In another study, where podcast access was restricted to course-related material, greater success was found, as the practice helped students keep up with class work (Clark, Westcott, & Taylor, 2008; Clarke, 2006; Glogoff, 2009; Hallett, 2005; Young, 2005).

The use of podcasts may be another way to open classrooms to a wider variety of audiences, as seen when podcasts are used as an extension of distance learning. The application of online courses at the undergraduate level has increased dramatically, although effectiveness in terms of improved student learning remains unclear (Caladine, 2008; Evans, 2008; Gaines, 2008; Hilton III, Graham, Rich, & Wiley, 2010; Ryba, Selby, & Mentis, 2002; Velez, 2008). Although some argue that online learning is ideal for extending learning to a non-enrolled public, others cite the increased learner-to-learner and learner-to-faculty interactions as one of the strengths of the technology (Bloom & Hough, 2003; Brown, 1994; M. Lee & Chan, 2007).

Students have asked for podcasts to help them catch up when they have missed classes and have praised podcasts for offering the option to listen and view course material at their discretion. However, some studies have shown that students may not actually use podcasts, suggesting that many students want them more for a safety net in case they might need them (Brittain et al., 2006). In addition, students use podcasts for other reasons: to clarify materials covered in lectures; to play them over and over as needed; in some cases, to enhance comprehension of complex concepts; and to fill in
gaps in their notes. By incorporating podcasts, faculty can create a blended learning environment. This blended learning environment can improve student performance by allowing students to review materials any time and as many times as they choose (Bongey et al., 2006; Copley, 2007; Dekhane, Napier, & Smith, 2011; Schober, Wagner, Reimann, & Spiel, 2008).

As with other technological integrations, many professors resist putting their courses online due to the perception that it is time-consuming to create a podcast, and because they are unsure if the effort involved improves student learning outcomes. Then, as an added burden, when recording classroom lectures and discussions, the faculty is not only director and producer but primary actor as well. Hilton et al. (2010) examined the degree to which distance learning components strained faculty workload and whether the course was able to improve faculty-student and student-student interactions. Students in traditional classes and distance learning classes were interviewed to gather their perceptions about the usefulness of the technology. The results indicated that learner-content interactions, including the writing of blogs, appealed mostly to distance learning students; about a third of the students surveyed thought that reading other students’ blogs was useful and educational. Unfortunately, it was found that if the faculty invested little time in encouraging student-student interaction, the level of such interaction was also generally poor.

One study found that faculty believed that extending a course to an online environment would be relatively easy (Ryan, Porter, & Miller, 2010). However, the faculty’s lack of knowledge about the necessary support needed for student-student interaction, encouragement, and promotion online resulted in a limited sense of the
usefulness of the endeavor, as measured by student learning outcomes. In addition, it was found that when podcasts do not contain video, there is an additional challenge to the faculty who, without props, must use descriptive words and colorful language to convey ideas and concepts or pictures so that the learner can visualize what is being said (Lane, 2006; Ralph & Olsen, 2007; Webster, 2008).

Developing, creating, and incorporating podcast technology requires additional planning and considerable effort to systematically integrate podcasts in courses and various instructional design platforms so that they can be effective to achieve the anagogical needs of today’s technology-savvy students. In general, the literature on technology integration has come to hold educators responsible for less than optimal implementation; therefore, a number of approaches have been suggested to help educators with the process. Kopcha (2010) noted that technology integration only improves student outcomes if introduced within the correct context to student-centered approaches to learning. Barriers to successful implementation have been linked to time restraints, personal beliefs of faculty about technology, access to specific technology, professional development, support, the culture of the school involved, and failure to link technology and student-centered pedagogy. Kopcha (2010) proposed peer mentoring as a way to help educators overcome the barriers to optimal integration. He constructed a systems-based model using mentoring for educator professional development as a pathway toward improved technology integration. The model leads the educator through initial setup to educator preparation, curricular reform, and community of practice. This model attempts to use resources currently available to support and sustain the implementation process. The proposed model was found to improve educator buy-in to
technology integration, proving that mentoring was helpful in overcoming many of the barriers to integration (Kopcha, 2010).

Johnston, Leung, Tin, Ho, Lam and Fielding (2004) examined whether medical undergraduates using handheld computers that could upload data to a clinical decision-support software (CDSS) were able to gain better access to high quality information and whether students would accept and adopt the tool to support their diagnoses in hospitals. The results indicated that although students found the devices useful, they were less than satisfied with several technical features, and their average use of the devices was quite low, with many students using the devices only once per week. In terms of using the CDSS in an actual clinical setting, few students made use of them. Findings indicated that these limited results were due both to student lack of computer skills and faculty attitudes toward the use of such devices. Supportive data were obtained from a researcher-designed survey focusing on a number of variables cited in the literature as supporting or inhibiting technology utilization outside the classroom. An examination of the usefulness of the devices found that while students were able to find the information they needed quicker than by other means, they were less successful in identifying and applying the needed clinical information. When this happened, faculty expressed frustration. The data also suggested that students using the devices lost face when failing to come up with the required data. As a result, the study found that “technology alone was not enough to ensure the ready uptake of health information tools by students” (Johnston et al., 2004, p. 625).
**Linking technology and pedagogy.** The degree to which technology integration improves learning is frequently a topic of research. Findings support the idea that when pedagogy and technology are well matched, improved learning will occur. As a result, a considerable amount of research has concentrated on comparing classroom and technology-based pedagogy to determine what works best in each context and which is better for students.

Making use of the Technology Acceptance Model, Steinbronn and Merideth (2008) compared perceived usefulness of instructional methods in traditional classrooms and in online teaching environments. Their study was based on engagement theory, which argued that students must be engaged in order to learn. Engagement not only leads to the development of collaborative skills but also posits that it will open minds with sharing, involved argumentation, and then compromise. To determine the degree to which classroom-based and online teaching/learning involved these values, 52 faculty members who had taught in both environments were surveyed with regard to their pedagogical preferences and successes. The survey involved the creation of 15 original questions combined with items from the University of Minnesota’s Faculty Technology Survey (Switzer & Csapo, 2005). Most of the faculty reported being more comfortable lecturing face-to-face, and, as a result, many simply recorded and then transferred their lectures to the online format. E-mail is viewed by most respondents as a mixed blessing, enabling greater communication yet also creating an additional workload. In terms of online communication, faculty believed that students’ questioning and feedback was somewhat improved by online communication yet again increased the faculty’s workload. Overall, faculty sensed that perceived usefulness shifting from classrooms to
online learning is limited for them because the amount of engagement and communication promised by online learning has not yet materialized. As a result, many faculty respondents remained hesitant about fully endorsing online learning. Steinbronn and Merideth (2008) argued that most faculty at the college level require additional professional development, both to become more receptive to new media and to improve the level at which they use online opportunities. Using rubrics to mentor and monitor faculty progress could ensure that gains made by faculty were progressive and permanent (Bell, 2007).

The technology acceptance model and technology in the classroom. One of the most mature areas of information systems research involved the attempt to predict technology acceptance by users in a business environment (Abuhamdieh & Sehwail, 2007; Chang & Tung, 2008; Chen, 2009; Christen, 2009; Davis et al., 1989; Lockhart & Lacy, 2002; Park, 2009; Yuen & Ma, 2008). As a result of research in this area, a number of different models have emerged, drawing from diverse fields ranging from psychology to sociology. To bring some order to the research, Venkatesh, Morris, Davis, Davis, Delone, McLean, Jarvis, Mackenzie, Podsakoff, and Chin (2003) examined eight different prominent technology acceptance models and tested them empirically to determine which models had the best validity. The research then attempted to synthesize the best elements of each model into a comprehensive model, the Unified Theory of Acceptance and Use of Technology. Some models in the literature focused on user intentions and usage as dependent variables, while other models centered on implementation success at the organizational level.
Venkatesh et al. (2003) chose to focus on those models that measure user intention to use technology, concentrating on eight models: the Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model (MM), Theory of Planned Behavior (TPB), a Combined TAM and TPB model, Model of PC Utilization, Innovation Diffusion Theory, and Social Cognitive Theory. Longitudinal studies were organized at four different organizations, capturing perceptions of the users’ experience as the technology increased. A questionnaire was created using items validated in preexisting research and adapted to technology using the TAM scales, adapted from Davis (1985), who developed the TAM theory. As a result of the study, seven constructs derived from one or more of the models emerged as significant determinants of usage.

Moreover, Venkatesh et al. (2003) argued that four constructs in particular were outstanding and would have a profound impact on user intention to make use of technology: performance expectancy, effort expectancy, social influence, and facilitating conditions. The study also found that attitudes toward using technology, self-efficacy, and anxiety were not associated with direct intentions to use technology. Performance expectancy, or the degree to which the user believes the use of technology will improve one’s performance, is, of course, closely related to perceived usefulness in the TAM, but also to extrinsic motivation model (MM), job fit in the Model of PC Utilization theory (MPCU) model, relative advantage in Innovation Diffusion (IDT), and outcome expectations in Social Cognitive Theory (SCT), thus synthesizing all of these parallel elements.
Effort expectancy involves the degree of ease of using the system and is clearly related to ease of use in TAM, complexity in MPCU and ease of use in IDT models. Effort expectancy was found to be especially prominent for women. Social influence, or the degree to which an individual perceives others wanting them to use the new technology, is closely related to the subjective norm in Theory of Reasoned Action (TRA) and TAM, social factors in MPCU and image in IDT. Finally, facilitating conditions involves the perception by the individual that an organizational infrastructure has been created that supports use. This construct is related to perceived behavioral control in the Theory of Planned Behavior (TPB), facilitating conditions in MPCU, and compatibility in IDT. All of the above syntheses were made by Venkatesh et al. (2003) as empirical tests on eight models that found strong correlations between the factors.

The researchers made a special point of omitting self-efficacy and anxiety from a unified model as the empirical research found that these constructs only had an indirect effect on user effort expectancy. The resulting unified model, or Unified Theory of Acceptance and Use of Technology (UTAUT), was then empirically tested with data gathered from two organizations for cross validation. The tests provided strong empirical support of the UTAUT model, positing that performance expectancy, effort expectancy, and social influence are strong determinants of intention to use, and intention and facilitating conditions strongly determined ultimate usage behavior. It was also found that experience, voluntariness, gender, and age were important variables in determining user intention to use technology and the use they make of it after adoption. Venkatesh et al. (2003) argued that the UTAUT is a definitive, cumulative model that has a high explanatory power in explaining why some employees intend to use and then actually use
technology and others do not. In addition, Venkatesh et al. (2003) found that the model is particularly robust in explaining differences in technology between younger and older, and male and female employees. The fact that social influence also was found to be an important inspiration on technology use was also deemed significant. While the predictive value of the model is high, the researchers also recommended its usage in a way that works with other streams of research, such as those making use of the Technology Acceptance Model as is.

Davis et al. (1989), concerned that information technology was being introduced into companies yet was not used by employees, began to introduce elements of the Technology Acceptance Model in the early 1980s. The main elements tested were perceived usefulness, defined as “the degree to which a person believes that using a particular system would enhance his or her job performance” and perceived ease of use, “the degree to which a person believes that using a particular system would be free of effort” (Davis, 1985, p. 320). Further, Davis argued that these constructs were ultimately derived from the expectancy-theoretic model developed by Vroom (1964) in Work and Motivation and Bandura (1982) in Self-Efficacy Mechanism in Human Agency. Davis et al. (1989) further developed and defined his self-efficacy theory and the cost-benefit paradigm that he derived from behavioral decision theories developed during the 1960s and early 1980s. From these and other theories, Davis developed and tested the validity of perceived usefulness and perceived ease of use and then spent most of his research developing assessment scales of information technology use based on these constructs. As Davis demonstrated success in using these constructs to measure the degree of
receptivity to technology in a particular company, the use of his constructs spread through the industry and subsequent literature.

**Technology adoption in education.** Abuhamdieh and Sehwail (2007) used the Technology Acceptance Model (TAM) to determine whether faculty or students had different attitudes about the use of a web portal (gateways to information) on a college campus. Their study focused not only on portal use but also on whether student and faculty perceptions of its usefulness and ease of use impacted how the portal was used. The portals were introduced by the university to streamline communication on campus, enabling students and faculty to email, post messages on bulletin boards, and refer to academic calendars. TAM was used to measure perceived ease of use and perceived usefulness by students and faculty. Abuhamdieh and Sehwail also expanded the model to include such factors as adaptability, empathy, quality of information, fun, reliability, and responsiveness as factors influencing utilization. The study used a survey instrument with constructs developed from the TAM for data collection and the ANOVA for statistical analysis of the data. The survey was then published on the web for easy access, with the assumption that if users could access it they were also computer savvy.

The study found that some systems such as emails and announcements are used much more frequently than others. It also found that there were significant differences in the perceptions of students and faculty about the usefulness and ease of use of the system, with students having generally higher levels of acceptance even though they “had less favorable impression of the importance of the portal as an educational medium” (Abuhamdieh & Sehwail, 2007, p. 45). Faculty had less favorable views of the system because of their frustration in its use, access to information through another path, and
because the system often lacked features that caused faculty to abandon use of it altogether.

Abuhamdieh and Sehwail (2007) argued that these findings presented problems to technology integration, as faculty often act as role models for students. Negative faculty adoption and response to a technology will result in poor acceptance by students as well. While the study validated the TAM model as being helpful in discriminating between student and faculty use, it also highlighted that continued technical difficulties could derail the overall acceptance of portal-based communication at the college level. In 2009, Thomson Reuters’ ScienceWatch web pages discussed the Technology Acceptance Model (TAM), using a diagrammatic representation map of 28 core papers showing the increased importance of TAM in a variety of fields (ScienceWATCH.com, 2009).

Elearning is another technology used in many classrooms, including the use of “the internet, intranet, extranet, satellite broadcasts, audio/video, interactive TV and CD-ROMs” (Chang & Tung, 2008, p. 72). These formats become even more important when learning is acquired online (Hyder, Kwinn, Miezga, & Murray; Rosenbery, Moore et al., 2007). However, a number of studies found that after the introduction of all or any of these media to the traditional or online classroom, some faculty and students, for various reasons, fail to make optimal use of the technology (Mungania, 2004; Prensky, 2001; Waterhouse, 2005). Chang and Tung (2008) conducted a case study using the innovation diffusion theory and the technology acceptance model with the goal of developing a “new hybrid technology acceptance model” (Chang & Tung, 2008, p. 71 & 81), primarily to study the behavioral intentions of students to use the online learning course websites effectively. This theoretical extension is called for, Chang and Tung (2008) argued,
because the TAM does not adequately explain the various motives that users of online media might have in order to make optimal use of the media. They argued, therefore, that two additional constructs, perceived system quality and computer self-efficacy, needed to be added to ease of use and perceived usefulness, in order to develop TAM that would apply more accurately to online environments. Computer self-efficacy involves one’s perception that one has an overall ability to use computers effectively and to apply specific skills to broader, though as yet future, tasks. The innovation diffusion theory (IDT) asserts that innovations in technology are adapted or not based on relative advantage, compatibility, complexity, trial-ability, and observe-ability. The advancement must bring a relative advantage over the previous way of doing things; the innovation must be consistent with one’s values, be relatively easy to use, and be able to be tested and easily observed by others.

This model clearly has some points of overlap with TAM, as relative advantage appears to some researchers to relate to perceived usefulness in TAM, while complexity in IDT is believed to be parallel to perceived ease of use in TAM. Comparing the models, however, Chang and Tung (2008) found that compatibility was not addressed in TAM; thus, they sought to follow preceding research adding this construct, to develop a more robust TAM model. Primarily, this was due to the fact that previous studies on mobile commerce acceptance found that compatibility “had a direct effect on perceived usefulness and behavioral intention to use” (Chang & Tung, 2008, p. 73). Perceived usefulness is the degree to which one believes “that using a particular system enhances his or her job performance” and perceived ease of use is “the degree to which a person
believes that using a particular system will be free of effort.” Both have been found to be quite robust predictors of technology uptake (Chang & Tung, 2008, p. 74).

To study the validity of the revised model on the use of online courses, 736 Taiwanese undergraduates were surveyed with an instrument combining elements of diffusion of innovation and technology acceptance models and data analysis done with structural equation modeling. The study found that compatibility between the newer technology and student values had a positive effect on perceived usefulness and behavioral intention to use the online learning course. Therefore, it was found that the higher the compatibility, the more students will perceive the usefulness of the technology. At the same time, the study also confirmed the validity of TAM by finding that both perceived usefulness and perceived ease of use “have a great positive and direct effect on the behavioral intention to use the online learning course websites” (Chang & Tung, 2008, p. 82).

Yuen and Ma (2008) agreed that faculty attitudes towards technology have an important impact on their decision whether to adopt technology. As a result, these researchers explored the use of the Technology Acceptance Model to determine if it predicted faculty acceptance of eLearning technology. Data were collected using a self-report questionnaire from 1152 in-service faculty studying faculty education in Hong Kong. Yuen and Ma (2008) found that the TAM provided two important constructs to explain computer use—perceived usefulness and ease of use—and they believed that it was necessary to construct a composite model of five constructs to gain a more complete picture of the variables that impact decisions regarding use of the technology. Thus, they added intention to use, subjective norm, and computer self-efficacy to the perceived
usefulness and perceived ease of use constructs from TAM. Using linear structural relations (LISREL) to analyze the results of the study, Yuen and Ma found that subjective norm and computer self-efficacy were, in fact, important factors and, indeed, they described these constructs as “perception anchors of the fundamental constructs in TAM” (Yuen & Ma, 2008, p. 229). As the results were analyzed, however, it was found that perceived ease of use, as opposed to perceptions of usefulness, was more important in determining whether a faculty would use technology.

The finding, favoring ease of use over perceived usefulness, was not in accord with previous findings in the literature. Yuen and Ma (2008) speculated that faculty’s focus on time-based issues with regard to technology leads to the result that ease of use becomes a very important factor for them, in particular, when compared to workers in other fields. In terms of implications, Yuen and Ma (2008) argued that insofar as subjective norm was important for faculty, important influences such as commitment to computer technology use by principals and faculty-leaders in schools would ensure that others would follow by example or as a result of peer pressure. The importance of self-efficacy implies that faculty in general needs more training in computer skills to build their self-confidence in using computers. In general, Yuen and Ma (2008) also found that the TAM has good explanatory power for predicting why faculty will or will not begin to adopt and use educational technology.

Ma, Andersson, and Streith (2005) used the TAM model and expanded it to determine how and when student faculty decided to use computers at a Swedish university. The expansion of the model involved bringing in subjective norms from the Ajzen’s (1991) Theory of Reasoned Action (TRA) in order to consider the degree to
which faculty perceptions of the attitudes and beliefs of departmental heads or influential faculty impacted their intention to use computers. The use of this construct was based on TRA studies that found a strong correlation between subjective norm and behavioral intention. Data were gathered from 84 student faculty, using a researcher-designed survey combining elements of the above constructs; the results were then analyzed using a structural equation modeling technique. The findings indicated that student faculty sense of the perceived usefulness of computers had a direct significant effect on their intention to use computers, while ease of use had only an indirect effect on use. Ma et al. (2005) also sought to determine if faculty subjective norms, based on the influence of others’ expectations of them (peer pressure), had any influence on use; they found only an indirect influence. The explanation for the finding was that most faculty members were allowed to make individual decisions about when and where to introduce computers. Overall, Ma et al. (2005) found that intention to use computers was the strongest predictor of actual computer use in classrooms.

Park (2009) reviewed the various reasons ranging from faculty effort to the high cost of technology to explain why technology integration remains difficult on the undergraduate level. He enlisted the TAM model to determine if student use of eLearning in Korea was influenced by perceived usefulness, ease of use, intention to use, and self-efficacy with computers. Social influences were also considered in the construct of subjective norm borrowed from TRA and utilized in TAM2 (Venkatesh & Davis, 2000; Venkatesh et al., 2003).

After constructing a theoretical model regarding factors in TAM, a population of students enrolled in eLearning courses at Konkuk University, Seoul, South Korea, was
surveyed and the results were analyzed. The results showed that both eLearning self-efficacy and subjective norm played a major role in forming intentions to use eLearning. Subjective norms appear to be particularly strong in Korea where people are “encouraged to use IT in every field to catch up with the social change caused by IT” (Park, 2009, p. 158). At the same time, Park found that ease of use and perceived usefulness did not influence student intentions to use eLearning, most likely because, on the student level, all students are familiar with the Internet and computers. Nonetheless, Park (2009) acknowledged that these findings, with regard to students, might not translate to faculty or others. Overall, Park (2009) found that the TAM model was re-validated, indicating its usefulness in assessing the readiness and intention of students to make use of eLearning and other educational technology-based advances.

Gibson, Harris, and Colaric (2008) surveyed professors at a college of business regarding their attitudes toward online education to determine the degree to which the technology acceptance model explained their responses. Gibson et al. (2008) found that although perceived usefulness was a strong indicator of whether a faculty member would make use of the technology, ease of use added little to the predictive power of TAM in determining faculty buy-in to use technology. Previous research indicated that faculty resisted online learning due to fear of technology problems in course delivery and inadequate student skills in managing the process (Perreault, Waldman, Alexander, & Zhao, 2002).

Concerns about whether online learning improves student outcomes were also characterized in the literature about technology in education. Gibson et al. (2008) developed a survey using four items, the perceived usefulness, and perceived ease of use
items of the TAM, to gain a better sense of the sources of faculty resistance. The ease of use factor did not register as a significant inhibiting factor because most users, including faculty, had colleagues or others who could quickly train them to use the new technology. Being able to be trained quickly may be linked to the higher level of education in collegiate-level professors, and thus, the lack of explanatory power of ease of use may be limited to the undergraduate level of faculty. Gibson et al. claimed that “69% of respondents described their personal level of computer competence of being either good or excellent; hence, restriction of range with regard to overall computing skills cannot be rules out as impacting our findings” (2008, p. 358), suggesting that they had largely overcome concerns about ease of use and were focusing on perceived usefulness.

Overall, regarding online education, Gibson et al. (2008) found that it was the perceived usefulness of the technology for improving teaching and learning over the status quo methods that were the primary motivation for technology acceptance among faculty. If faculty can be convinced that the new technology, whatever it may be, will offer them advantages over current procedures and improve student learning, they will be more likely to accept the technology.

An additional technological development that influenced the degree to which podcasts are used in higher education is the growth of distance education. A collaborative effort between Babson Survey Research Group, the College Board, and the Sloan Consortium supported by the Alfred P. Sloan Foundation found that:

- Over 3.9 million students were taking at least one online course during the fall 2007 term, a 12% increase over the number reported the previous year. The
12.9% growth rate for online enrollments far exceeds the 1.2% growth of the overall higher education student population.

• Over 20% of all U.S. higher education students were taking at least one online course in the fall of 2007. (Allen & Seaman, 2009)

Chen (2009) found that a number of colleges and universities continue to demonstrate reluctance to embrace distance education. Therefore, a case study was developed to address both the stakeholder and funding barriers that inhibited the adoption of distance education in higher education. Stakeholder barriers were also broken down to consider faculty perceptions as a major barrier to widespread adoption, as reported in the literature. Faculty perceptions, in turn, were divided into “technical expertise, faculty compensation and time, and attitudes toward technology” (Chen, 2009, p. 334). The study employed a standard survey of distance education use and the Postsecondary Education Quick Information System (Tabs, 2003) and found that both cost issues and faculty participation issues were, in fact, barriers to adoption of technology. The faculty was primarily concerned with unpaid additional workload involved in distance education, indicating to Chen (2009) that universities must work to mitigate this barrier by offering faculty help and release time to develop distance education components of their teaching. Sharing courseware from college to college might also reduce the overall workload and time needed by faculty to prepare distance education courses. Overall, Chen (2009) found that faculty’s so-called negative perceptions of this particular technology were related more to practical issues of time and compensation than to ease of use and perceived usefulness issues.
In addition to the TAM, other assessment models have been developed to measure the efficacy of technology-based learning. Noting that assessment frameworks for distance learning were lacking, for example, Lockhart and Lacy (2002) developed a seven-item assessment model to determine the effectiveness of distance learning, measuring the institutional readiness, faculty services, instructional design, student readiness, student services, learning outcomes, and retention. Their model was further used to assess the distance learning program at Montana State University-Billings and Bozeman in Montana. The results indicated that the faculty, in particular, were too isolated in their efforts to design and create distance education courses, and there was little sense of student satisfaction or response to the programs. As a result, Lockhart and Lacy (2002) recommended that more data on faculty needs and perceptions of technology in education were needed to better assess what had to be done to create successful technology integration on campuses.

Podcasts in Use

The use of podcasts by Americans generally, and in classrooms specifically, is expected to continue to rise over the next decade (Allen & Seaman, 2003, 2009; Bairstow, 2006; Bennington, 2007; Berger, 2007; Chitiyo & Harmon, 2009; Clauson & Vidal, 2008; Gordon, 2006; McGee & Diaz, 2007; Schneider, 2006). By one prediction, 12.3 million Americans will listen to podcasts by 2020, and another estimate indicated that the U.S. audience for podcasts has increased to 56 million (Gordon, 2006). Various search engines, similar to Google yet focusing entirely on podcasts, make finding appropriate podcasts a bit easier. Search engines include yet are not limited to Podscope,
Podcast.net, PodOmatic, Podcast directory, the podcast network, Yahoo! Podcasts, Pic.TV and feedster.com.

Podcasts are primarily promoted by those who support their educational use for the ease of use and convenience. Podcasts can be accessed through various media and at one’s convenience. Bennington (2007) argued that “all you have to do is listen,” and “you can listen while jogging, doing the dishes, or walking the dog” (p. 32). Bennington (2007) further noted that for many fields such as business information, it is highly likely that podcasts could be used by commuters to “download business information into your brain on those long drives” (p. 33).

Podcasts are easy to obtain; download a podcast aggregator like iTunes or use Really Simple Syndication (RSS) and you have free access to most podcasts. Many are automatically downloaded whenever anything new is added (Hendron, 2008; Really Simple Syndication, 2009; Universal, 2007). In addition to the ease of use and downloading, podcasts, though static in themselves, can be linked to websites where listeners can ask questions and engage in knowledge sharing. Bennington (2007) notes that many podcasts are created by non-experts and thus are of suspect validity for one’s field. Nonetheless, this involves some degree of discrimination of quality and should not scare users away from the overall value of podcasts’ ability to expand the availability of educational material from the classroom.

Experiments with podcasts are being conducted in various educational arenas, including medical educational fields. By 2006, 12% of American adults had downloaded a podcast onto their iPod or computer; by 2008, this number increased to 19%, and by 2010, it had grown to 21% (Madden & Jones, 2008; PEW, 2010). Adults today use the
Internet to find podcasts on medical knowledge more than on any other kind of information, including music (Fox & Jones, 2009). Abreu, Tamara, Sipp, Kearny, and Eavey (2008) argued that podcasts might be an ideal way to reinforce attempts by doctors to inform their patients of various medical conditions. A case study described how pediatric otology procedures explained to ENT patients at the Massachusetts Eye and Ear Infirmary helped them better understand problems and procedures being addressed in treatment: “…education expands the audience and permits portability of information” (p. 208). Though inconclusive with regard to the number of hits that the podcasts developed by the department received, Abreu et al. (2008) were nonetheless confident enough in the results to declare that “podcasting, no longer a fad, is a powerful communication tool” that helps doctors communicate more effectively with patients (p. 211).

Concurrently, biomedical journals have been experimenting with offering synopses of key articles to students and practicing doctors through the use of podcasts (Clauson & Vidal, 2008). In assessing the advantages of offerings thus far, Clauson and Vidal (2008) cited portability as a major positive factor to help working persons “stay abreast of new developments” (p. 2157). They also noted that insofar as 30% of persons report being primarily auditory learners, podcasts may result in improved processing and retention of information. Thus, for many learners, podcasts may be superior to reading as a form of information distribution.

Clauson and Vidal (2008) noted that podcasts often lack bookmarks, making it more difficult to search within them or skip directly to places one wants to view. Podcast quality can also remain an issue, often reducing their educational impact. Nonetheless,
with 7% of all podcasts being of an educational nature, Clauson and Vidal (2008) expected increased use of podcasts in education as well as in the biomedical field.

On an elemental level, podcast use has been justified as a way to prepare students online to communicate in writing and voice that will doubtless be a requirement of all future jobs (Dlott, 2007). Once again, when the faculty were asked if the efforts taken to create a podcast were worth it, they responded that “the excitement of creating a polished product for the Web and the possibility of reaching a diverse and real audience were tremendous motivators” (Dlott, 2007, p. 82) that could lead to improvement in writing.

Research (Aguiar, Carvalho, & Carvalho, 2009; Kennedy, Hart, & Kellems, 2011; L. Taylor, McGrath-Champ, & Clarkeburn, 2012) also indicated that the public nature of podcasts might create a feeling of enhanced pride of learning in students, indirectly motivating them to become more engaged in their learning. Overall, the gradual introduction of podcasts into education began as an effort to improve student engagement and motivation; to that end, many faculty were content with these improvements.

Finally, some researchers have begun to detect that podcasts are being used extensively by broader communities to create counter publics online where authorities and mainstream values can be challenged (Scholz, Selge, Stille, & Zimmermann, 2008). In their analysis of the dramatic rise in the use of podcasts by Muslim online communities, Scholz et al. (2008) examined how effectively podcasts are being utilized, whether they have indeed become an instrument of deconstruction and reconstruction of authority, and whether they are effective in coping with institutional crisis. This study was in keeping with the theoretical belief that the Internet generally has had, and will continue to have, a democratizing tendency, as it allows anyone to express his or her
opinions online. The web has also advanced from the age of Web 1.0, when the user simply consumed pre-prepared contents, to the age of Web 2.0, when the consumer has become a producer of online context, and thus exists as a prosumer, described (in this case) as someone who makes use of media to publish his or her own opinion and “contributes to an alternative online discourse having the potential to challenge established views and interpretations” (Scholz et al., 2008, p. 465).

While this belief is partly compromised by the effects of the digital divide, both geographically and generationally, Scholz et al. (2008) studied the degree to which Muslim groups have made use of podcasts and sought to determine the impact of using podcasts to influence public opinion. The results found that podcasts have become an integral part of the emergence of a public online voice and an important instrument for Muslim groups to “tackle newly emerging challenges spawned by the interference between their self-understanding and the specific configuration of Muslim life in the diaspora” (Scholz et al., 2008, p. 507).

Results also indicated that podcasts can be utilized in a highly diverse manner for a number of different purposes. The most important use of podcasts is to build up a network of individuals who wish to exchange ideas, leading to the creation of an online community. Overall, by examining the use of podcasts in a non-scholastic context, Scholz et al. (2008) called attention to the enormous potential for podcasts in terms of the creation and support of online communities.

**Podcasts: College-level Faculty Motivation for Use**

One of the most notable university-level efforts to incorporate podcasting into learning was the 2004 initiative undertaken by Duke University (Belanger, 2005) that
gave all 1600 entering first-year students an iPod, in an evaluation of the experience of the first year of the endeavor. Belanger (2005) analyzed iPod use in terms of a tool for course content dissemination, as a classroom recording device, field recording tool, and study support resource. The advantages of iPods were directly related to the simplicity of access to course materials, the ability to digitally record lectures, and improvement in engagement by students. The study found that 75% of all first-year students used iPods in class or in direct support of their studies.

Two challenges emerged: one was related to the type of presentation; for example, a PowerPoint presentation in class could be too busy to view on an iPod’s smaller screen. Another challenge was the location and size of podcasting materials and whether students had access. The results found that podcasts were particularly helpful in courses with a high level of listening comprehension requirements, such as language or music courses, law, medical, or where the content of the course was conceptually difficult.

Podcasting or recording course materials with iPods was also extremely helpful in courses requiring a lot of field notes, ranging from cultural anthropology to medicine. Although a great deal of positive feedback for the project was gathered, it was also found that while “anecdotal evidence from some projects indicated that access to recorded lectures may have positively impacted student exam performance” (Belanger, 2005, p. 6), the degree to which podcast use actually improves student course experience and learning outcomes remains unknown.

Reviewing a wide range of faculty uses of podcasts, Guertin (2010) listed “creating audio archives of classroom lectures” as the major reason for the creation of
Most lecturers have found that podcasts work best in a *micro-lecture* format not exceeding ten minutes. Podcasts can also be used to deliver supplementary materials in courses, including homework. Studies have shown that students enjoy the use of audio and/or video supplements to print-based learning and that such an approach can improve learning (Carvalho et al., 2008; Hew, 2009; M. Lee, McLoughlin, & Chan, 2008).

Guertin (2010) also reviewed the student use of podcasts by reviewing access logs and found that most students download podcasts well after they were posted, indicating that students most likely use podcasts to review class materials for tests. The study also found that the most popular podcast downloaded was from the first day of class when projects and requirements for papers or final exams were explained. The fact that podcast downloading spiked in the week prior to an exam solidified the conclusion that during exam time, podcasting was primarily used as a study aid to reinforce past learning.

A study conducted by Traphagan, Kucsera, and Kishi (2010) investigated the impact of class lecture webcasts on students’ attendance. Their findings provided the following insights:

1. The availability of webcasts negatively impacted student attendance, but the availability of other online resources such as PowerPoint slides had a greater negative impact on attendance.

2. Webcast access appeared to nullify the negative effects absenteeism had on student performance.

3. For most performance measures based on lecture content, more webcast viewing was associated with higher performance.
4. Most students in the webcast section reported positive learning experiences and benefits from using webcasts, even though a majority also reported using webcasts for missing a class.

In summary, these results collectively suggest that webcasts could have positive effects on students’ learning experiences and performance, even if class attendance does decline.

Other studies focused on the topic of student response to podcasting (Bongey et al., 2006; Flanagan & Calandra, 2005; Gribbins, 2007; Palmer & Devitt, 2007; Windham, 2007). Researchers found that students favored the flexibility of podcasts because they could pause, rewind, or fast-forward through material at will and thus “control the pace and frequency of listening to course content” (Guertin, 2010, p. 6), an approach that is particularly useful for English as a Second Language (ESL) students or students with learning disabilities. Students found use of podcasts in a preemptive fashion to help relieve the stress of classes, as podcasts made available before the lectures helped students prepare and, in many cases, increased their participation level.

Guertin’s (2010) survey also detected some additional innovative uses of podcast. For example, one professor asked volunteer students to gather in his office to discuss weekly content; this became a podcast for the benefit of other students. Another professor distributed quizzes and review sessions as podcasts to free up more classroom time. Podcasts were also found to be helpful for frequently asked questions, creating podcast-versions of student projects, and publishing students’ reports on world problems. Overall, Guertin (2010) found that podcasts not only had a positive impact on student learning at
the undergraduate level, but also that both faculty and students moved to the next phase of podcast use, devising innovative ways in which podcasts can enhance learning.

Tavales and Skevoulis (2006) described various ways that podcasting enriches eLearning, and the authors provided models of best practice in terms of downloading and creating podcasts. The researchers primarily viewed podcasts as useful in traditional classrooms for helping students make up time or missed material due to unexpected absences. This is a valued advantage as more and more faculty have had to concede that due to the growing complexity of the non-traditional students who often juggle full-time jobs and families, absences to a certain degree have become fairly normal if not expected. Some universities have expedited the podcasting process by outfitting lecture halls with recording equipment, which faculty and students may use to record lectures and create their own podcasts. Tavales and Skevoulis (2006) noted that “because the university incurs negligible costs to use this technology, and because the podcasts are free to download from the iTunes website, the service is provided and used with minimal use of resources and much mutual benefit” (p. 4). The researchers also found evidence that the Luddite effect (Spencer, 1999), that is, the continued fear of technology, may be retarding progress in the integration of podcasting in all collegiate-level courses.

In an Internet workshop, Frye, Trathen, and Koppenhaver (2010) found that many faculty do not know how to integrate technology into classrooms. The authors described a workshop that was created to help faculty develop blogs and other internet-based information technology to increase the social nature of learning, according to social constructivism, in their classrooms. The steps involved creating blogs, the use of the blogs, and the degree to which blogs improved student learning. The usefulness of blogs
is justified by the belief that posting one’s learning on a blog “increase(s) the authenticity of student learning,” and increasing the audience for learning motivates students to think and write more effectively (p. 50). Findings showed that not only does students’ writing mature by posting their writing on blogs, but also that the process allows them to begin to think like professional writers, who often must write “for a public that can only be imagined” (Frye et al., 2010, p. 50). In general, if students know that what they write will be posted on the Internet, they will be more motivated to improve their writing skills. On this basis, the use of technology was increasingly justified to faculty, meeting the requirement of blogs and later podcasts having a perceived usefulness in terms of improved student learning.

A number of general surveys of faculty perceptions of podcasts and blogs indicated that views are changing toward the positive. BizEd (2007) reported a survey undertaken by Thomson Learning of 677 professors from all fields at a number of major universities, which found that 35% of the professors viewed podcasts favorably, especially as “a valuable communication tool to reach students” (p. 66). It was also found that 10% of faculty write their own blogs; this is higher than the 8% general population. An additional way to measure faculty satisfaction with podcasts, apart from case studies, is by faculty testimonials about their favorite podcasts and how extensively they make use of them as reported by Bairstow (2006) in the Teaching and Learning with Technology annual report, 2010-2011. Thus, by offering their stamp of approval on specific podcasts, an increasing number of professors attest to support individual examples of highly effective podcasts. Bairstow (2006) listed what he believes are the top ten science-oriented podcasts; several are affiliated with National Public Radio, and all
are deemed substantial and significant in their field. Bairstow noted that ease of use is a factor, and he enthusiastically embraced podcasts, saying that one only needs to download Apple iTunes software onto one’s computer, scan the directory, and begin to view podcasts on the PC or on any portable media device.

The primary empirical evidence of whether faculty members are using podcasts is ultimately derived from the growing literature on faculty acceptance of technology, or barriers to their acceptance. Chitiyo and Harmon (2009) presented a case study of the adoption of technology by pre-service faculty in Zimbabwe. Overall, they found that whether a faculty uses technology is based on the faculty’s computer proficiency and competency and whether they had confidence in their computer skills. The researchers began by using the model of technology integration, and then divided the adoption process into the entry, adoption, adaptation, appropriation, and invention phases. The Computer Technology Proficiency and Competency Questionnaire was administered to 26 lecturers on the faculty of three universities in Zimbabwe. This study found that few faculty members believed they had more than basic levels of skills and thus had little confidence in being able to integrate technology effectively into their classrooms and rarely arrived at the entry or adoption phases of integration.

The faculty was also constrained by lack of funding, lack of access to technology, and poor overall availability of technology. Because of infrastructural and funding weaknesses in African education in general, this study cast in high relief that the problem of institutional support was a barrier to technology adoption in classrooms. While acknowledging that many faculty have what Chitiyo and Harmon (2009) termed second-order barriers to integration in their internal negative attitudes about technology, the
study generally found that institutional and funding limitations serve as the primary barrier to technology integration.

Faculty at the undergraduate level may have developed an aversion to hand-held media or student-controlled media in the classroom, primarily because students often bring laptops to class presumably to take notes more efficiently, but actually to tune out a lecture and chat online with friends (Read, 2005). However, the attention gap created by lectures versus laptops has a remedy: podcasts. Through course-casting, more and more professors are making podcasts of key segments of lectures and podcasting them for students to review outside the classroom. Results also suggested that podcast technology helps students for whom English is a second language and for students who have fallen behind.

Read (2005, 2007) addressed a frequent concern that appears to be the reason that professors resist podcasting: the fear that providing podcasts will make students believe that they do not have to attend class. While this is a false assumption in many cases, it is true that some faculty who have introduced podcasts to courses have had to add incentives including presenting some material in class that is not included within the podcast, or even resorting to a different method of taking attendance. Faculty also worries that by podcasting they may lose intellectual property rights over their course material; nevertheless, some universities have moved forward with provision of lectures by podcasting. Purdue’s BoilerCast project (Koo & Kwong, 2006) allows students to download to their personal computers the podcasted contents of lectures in 70 courses. One advantage of the Purdue program is that it has alleviated the extra work involved, a major area of faculty resistance to podcasts. However, BoilerCast comes with a staff of
technical advisors who simply provide a professor with a microphone to use during class; the staff does the rest. Often, technical support people are student recruits. In many promotional descriptions of online learning, the idea for learning anywhere anytime appears to be a primary motivation, and the only real way to do this is with podcast. Another advantage to podcasting is flexibility, as podcasts can be slowed, re-listened, or reviewed by students who need more time to absorb the content. Some professors have commented that podcasts take the pressure off of lecturing, “because I’m not stressing out knowing that those four people in the corner aren’t quite getting something” (Read, 2005, p. 4).

Although many faculty fret over whether podcasting lectures will reduce class attendance, some argue that as long as podcasting remains limited to recording lectures, it will not revitalize pedagogical or andragogical learning (Read, 2005, 2007). Acknowledging that the attendance-podcast problem can be solved if classes are more interactive and if podcasts remain supplemental, it is also true that simply recording lectures as podcasts will not hold students’ interest. One researcher argued that podcasts are similar to radio shows, where professors must be entertaining to bring students back. Although disappointing, few professors seem to be able to avoid being boring; too many professors believe that the lecture in class is where they should primarily devote their skills and just use podcasts in a rote way. The concept sage on the stage type of lecturing faculty is eroding; college students no longer want to listen to a lecture for an hour, preferring to take an active role rather than being passively taught (Grayson, 2010). Students “want to gather information on their own terms and spend their class time immersed in meaningful discussion” (Read, 2005, p. 5). With this in mind, some faculty
have reversed the traditional model of podcasting after class and now create podcasts to be viewed by students before class. This prepares students ahead of class time and engages them in classroom discussions similar to years past when students were told to read before class; now, students can listen and view beforehand. Lectures viewed ahead as podcasts can free classroom time for discussion, opening the “interactive personal space between you and your students” (Read, 2005, p. 6). An example is given by Read of a faculty member in film studies who gave students 30-minute podcasts before class and then reviewed the talking points in class as the basis for discussion. How openly accessible podcasts will be, whether closed behind firewalls and accessible by students only or open to the public, remains a hotly contested issue. Finally, with regard to lecturing, podcasts have also been found to help professors polish their lecturing, making content more comprehensible to students. One professor viewed his podcasts as rehearsal tools that allowed him to make himself more understood by students in class (Read, 2005).

Enabling podcasting on an institutional level is believed to be an important way to overcome faculty resistance to podcasts. Stanford University made an arrangement with Apple Computer to provide podcasts of all university lectures on iTunes, a move that represents a significant “institutional commitment” to podcasting (Young, 2005, p. 1). Apple is making arrangements with many universities to expand the use of academic podcasting. It is believed that such institutional-level enabling of podcasting will further weaken faculty resistance to podcasts that are based on the perception that they are not easy to create, manage, or access.
In a follow-up study, Read (2007) reported on more efforts being undertaken by universities to help faculty overcome resistance to podcasting based on unfamiliarity with the technology or belief that podcasting is too difficult to set up. Many universities have now set up classrooms for recording lectures, outfitting lecture halls with Instreamer technology that converts lecture recordings into MP3 files (Aldrich et al., 2006). Even at colleges with only a limited number of recording halls, creative scheduling has allowed podcasting in a growing number of courses. Anystream software, installed in student computers by some colleges, now allows anyone to record sessions and turns them into MP3 files (Making a podcast, 2010). Moreover, additional research is finding that most students listen to podcasts on personal computers as opposed to MP3 players, so cross-platform technology has improved ways to diffuse recorded lectures to multiple formats. Finally, it is apparent that faculty property rights concerns have increased, as more colleges and universities are laying out property rights policies before the release of podcasts. Nonetheless, the current state of property rights with regard to podcasts continues to worry many faculty, with the result that “if you’re concerned about where your content is going to end up, it’s probably not the way to go” (Read, 2007, p. 6).

The Persistence of Technophobia

Schneider (2006), a professor at the collegiate level, provided a personal account of his evolution of thinking about podcasts. Originally, he expressed a common fear about podcasts: that podcasts would unbind college classes from class attendance and let students float free, unguided, in the virtual learning world. As a result of a highly dichotomized view, real-time classes were defended as important against the incursions of podcasting and the vision that they were leading to anytime, anywhere learning.
Schneider was attacked as a curmudgeon for failing to consider how podcasts could help students keep up with a course if they were sick, on a religious holiday, disabled, or out of town for work. Schneider also lamented that many respondents relegated his defense of regular class as misinformed, that he had been “reduced to a silent sound bit in the ether, a floating phenomenon of technophobia” (Schneider, 2006, p. 2).

Clarifying his point, Schneider (2006) pointed out that he teaches theatre, which is about events that “can’t be recorded, abstracted, time delayed, or transmitted in any form without losing their quality of liveness” (Schneider, 2006, p. 2). He viewed classroom teaching as the same thing, involving not just the conveyance of information but of values through moments that cannot be conveyed outside of the classroom. He blamed the pressure to podcast everything in a course on “an insidious alliance whose principal goal is economy of effort, and whose principal product is boredom for all concerned” (Schneider, 2006, p. 3). As such, he viewed podcasts as “a thin surrogate for real instruction, a fig leaf for disengagement, an excuse for lack of commitment from professors and students alike” (Schneider, 2006, p. 3). It is likely that many college-level professors continue to harbor the animosity, more often than not unspoken, toward the “podcastification” of higher education (Schneider, 2006, p. 4).

McGee and Diaz (2007) contrasted a rather Luddite or anti-technology view of faculty with perhaps a more realistic assessment of the interaction between faculty and technology. The authors described a day in the life of faculty where technology is present at every turn, and all faculties are deeply engaged in managing their professional lives through technology. Indeed, McGee and Diaz (2007) posited that one of the major reasons faculty may resist podcasting is that they already have too much technology
involved in their teaching life and have already come to see some of the unexpected disadvantages of technology. With regard to student emailing faculty, for example, faculty are so overwhelmed by the quantity of communications and answering all requests for information that they have had to begin placing restrictions on such communications. Thus, it is not so much a matter of faculty hunkering down in pre-technology utopias that causes resistance to podcasting, but that “faculty are now expected to embrace learning technologies along with everything else” (McGee & Diaz, p. 29).

To put faculty resistance in technology in perspective, McGee and Diaz (2007) noted that the technology adoption cycle can take up to four quarters, or an entire school year, involving a great deal of time. Moreover, in most cases, faculty can adopt only one technical advance at a time, thus further slowing down the process. Lack of integration on an institutional level only adds more delays to the process of adoption. The fact that technology is constantly changing, resulting in student expectations with regard to technology, is a moving target that often makes it impossible for faculty to guess which technology is going to elicit the most positive response at any given time. Thus, McGee and Diaz (2007) argued that faculty cannot be expected to adopt technology in a timely manner. They reasoned that it is not because they resist technology per se, or fail to see the usefulness of it, but because the technologies they are pressured to adopt may be immature, unproven, not yet integrated with other tools on campus, and generally, there is little institutional support in providing such integration.

As a result of this ongoing problem, McGee and Diaz (2007) argued that better information could help faculty and institutions make more informed choices about which
technology to adopt. They recommended student and faculty surveys, student and faculty focus groups, and behavioral and psychological surveys to gain a sense of where students and faculty stand with regard to current technology demands. For faculty, it is also important for all universities to gain a sense of where faculty stands in the technology adoption cycle so that initiation of the adoption process can be done effectively. To this end, McGee and Diaz stated that the Technology Acceptance Model (TAM) can be a useful tool as it “integrates well with teaching style because it can be part of an individual profile yet can also be used to identify cross-faculty patterns suggesting where interest and barriers lie” (McGee & Diaz, 2007, p. 33). The finding that faculty members in one department do not perceive the technology in question as useful may alert researchers to the fact that “there may be external variables at play” including age, lack of incentives, or curricular limitations (McGee & Diaz, 2007, p. 33). Overall, they argued that TAM and other models should be used so that universities can fine-tune implementation strategies to match where students and faculty stand with regard to adoption of technology.

In his study of student attitudes toward podcasting in an engineering course at the undergraduate level, Berger (2007) inadvertently found that the reports of faculty fear and lesser experience with technology must, in some cases, be qualified. The study found that professors voluntarily began to use more podcasts at the University of Virginia, presenting students with the change. Berger conducted a survey to determine student attitudes toward podcasting, determine the overall benefits of podcasting, and evaluate which types of engineering content are best presented in a podcast format. However, Berger did not address the issue of whether the introduction of podcasting directly influenced student outcomes.
Acknowledging that the *millennial* (Barrios et al., 2004; D. Miller, Principal et al., 2004) generation of students are familiar with most if not all forms of technology and prefer group-learning in trial-and-error situations, Berger (2007) foresaw that podcasting could help transform education from a producer-push to a demand-pull approach to education, where lectures are replaced by interactive problem-solving sessions. Though anecdotal evidence appears to bear this out, few empirical studies have proven student support of podcasting. For this reason, Berger administered a survey to 55 students in a Strength of Materials course at the University of Virginia, where podcasts were used for video problem solutions, roundtable discussions, and exam review. The results showed that student support for podcasting was lukewarm, at best, with many students in the course unaware of the availability of podcasting.

The findings also suggested that faculty were ahead of the students in supporting podcast use, most likely because the faculty had a clear sense of how podcasting could supplement their courses, whereas students were less clear about the educational advantages. Looking further into this unexpected result, Berger (2007) also found that although high-achieving students supported podcasting, the presence of podcasting had less of a positive effect on their grades, possibly because their grades were already high. Lesser-achieving students primarily gave a lukewarm response, although those who used podcasting believed that using podcasts made a difference.

Overall, Berger found that podcasting “does not serve all students equally” in the course (Berger, 2007, p. 5). It seems that lower-achieving students may regard podcasting as yet another demand placed on them when they are already struggling with current methods. Finally, the study overturned the general perception that students are
demanding podcasting, and that faculty members are lagging behind. In Berger’s survey of engineering students, this does not appear to be the case.

**Studies on the Use of Podcasts**

Case studies on the use of podcasts measure whether are podcasts a fad or here to stay. A number of case studies debunk some beliefs that have emerged about faculty fears and student use of podcasting, whereas the Technology Acceptance Model has been enlisted to determine faculty and student views about podcasting at the university level (Copley, 2007; Gribbins, 2007; Hew, 2009; Koo & Kwong, 2006; Lau & Woods, 2008; M. Lee & Chan, 2007; McGarr, 2009; O'Toole, 2007b; Rosell-Aguilar, 2007; Sandars, 2009).

**The myth of anywhere, anytime learning.** Sandars (2009) argued that the primary strength of podcasts at present is that they are focused on audio content. This is beneficial to students because studies have shown that “hearing is a powerful sensory channel, and long term memory is greater when material is heard than read” (p. 387). In the context of medical education, however, Sandars avowed that short podcasts, as opposed to recorded lectures, sometimes called *profcasts*, are perhaps better, especially if built on a structured template with a storyboard that is then carefully edited, all to make the point of each lesson clearer. Sandars also recommended that podcasts be published alongside feed readers, or aggregators, also called RSS feeds, that determine when a new download has been made and transmits it to subscribers. Overall, the researcher focused on technical factors that must be aligned to enhance the learning potential of podcasts. Nonetheless, his focus on the auditory aspects of podcasts is rooted in the belief that
listening can be done in any context, meaning that the aural nature of podcasts lends them to anytime learning.

Hew (2009) studied the effectiveness of the use of podcasts in undergraduate contexts. He based his support of podcasts on educational theory, suggesting that listening, because it is an instinctual human behavior unlike reading or writing, is an optimal way to help students review course material and/or to solidify understanding. The spoken word is also supported by some theorists for its ability to clarify concepts and add to motivation to learn through the direct personal experience of communication. Podcasts, therefore, have the power to take the innate advantage of the spoken word and transfer it to asynchronous learning contexts. At the same time, Hew conceded that many faculty resist podcasts because of the increased labor required to implement them, because they fear increased student absenteeism in class as a result of them, and because they are unsure whether podcasts will actually improve student learning.

To determine the validity of these concerns, Hew (2009) reviewed the literature on podcasts to establish the general findings of the research on these issues. The constant comparative method or grounded approach was used to compare the findings of various studies in order to arrive at a general result. Findings indicated that podcasts were most commonly used by students to review class lectures or catch up on missed lectures, and second, to leave behind a record of lessons learned. Most podcast usage, in general, involved professors who recorded their lectures and distributed them in podcasts. Studies of student preferences found that students like podcasts to be no more than five minutes in length, although some allowed for up to ten minutes. The study also uncovered a number of barriers to podcast use including student unfamiliarity with podcasts, technical
problems of all kinds, and the fact that many students had trouble seeing the relevance of podcasts for their learning. Among the conclusions, Hew’s study found that, at present, the dream that podcasts would be used by students anywhere and anytime to learn has not been realized; most students used podcasts on their home computers during homework time. Thus, podcasting does not contribute to the scenario of integrated multitasking promoted by so many technophiles. Students were found to resist multitasking, as they believed that listening to lectures is different from listening to music. In addition, they did not wish studies to infringe on their personal time, and, contrary to popular beliefs, students have difficulty absorbing knowledge from multiple simultaneous sources. The study also found that faculty resisted podcasts because of lack of time to prepare them and various technical challenges.

Generally, the research on resistance to podcasts appeared to echo research on resistant to technology in general (thus, ease of use in this case was a factor, thereby creating a barrier for some). Hew (2009) also reviewed studies on the impact of podcasts on student learning, both self-report-based and experimental studies, and found that podcasts could enhance student learning, at least in the students’ perception of improved learning. However, an experimental study of the influence of podcasts on learning in a first-year undergraduate exercise physiology module suggested that “the use of podcasts might not result in a worthwhile improvement in student achievement over-and-above the use of written material” (Hew, 2009, p. 345).

Baker, Harrison, Thornton, and Yates (2008) explored the impact on student learning in a study on the use of podcasts in a university-level blended course. Ex-post facto research was performed analyzing quiz results from early and late in the semester,
before and after the introduction of podcasts. The study found that quiz scores did not substantially increase, suggesting the podcasts had little positive effect on learning. Research (Evans, 2008; Instant Anatomy-Podcasts, 2008) indicated that students believe that podcasts are more efficient than their own notes in helping them to learn. Significantly more students indicated “that they are more receptive to the material delivered as podcast than either textbooks or traditional revision lectures” (Evans, 2008, p. 495).

Given the advantages of podcasts’ flexibility, as in when, where, and how they are used, Evans (2008) pointed out that podcasting appears to have potential as an innovative learning tool for today’s non-traditional student learners in higher education. This confirmed other studies that were focused solely on the affective outcomes of podcasting: findings generally indicated that students like podcasts and believe that it offers them the convenience of studying material at their own pace on their own time. Overall, however, although acknowledging that students appreciate podcasts and may believe that podcasts help them in learning, experimental case study results found that, at present, podcasts have not yet been shown to produce any measurable improvements in student learning.

Lee and Chan (2008) reviewed the efficacy of podcasting in the context of mobile learning, the idea that mobile devices allow for anytime, anywhere learning for students. Mobile learning (m-learning) is also believed to provide students with an increase in spontaneity, personalization, informality, context-sensitivity, portability, ubiquity, and pervasiveness, all considered as factors to improve learning outcomes. Lee and Chan were particularly concerned about whether m-learning and podcast usage, connected with m-learning, is the new flavor-of-the-month, or whether it represents a permanent change
in educational practices. This question emerged as other studies found persistent barriers to m-learning, including failure to manage learning and lack of cross-platform solutions to access learning materials (O’Bannon, Lubke, Beard, & Britt, 2011). Podcasts, in particular, are lauded for freeing eyes and hands and reducing learning to short, bite-sized audio clips that students can absorb as part of their everyday life, especially in the quiet or squander time in everyday life. A case study was undertaken to test these hypotheses and to measure the contribution of podcasts to mobile learning by measuring the level of perceived effectiveness and impact and ways in which students obtained and consumed podcasts. Podcasts were created for a Human-Computer Interaction course at a large Australian university, and student use of weekly podcasts over the course of a semester was measured. A survey was developed and administered to students at the end of the semester, supplemented by semi-structured interviews regarding their podcast use. The results indicated that while students did employ podcasts and generally found them to be helpful, their use patterns were “at odds with the vision of pervasive m-learning as portrayed” in the literature (M. Lee et al., 2008, p. 212).

Findings indicated that students did not multitask while using their podcasts, most likely because they treated learning activities differently than other activities, and did not use their podcasts in a mobile manner spread through everyday life but in traditional studying at home. Also, students used podcasts differently, based on their learning styles: sometimes to listen to materials before studying and at other times to review readings. In addition to calling into question validity of the goal of learning while multitasking, Lee and Chan (2007) also suggested that the vision of m-learning has not spread into everyday life because students did not want studies to infringe on their personal time.
Overall, then, the realities of learning as an activity requiring some degree of concentration and as limited to certain times in student’s days acts as a barrier against the dreams of m-learning and podcast usage.

**The myth of reduced attendance as a result of podcasts.** Copley (2007) specifically studied whether the use of podcasts in a college course improved student outcomes or had negative impact. He viewed podcasts as part of a distance education paradigm combining eLearning to promote the development of mobile learning. Podcasting has become so popular that in 2004, Duke University issued iPods to all undergraduates for the purpose of recording lectures (Copley, 2007).

Apple launched *iTunes U* in 2006, a software package that manages and delivers podcasts from a number of universities. Most podcasts at present consist of professors who podcast portions of their lectures of course material for students to review. To determine if this use of podcast actually helps students, Copley (2007) conducted a study using a simple podcast formula to determine what students thought about them and if students really used them. An audio podcast was combined with video slides.

In this study, the barrier to podcasts being used was explored by studying student attitudes. Responses of 283 students in the podcast modulated courses indicated that 94% of students’ downloaded podcasts onto PCs, 87% referred to lecture notes when using the podcasts, and seniors rated the use of podcasts more highly than freshmen. Most students used podcasts to consolidate their notes, to catch up on missed lectures, or to have a complete record of the course. A preponderance of students (93%) said that they would like to see more lecture material available on podcasts. The issue worrisome to educators, that podcasts usage would reduce student motivation to attend class, was alleviated when
it was discovered that only 12% of students reported that podcasts usage negatively affected class attendance; 40% of students were committed to attending lectures because of the availability of interaction and because live lecture was better than prerecorded lecture. It was also found that podcasts are particularly useful to students with dyslexia, as this condition requires more time for students to take notes.

Overall, the study found that in most cases faculty’s fear that podcasts will encourage poor attendance is not grounded in reality. Moreover, students are enthusiastic about using podcasts, as it helps them manage course notes and keep abreast of materials if they miss a class (Copley, 2007).

O’Toole (2007b) reflected on the use of podcasts at the University of Denver, noting that “customization is most important to the full realization of an application’s success” (p. 941). His review indicated which technology advisors helped faculty overcome file size and other managerial problems in order to expedite the process, though primarily, he offered philosophical reasons that podcasts improve student learning.

Pilarski, Johnstone, Pettepher and Osheroff (2008) examined the use of podcasts as recordings of class lectures, in a Medical Foundations course, with student response to podcasts being assessed by a questionnaire devised by the researchers. The results of the study indicated that students had positive reactions to podcasts. A high proportion of the students, 95% of the class, made use of the podcasts. The primary benefits for podcasts measured in the study were that they reduced stress by offering students another way to review materials. The findings were significant to Pilarski et al. (2008) insofar as stress and anxiety have been found to be associated with poor academic performance as they
reduce students’ capabilities to manage time and perform positively at college. However, because the course under study was a newly-created course, there was no quantitative way to determine if the introduction of podcasts improved any of the test scores. Therefore, an educational aid such as podcasts, which can help reduce stress, may or may not have indirectly improved academic outcomes. In terms of the common faculty fear that podcasts will reduce class attendance, the presence of the podcasts in the course did not result in reduced attendance. As this fear remains one of the primary barriers in faculty perceptions of podcast use, the results offer further evidence that fear of negative impact on attendance because of podcasts is unfounded.

Glogoff (2009) quoted brain study findings that 35% of audience attention is lost after ten minutes of a lecture, a factor that could motivate the use of podcasts. Providing podcasts allows students to pick up material that they missed as a result of a dwindling attention in class. With regard to the fear that provision of podcasting will result in a drop in class attention, a number of testimonies from faculty were provided, attesting that podcast usage had no negative impact on class attendance. The advantages of podcasts derived from the same source indicated that they are convenient, allow for flexible location-independent access to materials, and are easy to use for recording discussions or other classroom instructional events. A study of podcast use at Dartmouth College, moreover, found that 34% of students took better notes with the help of podcasting, while 88% of students affirmed that provision of podcasts had no impact on their course attendance (May, 2008).

Another study on a cyber-classroom course at the University of Michigan found that there was “a significant improvement in student outcomes as assessed by final
grades, a 56% drop in failing grades, and a 36% increase in grades B-plus or above” (Glogoff, 2009, p. 7). Glogoff found that 77% of students reported that podcasting had no impact on their attendance. In general, these and other studies found that most undergraduate students made use of podcasts to catch up after missing material and in studying for exams. Overall, Glogoff provided evidence from the literature that not only allayed faculty fears of reduced attendance due to podcasts but also that podcasts very possibly improve student learning, primarily by enabling more engagement through self-paced contact with course material.

**Podcasts and pedagogy.** Though a number of articles exist about the effectiveness of introducing blogs, wikis, and podcasts into undergraduate classes, empirical research on proven improvements in student learning are less easy to find (JISC, 2011; BizEd, 2007; Engdahl, 2008; T. D. Green et al., 2008; McGee & Diaz, 2007; Richardson, 2006; Saeed, Yang, & Sinnappan, 2009).

Kazlauskas and Robinson (2012) found that

The patterns of podcast usage by responding nursing and business students were not significantly different. Non-listeners in both cohorts did not differ significantly from podcast users (listeners) demographically or with regard to personal access to computers, the Internet and MP3/4 players. Non-listeners utilized lecture notes, text resources and the learning management system in a similar way to listeners. The only significant difference was the longer hours spent in paid work by non-listeners. (p. 1)

Parenthetically, on the level of theoretical social constructivism, the creation of a learning community automatically should improve student learning. Indeed, as the literature on
podcasts has advanced, it becomes apparent that to gain results from podcast usage, podcasts must be aligned with pedagogical best practice.

Saeed et al. (2009) reviewed the use of blogs and podcasts in a university class, noting that the most serious obstacles to podcast usage were student learning styles and technology preferences. If a medium that is not compatible with student learning styles and technology preferences is introduced into a class, then it is not likely to be adopted by students. The study examined the degree to which student learning styles and technology preferences influenced their use of technology such as blogs or podcasts linked to a university course. Students were surveyed with regard to both issues, and an attempt was made to determine if matching student learning style and technology preference with a particular technology was the combination required for improved learning outcomes. The theoretical basis of this approach to improving student outcomes through technology is cognitive learning theory, which posits that all individuals learn differently and that learning style must be matched to pedagogy in order for the student to be successful.

Of the many models created to describe learning styles, Saeed et al. (2009) made use of an index of learning styles, which divides learning styles into four types: active-reflective, sending-intuitive, visual-verbal, and sequential-global. An action research approach was used to examine whether learning styles and technologies were matched in a population of 204 students in an undergraduate web programming course. The study determined student learning styles, then experimented with matching them to different technologies. Impact was analyzed and a determination made about matching learning styles and technologies.
Learning style data were collected using the Felder-Soloman learning style inventory (Felder & Soloman, 2011) asking students to rate their technology preferences. Based on an analysis of student learning style, it was thought that a blog, which is a social bookmarking page, and a podcast added to the course, would best suit students and improve outcomes. The results indicated that whereas the verbal style was the most common learning style, many students were well balanced between learning styles. This finding supported other studies, which have found that students are flexible in extending their learning styles. With regard to matching learning style and technology, it was found that students preferred both synchronous and asynchronous communication tools, though sensing learners preferred emails as opposed to blogs, while intuitive students preferred blogs over other technologies like email. Podcasts seemed to accord best with sequential learners who followed logical stepwise paths to learning. Overall, however, the study found that the “learning styles of today’s learners are flexible enough to experience varying technologies and their technology preferences are not limited to a particular tool” (Saeed et al., 2009, p. 107).

D’Arcy, Eastburn and Bruce (2009) studied whether various instructional media used at the undergraduate level differentially affected student outcomes. Their study addressed the issue of student outcomes resulting from the use of “wikis, interactive web sites, online discussion forums, writing with video, conferencing tools and personal response devices” (D'Arcy, et al., 2009, p. 56). A course (PLDA 200 - Plant, Pathogens and People) in its natural or original format was supported by 19 different instructional media, ranging from traditional to new media formats. The different learning styles of students were determined by on the Gregorc Style Delineator (Hawk & Shar, 2007; Reio
& Wiswell, 2006) that identified preferred, neutral, or non-preferred learning styles based on how persons organize information. Thus, students organize information as concrete or abstract, sequential, or random styles. The preferred learning styles of 272 students were determined and then measured against the media they preferred. Results showed that several media were found to be helpful to all the groups, and a limited number of media were helpful to a few groups. For example, while all students found the use of overhead slides useful, the concrete random students did not view outside writing assignments as helpful, and the abstract random students believed that they never learned anything from a supplemental website or podcast. Abstract random and concrete sequential students also favored lectures, but only if they were occasionally interrupted to address questions of problems. Similar evaluations by various learning-style students were made about other media as well. Some students found providing PowerPoint notes online, similar to podcasts, to be helpful because it reduced the pressure to “scribble down everything” while taking notes in class (D'Arcy, et al., 2009, p. 62). In reviewing the overall results of the survey, D’Arcy et al. argued that best practice in terms of instructional media resulting in improved student outcomes appears to require an environmental perspective that acknowledges that different students will find different combinations of media to best help them. The findings therefore indicated that podcasts improved student outcomes only if aligned with student learning styles.

Focusing on language learning using podcasts at the college level, Rosell-Aguilar (2007) expressed concern that most research thus far has been concerned with technical issues in the creation of podcasts and not on whether podcasting contributes to optimal pedagogy. Their research found that language learning might well be one of the specific
areas where podcasting can help improve outcomes. At present, foreign language podcasts, stand-alone courses delivered on podcasts, and supplementary material podcasts are available to language learners. Stand-alone courses offering podcasts started at Osaka Jogakuin College in Japan and at Duke University in the U.S., providing custom-made materials such as quizzes, oral feedback, audio exercise, and other sources to students on a weekly basis. Podcast projects where students work creating podcasts have become popular in language learning circles Rosell-Aguilar (2007).

With regard to pedagogy, Rosell-Aguilar (2007) found areas where podcasting can be justified by constructivism, the use of authentic materials, informal and lifelong learning, theories of learning objects use, and the practice of chunking. Podcasting is deemed to be potentially constructivist insofar as it allows students to construct knowledge through active exploration and interpretation. While some believe that podcasts do not have the social context necessary for constructivist learning, others argue that as most podcasts are accessed through blogs, the blog provides that context.

Podcasts can easily incorporate authentic materials and are ideal for lifelong learning. Learning objects are defined as “any digital resource that can be reused to support learning”; therefore, podcasts qualify as learning objects (Rosell-Aguilar, 2007, p. 478). In the context of mobile learning, learning theory also finds that chunking knowledge into learning objects facilitates learning. Although Rosell-Aguilar (2007) found substantial theoretical support for the pedagogical efficacy of correctly-used podcasts, at present, too many podcasts are created in a hit and miss style with regard to conforming to pedagogical best practice. In terms of language learning, the best podcasts make use of authentic materials, use a variety of native speakers, are engaging, limit time
of podcast to no more than 15 minutes, slow down pronunciation, and frame offerings in the context of cultural information. In summary, Rosell-Aguilar argued that although a number of advances have been made to advance pedagogical practice in podcasting, much work needs to be done in improving pedagogy in podcasting.

M. Lee et al. (2008) inferred in their study of undergraduate student-created podcasts that one of the implicit barriers to podcasting effectiveness may be that they remain tethered to lectures and mostly consist of lectures put in an audio clip format. By contrast, M. Lee et al. (2008) studied a class where students were given license to create their own podcasts to share with other students and the community of learning created by this project. The podcasts were digital audio learning objects (DALO). They were created by first-level information technology students at Charles Sturt University in Australia, following the example of Drexel and other universities in the U.S. and the work of the Informal Mobile Podcasting and Learning Adaptation Project that provided support for student-created podcasts. From study of these projects, M. Lee et al. (2008) adopted the conviction, combined with a theoretical orientation based on constructivism and collaborative learning theory, that podcasting will reach its greater potential in the area of knowledge-creation. A participation metaphor is utilized for education by which knowledge construction occurs through enculturation, guided participation, and legitimate peripheral participation. Protocols for optimal DALO production were discerned to include simplicity, timeliness, educational focus, high engagement level, and reusability. In this case study, students were interviewed following their participation, and focus groups were also held to elicit their reflections on the experience. Responses were organized according to a content analysis approach. The project not only promoted
collaborative knowledge creation among students but was found to stimulate collective and individual learning. The overall impression gained from current case studies of podcast use at the university level was that podcasting remains in its infancy, and much fine-tuning and tailoring of podcasting to best practice pedagogy needs to take place before podcasting fully realizes its potential as an educational technology M. Lee et al. (2008).

A principal fear that faculty have about podcasting is that the technology will somehow unravel the relevance of the traditional lecture, thus creating the need for completely reorganizing course material. In addition, some faculty looked upon the resulting unpaid extra labor to create a podcast in a negative light. McGarr (2009) sought to determine the degree to which podcasting will affect the traditional lecture. Contrary to so many educational researchers who seemed determined to abolish the lecture format because it has been found wanting in terms of pedagogical effectiveness, McGarr noted that lectures not only have a long-term heritage but also have proven pedagogical value when they are inspired. Thus, “effective lectures can provide the excitement of intellectual discovery through the presentation of challenging and provocative ideas” (McGarr, 2009, p. 310). Lectures that relate topics to students’ prior knowledge and relate material to real life are both proven strategies to make knowledge more meaningful and have also been found to advance learning. The lecture is also lauded as a tried and true way of helping students make their way through a large body of material and “providing the most up to date knowledge in a particular field” (McGarr, 2009, p. 310). It may also be true that too many lectures simply transfer information that is copied by students in notes, and thus entail a low level of engagement. Because so many lectures
are delivered in this manner, a host of researchers charge lectures with inculcating a passing and reproductive mindset in students. Also, as a result of the pervasiveness of un-engaging lectures, attendance remains a problem at lecture-based courses. Given the current debate on lectures, the role of podcasting in either supplementing or overturning the hegemony of lectures remains unsettled.

McGarr (2009) examined three claims with regard to podcasting at the university level: podcasts increase the flexibility of learning, increase accessibility to learning, and enhance the learning experience. In reviewing these points, McGarr expressed some concern about whether these advantages are authentic and result in lasting change or whether they are simply a “flavor of the month.” Current results indicated that most podcasts are used only to supplement the existing lecture format and may lead to increased comprehension of lecture material. McGarr noted previous studies have found that the promise of podcasting, as in the vanguard of mobile learning, has not yet been realized; research indicated that most students used podcasts during normal study hours and preferred their PCs over MP3 players. In his study of 249 students in a college journalism course, for example, he found that 91% of students used podcasts only during their regular study hours and used their PCs, rather than embarking on some greatly expanded kind of mobile learning (McGarr, 2009).

Lee and Chan (2007) found, in their study at an Australian university, that students used podcasting mostly to supplement lectures, to review materials, or to make up for lost time due to schedule conflicts. In this and other studies, students reported that they still preferred the real-time lecture over the podcast, indicating the degree to which podcasting remains tethered to lecturing. These results indicated to McGarr (2009) that
the use of technology “should be grounded by sound educational goals rather than ambitious expectations” (p. 316). The reality of podcasts appears to be far from leading a revolution to mobile learning, and at the present they remain supplementary study aides to lecture-based courses (McGarr, 2009). That podcasting appears to have no effect on class attendance only underscores this fact. In both ways, then, a growing body of evidence suggests that faculty fears of a podcast revolution, which will upset their traditional way of doing things, are not grounded in reality. On the basis of these findings, McGarr argued that podcasting, for the time being, will only have substitution, supplementary, and creative use in otherwise traditional college-level courses.

Exploring these options, McGarr (2009) found some evidence that by providing supplementary material, podcasting can lead to undermining student use of more traditional support materials like textbooks, but that lectures remain at the center of the course. Overall, McGarr concluded that podcasts will have little influence on the traditional lecture, and what influence they do have will be indirect. The process of podcasting may cause some faculty, who continue to engage in rote lectures before passive students, to do a better job of editing to retain the activate elements of their lectures to enhance student engagement. Although the McGarr (2009) study may help alleviate faculty fears of podcasting, it may also be that because the TAM was not used in his study, he may have overlooked the possibility that, if podcasts are not revolutionary and will not greatly alter the dynamic of the lecture-based course, perhaps faculty will then perceive that podcasts are not particularly useful and, thus, resist going to all the trouble of creating them.
Clark, Taylor, and Westcott (2008) reported about a study of the use of podcasting in a Management and Organizations course among postgraduate students at a university in Australia. Noting the diversity of the enrolled students, in terms of their experience with the material of the course in their undergraduate studies, Clark et al. (2008) believed that podcasting would be an ideal way to support the fundamental lecture material presented in the course. The study entailed offering the first half of the course without the support of podcasts and offering the second half of the course with podcast support. Student and faculty response to the presence of podcasting was gathered through both quantitative and qualitative means, or surveys and interviews. Three questions related to the degree that students believed podcasting improved their learning, three questions related to their intention to use podcasting again, and three questions related to how they made use of podcasts. Most students (79%) already owned an MP3 player and had some familiarity with podcasts, and 63% of students listened to the podcasts prepared for the course. Most students believed that the podcasts were a valuable addition to their learning, and 79% wanted to see podcasts used more widely on campus. Nearly half of the students (41%) used podcasts to reinforce points raised in lectures, while 26% stated that podcasts helped them reduce language problems. Generally, a majority of students believed that podcasting helped improve overall learning outcomes; “almost two thirds of respondents said that podcasting enhanced their learning, and more than half stated that podcasts helped them actively engage in learning” (Clark et al., 2008, p. 26). One third of the students used podcasts as intended by the lecturer, to reinforce key lecture points. The lecturer believed that, although creating podcasts took extra time, podcasts effectively streamlined certain aspects of reinforcement in learning.
Edirisingha, Rizzi, and Rothwell (2007) evaluated the use of podcasts in a first-year undergraduate course on English Language and Communication at Kingston University with two focus groups and personal interviews with six students. Six podcasts, one every two weeks, were developed to in support of the course. Each podcast was approximately ten minutes long and was designed to target student comprehension of course materials and study skills. In addition, student experiences with the podcasts were evaluated through focus groups, interviews, and surveys. The podcasts were found to have value because they gave students more options to learn the material, helped to translate faculty and peer tacit knowledge into material that could be discussed by all, and brought “…a sense of informality…into formal learning” (Edirisingha et al., 2007, p. 87); all appeared to engage more students. Forty-four percent of students had some familiarity with podcasting, making them more likely to use them outside of the classroom, as Edirisingha et al. indicated, “the potential for making academic content available for listening beyond the physical bounds of the academic institution” (Edirisingha et al., 2007, p. 93). Fifty-three percent of the students also demonstrated a needs-driven use of podcasts, meaning that they listened to the podcasts when they believed they needed to, a finding that further reinforces the previous point. Forty-seven percent of students listened to podcasts without doing anything else, though 33% took notes while listening to podcasts, indicating that the vision of multitasking while listening to podcasts is far from being realized. Edirisingha et al. (2007) interpreted these findings to mean that “students try to separate their study from routine personal activities such as cooking and washing” (p. 94).
This study also explored the degree to which podcasts helped students improve their learning. Fifty-three percent of students stated that podcasts helped them prepare for seminars or to summarize materials for tests. Forty percent of students believed that the availability of podcasts helped improve their learning. Some students reported that podcasting helped them to take better notes and absorb material at their own pace, and were especially helpful when lectures were missed. Finally, some students felt that podcasts existed in a different educational space, somewhere between entertainment and relaxation; that podcasts represented a new kind of learning, which could take place in a less formal context of setting, that is outside the classroom. Edirisingha et al. (2007) designed the study to demonstrate podcasts’ potential benefits for students; they “provided a model of the features of podcasts that can compliment [sic] students' formal learning processes” (Edirisingha et al., 2007, p. 102). The study showed that podcasts improved undergraduate learning by blending a combination of pedagogy and technology, extending and increasing the flexibility of when and where to learn.

Feinstein (2008), an instructor of undergraduate mathematics, described how he introduced podcasting into his courses in an effort to improve student learning. One key problem in his preexisting instructional style was that any calculations written on the blackboard in class would generally be lost when class ended. As a solution, he began to use a tablet PC to record his class work and then provided the recorded work to students by using audio podcasts. Among the many benefits of the use of podcasts, Feinstein found that it allowed students who were seated farther back in the classroom to be able to read his notes, that it improved student outcomes, and helped dyslexic students to keep up with the class. Podcasting was particularly appreciated by students who missed class and
by non-native English speakers who may have had problems with comprehension during class. Feinstein also found some disadvantages: the use of this technology may have helped to slow down the pace of the lectures; the amount of material that can be presented on a portable or PC screen at any one time is fairly limited; and, as some students noted, it created additional workload to both Feinstein and to the student reviewing the module.

**Technology Assessment Model, Students, Faculty, and Podcasts**

Lau and Woods (2008) used the TAM to determine the level at which learning objects (animations and interactive simulations) were used in a Digital Systems university-level course. A web-based survey of “undergraduate IT students who were enrolled in the Faculty of Information Science and Technology (FIST) at Multimedia University” was used to collect usage data (p. 688). The study showed that the users’ beliefs and attitudes about the usefulness and ease of use greatly influenced their use of the objects. Thus, Lau and Woods (2008) concurred with previous studies that the TAM was a “theoretically sound and parsimonious model which can be used to predict the users’ behavioral intention to use” learning objects (p. 693). The findings also reconnected with the TRA theory, showing again that an individual’s behavioral intention was found to be a strong predictor of future behavior. As a result, the study extended the validity of TAM into the learning object context.

Carvalho, Moura, and Cruz (2008) conducted four studies involving students from the 9th to 11th grade, undergraduate, and graduate students to determine if they preferred or opposed the use of podcasts, their preferences in terms of information gathering, and preference to the written page or podcast. One study interviewed 14 female
undergraduate students in an education sciences course at University of Minho and found that most of the students had negative views of podcasts. More than half (58%) of the respondents used the podcasts and listened to the podcast more than once to clarify details; 36% of students preferred the instructions written as opposed to listening to podcasts, as they preferred to read and be able to highlight important sections. Most users believed that podcasts were more helpful in providing feedback and in spelling out instructions for assignments.

The idea that podcasts would expedite multitasking was also countered by the results of a second study of masters’ degree students, 80% of whom reported that they listened exclusively to podcasts, as opposed to 12% who listened and wrote everything down and 8% who listened while taking notes (Carvalho et al., 2008). Overall, Carvalho et al. found that podcasting can be a useful tool for all levels of learning, “limited only by the faculty's imagination and the context of learning” (2008, p. 31).

Gribbins (2007) also reviewed the potential of podcasting at the postsecondary level by considering the educational advantages of audio over print media. His research found the advantage of “clarity and meaning, motivation, emotion, intimacy, and personalization” (p. 1). Gribbins also noted that many universities have adopted podcasting as a secondary way to communicate with students, whereas some professors have converted entirely to podcasting using it as a primary means to communicate with students. Thus far, only a handful of studies have examined whether the use of podcasting at the college level is favored by either students or faculty. Gribbins, citing a study by Johnes (2005), reported that students in an economics class found podcasting to be helpful, yet also noted that they were in the minority. Another study of an information
technology class found that podcasting resulted in the reduction of in-class anxieties and allowed students a more flexible approach to their learning (Chan & Lee, 2005). In that study, 96% of the students found that podcasting helped them do better in the course. As a result of these findings, more researchers are favoring podcasting because it gives the students more control over their learning, as spatial and temporal flexibility allows them to choose when and where to listen to materials. To seek more concrete answers about the efficacy and acceptability of podcasting in a postsecondary class, Gribbins (2007) enlisted the Technology Acceptance Model to assess students’ overall level of acceptance of podcasting as a learning tool. The model considered perceived usefulness of podcasting, student attitudes towards podcasting, and whether these constructs then translated into a behavioral intention to make optimal use of podcasting, that is, to use podcasting as a way to improve their outcomes. To obtain data, a survey was distributed to 49 students in two graduate-level management information courses, with specific questions designed to measure students’ familiarity with podcasting, their intentions to use podcasting, and their overall views about the use of podcasting. The findings indicated that 55% of the students had only limited exposure to podcasting, and only 9% of students had listened to an actual podcast. Gribbins concluded that “although the graduate students surveyed in this study debated the potential effectiveness of podcasting in improving their own performance as student-learners, the results confirmed that they do perceive podcasting to be a useful educational tool” (Gribbins, 2007, p. 6). Gribbins also noted that her results strongly suggested that even if students approve of podcasting, too few at present actually make use of podcasting, and an alarmingly few students appear to be willing to use podcasts in ways imagined by proponents of anytime,
anywhere learning. Finally, the study confirmed that the Technology Acceptance Model and its constructs were able to discriminate between students who favored podcasts and those who did not, as well as those whose intentions to use them translated to actual use, and those who did not. While addressed only to students and their use of podcasting, Gribbins demonstrated the overall utility of the Technology Acceptance Model in discerning the various motivations and barriers that affect student podcast usage.

In a similar manner, Koo and Kwong (2006) examined the usefulness and use of the aforementioned BoilerCast (p. 1) podcasting service in an information technology class at Purdue University. Though exploring the usefulness of the podcasting from only the students’ perspective, the study examined the way podcasting was employed in the class and made a determination of feasibility of podcasting based on student responses. To gain a sense of student intention to use podcasting, as well as their actual use behavior, Koo and Kwong (2006) used the Theory of Planned Behavior model and incorporated that model in the Technology Acceptance Model to identify those features that students considered most important for useful podcasting. The BoilerCast program may be unique because at the current time faculty participation in the program is voluntary, with more than 60 professors participating. Thus, voluntary faculty participation appears to preclude the need to measure their intentions, as they have already demonstrated the capacity to overcome podcast barriers by participating in the project. BoilerCast was created with the intention to help students access podcasts to review lectures, allow students who had missed a lecture to catch up, and provide a way for students to enhance their understandings by listening to podcasts of lectures as many times as they choose. It was believed that all of these advantages would lead to improved
student outcomes. Koo and Kwong (2006) used the TPB and TAM in an attempt to
determine student attitudes and behavioral intentions with regard to using podcasts, and
especially to determine the various influences that positively or negatively affect student
intentions to utilize BoilerCast subscription. The Theory of Planned Behavior was used to
measure student attitudes, subjective norms, and perceived behavioral control that
involves general feelings of favorableness towards podcasting, the perception that
important people around them want them to use podcasting, and their perception of ease
of use or difficulty of use of podcasting. The TAM was used to provide the constructs of
perceived usefulness and ease of use that somewhat overlap with TPB constructs.

Koo and Kwong (2006) acknowledged that both the TPB and TAM have
theoretical shortcomings in that they are constructed on the assumption that once
someone forms an intention to act, that person will be free to act without interference by
outside barriers such as limited ability and time constraints. In addition, they included a
construct called “the perceived quality of service” that was not considered before in TPB.
Previously, service quality has been described as a form of attitude, related yet not
equivalent to satisfaction resulting from the comparison of expectations with performance
(Koo & Kwong, 2006, p. 2). A survey was constructed using constructs incorporated
from the two models and distributed to 23 students in a technology information course
over a three-week period. The results found that attitudes had positive effects on behavior
intention; subjective norm and perceived behavioral control also had positive effects on
intention to use podcasting. Both perceived usefulness and perceived ease of use were
found to have positive impact on attitudes toward BoilerCast, with perceived quality of
service being particularly helpful in enabling usage. The importance of subjective norm
was interpreted as being related to the age group of most of the student participants, as Generation Y students have been known to be willing to buy into technology, but only if it is considered fashionable by their peers. Overall, Koo and Kwong concluded that the two most important factors that will contribute to more student buy-in of BoilerCast are service usefulness and ease of use; subjective norms in the form of peer and faculty perceptions of the value of podcasting also play a major role in student adoption of the technology. Because most students today are digitally literate, they are also more concerned about the quality of the podcasted materials and the completeness of the recorded lectures than with costs or other issues. While focused on students, Koo and Kwong demonstrated the effectiveness of the TAM in discerning factors involving faculty that contribute to increased use of podcasting on the university level.

**Conclusion**

The current state of the art of podcast use by faculty and students at the undergraduate level was examined in this literature review (Hallett, 2005; Kopcha, 2010; Steinbronn & Merideth, 2008). The Technology Acceptance Model, with the constructs of perceived usefulness and ease of use, was used as a framework to consider why faculty might resist podcast use, why students use or do not use podcasts, and if podcasts are objectively or measurably useful, as measured by their impact on improved student outcomes (Abuhamdieh & Sehwail, 2007; Chang & Tung, 2008; Chen, 2009; Davis, 1989; Lockhart & Lacy, 2002; Park, 2009; Yuen & Ma, 2008).

A number of studies on educational technology have found that the Technology Acceptance Model is a strong, convincing tool with the power to explain resistance to technology integration. Case studies of podcast use at the undergraduate level found that
podcast use does appear to bring a number of benefits, with both indirect and direct impact on improved student outcomes (Bairstow, 2006; Bennington, 2007; Berger, 2007; Chitiyo & Harmon, 2009; Dlott, 2007; Gordon, 2006; Kay, 2012; Lombardo, 2011; McGee & Diaz, 2007; Read, 2005; Schneider, 2006). However, studies indicated both positive and negative results with regard to the hopes or myths developed by promoters of podcasts. On one hand, faculty fears that podcasts would interfere with student attendance and performance in traditional classes have not been borne out.

On the other hand, the idea that students would use podcasts for anytime, anywhere learning has also failed to materialize, as most students have absorbed podcasts into their normal patterns of study and test preparation. Insofar as podcasts appear to be able to improve student learning by supplementing studying and test preparation in traditional courses, they may take a permanent place in the arsenal of student study aids.

Moreover, as to the general question of whether podcasts improve student outcomes, present results seem to indicate that podcasts can improve student outcomes, but only if carefully matched with the appropriate pedagogy, or in very specific circumstances, under tightly controlled pedagogical goals. Finally, the importance of subjective norms was documented in a number of TAM-based studies, also indicating that buy-in by significant others, including faculty, is critically important for podcast use.

Although the vision of student-driven podcast use appears to be a fad, podcasts also appear to be taking their place in undergraduate education, though in a more limited role than originally proposed (Copley, 2007; Gribbins, 2007; Hew, 2009; Koo & Kwong, 2006; Lau & Woods, 2008; M. Lee & Chan, 2007; M. Lee et al., 2008; McGarr, 2009; O'Toole, 2007a; Rosell-Aguilar, 2007; Sandars, 2009). Finally, while an abundance of
studies have utilized the Technology Acceptance Model as an instrument to determine answers to technology acceptance, it also appears that the TAM is increasingly being used to provide some empirical and evidence-based grounding to the expectations placed upon podcasts, students, and faculty at the collegiate level. A number of studies presented here used the TAM to document faculty-student responses, especially with regard to perceived usefulness of technology. These may be critical in determining whether podcasting is adopted permanently or whether podcasting is doomed as yesterday’s fad.
Chapter Three

This chapter includes a discussion of the research design and the model used for measuring technology acceptance. The model, which also serves as a theoretical conceptual framework for this study, is followed by the research questions with related variables, sample selection, instrument selection, data collection, data analysis methods, and techniques chosen to analyze the data. Specifically, the intent of this research is to determine factors that affect podcast creation and use as an educational resource and to determine faculty’s personal satisfaction when podcasts are systematically and appropriately integrated within educational platforms to support learning objectives.

Research Design

A survey tool was used to collect data about various factors that affect faculty creation and use of podcasts and about faculty’s overall satisfaction when podcasts are used as a teaching resource. In particular, the survey collected evidence that supported faculty impressions and beliefs that podcasting technology can be substantively useful as a teaching resource, beyond being merely interesting or another technological fad. The survey instrument incorporated criteria and survey examples modified from Fred Davis’s (1985) Technology Assessment Model (TAM) model. Based on the TAM, this survey was designed to investigate and assess the barriers of acceptance and to encourage faculty to provide information about their perceptions of satisfaction and motivation concerning podcasts. The cross-sectional, self-administered, online at-demand survey was designed to be accessible to faculty located on or off campus. Data gathered from completed surveys were exported directly into statistical analysis software (SPSS version 18 for Windows and Microsoft Excel 2010) to minimize data input errors and where data
collected were used to test the socio-technical model of faculty participation and satisfaction.

The final survey was uploaded to *Survey Monkey™* and configured for online access. From December 20, 2009, to January 24, 2010, faculty at a public midwestern university was invited to participate in the online survey. Email requests sent in December 2009 resulted in 96 faculty responses; a second email request sent in mid-January 2010 gathered an additional 76 responses, for a total of 172 participants (26%).

**Research Questions**

Research questions were designed to investigate and determine the factors that affect collegiate faculty when they attempt to create and use podcasts. In addition, the questions attempted to determine faculty’s overall satisfaction with podcasts as an educational resource. Data gathered by means of a survey instrument were analyzed to determine answers to the research questions and accompanying hypotheses.

Q. 1 Is there is a relationship between faculty satisfaction and the use of podcasts?

H₀ The use of podcasts makes no difference in faculty satisfaction.

H¹ The use of podcasts makes a difference in faculty satisfaction.

Q. 2. What educational factors influence the creation and use of podcasts?

Q. 3 Is there a relationship between past and present computer use and podcast satisfaction?

H₀ Past computer and podcast satisfaction is not related to current satisfaction with podcast use.

H¹ Past computer and podcast satisfaction is related to current satisfaction with podcast use.
Variables

The researcher used preexisting scales from Davis’s (1985) TAM model to develop an instrument that could assess factors commonly found when podcasts were used as a teaching resource to achieve learning objectives. Using preexisting scales added a level of understanding when comparing previous studies in video/audio resources to modern podcast technology data available concerning acceptance of augmented education resources and their effectiveness.

For this study, independent variables included time available to plan, time available to create podcasts, pressure to create podcasts, perceived value, perceived usefulness of podcasts, and perceived ease of use.

Dependent variables include motivation to create a podcast, present satisfaction with computer technology, present satisfaction with podcasts, prior experience, gender, teaching roles, ethnicity, length of time teaching, and age.

Participants and Sample Population Selection

The population of this census-type survey research, whose purpose was to gather subjective documentation of perceptions and experiences concerning podcasts, included full- and part-time professors, associate professors, full- and part-time lecturers, instructors, and assistants (faculty) for whom the graduate school had email access.

The principal sample had a targeted response of approximately 666 faculty members at a midsize, public midwestern U.S. university. The university, with approximately 23,503 students, was chosen for its convenience to the researcher and because university faculty were considered to be representative of an average faculty who use or do not use podcasts. In addition, this group was chosen because they could provide
information on the factors that concern the creation and use of podcasts and could provide knowledge of podcast outcomes. Consequently, generalizability was limited to this group.

Johnson and Christensen (2008), recognizing the need to determine sample size for research activities that do not require calculations, developed a chart to indicate the representative number derived from a given population. According to their chart (p. 242), the representative population for this study should be somewhere around 242 of the 666 potential faculty participants. The optimum response of 242 would assure a 95% confidence factor for the analysis of the data.

**Survey**

The electronic email invitation (see Appendix A) to participate in the online survey was sent to the entire faculty on file. Thus, the Graduate School essentially shaped the population as a convenience sample. This study did not employ a paper edition of the survey, nor did it offer any special incentives to improve response rate. A self-report, web-based survey instrument collected data from the survey (SurveyMonkey.com, 2010). No confidential data were collected; however, all data were kept secure by means of password protected electronic files.

Consent to publish the results was granted by participating faculty who, by agreeing to participate in the survey, also acknowledged giving permission. Participants accessing the website that hosted the survey were asked a second time to confirm consent; if they agreed the second time, the survey software permitted survey respondents to continue. No names or other confidential data were collected, and the survey data were aggregated to provide a greater level of anonymity.
Within the survey, participants were asked to provide demographic data such as gender, teaching role, years of teaching, and college association. Of the 176 surveys submitted, 142 were deemed usable for sample analysis. A snapshot of demographic information about participants is shown on many of the following tables. Table 2 shows the breakdown by gender. Eighty-five (60%) female faculty responded to the survey, and 47 (40%) male faculty responded.

Table 2

*Participants by Gender*

<table>
<thead>
<tr>
<th>Q 16.1 Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey Participants</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Table 3 displays the various teaching roles of the respondents and their respective breakdown. The table shows that full-time professors and part-time faculty, with almost 25% responding from each group, collectively totaled almost 50% (70) of the total sample group of 141. Full-time associate and full-time assistants, with 14.2% responding, accounted for 28% (40) of the total. Full-time faculty and instructor/lecturers composed the third largest groups with 9.2% and 7.8%, respectively.
Table 3  
*Teaching Roles of Respondents*

Q 16.3 Which of the Following Best Describes Your Teaching Role?

<table>
<thead>
<tr>
<th>Teaching Roles</th>
<th>% Response</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-Time Professor</td>
<td>24.8%</td>
<td>35</td>
</tr>
<tr>
<td>Full-Time Associate</td>
<td>14.2%</td>
<td>20</td>
</tr>
<tr>
<td>Full-Time Assistant</td>
<td>14.2%</td>
<td>20</td>
</tr>
<tr>
<td>Full-Time Faculty</td>
<td>9.2%</td>
<td>13</td>
</tr>
<tr>
<td>Part-Time Professor</td>
<td>4.3%</td>
<td>6</td>
</tr>
<tr>
<td>Part-Time Associate</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>Part-Time Assistant</td>
<td>0.7%</td>
<td>1</td>
</tr>
<tr>
<td>Part-Time Faculty</td>
<td>24.8%</td>
<td>35</td>
</tr>
<tr>
<td>Instructor/Lecturers</td>
<td>7.8%</td>
<td>11</td>
</tr>
</tbody>
</table>

Total responding 141

Table 4 displays faculty years of experience, with 74 (52%) of respondents having more than 12 years teaching experience.
Table 4

*Years of Teaching Experience*

**Q 16.5 How long have you been teaching?**

<table>
<thead>
<tr>
<th>Years</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3 years</td>
<td>13.4%</td>
<td>19</td>
</tr>
<tr>
<td>4 - 6 years</td>
<td>14.8%</td>
<td>21</td>
</tr>
<tr>
<td>7 - 9 years</td>
<td>9.9%</td>
<td>14</td>
</tr>
<tr>
<td>10 – 11</td>
<td>9.9%</td>
<td>14</td>
</tr>
<tr>
<td>12 &amp; more</td>
<td>52.1%</td>
<td>74</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>142</td>
</tr>
</tbody>
</table>

A survey instrument was employed to investigate several factors associated with podcast technology adoption, utilization, and satisfaction. The instrument incorporated several factors used by Davis’s (1985) original Technology Assessment Model (TAM), which incorporated criteria from the Theory of Reasoned Action (TRA) and the Theory of Behavior Analysis (TBA). Existing theories and current research involving TAM assisted in validating the survey instrument. Internal consistency (reliability) of the survey instrument scales (composite variables) were assessed and reviewed. The complete survey questionnaire is shown in Appendix C. Web-based surveys are gaining in popularity for the advantages of speed, cost, and flexibility; unfortunately they also exhibit a few limitations.
Survey Questionnaire Advantages

• **Speed** – It is easier and quicker to create surveys and to change them electronically than it is to make changes on paper, reprint them, and then redistribute.

• **Skipping Logic** – Web page surveys and questionnaires can also use skipping logic to speed up participant completion time. Although this is also true in paper versions, electronic versions can automatically incorporate branching logic, freeing up the respondents to just answer questions and not be concerned about which questions to answer and which questions to skip.

• **Quick data collection** – Web-based surveys allow quick data gathering and downloading into analysis software, reducing data input errors (Nardi, 2003; Sue & Ritter, 2007; Thomas, 2004).

• **Delivery** – Delivery of web page surveys/questionnaires can be extremely fast. Surveys and questionnaires can be delivered to addressee in seconds, rather than in multiple days, as in traditional mail. In addition, the results are available to the researcher almost immediately upon submission by the survey participants. As such, surveys or questionnaires posted on a website can gather several thousand responses within a few hours (Alreck & Settle, 2004; Sue & Ritter, 2007).

• **Cost-savings** – Traditional paper-based questionnaires require printing, collating, envelope purchase, stuffing, and postage costs; it is much less expensive and more environmentally responsible to send surveys/questionnaires online (Nardi, 2003; Thomas, 2004). Also when using...
electronic questionnaires, there is very little cost involved after the survey/questionnaire has been designed and written. In addition, polling large samples (populations) does not usually cost any more in distribution and collection than polling small samples. Further, online surveys eliminate the need to pay for people to conduct interviews.

- **Ease of Editing/Analysis** – An electronic survey is fairly easy to create and administer. The questionnaire is also accessible from any location from any Internet-enabled device. The questionnaire can be distributed by using a webpage, by an email with the questionnaire as an attachment or imbedded within the email. Some systems do not allow attachments due to security concerns. Thus, imbedding the survey in the email or as a link to a webpage would be an advantage. Data already in electronic form allow for easier transfers from the instrument to the analysis software, thereby reducing the likelihood of data entry input errors.

- **Pre-letters** – It is easier and cheaper to send out electronic introduction letters, invitations, and to receive responses.

- **Population** – Online resources provide access to a larger population sample and wider geographic coverage, allowing an almost unlimited range of who can be contacted; therefore, if needed, the sample size can be quickly enlarged (Sue & Ritter, 2007).

- **Candid Responses** – Research shows that a significant number of people are more likely to give longer and more candid answers to open-ended questions when giving their answers to a computer instead of to a person or on a paper

- **Access** – Thomas (2004) stated that one of the requirements to communicate and create a useful web-based survey is that “members of the target audience need access to and have familiarity with computers” (Thomas, 2004, p. 15). Today's university faculty members are likely to be part of today's highly mobile society; therefore, a web-based survey would gain greater responses from this population. The entire population of faculty at the selected university was invited to participate in this study. The topic of this research presumed that participants were knowledgeable computer and Internet users, as today's faculty must employ PCs to read and send email, accomplish research, and access web pages. University faculty members also use PDAs or cell phones (these are generally handhelds devices that are synchronized regularly with a PC) or use Internet-ready devices that can create and play podcasts.

**Survey Questionnaire Weaknesses**

- **Limits of Sample Sizes** – Population and sample sizes are limited to those with access to a computer and those who have online network access (Nardi, 2003). It may not be possible to know for sure who is actually answering the survey, and the process may be biased toward computer literate faculty. While the number of people who use the Internet increases every year, not everyone uses a PC or has access to the Internet. Therefore, Internet-based surveys and questionnaires generally cannot reflect the entire population (Nardi, 2003).
\begin{itemize}
\item \textit{Incomplete Data} – Respondents can easily stop or quit a questionnaire anytime, resulting in incomplete data. This may be an advantage to the respondent, but it is not good for the researcher who is collecting data. In addition, if online surveys and questionnaires are too long, they are less likely to be completed than surveys that are completed by talking directly with an interviewer. A good interviewer can sense when a participant is getting tired or frustrated; computers (as yet) cannot. A good interviewer can also sense when there is a need for more information and can provide it as needed (Sue & Ritter, 2007).

\item \textit{Survey Arrangement and Display Challenges} – Constructing an online survey or online questionnaire can be more challenging depending on the researcher’s familiarity of computers and survey creation software. Respondents’ hardware displays vary and questionnaires could be displayed in a form other than intended, making the display unusable or difficult to understand (Sue & Ritter, 2007; Thomas, 2004).

\item \textit{Potential Technical Problems with Hardware and Software} – Computers and networks have a much greater likelihood of glitches and missed communications than do oral or written forms of communication.

\item \textit{Editing/Analysis} – Although both web-based and paper-based questionnaires can make extensive use of colors, fonts, and pictures, these features should be used carefully and with discretion (Alreck & Settle, 2004). For example, color printing can be expensive, and some colors may elicit unfavorable responses.
\end{itemize}
In addition, some respondents may react unfavorably to any reduction in access speeds due to the larger files and the use of color inks (Thomas, 2004).

**Choice of electronic survey.** Survey limitations and advantages make selection especially important; however, the research acknowledged that there might be some restriction to what can be studied using this technique. This researcher concluded that for the purpose of this research, an online survey had more advantages than disadvantages, with the biggest advantage being able to reach a wider range of respondents.

**Survey design/questions.** This survey was designed to collect and investigate faculty motivation to create and/or use podcasts. Questions also probed whether faculty were satisfied with podcasts in achieving learning outcomes. The questionnaire was separated into five categories in an attempt to gain an understanding of faculty motivation and satisfaction with use of podcasts. (Appendix D includes a cross referenced list of survey questions and categories.)

- **Demographics** – establish the characteristics of faculty generating a profile for each response.
- **Podcasting Knowledge** – determine faculty's knowledge about podcast technology.
- **Podcast Usage** – determine faculty purpose (andragogy) usage of podcasts.
- **Podcast Motivation** – determine factors or motives for creating and using podcasts.
- **Podcast Satisfaction** – determine faculty satisfaction when utilizing podcast to achieve learning objectives.
The original survey instrument based on Davis’s (1985) TAM was used by the researcher because no preexisting survey instrument relating to creation or use of video/audio or podcasting was found. The survey instrument was facilitated by an online service called Survey Monkey™ (SurveyMonkey.com, 2010), which offered the advantages of being accessible 24 hours a day from anywhere there is an Internet connection, enhanced data collection, and the ability to easily download the data into analyzing software.

**Pilot Testing of the Survey Instrument**

Working with campus faculty, two pilot surveys were conducted within a larger survey that explored nursing students’ (many of whom were instructors) use of technology, specifically the use of podcasts, and various different delivery methods of lectures.

The pilot studies were designed and intended to achieve the following:

1. To test survey/questionnaire design, check wording, spelling, and the general flow of the survey/questionnaire.
2. To help the researcher plan in advance for different strategies to be used in case a significant number of students failed to respond or answer the questions as anticipated by the researcher.
3. To validate and support the expectation that data collected would provide sufficient answers to the research questions.
4. To enable the researcher to decide whether to include the data from the pilot studies in the final data analysis. The decision would be made to use data from the pilot study if the data proved that the survey was thorough enough, that no
changes were required or needed, and that the pilot survey was appropriate to include in the final research phase.

The pilot study was also reviewed by two faculty members who were knowledgeable about podcasts and two PhD candidates who were familiar with podcasts. These reviewers provided feedback and clarification and checked grammar, syntax, and spelling. Minor changes to the wording clarified the intent of questions. Questions were grouped into the selected constructs of demographics, knowledge, usage, motivation, and satisfaction.

Revisions were incorporated into the final version of the survey, uploaded to Survey Monkey™, and sent by the graduate school via email with the Survey Monkey™ link to faculty.

The survey did not include any request for personal or confidential information. All faculty members who received an invitation to participate in the online survey also received an explanation of the purpose of the study. Because no personal data were collected, verification of delivery could not be guaranteed or checked.

**Data Analysis**

Data from the surveys were downloaded and imported into a Statistical Package for the Social Sciences, version 18 (SPSS). Data screening was performed to identify any data entry errors that might have occurred and to examine how appropriately the collected data met our statistical assumptions. Frequency tables were developed and used to find any miscoded entries and to discover missing data. Analytic techniques were used to examine various factors and to explore faculty satisfaction with podcasts. Descriptive
statistical analyses were performed on the demographic information data collected from participants, providing frequencies, percentages, and means.

Demographic characteristics were analyzed to determine whether demographic factors resulted in a higher or lower motivation and satisfaction when planning, creating, or using podcasts. This study attempted to examine whether these factors impacted faculty’s decision to plan, create, and use podcasts to achieve learning objectives, and whether these factors affected faculty's satisfaction when using podcasts as an educational resource.

Survey Demographic Variables

Faculty demographic information was limited to gender, age group, teaching roles, ethnicity, length of time teaching, and specific colleges within the university in order to determine whether one group of faculty creates more or fewer podcasts than another group. Differences in motivation to create and satisfaction with using podcasts were cross-tabulated by various demographic categories including gender, college of employment, teaching role, and years teaching.

Methods of Analysis

Factors that motivate or inhibit faculty to create and/or use podcasts was of special interest to this study, including past use of computer technology to determine if this influences a faculty’s current use of podcasts. The research also scrutinized a faculty’s past satisfaction with computer technology and whether this factor influences the present use of podcasts. In addition, the research investigated administration and peer pressure and student desire for podcasts as factors that influence creation and use of podcasts.
Reliability and Validity Issues of the Instrument

Among several types that contribute to the overall validity of a study, the two main dimensions are internal and external validity, and further sub-types can be added under these headings (Trochim, 2002).

*Internal validity* is concerned with the degree of certainty that observed effects in an experiment are actually the result of the experimental treatment or condition (the cause), rather than intervening, extraneous, or confounding variables. Internal validity is enhanced by increasing the control of other variables. The internal (content) validity of the instrument was checked to ensure that survey questions measured what was intended and that the questions related to the objectives of the survey (Thomas, 2004, p. 80). Examination prior to the pilot study and final study that was completed by two PhD candidates and one faculty member who were familiar with podcasting and learning objectives contributed to the internal validation of the study instrument. While no formal validation was done, the questionnaire’s focus on perceptions suggested that the responses would not be affected by instrumentation problems.

*External Validity* concerns the degree to which research findings can be applied to the real world beyond the controlled setting of the research. This is the issue of generalizability. Attempts to increase internal validity are likely to reduce external validity, as the study is conducted in a manner that is increasingly unlike the real world.

*Reliability* is an essential prerequisite for validity. There are many forms of reliability, all of which will have an effect on the overall reliability of the instrument and, therefore, the data collected. It is possible to have a reliable measure that is not valid;
however, a valid measure must also be reliable. The following are some of the forms of reliability.

- **Inter-Rater or Inter-Observer Reliability** – used to assess the degree to which different raters/observers agree when measuring the same phenomenon simultaneously (Haung, 2010).

- **Test-Retest Reliability** – compares results from an initial test with repeated measures later on, the assumption is that if the instrument is reliable, there will be close agreement over repeated tests if the variables being measured remain unchanged (Fayers & Machin, 2002).

- **Parallel-Forms or Alternate-Forms Reliability** – used to assess the consistency of the results of two similar types of test used to measure the same variable at the same time (Furr & Bacharach, 2007).

- **Tests for Homogeneity or Internal Consistency** – individual items in an instrument measuring a single construct should give highly correlated results that would reflect the homogeneity of the items. This can be tested using the split-half form, whereby the items are divided into halves and then correlated with the Spearman-Brown formula. A more sophisticated approach is to use Cronbach’s alpha that tests all possible split halves. Another approach is to use Cohen’s kappa that correlates each item with each other item and then the total score. Items with weaker correlations can be removed to leave an instrument with a high degree of homogeneity (Terwillger & Lele, 1979).
Davis (1985) used robust methods (e.g. pre-tests, pilot studies, internal consistency, factor analysis) to assure validity and reliability of his instrument. Further research confirmed Davis’s instrument’s validity and reliability (Chau, 1996; King & He, 2006; Y. Lee et al., 2003; Park, 2009; Szajna, 1996; Tao, 2007).

Most of the data in this study have never before been accumulated; therefore, triangulation with prior studies is not possible. Most of the data are based on faculty’s perceptions and therefore have only face validity. Validating a particular set of questions can be accomplished by asking several questions on the same issue in a slightly different way at different times in the survey instrument. This ensures that the wording of a particular question does not skew the results.

Summary

The research design, research questions, sample selection, instrument selection, data collection, and data analysis procedures were discussed in Chapter Three. Factors that affect faculty motivation and overall satisfaction in the use of podcasting technology were explored. The survey instrument used in this study was based entirely on the Technology Assessment Model developed by Davis (1985), which also included the theory of reasoned action and theory of planned behavior. Davis’s concept has been consistently proven in previous studies. The instrument was pretested; its contents were validated and tested for internal consistency. The population sample target consisted of faculty at a mid-size midwestern university. The concepts of validity and reliability as they relate to this study were discussed, as well as the operational measurements and critical factors that function as the independent and dependent variables.
Chapter Four

The findings and the data generated from a web-based survey examining faculty use of podcasts are presented in this chapter. The survey comprised 79 questions that explored the various factors affecting faculty's creation and use of podcasts and investigated faculty confidence levels and their expectation of skills sets needed to create a podcast. The survey further documented faculty beliefs about availability of training and support and determined whether faculty thought that podcasts were effective tools to achieve learning objectives.

Organizing and Limitations of Data Collection

Data collection began on December 20, 2009, and concluded on January 23, 2010. Initial results indicated that the majority of faculty thought it would be easy to use podcasts, that podcasts could help them accomplish more, and that podcasts could be an effective teaching resource. Incentives and release time were identified as important factors that promoted or inhibited the creation of podcasts.

The researcher did not have direct access to faculty lists, email IDs, or email lists. Since no identifiable data were collected, no attempt was made to validate email lists or faculty email IDs. Because the exact number of faculty members who were sent email invitations and those who actually received e-mail invitations was unknown, the overall response rate could not be calculated or determined. In addition, the number of undeliverable emails due to spam filters, firewalls, pop-up blockers, and other computer-generated filters was unknown. It is unlikely that all faculty members received an email; however, the returned sample of 142 responses was enough to identify noteworthy trends and effects.
A review of the findings begins with demographic data of the participating faculty, followed by faculty experience in the use of podcast technology, pressure to create or use podcasts, attitudes related to learning to create or use podcasting technology, and finally, faculty predictions about their future use of podcasts as a teaching tool. The data collected were verified to insure integrity; data were checked for missing values and checked for improper data format. Data were entered into the SPSS software and Microsoft Excel for further data analysis.

**Demographic Data**

Responding to the survey, the sample population comprised 85 females and 57 male faculty members. Eighty percent of respondents were Caucasian; 10% preferred not to answer, and the remaining 10% were represented by those of Asian, Black, Native American or Alaskan, and Hispanic ethnicity.

Figure 4 shows that the majority of faculty responding to the survey was over 40 years of age, with the largest age group utilizing technology at 51-60 years, followed closely by groups aged 41-50 and 61+. Using technology the least was the 21-30 age group.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Response</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 20</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>21 to 30</td>
<td>7.1%</td>
<td>10</td>
</tr>
<tr>
<td>31 to 40</td>
<td>14.2%</td>
<td>20</td>
</tr>
<tr>
<td>41 to 50</td>
<td>20.5%</td>
<td>20</td>
</tr>
<tr>
<td>51 to 60</td>
<td>37.6%</td>
<td>50</td>
</tr>
<tr>
<td>61+</td>
<td>26.0%</td>
<td>20</td>
</tr>
</tbody>
</table>

*Figure 4. Age range of respondents.*
Figure 5 shows the frequency of podcast usage across the different age groups.

Faculty over 40 used podcasts more than their younger counterparts.

<table>
<thead>
<tr>
<th>FREQSEMSTER</th>
<th>AGE 21 to 30</th>
<th>AGE 31 to 40</th>
<th>AGE 41 to 50</th>
<th>AGE 51 to 60</th>
<th>AGE 61+</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>never</td>
<td>7</td>
<td>15</td>
<td>16</td>
<td>33</td>
<td>21</td>
<td>92</td>
</tr>
<tr>
<td>seldom</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>sometimes</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>9</td>
<td>3</td>
<td>21</td>
</tr>
<tr>
<td>regularly</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>often</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>20</td>
<td>29</td>
<td>53</td>
<td>29</td>
<td>141</td>
</tr>
</tbody>
</table>

Figure 5. Frequency of podcast use per semester per age group

Categorized by professional status, data indicated that full-time professors composed about 25% of the total number of respondents, followed by about 14% each of full-time associate professors and full-time assistant professors; full- and part-time lecturers, however, were represented in 34% of the responses, whereas part-time professors and part-time assistant professors responded at the lowest response rates. The faculty in the College of Arts and Science were the largest number of respondents, followed by the College of Health and Human Services, College of Technology, College of Business, and College of Education. A small number of faculty preferred not to specify a specific college.

Figure 6 shows a graphic representation of the general demographic data gathered in this study.
Figure 6. Demographic profile of respondents.
**Faculty Use of Podcasts**

Survey data indicated that the profiles of faculty who created podcasts were not significantly different from those who did not create podcasts. Female faculty were slightly more likely than male faculty to use podcasts. Data collected showed that faculty in the age range of 51-60 were more than twice as likely to use podcasts as any other age group. Using technology the least was the 21-30 year group.

Gender, age, college, teaching position, or experience appeared to have little or no effect on whether faculty created and/or used podcasts. Although the majority of faculty respondents (104 of 142) did not create podcasts in the last year, those who did create podcasts (38) reported that their experience with podcasts was good. Responses of all faculty responding are shown in Table 5, indicating that the majority (85%) used computer technology for more than eight years and their experiences with technology were good. Female faculty uses podcasts more than male faculty.

Table 5

*Technology Use by Gender*

<table>
<thead>
<tr>
<th>Q. 3.1 I Have Used Computer Technology For</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1 year</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2-3 years</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4-5 years</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>6-7 years</td>
<td>2</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>&gt; 8 years</td>
<td>52</td>
<td>69</td>
<td>121</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>57</td>
<td>85</td>
<td>142</td>
</tr>
</tbody>
</table>
Table 6 shows that female faculty had more positive experiences with technology than did male faculty.

Table 6

*Computer Experience by Gender*

<table>
<thead>
<tr>
<th>Q. 3.2</th>
<th>My past experience with computer technology has been good.</th>
<th>Scale</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Strongly disagree</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Disagree</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Neutral</td>
<td>3</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Agree</td>
<td></td>
<td></td>
<td>22</td>
<td>39</td>
<td>61</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td></td>
<td></td>
<td>29</td>
<td>36</td>
<td>65</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>57</td>
<td>85</td>
<td>142</td>
</tr>
</tbody>
</table>
Factors Influencing Faculty Use of Podcasting Technology

Faculty perception of outside factors, such as influence or pressure from administration, colleagues, and students to use podcasts, was explored. Data showed that the majority of faculty who responded to the survey questions said that they felt little or no pressure from outside sources to create or use podcasts; however, more than half 57.8% (74) thought their students believed that podcasts should be used in their teaching. Almost half (48%) of faculty who responded thought that their administrators believed podcasts should be used as a teaching resource; however, another 43% reported that their administrators held an opposing opinion.

Tables 7-9 show responses about faculty perceptions regarding outside pressure from specific groups to use podcasts in their teaching. Table 8 exhibits whether faculty thought administrators believed that podcasts should be used as a resource for teaching. Of the 124 faculty responding to the survey, only 8.9% (11) thought that administrators usually or most of the time believed that podcasts should be used as a resource for teaching. Of faculty responding to the survey, 48.4% (60) felt that administrators sometimes believed that podcasts should be used as a resource for teaching. Of the faculty responding to the survey, 42.7% (53) felt that administrators never or rarely believed that podcasts should be used as a resource for teaching.
Table 7

Pressure to Use Podcasting

| Q. 5.1 Do you feel pressured to create or utilize podcasting technology? |
|-----------------|-----------------|-----------------|-----------------|
| Scale            | Male | Female | Total |
| No pressure      | 28   | 27    | 55    |
| Little pressure  | 10   | 15    | 25    |
| Some pressure    | 3    | 6     | 9     |
| Moderate pressure| 0    | 1     | 1     |
| Lot of pressure  | 0    | 3     | 3     |
| **Total**        | 41   | 52    | 93    |

Table 8 reveals whether faculty believed that their colleagues think that podcasts should be used in their teaching. Of the 128 faculty responding to the survey, only 5.4% (7) thought that their colleagues believed that podcasts should be used usually or most of the time in their teaching; about 25% (31) felt that their colleagues believed that podcasts should be used in their teaching sometimes; but the vast majority (70.3%; ninety) felt that their colleagues believed that podcasts should be used only rarely or never in their teaching.
Table 8

*Colleagues’ Pressure to Use Podcasting*

<table>
<thead>
<tr>
<th>Scale</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>never</td>
<td>18</td>
<td>31</td>
<td>49</td>
</tr>
<tr>
<td>rarely</td>
<td>16</td>
<td>25</td>
<td>41</td>
</tr>
<tr>
<td>sometimes</td>
<td>12</td>
<td>19</td>
<td>31</td>
</tr>
<tr>
<td>usually</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>most of the time</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>51</td>
<td>77</td>
<td>128</td>
</tr>
</tbody>
</table>

Table 9 demonstrates faculty’s presumption about whether their students think that podcasts should be used in their teaching. Of the 128 faculty responding to the survey, 15.6% (20) thought their students want podcasts to be used in their teaching usually or most of the time. More than one of four respondents (26.5%; 34) thought their students believed that podcasts should be used as part of used in their teaching, and more than half (57.8%; 74) believed that their students think that podcasts should be included in the instruction.
Table 9

*Students’ Pressure to Use Podcasting*

<table>
<thead>
<tr>
<th>Q. 8.7 My students think I should use podcasts in my teachings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Never</td>
</tr>
<tr>
<td>Rarely</td>
</tr>
<tr>
<td>Sometimes</td>
</tr>
<tr>
<td>Usually</td>
</tr>
<tr>
<td>Most of the time</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

**Attitudes Related to Learning to Create or Use Podcasting Technology**

As shown in Table 10, the majority of faculty across all age groups believed that learning to use podcasting technology would be relatively easy for them. Neither age nor gender appeared to be a factor in learning to create or use podcasts, and all respondents thought that it would be easy to become skillful podcasters.
Table 10

_Ease of Learning to Create Podcasts_

<table>
<thead>
<tr>
<th>Q. 11.1 Learning to Create Podcasts Would be Easy for Me.</th>
<th>Gender</th>
<th>Age of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale</td>
<td>M</td>
<td>F</td>
</tr>
<tr>
<td>Unlikely</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Slightly unlikely</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Neutral</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>Slightly likely</td>
<td>15</td>
<td>22</td>
</tr>
<tr>
<td>Extremely likely</td>
<td>26</td>
<td>27</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
<td>82</td>
</tr>
</tbody>
</table>

_Training and Support for Creation and Use of Podcasts_

Faculty were divided in their perceptions about available support and training on planning and creation of podcasts; 42% of the respondents felt positive about the availability of support and training, about 35% of respondents were neutral about the issue, and 23% said that support and training were not available. The predominance of neutral and negative responses may be a reflection of the high numbers of respondents who were not users of podcasting technology and, therefore, may not have had an interest in or knowledge of support and training available.
Regardless of perceptions about support and training, respondents overwhelmingly agreed that incentives, including pay and release time, were inadequate and created a barrier to development of podcasts. Tables 11, 12 and 13 provide data in support of these findings.

Table 11 shows a large number of neutral responses (roughly 35%) and negative (23%) responses to questions about the availability of assistance and training. This suggests that faculty were generally unaware of the existence of such help.

Table 11

**Support and Training for Podcasting Technology**

<table>
<thead>
<tr>
<th>Scale</th>
<th>Q. 7.1 Knowledgeable support personnel are available when I need help.</th>
<th>M</th>
<th>F</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>1</td>
<td>10</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>9</td>
<td>13</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Neutral</td>
<td>22</td>
<td>26</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td>19</td>
<td>27</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>5</td>
<td>7</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>56</strong></td>
<td><strong>83</strong></td>
<td><strong>139</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 12 reveals that 60.7% of faculty believe that incentives are inadequate or non-existent, with some 25% (35) being neutral, as they consider creating or using podcasting technology.
Table 12

*Incentives for Podcasting Technology * Gender Cross-tabulation

| Q. 7.3 There are adequate incentives for me to utilize podcast technology |
|-----------------------------|-----------------------------|----------------|
| Scale                      | Male | Female | Total |
| Strongly disagree           | 13   | 26     | 39    |
| Disagree                    | 17   | 29     | 46    |
| Neutral                     | 19   | 16     | 35    |
| Agree                       | 6    | 8      | 14    |
| Strongly agree              | 2    | 4      | 6     |
| **Total**                   | 57   | 83     | 140   |

Table 13 reveals that the vast majority (77.7%; 105) of faculty believe that release time is inadequate or non-existent when they consider creation or usage of podcasting technology. There were 21.7% (30) faculty being neutral and only 2% (3) saying the release time was adequate.

Table 13

*Release time for Podcasting Technology * Gender Cross-tabulation

<table>
<thead>
<tr>
<th>Q. 7.4 I have been given sufficient release time to develop podcasts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale</td>
</tr>
<tr>
<td>Strongly disagree</td>
</tr>
<tr>
<td>Disagree</td>
</tr>
<tr>
<td>Neutral</td>
</tr>
<tr>
<td>Agree</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>
Podcast Use and Satisfaction

Results showed that while 78% of faculty did not create or use podcasts within the last year, almost half of all respondents believed they would be using podcasts more in the future, with the majority saying that they expected to use podcasts from 1 to 4 hours per week. Table 15 is a summary of predicted use of podcasting technology and expected extent of use.

Table 14

*Prediction of Podcast Use and Extent per Week*

<table>
<thead>
<tr>
<th>Q. 13.1 I predict that I will use podcasting technologies on a regular basis in the future.</th>
<th>Q. 13.2 Hours per week I am likely to use podcasts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale</td>
<td>M</td>
</tr>
<tr>
<td>Unlikely</td>
<td>15</td>
</tr>
<tr>
<td>Slightly Unlikely</td>
<td>6</td>
</tr>
<tr>
<td>Neutral</td>
<td>6</td>
</tr>
<tr>
<td>Slightly Likely</td>
<td>18</td>
</tr>
<tr>
<td>Extremely Likely</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
</tr>
</tbody>
</table>
**Faculty Satisfaction**

A shown in Tables 15 and 16, faculty members seemed more likely to be satisfied with podcasts and were more positive about opportunities to accomplish more and to improve or enhance the quality of instruction with the use of podcasts. The majority of faculty were confident in their current abilities to learn and use podcasts. Tables 17 and 18 show faculty responses to various statements related to their satisfaction with podcasting technology.

Table 15 shows faculty perceptions of ease or difficulty in learning to create and properly use podcasts. Regarding ease of learning to create podcasts, 22 of 139 responses said it would be unlikely or slightly unlikely to find podcasting easy, 27 were neutral, and 90 (the majority) were slightly or extremely likely to find learning to create podcasts to be easy. Of 140 responses about ease of learning to properly use podcasts, 17 were unlikely or slightly unlikely to find podcasting easy, 24 were neutral, and 98 (the majority) were slightly or extremely likely to learning to utilize podcasts properly would be easy.
Table 15

Ease of Use and Learning Podcasting Technology

Q. 11.1 Learning to create podcasts would be easy for me (LPODEASY).

Q. 11.2 Learning to utilize podcasts properly would be easy for me (LPODUTIL).

<table>
<thead>
<tr>
<th></th>
<th>LPODEASY</th>
<th>LPODUTIL</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>unlikely</td>
<td>9</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>slightly unlikely</td>
<td>13</td>
<td>12</td>
<td>12.5</td>
</tr>
<tr>
<td>neutral</td>
<td>27</td>
<td>24</td>
<td>25.5</td>
</tr>
<tr>
<td>slight likely</td>
<td>37</td>
<td>45</td>
<td>41</td>
</tr>
<tr>
<td>extremely likely</td>
<td>53</td>
<td>53</td>
<td>53</td>
</tr>
<tr>
<td>Total Responding</td>
<td>139</td>
<td>139</td>
<td></td>
</tr>
</tbody>
</table>

Table 16 shows faculty perceptions of ease or difficulty about planning a podcast’s content, determination of whether their use of podcasts would be clear and understandable, whether they would find podcasts to be flexible to interact and work with, and perception of ease or difficulty in becoming skillful at utilizing podcasts. Regarding planning, of 139 respondents, only 22 believed it would not be easy, 33 were neutral, and 84 were likely to find it easy to plan. Faculty generally (about 67%) believed that their utilization of podcasts would be clear and understandable, one in four claimed neutrality, and fewer than 10% had a negative response about utilization of their podcasts.
Faculty perceptions about whether podcasts would be flexible and easy to work with showed about 54% giving a positive response that they were at least slightly likely to extremely likely to find podcasts to be flexible to interact and work with; about one in four were neutral, and 20% had negative feelings about flexibility of podcasts. Responses related to ease or difficulty at becoming skillful in the use of podcasts showed that the majority (62%) believed that it would be easy to become skillful at utilizing podcasts. Only 18 (13%) believed it would not be easy, and again, about one in four were neutral about the ease of becoming skillful in the use of podcasts.

Table 16

Planning, Flexibility, and Ease of Use

Q. 11.3 I would find it easy to plan a podcast’s content (PODPLAN).

Q. 11.4 My utilization of podcasts would be clear and understandable (PODUTILZ).

Q. 11.5 I would find podcasts to be flexible to interact and work with (PODFLEX).

Q. 11.7 It would be easy for me to become skillful at utilizing podcasts (PODSKILL).

<table>
<thead>
<tr>
<th></th>
<th>PODPLAN</th>
<th>PODUTILZ</th>
<th>PODFLEX</th>
<th>PODSKILL</th>
<th>AVERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>unlikely</td>
<td>11</td>
<td>7</td>
<td>10</td>
<td>6</td>
<td>8.5</td>
</tr>
<tr>
<td>slightly unlikely</td>
<td>11</td>
<td>6</td>
<td>18</td>
<td>12</td>
<td>11.75</td>
</tr>
<tr>
<td>neutral</td>
<td>33</td>
<td>33</td>
<td>36</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>slight likely</td>
<td>43</td>
<td>50</td>
<td>45</td>
<td>45</td>
<td>45.75</td>
</tr>
<tr>
<td>extremely likely</td>
<td>41</td>
<td>42</td>
<td>30</td>
<td>40</td>
<td>38.25</td>
</tr>
</tbody>
</table>
Table 17 shows faculty responses related to teacher performance and academic outcomes. Data collected showed that half of the 130 faculty responding believed that podcasts could help them accomplish more, but almost 30% believed it unlikely, and 25 respondents were neutral.

Asked whether using podcasts would improve academic performance and ability to teach, data collected showed that of 140 respondents, one of three believed it would be unlikely; slightly more respondents were neutral, and about 39% stated that they were likely to see an improvement in the academic performance and their ability to teach.

Data collected from 141 faculty about whether use of podcasts would enhance effectiveness as an instructor showed that nearly half of the respondents were optimistic about the possibility, while slightly more than half were neutral or did not expect increased effectiveness from the use of podcasts.

Data collected for two statements related to increase in academic productivity or ease of teaching due to the use of podcasts showed attitudes of 141 respondents split roughly in thirds, from those who believed that using podcasts would increase their academic productivity or make it easier to teach (30%), to slightly more than a third of the faculty who remained neutral about those concepts, and about 35% who believed that it was unlikely that using podcasts would increase their academic productivity or make it easier to teach.
Table 17

Accomplish, Improve, and Easy to Use

Q. 12.1 Using podcasts in my class would enable me to accomplish more
   (UPODACCOM).

Q. 12.2 Using podcasts would improve my academic performance and my ability to
   teach (UPODPERM).

Q. 12.4 Using podcasts would enhance my effectiveness as an instructor
   (UPODEFFECT).

Q. 12.3 Using podcasts would increase my academic productivity (UPODPROD).

Q. 12.5 Using podcasts would make it easier to teach (UPODEASIER).

<table>
<thead>
<tr>
<th></th>
<th>UPODACCOM</th>
<th>UPODPERM</th>
<th>UPODEFFECT</th>
<th>UPODPROD</th>
<th>UPODEASIER</th>
<th>AVG</th>
</tr>
</thead>
<tbody>
<tr>
<td>unlikely</td>
<td>23</td>
<td>27</td>
<td>26</td>
<td>34</td>
<td>26</td>
<td>27.2</td>
</tr>
<tr>
<td>slightly unlikely</td>
<td>16</td>
<td>15</td>
<td>10</td>
<td>18</td>
<td>23</td>
<td>16.4</td>
</tr>
<tr>
<td>neutral</td>
<td>25</td>
<td>44</td>
<td>36</td>
<td>47</td>
<td>49</td>
<td>40.2</td>
</tr>
<tr>
<td>slight likely</td>
<td>45</td>
<td>40</td>
<td>46</td>
<td>31</td>
<td>31</td>
<td>38.6</td>
</tr>
<tr>
<td>extremely likely</td>
<td>21</td>
<td>14</td>
<td>23</td>
<td>11</td>
<td>12</td>
<td>16.2</td>
</tr>
<tr>
<td>Total</td>
<td>130</td>
<td>140</td>
<td>141</td>
<td>141</td>
<td>141</td>
<td></td>
</tr>
</tbody>
</table>
Table 18 shows faculty responses to the question of whether use of podcast technologies would be enjoyable, pleasant, fun, and worth the time to plan, develop, and create. Faculty responses at 138-139 hovered around the 50% level for those who expressed likelihood that use of podcast technology would be enjoyable, pleasant, fun, and worth the time to plan, develop, and create. About one in three claimed neutrality for enjoyable, pleasant, and fun use of podcasts but were more discriminating about whether the use of podcasts would be worth the time to plan, develop, and create. Regarding the worth of time, only 13% were neutral, and 41% declared worthiness to be slightly or entirely unlikely. This finding may be related to expressions in other parts of the survey that noted concerns about lack of incentives and release time for planning and creating podcasts.

Table 18

*Podcast Helpful, Useful, Fun, and Worthwhile*

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>UPODACCOM</th>
<th>UPODPERM</th>
<th>UPODEFFECT</th>
<th>UPODPROD</th>
<th>UPODEASIER</th>
<th>AVG</th>
</tr>
</thead>
<tbody>
<tr>
<td>unlikely</td>
<td>23</td>
<td>27</td>
<td>26</td>
<td>34</td>
<td>26</td>
<td>27.2</td>
</tr>
<tr>
<td>slightly unlikely</td>
<td>16</td>
<td>15</td>
<td>10</td>
<td>18</td>
<td>23</td>
<td>16.4</td>
</tr>
<tr>
<td>neutral</td>
<td>25</td>
<td>44</td>
<td>36</td>
<td>47</td>
<td>49</td>
<td>40.2</td>
</tr>
<tr>
<td>slight likely</td>
<td>45</td>
<td>40</td>
<td>46</td>
<td>31</td>
<td>31</td>
<td>38.6</td>
</tr>
<tr>
<td>extremely likely</td>
<td>21</td>
<td>14</td>
<td>23</td>
<td>11</td>
<td>12</td>
<td>16.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>130</strong></td>
<td><strong>140</strong></td>
<td><strong>141</strong></td>
<td><strong>141</strong></td>
<td><strong>141</strong></td>
<td></td>
</tr>
</tbody>
</table>
Chapter Five

This chapter includes the final assessment of the process, conclusions, implications, limitations, and future research possibilities as a result of this study. Although various forms of audio, video, and podcasts’ technology have promised to transform education, all have generally failed to live up to the potential anticipated by their advocates. Little research has been done to understand the factors influencing the creation of podcasts, the effectiveness of podcasts when used to achieve learning objectives, or the justification of faculty time, effort, and planning involved in creating and using podcasts. Data gathered in this study contributed to an overall understanding of faculty satisfaction with podcasting technology and the motivational factors that influence the creation and use of podcasts.

This study contributes to existing literature and research by suggesting that faculty satisfaction, incentives, release time, and ability to achieve learning objectives using podcasts are critical factors that exert a positive influence on podcast creation and use. Factors within the educational system can influence podcast creation and use. Current outcomes demonstrate the importance of taking a systems-approach to managing the multiple factors rather than simply focusing on a single factor. This is especially important for faculty satisfaction among those who want to create and use multipurpose podcasts (learning objects) to achieve multiple learning objectives.

This study explored the various factors that inhibit or promote faculty use of podcasts and looked at overall satisfaction with podcasts when used to achieve learning objectives. The factors investigated included demographics and cross tabulations of age, gender, teaching position, designated college, full-time or part-time employment, past
experience with technology, current ability and skills with podcasts, time available to prepare, and incentives to use. The study also looked at the numbers of faculty who used podcasting as a resource and whether learning to plan, create, and use podcasts would be easy for them.

Survey questions probed whether faculty who used podcasts found them to be flexible and whether or not the use of podcasts gave faculty greater control over their instructional performance, thereby enhancing the quality and effectiveness of their instruction. Faculty were asked about the future potential use of podcasts and whether they thought that they were able to observe changes in students’ motivation, enthusiasm, participation, and collaboration when podcasts were used. Most of the faculty respondents who used podcasts were satisfied with the use of podcasts as an instructional tool to achieve course objectives; however, two critical factors emerged that affected podcast creation and use: 60% of faculty respondents believed that there were insufficient incentives for them to create and use podcasts, and almost 74% believed that there was insufficient release time available for faculty to plan and create podcasts.

**The Data Gathered Presented a Dilemma**

Here, then, the data gathered presented a dilemma. Consider the following findings:

- More than 50% of faculty respondents believed that planning, creating, and using podcasts would be easy for them to do and that podcasts were flexible and easy to use.

- Equal proportions of faculty respondents believed that using podcast resources would enable them to accomplish instructional goals more effectively and more quickly. Students would be able to use the podcasts to review the materials
whenever and however times they needed. Podcasting technology would improve faculty delivery of information and instructions and give them greater control over their instructional performance.

- More than three fourths of respondents believed podcasts they designed would be of high quality, and more than half said that their podcasts would be effective as a teaching resource.
- More than 4 of 10 (43%) faculty predicted they would be using podcasts 1-2 hours a week in the future, and almost half of the faculty believed they would see changes in students’ motivation, enthusiasm, participation, and collaboration, thereby increasing their own personal satisfaction with using podcasts.

However, the vast majority (78%) of faculty did not create or use podcasts in the last year.

These findings lead to questions about what is going to change, or what will be different in the future? Why were so few faculty members using podcasts if they felt so positive about them? Are incentives and planning time the only barriers, or are there other factors left unexplored in this study?

Questions, Conclusions, and Implications

Q. 1. Is there a relationship between faculty satisfaction and the use of podcasts?

H⁰ The use of podcasts makes no difference in faculty satisfaction.

H¹ The use of podcasts makes a difference in faculty satisfaction.

It was believed that by appropriately incorporating technologies such as podcasts, faculty would have the potential to positively influence learning, thereby increasing their own satisfaction. Q.1 asks, “Is there a relationship between faculty satisfaction and the
use of podcasts?” with the null hypothesis $H^0$ stating: “The use of podcasts makes no difference in faculty satisfaction.” The results from the data collected showed that overall faculty had positive perceptions about podcasts and believed that podcasts can be a valuable educational resource. On the basis of these findings, the null hypothesis was rejected. Although the data collected clearly showed that the majority of faculty did not currently create or use podcasts, most indicated that they would use podcasts in the future. By utilizing and embracing podcasts, instructors demonstrate that they are modern and up-to-date in the use of technologies that can make a difference in student learning.

**Q. 2. What educational factors influence the creation and use of podcasts?**

To a large extent, faculty respondents in this study believed there was little if any pressure from administrators, colleagues, or students to use podcasts. The controversy continues between those who believe that most elements in education could and should be created as learning objects and those who believe that creating educational elements as learning objects doesn't make any difference—that in the end, creating podcasts just generates more work for faculty with little or no reward.

As indicated in the literature review, the issues surrounding planning, implementation, and measurement of the effectiveness of podcasts (audio or video) are complex and multi-faceted. Although much research has been conducted on various aspects of electronic instructional aides, researchers expressed disagreement on theoretical and pragmatic levels about the effectiveness of this type of teaching and learning, what constitutes an appropriate podcasting framework, and recommendations for the creation and appropriate use of podcasts.
Further, the goals for podcast implementation beyond the basic structure or form of podcasts are not clearly defined; for example, specific directions on how to create a podcast as a learning object, the best way to achieve learning objectives using podcasts, or ways that podcasts can be reusable by more than one faculty have only very broad, vague outcomes. Improved student learning and instructor satisfaction are suggested, yet the use of podcasts and measurable outcomes are not universally agreed upon. Fundamental connections are not well understood. Rapidly changing technologies have created a shifting target in terms of measuring the podcast’s potential as an educational resource. In addition, nothing specifically addresses faculty motivation and their satisfaction with learning outcomes when podcasts are used.

With the advancement of technology, increasingly faster Internet, and faster Internet-enabled devices, faculty members said that they would find it easier to incorporate technologies such as podcast into the learning environment. Unfortunately, determining the real effectiveness of those technologies has proven difficult to measure (O’Bannon et al., 2011).

There was a general belief that there were insufficient incentives and insufficient release time available for faculty to create podcasts. The variety of responses suggests an opportunity for further study to study the effectiveness of podcasting on learning and what incentives are needed to encourage the creation and use of podcasts.

**Q. 3 Is there a relationship between past and present computer use and podcast satisfaction?**

H\(^0\) Past computer and podcast satisfaction is not related to current satisfaction with podcast use.
H$^1$ Past computer and podcast satisfaction is related to current satisfaction with podcast use.

Multiple factors were explored about the past and present use of podcasts, past recording technology, and their implementation into the educational arena. Predictors for successful production of podcasts ranged from very pragmatic recommendations related to past infrastructure design and assessment to more philosophical issues about the value of podcasts. The research focused on a measurable pattern and way of structuring the process of implementation to achieve a higher probability of effectiveness. As expected, past technology use was a factor in faculty’s present use and satisfaction with podcasting technology.

Results from the data collected clearly show that there was a relationship between past computer and podcast satisfaction and current satisfaction with podcast use. On the basis of these findings, the null hypothesis, “Past computer and podcast satisfaction is not related to current satisfaction with podcast use,” was rejected.

As seen in Figures 7 and 8, past experience was statistically significant to current satisfaction, podcast use, and ease in teaching.
Figure 7. Past experience and makes it easier to teach

Figure 8. Past experience and current use of podcasts
Limitations of the Analysis and Generalization of the Findings

Limitations considered when evaluating the results and conclusions of this study are population, survey size, demographics, and survey questions. This study involved the development and definition of variables. However, factors such as satisfaction and learning have many definitions or interpretations. While this study relied heavily on Davis’s (1985) TAM as a basis of criteria to define many of scales, much is still open to individual interpretation.

Responses from a specific population limited generalization of the findings to this group. Random sampling was not an option in this study; therefore, the results limit the representativeness of the population sample and generalization of the results.

The survey was criticized as being too long; some questions were redundant, and, in retrospect, some should have been combined. The redundancy could have led to participant fatigue, resulting in missing results. A better approach might have been to reissue the survey with the combined questions. Based on this research experience, the next step of the research is to measure the effects of podcasts by having one class that uses classroom time to teach with classroom traditional lecture with homework while another class would use podcast lectures as homework or out of classroom work and use class time to clarify the lectures.
The survey examined a cross-sectional population sample at a specific point in time. Basic requirements in establishing causality are to demonstrate that the cause clearly comes before an effect and that there are no replacement or substitute causal variables or explanations (Creswell, 2003; Hair, Black et al., 2006). This study was not longitudinal; therefore, it is not possible to meet the requirement for establishing causality. In addition, this study does not exclude other causal variables or include all challenging explanations of the observed relationships between the variables used in the study in such a way to suggest that causal relationships exist.

A further limitation involves common method variance where correlation coefficients presented in this study might be due in part to a common source. The urban legend that there is universally shared variance inherent in our methods is both an exaggeration and oversimplification of the true state of affairs. Common method variance as often conceptualized may be a legend, but biases are real and endemic to research. (Spector, 2006, p. 230)

As an example, a common source in this research is faculty from a single campus. The survey instrument, distributed online, allows self-report measures for nearly all variables, yet it is feasible that faculty members from the same overall organization (university) could demonstrate a propensity to answer questions in an analogous manner that, in turn, could create possibilities for false correlations in variables. Another source for common method variance is the possibility that several respondents were from within the same college, thus creating the same type of correlation coefficients, where they might be due, in part, to a common source.
Despite various limitations, this study adds a greater level of understanding of the identified variables by identifying and defining factors that motivate faculty decisions to create podcasts in the educational environment. In addition, it is important to identify potential limitations and factors, which may inhibit or promote faculty use of podcasts in achieving learning objectives. Finally, this study is a vehicle to identify future research and new challenges that could lead to opportunities for future use of podcasts as an educational resource.

**Future Research**

Society is moving toward a learning environment where learning devices are ubiquitous, and access to the Internet is available anywhere at any time to everyone. The opportunities to devise different methods for learning appear to be unlimited. Education has become, or needs to become, more entertaining, engaging, and thought-provoking. Some instructors now request that students view the course lectures at home, which enables hands-on study sessions or labs to take place in the classroom. Other faculty use the classroom time to enhance students’ understanding of the lecture materials that were reviewed earlier. When used appropriately, podcasts have the potential to meet many of the needs of today’s technology-savvy instructor and the increasing demands of students for enhanced educational experiences.

Further research is needed to determine the true effects of podcasts on an instructor’s time and workload, the impact of instructor incentives and administration encouragements, student and instructor satisfaction, and podcasts’ effectiveness to achieve learning outcomes. The impact of incentives, such as paying for development of podcasts with copyright privileges, needs to be evaluated. Making time available with
pay for instructors to plan, create, and utilize podcasts for themselves and for other instructors should be further explored. The creation of podcasts requires instructors to engage students in ways that are entertaining yet informative. For podcasts, the genre of teaching is different and presentation methods more complex. Further research needs to identify and promote faculty as effective podcasters and to investigate how to exploit faculty’s recording and specific podcasting talents without negating existing classroom lectures and other faculty.

As different patterns emerge in education and we learn what factors directly influence the use of podcasts and faculty satisfaction, it is important for researchers to continue to challenge new theories and develop new models. Future research using a controlled experimental model, where one class uses lectures in the form of podcasts and another identical class that has tradition lectures, might provide additional knowledge and understanding about the effectiveness of podcasts, their effectiveness toward achievement of learning objectives, and student and faculty satisfaction when using podcasts.

Other survey studies with fewer questions could refine and enhance the instrument to more specifically identify the factors in understanding the role of podcasts in education. With the progression of technology, reduction of barriers such as excessive file sizes and file download times will allow development of better quality podcasts. Future studies might include specific questions concerning advanced podcast production systems and new technologies that may allow interactive activities within podcasts, such as a question section, where an incorrect answer would return to the appropriate section to review. One startup attempt in interactive technology that envisioned some potential for interactivity in podcasts was the “Wax xi” system. Wax xi’s made an effort at
interactive podcasts reportedly to allow for interactivity during and after the podcasts are recorded. They had hoped it would be able to give students the opportunity to connect with people whose thinking, words, or actions could make an impact on them.

Unfortunately, there has not been any update to their webpage since 2007 (wax xi, 2007).

Future research could provide additional data on faculty satisfaction with learning objectives, such as to determine whether podcasts are possible mediators or antecedents to learning outcomes. Future research should investigate the dilemma identified when high percentages of respondents in this study pointed to reasons of insufficient incentives and insufficient release time available as their failure to produce or use podcasting as part of their instructional methods. The data gathered in this study indicated that equal proportions of faculty respondents believed that using podcast resources would give them greater control over their instructional performance.

Given this testimony about the benefits of the use and effectiveness of podcasting, further research could explain resistance to the use of podcasts and determine whether financial incentives and planning or release time were the only deterrents.

**Research Summary**

This study contributes to existing literature and research by suggesting that faculty satisfaction, incentives, release time, and ability to achieve learning objectives using podcasts are critical factors that exert a positive influence on podcast creation and use. Factors within the educational system can influence podcast creation and use. Current outcomes demonstrate the importance of taking a systems-approach to managing the multiple factors rather than simply focusing on a single factor. This is especially
important for faculty satisfaction among those who want to create and use multipurpose podcasts (learning objects) to achieve learning objectives.

Finally, failure to manage faculty and student expectations may come at a cost of decreased faculty and student performance, not only in terms of satisfaction but also in terms of meeting learning objectives and future educational standards. Universities need to embrace and exploit this new technology because meeting higher standards is no longer optional. Universities must develop effective processes that assure incentives and release time to further develop podcasts, not only to sustain their use in education, but also to secure podcasting as an educational tool for the future. Managing the factors that inhibit or promote faculty creation and use of podcasts can bring universities closer to the goal of achieving high performance with a multidimensional learning advantage.
References


Carr, S. (2000). As distance education comes of age, the challenge is keeping the students. *(Cover Story), 46*(23), A39(33).


Glogoff, S. (2009). Podcast your lectures or, why students will still attend class.

Retrieved from http://
www.dartmouth.edu/~dcal/resources/documents/lecturecapture


Grayson, J. (2010). The expandable classroom: Movable wall solutions create flexible learning spaces that provide an ideal complement to technology-based education. *THE Journal (Technological Horizons In Education)*, 37(8), 16(13).


Hyder, K., Kwinn, A., Miezga, R., & Murray, M. How to design, produce, lead, and promote successful learning events, live and online. B. Brandon (Ed.)


Lang, D. J. P. R. L. (2005). *Faculty perceptions, attitudes, and experiences with academic integrity at a small, private, technological university*. PhD Book; Archival Material Date of Entry: 20060602, University of Missouri, Kansas City.


*The use of an e-learning constructivist solution in workplace learning.* Paper 
presented at the Proceedings of the 14th European conference on Cognitive 
Ergonomics: Invent! Explore!, London, UK.

Publications, Inc.


http://www.surveymonkey.com/

42*(5), 6(1).

implications. *Issues in Information Systems, VI*(1), 127–133.

Kingdom and the United States, 1920–1940. *British Journal of Music Education, 
21*(02), 163–178. doi: 10.1017/S0265051704005674

*Management Science, 42*(1), 85–92.

Tabs, E. D. (2003). Distance education at degree-granting postsecondary institutions: 
Sciences, US Department of Education.*


Villano, M. (2008). Building a better podcast: Everything you wanted to know--plus a few things you hadn't even thought to ask--on how to best bring the technology into K-12 curriculum.(podcasting). *THE Journal (Technological Horizons In Education), 35*(1), 30(36).


**Appendix A: Invitation to Participate in the Survey**

To: All faculty, lecturers, and adjuncts

Hello,

I would like to invite you to participate in a brief, online survey related to the use of technology in courses. I am a doctoral student in the College of Technology at Eastern Michigan University. For my dissertation, I would like to examine the factors associated with use and satisfaction with electronic video files (podcasts) in coursework. Your participation is valuable whether you have used electronic video files (podcasts) or not.

No identifying information is collected and participation is completely voluntary.

To participate in this study or for more information, please contact me at 734.487.4413 or at tmitchell4@emich.edu. You are also welcome to review the IRB approval form attached. I look forward to hearing from you!

The questionnaire should take no more than fifteen minutes to complete. I know that your time is valuable, so your participation is greatly appreciated.

If you are interested, please click on the following link to begin the survey

http://www.surveymonkey.com/s/NZB38FT

Thank you in advance!
Thomas Mitchell
Appendix B: Human Subject Approval

November 19, 2009

Thomas Mitchell
122 Sill Hall
College of Technology

Dear Thomas Mitchell:

The Human Subjects Institutional Review Board (IRB) of Eastern Michigan University has reviewed and approved as exempt research your proposal titled, "Faculty Espousal and exploitation of Podcasts: Structural Equation modeling." The IRB determined that the rights and welfare of the individual subjects involved in this research are carefully guarded. Additionally, the methods used to obtain informed consent are appropriate, and the individuals participating in your study are not at risk.

Exempt research does not require reporting of continuation one year after approval if the project continues. However, should the sample or procedures change as to have an impact on human subjects, then UHSRC should be notified by using the Minor Modification to Research Protocol or the Request for Human Subjects Approval form depending upon the scope of the changes (see the forms online).

On behalf of the Human Subjects Committee, I wish you success in conducting your research.

Sincerely,

Deb de Laski-Smith, Ph.D.
Interim Dean
Graduate School
Administrative Co-Chair
University Human Subjects Review Committee

Reference # 091103
Appendix C: Survey Instrument

Faculty Espousal and Exploitation of Podcasts

1. Instructor motivation and satisfaction with podcasts

Introduction:

The primary purpose of this study is to examine the factors affecting instructor motivation and perceptions of satisfaction as related to podcasts.

This research is part of Tom Mitchell's dissertation, a PhD candidate at Eastern Michigan University.

The survey should take approximately 15 minutes of your time, your participation is appreciated.

You may exit now or any time during the survey with no adverse consequences.

One of the latest technologies to enter the educational arena is podcasts and while podcasting in itself is not a new technology, its entry into education is still in the pioneering stage.

Podcasts are audio or video electronic files that can be played on the majority of electronic devices, such as a PC, Mac, iPhone, iTouch, iPod, portable MP3/MP4 players and on most cell phones.
Faculty Espousal and Exploitation of Podcasts

2. Confidentiality:

Confidentiality: You cannot be individually identified; there will be no collection of any data that could allow your identity to be disclosed.

Results may be presented at research meetings, conferences, and in scientific publications. Results will only be presented in aggregate form. No names or individually identifying information will be revealed.

Consent to Participate: I have read all of the above information about the survey and research study. I understand the research as described and that there is minimal possible risks or side effects. I understand that there is little likelihood that research will be of any direct benefit to me. The content and meaning of this information has been explained and I understand what has been presented before me.

All my questions, at this time, have been answered.

By clicking on "next" and continuing the survey I hereby consent to voluntarily follow the study requirements and take part in the study.
### Faculty Espousal and Exploitation of Podcasts

#### 3. Self-efficacy

1. **I have used computer technology for**
   - [ ] Less than 1 year
   - [ ] 2-3 years
   - [ ] 4-5 years
   - [ ] 6-7 years
   - [ ] more than 8 years

2. **My past experience with computer technology has been good**
   - [ ] Strongly Disagree
   - [ ] Disagree
   - [ ] Neutral
   - [ ] Agree
   - [ ] Strongly Agree

3. **My past experience with podcasts has been good**
   - [ ] Strongly Disagree
   - [ ] Disagree
   - [ ] Neutral
   - [ ] Agree
   - [ ] Strongly Agree

4. **I am very comfortable with creating podcasts**
   - [ ] Strongly Disagree
   - [ ] Disagree
   - [ ] Neutral
   - [ ] Agree
   - [ ] Strongly Agree
Faculty Espousal and Exploitation of Podcasts

4. General Podcast Questions

1. How frequently during a semester have you utilized podcasts as a normal part of your teachings?
   - Never
   - Seldom
   - Sometimes
   - Regularly
   - Often

2. How frequently have you obtained podcasts from another source, such as off the Internet or from other instructors?
   - Never
   - Seldom
   - Sometimes
   - Regularly
   - Often

3. How frequently have you created podcasts in the last year?
   - Never
   - Seldom
   - Sometimes
   - Regularly
   - Often

4. How frequently have you created podcasts in the last semester?
   - Never
   - Seldom
   - Sometimes
   - Regularly
   - Often

5. How would you rate your ability to create podcasts that meet learning objectives?
   - Not very good
   - Somewhat good
   - Good
   - Very good
   - Excellent
Faculty Espousal and Exploitation of Podcasts

5. Podcast Use and Creation

If you do not create or utilize podcasts, please skip to next page

1. Do you feel pressured to create or utilize podcasting technology?
   - 0 no pressure
   - 1 little pressure
   - 2 some pressure
   - 3 moderate pressure
   - 4 a lot of pressure

2. I feel confident in my abilities to learn new skills or functions related to Podcasting
   - Not Confident
   - Somewhat Confident
   - Moderately Confident
   - Fairly Confident
   - Very Confident

3. I feel confident in my abilities to create my own podcasts
   - Not Confident
   - Somewhat Confident
   - Moderately Confident
   - Fairly Confident
   - Very Confident

4. I feel confident in my abilities to upload and download podcast files
   - Not Confident
   - Somewhat Confident
   - Moderately Confident
   - Fairly Confident
   - Very Confident
# Faculty Espousal and Exploitation of Podcasts

## 6. General non use of podcasts

If you don’t use or create podcast could you help us understand why not?

1. **The race/ethnicity of the presenter influences how students react to the information presented in a podcast**
   - □ Strongly Disagree
   - □ Disagree
   - □ Neutral
   - □ Agree
   - □ Strongly Agree

2. **Your racial/ethnic background affects your decision to create podcasts**
   - □ Strongly Disagree
   - □ Disagree
   - □ Neutral
   - □ Agree
   - □ Strongly Agree

3. **The physical appearance of the presenter influences how students react to the information presented in a podcast**
   - □ Strongly Disagree
   - □ Disagree
   - □ Neutral
   - □ Agree
   - □ Strongly Agree

4. **Your physical appearance affects your decision to make podcasts**
   - □ Strongly Disagree
   - □ Disagree
   - □ Neutral
   - □ Agree
   - □ Strongly Agree

5. **The gender of the presenter influences how students react to the information presented in a podcast**
   - □ Strongly Disagree
   - □ Disagree
   - □ Neutral
   - □ Agree
   - □ Strongly Agree

6. **Your gender affects your decision to create podcasts**
   - □ Strongly Disagree
   - □ Disagree
   - □ Neutral
   - □ Agree
   - □ Strongly Agree
Faculty Espousal and Exploitation of Podcasts

7. Podcast support and time available

What are your perceptions about podcast support and time available to utilize podcasts?

<table>
<thead>
<tr>
<th>1. Knowledgeable support personnel are available when I need help</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree</td>
</tr>
</tbody>
</table>

| 2. Training is available on how to plan, create and how best to utilize podcasts |
|---------------------------------------------------------------------------------
| ☐ Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree |

<table>
<thead>
<tr>
<th>3. There are adequate incentives for me to utilize podcast technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. I have been given sufficient release time to develop podcasts</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree</td>
</tr>
</tbody>
</table>
## Faculty Espousal and Exploitation of Podcasts

### 8. Subjective Norm

1. Administrators believe that podcasts should be used as a resource for teaching
   - Never
   - Rarely
   - Sometimes
   - Usually
   - Most of the Time

2. In general, how often do you do what your administrators think you should do concerning the use of podcasts?
   - Never
   - Rarely
   - Sometimes
   - Usually
   - Most of the Time

3. How often do you do what your administrators think you should do concerning your overall teaching?
   - Never
   - Rarely
   - Sometimes
   - Usually
   - Most of the Time

4. My colleagues think I should use podcasts in my teachings
   - Never
   - Rarely
   - Sometimes
   - Usually
   - Most of the Time

5. In general, how often do you do what your colleagues think you should do concerning the use of podcasts?
   - Never
   - Rarely
   - Sometimes
   - Usually
   - Most of the Time

6. How often do you do what your colleagues think you should do concerning your teaching?
   - Never
   - Rarely
   - Sometimes
   - Usually
   - Most of the Time

7. My students think I should use podcasts in my teachings
   - Never
   - Rarely
   - Sometimes
   - Usually
   - Most of the Time

8. In general, how often do you do what your students think you should do?
   - Never
   - Rarely
   - Sometimes
   - Usually
   - Most of the Time
<table>
<thead>
<tr>
<th>9. Perceived Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>IF YOU DO NOT UTILIZE PODCASTS SKIP THIS SECTION!</td>
</tr>
<tr>
<td>1. Using podcast resources enables me to accomplish instructional goals more quickly</td>
</tr>
<tr>
<td>- Strongly Agree</td>
</tr>
<tr>
<td>- Agree</td>
</tr>
<tr>
<td>- Neutral</td>
</tr>
<tr>
<td>- Disagree</td>
</tr>
<tr>
<td>- Strongly Disagree</td>
</tr>
<tr>
<td>2. Using podcast resources improves the quality of my instruction</td>
</tr>
<tr>
<td>- Strongly Agree</td>
</tr>
<tr>
<td>- Agree</td>
</tr>
<tr>
<td>- Neutral</td>
</tr>
<tr>
<td>- Disagree</td>
</tr>
<tr>
<td>- Strongly Disagree</td>
</tr>
<tr>
<td>3. Using podcast resources makes it easier to teach</td>
</tr>
<tr>
<td>- Strongly Agree</td>
</tr>
<tr>
<td>- Agree</td>
</tr>
<tr>
<td>- Neutral</td>
</tr>
<tr>
<td>- Disagree</td>
</tr>
<tr>
<td>- Strongly Disagree</td>
</tr>
<tr>
<td>4. Using podcast resources gives me greater control over my instructional performance</td>
</tr>
<tr>
<td>- Strongly Agree</td>
</tr>
<tr>
<td>- Agree</td>
</tr>
<tr>
<td>- Neutral</td>
</tr>
<tr>
<td>- Disagree</td>
</tr>
<tr>
<td>- Strongly Disagree</td>
</tr>
<tr>
<td>5. Using podcast resources enhances the effectiveness of my instruction</td>
</tr>
<tr>
<td>- Strongly Agree</td>
</tr>
<tr>
<td>- Agree</td>
</tr>
<tr>
<td>- Neutral</td>
</tr>
<tr>
<td>- Disagree</td>
</tr>
<tr>
<td>- Strongly Disagree</td>
</tr>
<tr>
<td>6. There are changes in student motivation, enthusiasm, participation and collaboration when podcasts are utilized</td>
</tr>
<tr>
<td>- Strongly Agree</td>
</tr>
<tr>
<td>- Agree</td>
</tr>
<tr>
<td>- Neutral</td>
</tr>
<tr>
<td>- Disagree</td>
</tr>
<tr>
<td>- Strongly Disagree</td>
</tr>
</tbody>
</table>
Faculty Espousal and Exploitation of Podcasts

10. Podcast Creation Factors

IF YOU DO NOT UTILIZE PODCASTS SKIP THIS SECTION!

Factors you consider when creating a podcast

Learning styles can be divided into groups, such as Auditory, Visuals, Tactile, Global, Kinesthetic, and Analytical.

1. When you create a podcast what pedagogical factors do you consider? (select all that apply)
   - Lecture Review
   - Supplemental information
   - On-line
   - Pre-week Review (preview)
   - Stand alone learning
   - None
   - Post Week Review (wrap up)
   - Homework

2. What factors influence you (motivate) to create a podcast? (select all that apply)
   - Administration demands
   - Student's demand
   - Today's educational society demands
   - You cannot find appropriate podcasts, so you create your own
   - You just feel that you should

3. You consider student learning styles, in how and why you create your podcast.
   - Strongly Disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly Agree

4. Student learning styles should not factor into creating a podcast
   - Strongly Disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly Agree
Faculty Espousal and Exploitation of Podcasts

11. Perceived Ease of Use

1. Learning to create podcasts would be easy for me
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

2. Learning to utilize podcasts properly would be easy for me
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

3. I would find it easy to plan a podcast's content
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

4. My utilization of podcasts would be clear and understandable
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

5. I would find podcasts to be flexible to interact and work with
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

6. I would find podcasting technology easy to use
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

7. It would be easy for me to become skillful at utilizing podcasts
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

8. How confident are you in the ratings that you have indicated on this page?
   - Not at all confident
   - Slightly confident
   - Modestly confident
   - Confident
   - Somewhat confident
   - Very confident
   - Completely confident
Faculty Espousal and Exploitation of Podcasts

12. Perceived Usefulness

1. Using podcasts in my class would enable me to accomplish more
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

2. Using podcasts would improve my academic performance and my ability to teach
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

3. Using podcasts would increase my academic productivity
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

4. Using podcasts would enhance my effectiveness as an instructor
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

5. Using podcasts would make it easier to teach
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

6. I would find podcasts useful in teaching
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

7. How confident are you in the ratings that you have indicated on this page?
   - Not at all confident
   - Slightly confident
   - Modestly confident
   - Confident
   - Somewhat confident
   - Very confident
   - Completely confident
Faculty Espousal and Exploitation of Podcasts

13. Anticipate use of Podcasts

1. I predict that I will use podcasting technologies on a regular basis in the future
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

2. I am most likely to use podcasts
   - None
   - 1-2 hours per week
   - 2-3 hours per week
   - 3-4 hours per week

3. What are the chances that you will become a podcast user
   - 0
   - 20
   - 40
   - 60
   - 80
   - 100

4. How confident are you in the ratings that you have indicated on this page?
   - Not at all confident
   - Slightly confident
   - Modestly confident
   - Confident
   - Somewhat confident
   - Very confident
   - Completely confident
Faculty Espousal and Exploitation of Podcasts

14. Perceived characteristics of final podcast

1. Assuming I were to use podcasts, I would expect the quality of the output would to be high
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

2. In achieving learning objects podcasts are effective as a teaching resource
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

3. The video and audio files I used to create a podcast would be professional looking
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

4. How confident are you in the ratings that you have indicated on this page?
   - Not at all confident
   - Slightly confident
   - Modestly confident
   - Confident
   - Somewhat confident
   - Very confident
   - Completely confident
## 15. Satisfaction

1. I would find using podcast technologies enjoyable
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

2. I would find using podcasting technologies to be pleasant
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

3. I would have fun and enjoy using podcasting technologies
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

4. How likely is it that you feel it's worth your time to plan, develop and create podcasts?
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

5. When you obtain podcasts from another source, how likely are you to be satisfied with the quality as an educational resource?
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

6. After you have posted your podcast, how likely are you to be satisfied with it?
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

7. How likely is it that you will observe positive changes in students' motivation, enthusiasm, participation and collaboration, thereby increasing your personal satisfaction with utilizing podcasts?
   - Unlikely
   - Slightly unlikely
   - Neutral
   - Slightly likely
   - Extremely likely

8. How confident are you in the ratings that you have indicated on this page?
   - Not at all confident
   - Slightly confident
   - Modestly confident
   - Confident
   - Somewhat confident
   - Very confident
   - Completely confident
### Faculty Espousal and Exploitation of Podcasts

#### 16. Demographics

1. **Gender**
   - ○ Male
   - ○ Female

2. **What is your age group?**
   - ○ Under 20
   - ○ 21 to 30
   - ○ 31 to 40
   - ○ 41 to 50
   - ○ 51 to 60
   - ○ 61 plus

3. **Which of the following best describes your teaching role?**
   - ○ Full Time Professor
   - ○ Part Time Associates
   - ○ Full Time Associates
   - ○ Part Time Assistant
   - ○ Full Time Assistant
   - ○ Part Time Instructor
   - ○ Full Time Instructor
   - ○ other
   - ○ Part Time Professor

4. **What is your Race or Ethnicity?**
   - ○ Hispanic or Latino
   - ○ Native Hawaiian or Other Pacific Islander
   - ○ American Indian or Alaskan Native
   - ○ White
   - ○ Asian
   - ○ Prefer not to answer
   - ○ Black or African American

5. **How long have you been teaching?**
   - ○ 1-3 years
   - ○ 3-6 years
   - ○ 6-9 years
   - ○ 9-12 years
   - ○ 12 & more

6. **In what college do you teach?**
   - ○ College of Art & Science
   - ○ College of Business
   - ○ College of Education
   - ○ College of Health and Human Services
   - ○ College of Technology
   - ○ Prefer not to answer
   - ○ Other (please specify)

Page 17
# Appendix D: Survey Cross Reference List to Categories

Survey Condensed and Categorized  
7/28/2012

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Question</th>
<th>Demographics</th>
<th>Knowledge Usage</th>
<th>Motivation</th>
<th>Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>STUDSTYLESF</td>
<td>Student learning styles should not factor into creating a podcast</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LPODEASY</td>
<td>Learning to create podcasts would be easy for me</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LPODUTIL</td>
<td>Learning to utilize podcasts properly would be easy for me</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>PODPLAN</td>
<td>I would find it easy to plan a podcasts content</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>PODUTILIZ</td>
<td>My utilization of podcasts would be clear and understandable</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>PODPLEX</td>
<td>I would find podcasts to be flexible to interact and work with</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>PODTECH</td>
<td>I would find podcasting technology easy to use</td>
<td></td>
<td></td>
<td></td>
<td>x x</td>
</tr>
<tr>
<td>PODSKILL</td>
<td>It would be easy for me to become skillful at utilizing podcasts</td>
<td></td>
<td></td>
<td>x x</td>
<td></td>
</tr>
<tr>
<td>UPPOCASTCOM</td>
<td>Using podcasts in my class would enable me to accomplish more</td>
<td></td>
<td></td>
<td>x x</td>
<td></td>
</tr>
<tr>
<td>UPPODFRAN</td>
<td>Using podcasts would improve my academic performance and my ability to teach</td>
<td></td>
<td></td>
<td>x x</td>
<td></td>
</tr>
<tr>
<td>UPPODPROD</td>
<td>Using podcasts would increase my academic productivity</td>
<td></td>
<td></td>
<td></td>
<td>x x</td>
</tr>
<tr>
<td>UPPODEFFECT</td>
<td>Using podcasts would enhance my effectiveness as an instructor</td>
<td></td>
<td></td>
<td>x x</td>
<td></td>
</tr>
<tr>
<td>UPPODCEASIER</td>
<td>Using podcasts would make it easier to teach</td>
<td></td>
<td></td>
<td></td>
<td>x x</td>
</tr>
<tr>
<td>PODUSEFUL</td>
<td>I would find podcasts useful in teaching</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PREDICTPOD</td>
<td>I predict that I will use podcasting technologies on a regular basis in the future</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>LIKEYUSE</td>
<td>I am most likely to use podcasts</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>CHANCEUSER</td>
<td>What are the chances that you will become a podcast user</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>PODQUALITY</td>
<td>Assuming I were to use podcasts, I would expect the quality of the output would be high</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>ACHIEVELO</td>
<td>In achieving learning objects podcasts are effective as a teaching resource</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>PODPROUSING</td>
<td>The video and audio files I used to create a podcast would be professional looking</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>POSENJOYABLE</td>
<td>I would find using podcast technologies enjoyable</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>POPLEASANT</td>
<td>I would find using podcasting technologies to pleasant</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>PODFUN</td>
<td>I would have fun and enjoy using podcasting technologies</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>PODWORTH</td>
<td>How likely is it that you feel it’s worth your time to plan, develop and create podcasts?</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>SOURCESAT</td>
<td>When you obtain podcasts from another source, how likely are you to be satisfied with the quality as an educational resource?</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>POSTEDSAT</td>
<td>After you have posted your podcast, how likely are you to be satisfied with it?</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>CHANGEINSTUD</td>
<td>How likely is it that you will observe positive changes in students’ motivation, enthusiasm, participation and collaboration, thereby increasing your personal satisfaction with utilizing podcasts</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>GENDER</td>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>AGE</td>
<td>What is your age group?</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>TEACHINGROLE</td>
<td>Which of the following best describes your teaching role?</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>ETHNICITY</td>
<td>What is your Race or Ethnicity?</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>TIMESTEACHING</td>
<td>How long have you been teaching?</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>COLLEGETEACH</td>
<td>In what college do you teach?</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Question</td>
<td>Demographics/Knowledge/Usage</td>
<td>Motivation/Satisfaction</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>--------------------------------------------------------------------------</td>
<td>------------------------------</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>USEDTECH</td>
<td>I have used computer technology for</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXPERIENCE</td>
<td>My past experience with computer technology has been good</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PASTEXPER</td>
<td>My past experience with podcasts has been good</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMFORTABLE</td>
<td>I am very comfortable with creating podcasts</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRESEMESTER</td>
<td>How frequently during a semester have you utilized podcasts as a normal part of your teachings?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FREOTHER</td>
<td>instructors?</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>FREQREATEY</td>
<td>How frequently have you created podcasts in the last year?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FREQCREATE</td>
<td>How frequently have you created podcasts in the last semester?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RATEABILITY</td>
<td>How would you rate your ability to create podcasts that meet learning objectives?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRESSCREATE</td>
<td>Do you feel pressured to create or utilize podcasting technology?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONFESKILLS</td>
<td>I feel confident in my abilities to learn new skills or functions related to Podcasting</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONFED même</td>
<td>I feel confident in my abilities to create my own podcasts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONFTOOLS</td>
<td>I feel confident in my abilities to upload and download podcast files</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ETHNOCULT</td>
<td>The race/ethnicity of the presenter influences how students react to the information presented in a podcast</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ETHNOCYRATE</td>
<td>Your racial/ethnic background affects your decision to create podcasts</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYSINFLUENCE</td>
<td>podcast</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYSINFLUENCE</td>
<td>Your physical appearance affects your decision to make podcasts</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GENAFFECT</td>
<td>The gender of the presenter influences how students react to the information presented in a podcast</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GENAFFECTC</td>
<td>Your gender affects your decision to create podcasts</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUPPORT</td>
<td>Knowledgeable support personnel are available when I need help</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRAINING</td>
<td>Training is available on how to plan, create and how best to utilize podcasts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INCENTIVES</td>
<td>There are adequate incentives for me to utilize podcast technology</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RELEASE</td>
<td>I have been given sufficient release time to develop podcasts</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADMINBELIEF</td>
<td>Administrators believe that podcasts should be used as a resource for teaching</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADMINPODUSE</td>
<td>In general, how often do you do what your administrators think you should do concerning the use of podcasts?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADMINDO</td>
<td>How often do you do what your administrators think you should do concerning your overall teaching?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COLTHINKDO</td>
<td>My colleagues think I should use podcasts in my teachings</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COLDO</td>
<td>In general, how often do you do what your colleagues think you should do concerning the use of podcasts?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COLTHINKTECH</td>
<td>How often do you do what your colleagues think you should do concerning your teaching?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENTTHK</td>
<td>My students think I should use podcasts in my teachings</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENTDO</td>
<td>In general, how often do you do what your students think you should do?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PODEENABLES</td>
<td>Using podcast resources enables me to accomplish instructional goals more quickly</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PODEIMPROVES</td>
<td>Using podcast resources improves the quality of my instruction</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PODEASIER</td>
<td>Using podcast resources makes it easier to teach</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PODECONTROL</td>
<td>Using podcast resources gives me greater control over my instructional performance</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PODEFFECTIVE</td>
<td>Using podcast resources enhances the effectiveness of my instruction</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHANGESTUD</td>
<td>There are changes in student motivation, enthusiasm, participation and collaboration when podcasts are utilized</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDYSTYLESC</td>
<td>You consider student learning styles, in how and why you create your podcast.</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>