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The Role of Pedagogical Beliefs in Emerging Technology Integration: An Exploratory Case Study of Faculty Perspectives

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Abstract

The integration of social media, mobile/wireless and Web 2.0 technologies in higher education supports student engagement locally and globally to create new knowledge using innovative strategies. However, there remains a disconnect between the positive perceptions of faculty regarding the value of integrating technology and its adoption in online contexts. The purpose of this qualitative exploratory case study was to investigate the factors that influence faculty to integrate innovative and emerging technologies, and to consider whether pedagogical beliefs influence choice and adoption of technology. Participants included graduate and undergraduate faculty members who had experience teaching online; were representative of diverse disciplines and courses and were familiar with using technology in the classroom. Using qualitative content analysis, the data from in-depth interviews, questionnaires and researcher reflective journal entries were analyzed. The findings indicate that faculty are convinced of the benefits of technology and its potential impact on student success. However, their choices are influenced by those tools that align with their pedagogical beliefs and have a foundation in learning theory, that are easy to learn, and that demonstrate increased student engagement and motivation. This study contributes to the current gap in research related to low technology adoption rates by faculty, and highlights the complexity of selecting innovative technology for online global environments

Keywords

Pedagogy, Online Education, Emerging Technology, Social Networks, Web 2.0, Faculty, Qualitative Analysis

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The integration of social media, mobile/wireless and Web 2.0 technologies in higher education supports student engagement locally and globally to create new knowledge using innovative strategies. However, there remains a disconnect between the positive perceptions of faculty regarding the value of integrating technology and its adoption in online contexts. The purpose of this qualitative exploratory case study was to investigate the factors that influence faculty to integrate innovative and emerging technologies, and to consider whether pedagogical beliefs influence choice and adoption of technology. Participants included graduate and undergraduate faculty members who had experience teaching online; were representative of diverse disciplines and courses and were familiar with using technology in the classroom. Using qualitative content analysis, the data from in-depth interviews, questionnaires and researcher reflective journal entries were analyzed. The findings indicate that faculty are convinced of the benefits of technology and its potential impact on student success. However, their choices are influenced by those tools that align with their pedagogical beliefs and have a foundation in learning theory, that are easy to learn, and that demonstrate increased student engagement and motivation. This study contributes to the current gap in research related to low technology adoption rates by faculty, and highlights the complexity of selecting innovative technology for online global environments. Keywords: Pedagogy, Online Education, Emerging Technology, Social Networks, Web 2.0, Faculty, Qualitative Analysis

Despite the promise that technology holds for education, current approaches to integrating emerging technology have proven to be complex and frustrating for instructors. Veletsianos and Kimmons (2013) reported tensions among instructors implementing social networking that included lack of technical proficiency, unrealized user expectations, poor user interface, and contradictions between the embedded values within the software design and pedagogical beliefs. Concern has also been raised related to social networks adversely affecting academic performance based on poor time management (Kirchner & Karpinski, 2010). Alternatively, Web 2.0 technologies such as wikis applied in the classroom have been likened to "empowering, constructivist instruments" (Bowman, 2013, p. 3) and with thoughtful real world application of the tool, students' writing become more detailed and comprehensive. While collaborative and communication tools such as wikis and blogs are becoming common additions to the traditional delivery systems, research on emerging technologies and specifically on social networking software is in its infancy (Minocha, Schroeder, & Schneider, 2011). Veletsianos (2010) asserted that literature is sparse related to a common understanding of technologies within a broader higher educational context as opposed to a discipline-specific context. A literature review on the use of Web 2.0 technologies commissioned by the Higher Education Academy of the Open University of the United Kingdom (2010) supported the fact that while there is some empirical evidence regarding the benefits of Web 2.0 technology in informal learning environments, few longitudinal studies have succeeded in documenting major changes in pedagogical practice, even as Web 2.0 concepts have been subsumed by social networking and other more recent applications.

Research on social media applications and mobile/wireless technology within higher education environments has lagged behind its fast-paced development and utilizing technological tools is not seen as a priority by faculty (Drexler, 2010; Steencamp & Rudman, 2013; Tess, 2013). Conclusions in a literature review of Web 2.0 technologies (Conole & Alevizou, 2012) and supported by Bennett, Bishop, Dalgarno, Waycott, and Kennedy (2012; Boskz, 2012; Cheon, Lee, Crooks, & Song, 2012) included implementation challenges within the institution; gaps between technology's promise and the actual experiences of users; minimal training for faculty, and current research not impacting policies related to technology implementation or teaching practices.

Background and Objectives of the Study

Technological tools that support technology integration can be categorized as (a) *personal communication tools* that use social networking sites such as Linked In (www.linkedin.com) and Facebook (www.facebook.com); (b) *shared document creation* such as Wikis and Google docs; (c) *news, current events and the sharing of viewpoints* using blogging tools such as www.blogger.com, microblogs such as Twitter (www.Twitter.com), Real Simple Syndication feeds (RSS), video sharing sites such as YouTube (www.youtube.com); and (d) *photo sharing and audio sites* such as Flickr (www.flickr.com) and podcasts (Bower, Hedberg, & Kuswara, 2010; Nelson, Christopher, & Mims, 2009). This list of second generation web tools and applications are not exhaustive as mobile/wireless technology through the use of smartphones emerges as the latest ubiquitous tool to engage students, leading to a more active and participatory role for users. Mobile devices give students the flexibility to download a syllabus anywhere and anytime, to collaborate on assignments, engage in discussions and take quizzes while they allow faculty to communicate seamlessly with maximum flexibility and synchronicity (Cook & Sonnenberg, 2014; MacCallum, Jeffrey, & Kinshuk, 2014).

While the application of Web 2.0 concepts within current and innovative technologies has led to increased research on its effectiveness (Bennett, Bishop, Dalgarno, Waycott, & Kennedy, 2012), there are fewer studies on whether faculty perceive technology as an effective teaching and learning tool, particularly in higher education online environments (Conole & Alevizou, 2010; Ulrich, 2009; Veletsianos, 2010). Faculty may not have the experience to be able to integrate emerging technology into their course design, or understand how to adjust their instruction to positively impact student learning (Boskz, 2012; Harris, Mishra, & Koehler, 2009). To help make sense of the array of technological tools and choices, Mishra and Kohler (2006) developed a framework for technological pedagogical content knowledge, referencing the importance of technological knowledge, pedagogical knowledge and content knowledge as a dynamic framework that supports the integration of technology in teaching and learning. Bower et al. (2010) extended this model to define the *content* as discipline specific; the *pedagogies* as interactive approaches that the learning design attempts to engage, and the *technologies* as Web 2.0 tools that emphasize social connections and open access.

Supporting faculty to infuse engaging and meaningful content through technologies for instruction and assessment requires further pedagogical research as opposed to examining how traditional teaching transfers to the online environment (Bailey, Hendricks, & Applewhite, 2015; Kumar & Vigil, 2011). Understanding faculty attitudes toward emerging technology and its pedagogical value to learning design and student success may help to inform the current disconnect between the potential for technology integration and the tensions surrounding its implementation (Bennett et al., 2012).

Philosophical Underpinnings

Social media research includes a number of theories and models related to the socio-psychological behavior of social media users (Ngai, Tao, & Moon, 2015). Ngai et al. (2015) noted that "the first group of adopted theories and models in social media research aims to explain the behavior of human beings at the personal/individual level." (p. 34). The models that formed the basis of this research are the Technology Acceptance Model (TAM) (Davis, Bagozzi, & Warshaw, 1989) and the updated model TAM2 (Venkatesh & Davis, 2000), instruments that were developed based on existing theory and concepts of behavior. Both models have been widely used to measure perceptions of technology acceptance for students and faculty, and recently to investigate technology acceptance when different social media tools have been integrated (Ngai et al., 2015). The Unified Theory of Acceptance and Use of Technology (UTAUT) model (Venkatesh, Morris, Davis, & Davis, 2003) is the most recently developed technology acceptance model and is the unification of eight existing models, including four constructs (performance expectancy, effort expectancy, social factors and facilitating conditions, as well as four moderating variables (age, gender, education and voluntariness of use). While the Unified Theory of Acceptance and Use of Technology (UTAUT) model (Venkatesh, Morris, Davis, & Davis, 2003) is a more recent tool used to measure perceptions of technology acceptance for both students and faculty, the UTAUT is commonly used to research one rather than multiple technologies (Thomas, Singh, & Gaffar, 2013).

The TAM and TAM2 were built upon an early psychological theory of behavior referred to as the Theory of Reasoned Actions (TRA) developed by Ajzen and Fishbein (1980). The TRA posits that the two primary predictors of a person's behavioral intent are perceived ease of use (free of effort) and perceived usefulness (enhance job performance) as defined by Venkatesh and Davis (2000). Perceived ease of use refers to the belief that the technology could be adopted with minimal effort. Perceived usefulness can be defined as the educator's belief that the technology will be advantageous over the current delivery method, and will make a positive impact on student learning. The variables of perceived usefulness and perceived ease of use were both found to have a significant correlation with self-reported current usage and self-predicted future usage (Davis et al., 1989). The TRA is commonly cited in social media research (Hsu & Lin, 2008; Kwon & Wen, 2010).

The Theory of Planned Behavior (Ajzen, 1991) extended the TRA, and has been used in social media research to predict users' behavior from intention to action (Ngai et al., 2015). Ajzen's focus related to the attitudes, perceived behaviors and subjective norms of the user, asserting that perceived behavior control relates to the user's confidence level in performing new behaviors such as adopting innovative technology. In effect, Ajzen expanded on Bandura's earlier social learning theory (learning from others through observation, imitation and motivation) and social cognition (personal cognitive processes and social factors which may shape an individual's learning; 1989, 2001), by considering how behavioral control can moderate influences such as an individual's environment and societal events that can impact a user's confidence and self-efficacy. The TAM2 includes the variable of social influence (Venkatesh & Davis, 2000), suggesting that society and an individual's environment, including the influence of colleagues and superiors, may shape their attitudes and intentions about technology and their decisions related to technology adoption. In the context of this study, social factors may come from other faculty currently using Web 2.0 technologies, or an institutional expectation that faculty will adopt advanced technology to support student learning.

The basis for this case study was the discrepancy between pedagogical beliefs and actual implementation of technology (Shifflet & Weilbacher, 2015). Behavioral theories are

helpful in understanding both the context and interpretation of the data (Corbin & Strauss, 2008) as related to factors that influence individual perceptions and beliefs and may influence intentions and actions for technology adoption. Although the TAM and TAM2 were originally developed as quantitative tools for computer applications in business usage and are commonly used tools in the social sciences when researching information systems, they have been widely used in educational contexts as well (Teo, 2010). Exploring the data within this study through the lens of the TAM2 helped to highlight the attitudes and conditions under which faculty adopt emerging technology.

The Context of the Study from a Personal Perspective

The author is an experienced higher education faculty member and early adopter of technology who continues to be an avid user of technology and innovative teaching practices. Over the past 10 years, she has had the privilege of guiding doctoral students from initial research concept to publication of their doctoral dissertation, along with teaching research and educational technology courses at the doctoral level. One of her goals is to ensure that her doctoral students will become leaders who are proficient with technology and can motivate a new generation of employees who have grown up with the Internet. The idea for this research study evolved when the author joined a newly formed Educational and Instructional Research Center for doctoral and other faculty interested in furthering their scholarly research. Holding a strong belief that knowledge is constructed through social interaction and that such interaction can occur in a variety of ways, she saw the potential for increased use of Web 2.0 technologies at the university, and wanted to know more about the unique challenges that online faculty have implementing innovative technologies within the structure of the online course management system. Prior research has focused on traditional environments and many of those studies took place in K-12 learning environments. The author was also curious to know whether faculty perceived any benefits from integrating formal learning contexts such as the online classroom with informal learning environments, such as those that emphasize the social aspects of the Internet and increase the level of participation. While faculty have embraced the collaborative learning model and online faculty demonstrate constructivist beliefs through their use of discussion, engagement and collaborative knowledge sharing in the online classroom, integration of blogs, wikis, social networking sites, web-based applications and other tools designed for communication, resource sharing and creative expression are notably absent. Believing that online faculty generally agree that technology contributes to student success in part due to the accessibility of web-based learning, the author wanted to further understand how pedagogical beliefs may impact choices of technology and actual implementation.

Methodology

To explore faculty adoption best practices and the impact of pedagogical values on Web 2.0 implementation, an exploratory qualitative case study was identified as the most appropriate methodology. Qualitative methods are appropriate to generate a deep comprehension along with new insights to a problem (Neuman, 2006; Rubin, 2008) and to identify the factors related to how choice of technology and implementation decisions are made. The goal of this study using a qualitative research method and case study design was to investigate the factors that influence faculty to integrate innovative and emerging technologies, and to consider whether pedagogical beliefs influence choice and adoption of technology. The case study design is used when little is known or understood about a certain situation, for investigating how the situation or individual has changed over time (Leedy & Ormrod, 2010), as well as to focus on a contemporary phenomenon where the researcher has little control over

the behavior of the respondents. Specifically, Yin (2014) noted that a case study "investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (p. 13). Context-dependent knowledge is a critical component of the case study as a research design (Flyvbjerg, 2006) and constrains the ability of the researcher to generalize findings to larger populations. Exploratory case studies are used for an investigation of a situation or a social unit where generating an understanding of the meaning of participants' actions and the perspectives that inform their decisions is critical to an interpretation of the data (Maxwell, 2010). While an explanatory approach may have been appropriate in understanding why a discrepancy exists between the potential *for* and implementation *of* Web 2.0 technologies, as critical were the perceived outcomes of the participants. Exploratory case studies may identify research questions or procedures to investigate in future studies (Yin, 2014), thus augmenting the minimal current research on technology integration in online higher education environments. Case studies are increasingly being used as a research tool across the social sciences in discipline specific and professional settings where the researcher seeks to understand complex social behavior (Yin, 2014). In this case, the author included technology specific disciplines as well as other disciplines within the social sciences to understand the context of the participants and to consider the influence that the context and the beliefs of the participants may have on their actions (Maxwell, 2014). The case was the decision-making beliefs and practices of higher education faculty, but critical to the choice of design was the context which included the online classrooms of a large online university. Within this setting the decision-making choices related to advanced technology integration were made and implemented. The case study design allowed the researcher to uncover pedagogical perspectives about student learning that may guide faculty decision making, which is critical to understanding the actions and beliefs that inform their choices of technology and the conditions in which the technology will be implemented. Collecting data from multiple data sources and from diverse disciplines to allow for triangulation was critical to the design.

Research Questions

The goal of the exploratory study was to better understand the potential of technology for increased student success in online settings and the factors that influence faculty to choose certain technological tools or applications. Therefore, the primary research questions guiding the study are:

1. What are the factors that influence faculty to choose emerging technology to support teaching and learning?

2. How does integration of emerging technology into instruction align with the pedagogical values and beliefs of faculty?

Population and Sample

The study's population included experienced online faculty members from a university that offers both online and traditional courses. After submitting a Confidentiality Statement and Application to Conduct Research (a requirement for including faculty or students as participants) to the Committee on Research (COR), I received approval from COR and from the Institutional Review Board (IRB) of the university. I approached several department heads to obtain potential participants who met the criteria of the study. I solicited eighty faculty members through purposive sampling using Survey Monkey

(http://www.surveymonkey.com), a free online survey software and questionnaire tool. A purposeful sample of graduate faculty members in Information Systems and Technology were the first to be identified given their expertise with technology and a desire to capture data that would provide more confidence that the conclusions adequately represent the population under study (Maxwell, 2010). Each faculty member received a letter describing the goals and purpose of the study, criteria for participation, associated risks and benefits of participation, right to voluntarily withdraw, contact information, and the Informed Consent form. When the initial target pool of 15 participants was not met, a second purposeful sample of graduate faculty in Education, specifically those who specialized in educational technology and instructional design was recruited. Faculty members were selected based on experience with technology, teaching online, familiarity with emerging technologies and/or using technology in the classroom. A final source included volunteer graduate and undergraduate faculty in diverse disciplines who were part of a university social networking community, met the selection criteria, and were interested in the study. The resultant sample of fifteen faculty members was an adequate sample size based on research guidelines for common qualitative research designs and techniques (Creswell, 2008). I conducted preliminary data analysis after the first few interviews and questionnaires were received. This process of ongoing data analysis helped me to recognize when data saturation was reached. According to Elo et al. (2014), it is easier to know when data saturation has been achieved when preliminary analysis is begun early, rather than the more common method of collecting all the data and analysing it at once. Leedy and Ormrod (2010) stated that data saturation is reached when the responses of multiple participants become redundant and there are no further unexplained phenomena in the data. Preliminary analysis also helped to clarify methods and identify early characteristics of faculty who were most likely to use advanced technology in the classroom such as familiarity with terminology and applications.

Demographic Data of Participants

Participant ages ranged from 33 years old to 68 plus years old with half of the participants in the 48–67 years age range. Nine of the participants were male and six were female. Six of the participants had been teaching for over 15 years while five had between 11 and 15 years of teaching experience. Two participants had been teaching between 6 and 10 years while two taught for less than five years. The majority of the participants taught at both the graduate and undergraduate level. A variety of disciplines were represented by the participants, including Education (6), Healthcare Administration (4), Business Management (2), Information Systems (2), and Psychology (1). All faculty are required by the institution to have a minimum of five years of work experience in the field in which they are teaching, and most were practitioner faculty working in their field of expertise.

Data Collection

Questionnaire

Data collection included an open-ended two-part questionnaire hosted by Survey Monkey as well as traditional hard-copy and email distribution and completion, semi-structured telephone interviews and researcher journaling. I developed and field tested a two-part instrument to gather demographic data including gender, age, years of teaching, current employment status (adjunct/full-time), level and discipline of courses being taught (graduate/undergraduate), and secondly to gather data based on the constructs of the TAM: perceived usefulness; ease of use and behavioral intent. I was also interested in capturing social

influences felt by faculty which was an added construct in TAM2. The data collection instrument (Appendix B) was designed through the lens of the TAM2 for the purpose of exploring qualitatively the attitudes and conditions under which faculty adopt technology.

Interviews

I conducted faculty interviews using an interview protocol (Appendix A) based on the two research questions, namely the factors related to technology decision making and successful implementation, and whether pedagogical beliefs had an impact on choice of technology. Exploring the subject areas of implementation; the reasons why some faculty chose not to integrate emerging technology, and to collect further information on the faculty members' technological understanding helped to inform the research questions. I conducted a field test with five higher education online faculty prior to data collection to ensure the questions in both the questionnaire and the interview protocol would result in meaningful data that would inform the topic under study. Revisions were made based on responses to the questions in both instruments and overall feedback on timing to complete each instrument was used to adjust the instructions to participants.

Reflective Journal

I used a reflective journal throughout the data collection and analysis phases of the research as a tool to maintain an ongoing record of new insights as I conducted additional interviews and received the questionnaires back from the faculty. While using reflexive processes are common in qualitative research, little is written about how to use the reflective journal. After reviewing Ortlipp's article (2008) on the impact of critical self-reflection in creating transparency in qualitative research, I felt comfortable using this tool to map my insights and how they evolved over time. I used the reflective journal as described by Ortlipp (2008) as a tool for mapping my new understandings of my own role as an interpreter of the data. My entries written throughout the data collection and analysis phases contained a record of insights as they emerged, the data that supported those insights, and how the insights evolved as relationships and context were considered for participants. As questions arose after each interview, I made a note of them in the journal for further consideration once all the data was collected. Responses and any questions from the open-ended questionnaire were similarly noted in the journal. Transcripts were reviewed again as specific patterns and conflicting perspectives emerged from subsequent data analysis. While controlling bias is a concern and keeping a reflective journal is common practice in qualitative research (Etherington, 2004), my use of the reflective journal was not only to corroborate emergent themes but to question patterns within the data and to consider and reflect on reasons for faculty not implementing Web 2.0 technologies that did not fit within my own personal experiences.

For the purposes of this study, I wanted to recruit faculty from disciplines where technology was most likely to be implemented. I received a purposeful sample from two sources, and used the university's social networking community for self-selection of others who met the criteria and were interested in participating in the study. While most of the participants were unknown to me when I began this research, I am a member of the graduate department they were recruited from, and three I knew through online committees and workshops. Ortlipp states that "rather than attempting to control researcher values through method or by bracketing assumptions, the aim is to consciously acknowledge those values" (2008, p. 695). Using self-reflective practice, I was able to examine my own personal beliefs about the use of technology and student success within the framework of my own personal experience. I sought to clarify through reflexive thinking and contemplating decisions I took

with regard to the emerging themes how my own experiences may influence interpretation of the data. I was aware of how my own insights evolved as context and setting was considered for participants. For example, I had assumed that obtaining participants deeply involved in information systems would elicit more information about how innovative technologies were being selected and used in the classroom. As patterns emerged that indicated less rather than more use of social networking and other technologies, I realized how my assumptions had failed to consider the security and confidentiality concerns of IT organizations and experts, many of whom access the online classroom through their own organization's server. My recruitment challenges with this group became clear as I reflected on these and other challenges for my participants.

The relationship between innovative technology use and part-time status of most online faculty was another insight that emerged as a possible reason for certain patterns of responses, as was the fact that online teachers work with students worldwide. Such conflicting patterns seemed to relate less to a willingness to use technology and more to time availability for those working full-time or to consideration for those students overseas who lack reliable Internet access. Reflective journaling helped to clarify and support my interpretations, ensuring that discrepant data and alternative opinions were considered when testing final conclusions. Thus, I was able to ensure consistency of analysis by using the reflective journal to maintain an audit trail of decisions that were made over time, improving the reliability of the findings and conclusions. I was also able to further support reliability of analysis by checking emergent themes against the literature and identifying those outliers that may become the topic of future research.

Data Analysis

The data analysis aligned with the objectives of the qualitative case study which was to explore the phenomena within the context of the study (Yin, 2014) and to ensure methodological alignment with the theoretical positions that led to the research questions (Venkatesh & Davis, 2000). Analysis of the collected data began early and was ongoing. I first prepared transcripts of the interviews and questionnaires, and as questions or discrepancies in the data arose, they were noted in my reflective journal for further consideration once all data had been collected. I then categorized patterns of use under specific web tools and applications, and identified the conditions and purposes for which technology is used by the participants. Broad open codes were inductively generated with the help of QSR International's NVivo 10 software (QSR International Pty Ltd. Version 10, 2012) for organizing and categorizing the data.

I created matrices of the data and used thematic analysis to identify thematic expressions using key words and phrases and key words in context (Onwuegbuzie, Leech, & Collins, 2012; Ryan & Bernard, 2003) which helped to ensure the data remained rooted in participants' own language. Data from my reflective journal were reviewed to consider possible reasons for some of the patterns of responses from the interview transcripts and questionnaires (Glesne, 2010), particularly where questions emerged or new insights lent a clearer understanding of the phenomena. For example, while Information Systems faculty are well versed in emergent technology, they cannot integrate it in their classes where security issues and firewalls may prohibit social networking tools. The reflective journal provided corroborating evidence based on ongoing reflection of participant experiences and by checking emergent themes against the literature to support the objectivity of the findings. This process ensured the results were shaped by the respondents and not researcher motivation or bias, and is in keeping with Ortlipp's findings (2008) that the reflective process helps to bring the unconscious into the conscious and thus open to interpretation by the researcher. Codes were

refined, relabeled as interconnections within the data were sought out, and then merged with the broad themes to develop sub themes through a deconstruction of key words in context (Onwuegbuzie et al., 2012; see Appendix C).

I was able to achieve consistency and reliability of the research through the rigor of data triangulation from multiple sources (questionnaire data, interview responses and reflexive journal entries) as commonalities emerged from a convergence of codes (Shank, 2006) and were identified as categories and subsequently themes. Golafshani (2003) stated that "Engaging multiple methods, such as, observation, interviews and recordings will lead to more valid, reliable and diverse construction of realities" (p. 604). I established confirmability by adopting a reflexive approach supported by the reflective journal and developing an audit trail by condensing field notes to support emerging themes, then connecting concepts and interpretations to existing literature (Lincoln & Guba, 1985). The audit trail may be the most important trustworthiness tool, providing a map for replication of the study (Lincoln & Guba, 1985). I was able to determine when data saturation was reached through methodological triangulation (Denzin, 2012) by extrapolating the meaning from the interviews, and the open-ended questions, observing the point at which no further new information was emerging. The reflective journals supported my ability to ensure the results reflected the perspectives of the participants, and not those of my own personal lens and worldview. By exploring alternative explanations about the potential for technology to impact student success as they surfaced within the reflexive journal entries I was able to identify findings that were not anticipated, but for which alternate explanations were uncovered.

Findings

Four major themes emerged through the selective coding process based on the data analysis of the primary purposes for technology integration from a pedagogical perspective: *Instructional Purpose, Perceived Effectiveness, Pedagogical Challenges and Pedagogical Rewards*. Each theme includes a discussion of key observations and supporting subthemes. Pattern frequencies based on word and phrase repetition and key words in context were analyzed to develop sub-themes. Participants have been coded as P1 through P15 for the purposes of anonymity. A deconstruction of key words in context based on pattern frequency, a framework developed by Onwuegbuzie et al. (2012), appears in Appendix C. According to Maxwell (2010), providing numerical data related to the distribution of statements that determine subthemes can support the findings.

Theme 1: Instructional Purposes for Integrating Technology

When faculty were asked whether they were using Web 2.0 technologies for teaching, and if so, for what purpose, the majority of the faculty indicated that they were using some form of emerging technology for instructional use while all participants use technological applications built into course management system. Applications included class discussion and exercises, mentoring students, direct instruction through screen sharing, collaborative team assignments, shared research and report development, video projects and assessment techniques.

Collaboration and communication. Collaborating and communicating with students were the most often reported purpose for use, along with being able to share the screen with students for teaching and mentoring. For the purpose of instruction, participants used communications and screensharing tools (Skype, Joinme, Webcams, Slideshare, Screencast) the most, followed by collaboration/shared document creation tools including Wikis, Dropbox, Google docs, online white boards and discussion boards. P5 shared that while she did not feel

confident in her use of technology, she regularly used Skype to communicate with her students, stating, "Sharing my own screen with my students saves time for both of us, and is a great way to provide immediate feedback." P7 stated: "Wikis and Google docs are readily accepted by my students as ways to save time when revising team assignments."

Presentation of course materials and student assessment. Providing course materials and assessing students were the second most commonly cited purposes for technology integration and presentation tools including Prezis, Podcasts and YouTube. P9 asserted that podcasts and YouTube augment the class materials using tools that the students already have available, stating, "Why ask students to purchase additional software when they can just download material from the web." P3 shared her fascination with Prezis: "The Prezi is like a mind map but appeals to younger students and motivates them in a way I was never able to do with mind-mapping exercises." Other applications focused on tools that allowed for video solutions for assessment of students and faculty, along with recorded lectures for anytime, anywhere access. P9 commented: "My students appreciate opportunities to submit assignments using tools other than Word and PowerPoint. Recording in class presentations and then playing them back can be a powerful learning tool for students." P11 shared that for his students in the military, being able to record lectures for access anywhere in the world was critical for student access. Social media tools (Facebook, Linked In, Twitter) were primarily used for building a sense of community and to demonstrate faculty support of social and collaborative learning. P4 stated:

> The only social media tool I use is Facebook. I use it for students to introduce themselves to each other which can end up increasing the level of discussion in the class. Students are naturally curious about their fellow students but once they meet on Facebook, they use the online classroom for discussion.

One participant used a cutting-edge tool called Swivl, a video solution that records and permits assessment of instructor performance and classroom interactions. Other applications such as Jing were cited as tools (along with Swivl) that allowed for screen capture and sharing for the purpose of observation and evaluation of both instructor and student and by providing access to recorded lectures and materials independent of time and place.

Theme 2: Instructional Effectiveness of Implementing Technology

Unique strategies to engage students. Key findings revealed that technology can have a positive impact on student learning by introducing new methods to support a demonstration of knowledge. Participants agreed that technology adds to the effectiveness of the learning process by providing for strategies that could never be recreated by an individual without the use of technology. P14 commented: "All students have had different experiences. Technology is not one size fits all in the classroom." Participants indicated that technology can capture the attention of the student through simulations and sharing, encouraging a greater depth of discussion and further exploration of the key concepts of the curriculum, keeping students engaged and motivated. P10 stated that "technology has forced my students to think outside the box and look for new ways to show what they mean. For example, when a PowerPoint is required by an assignment they ask if a Prezi can be used." P5 stated that her students became much more engaged and animated in the blogs she required for her students, as compared to their posts in the online classroom. "They are much more likely to share their personal experiences in the blog. It also gives me a chance to observe their language skills." Screensharing technologies were cited by participants as being effective ways of mentoring distant students. Providing alternative strategies that can address a variety of learning styles

was stressed by some participants, while introducing new ways to support student learning and demonstrating knowledge are other indicators of the perceived effectiveness of integrating technology in teaching. P6 commented on the ways YouTube can be used to encourage discussion and debate in class, as well as engage younger students who "live" for technology, stating "YouTube helps to supplement my own lectures and the videos are more likely to be remembered." P5 commented on how she uses blogs: "As an instructor, I see the blog as a way to build in constructivist thinking. They are really building knowledge when they collaborate with each other. These skills will serve them well in the future so technology is really important to prepare them for their future careers."

Demonstrate knowledge. Faculty participants working with teachers felt it was important for students to see that knowledge can be demonstrated in different ways and forms so that they will be more willing to differentiate assignments when they are teaching. P1 commented: "Having alternatives to PowerPoint and Word assignments really distinguishes those who are creative thinkers…visual thinkers…it also makes marking assignments less tedious!" Participants stressed the fact that technology saves time and can promote critical thinking and thoughtful debate, particularly because virtual learning feedback is based on skills demonstrated as opposed to peripheral characteristics that may be more evident in the traditional, face-to-face classroom. P10 asserted:

> The critical thinking skills we emphasize so much when students enter the doctoral program are much more obvious when students use different technologies to prepare their assignments. It forces them to get out of their comfort zone and think about not only the goal, but also how they are going to demonstrate mastery of the goal.

P9 noted that because students are more willing to open up when they are in a virtual environment, they are building their communication skills. "We all tend to pre-judge others when we see them. I guess anonymity can go both ways but I think communicating virtually without the visual cues makes for a more stimulating classroom."

Generational issues. Other perspectives that emerged included generational issues related to students who are digital natives and welcome social media tools in the classroom. One participant spoke about the need to better understand her own perspectives on the use of social media as a mentoring tool. P9 stated: "There is a real difference based on whether my students have grown up with technology or not. The digital natives want to use social media and they really get to know each other. I really need to work on my skills because I don't even have a Facebook page!"

Time constraints and linguistic habits. Other factors cited were time constraints and the bad linguistic habits that are formed through social networking tools. One participant admired the tenacity of the digital natives but lamented that personal use of social media and other forms of Web 2.0 technologies introduces shortened forms of the language (omg, lol, etc.) in discussions and even papers. P7 asserted that one of his biggest frustrations was students bringing their "texting lingo" into the online classroom. "I think they pick up these habits and think because the classroom is online, they can just do the same thing there. This makes evaluating the posts even harder."

Theme 3: Pedagogical Challenges

Time intensive to keep up with trends. Over half of the participants found that the time required to learn new technology applications in order to be effective in the classroom was the biggest inhibiter to technology integration. The extensive learning curve for some

software along with knowing what new methods are out there and how effective they would be in the classroom were cited as primary challenges. P12 observed: "I want to use more recent technology because I think my students would be more engaged….but it takes a long time to not just learn it but to use it effectively in the classroom." P4 stated: "If the vendor provides a free trial, I am much more likely to experiment with the software. Free trials are also good for students. I don't want my students to buy something for my course and then not use it again." P7 noted that

> If the software is fast and easy to learn, I am more likely to have the patience to learn to use it. My students are all working adults – I want them to incorporate technology as well, but I respect their time and try to look for software that is user friendly and that they can learn and use quickly.

Commitment to using technology. Along with the need for technology to be fast and easy to learn, other subthemes that emerged included the need to be committed to technology, as well as additional technical support for technology that didn't work. P3 stated: "I know that the university provides professional development workshops and webinars to help us learn new technology…but you have to have the time to participate in them. We are all working professionals – where do you fit it all in?" P3 commented: "The university doesn't really support technology other than the online classroom, so that means we have to rely on our own knowledge or on the vendor. It's not like the traditional classroom where you have "the techie" coming to your classroom to help you and your students when something doesn't work." P6 observed:

> As the university moves to a more seamless platform for our classes, I think it will be easier to use social media and other resources. In the meantime, students can still access the classroom through their phones and tablets. Sometimes it is a little cumbersome, but at least they have that flexibility.

Ease of use. As important is that the instructor needs to be skilled and committed to the technology; otherwise, it is unlikely that student learning will improve. P10 noted:

> I can learn a new piece of software fairly quickly, but that doesn't mean I can immediately begin using it in my classes. P6 commented: "There has to be a process…I want to know that I'm not just using a new tool because it is expected of me, but because it will help my students learn.

Of those who found technology easy to use, technology that didn't work (web browsers or web pages that would not open) was the biggest frustration for instructors and students alike. P6 stated:

> Because most faculty work from home, there is no guarantee that we are all going to have the same level of access. The same goes for our students, especially those who might live in rural areas. Web pages that won't open are just plain frustrating….

Streaming technologies were cited as challenging to integrate in the curriculum due to limited bandwidth in different parts of the globe, as well as on sea or land. P7 commented: "I like to use podcasts and videos. Podcasts are a great teaching tool. The problem occurs when students' capacity to stream these technologies is limited. I like to give alternate assignment choices so

students can select what works for them." One participant referenced the institutional paradigm of not thinking outside the box when considering new curriculum and processes, citing the desire to have globally prepared students without the support needed to make it happen.

Social influences. When asked about collegial or instructional pressure to use technology, respondents did not find instances of either. Participants tended to use their colleagues as sounding boards for potential uses of new technology, and found outside professional networks were the best method of learning about the potential of new technology. Some participants appreciated the professional development workshops sponsored by the university as a way to maintain currency but felt no institutional pressure to adopt the technology beyond the requirements for delivering courses through the online course management system. The variable of social influence included in the TAM2 (Venkatesh & Davis, 2000) was not a factor to participants in this study when making decisions related to implementation of technology.

Learning style. The importance of learning style was stressed, suggesting that students have different preferences and needs and technology should not be considered a "magic bullet" for engaging all students. P1 observed: "I just don't think that technology is the magic bullet that is going to transform our classes. They say that technology has transformed the workplace but when employers are asked about critical skills, they mostly talk about communication and collaboration skills." The technical proficiency of students was cited by two participants, as well as the importance of being able to use the tools in their own personal and professional lives. P14 commented:

> Change is difficult for students as well as for us. Not everyone feels proficient using technology and prefer to use technologies they are comfortable with…MS Word and PowerPoint for example. I want my students to be prepared for their future careers and experiment with different tools. I am not sure what the answer is….

Students who thrive in traditional face-to-face environments may require more personal attention than can be provided online, regardless of whether Web 2.0 technology is used as a tool for engagement and collaboration.

Access. Another important finding mentioned by participants was student access when using Web 2.0 technologies, including time zone issues. One instructor who was proficient with technology did not integrate emerging technology based on the fact that his students were based worldwide and access needs vary based on location. He stated:

> I have a lot of military students who are based worldwide. They have so many restrictions on technology access, not to mention time, that I don't want to stress them out even more by using technology beyond the online classroom.

This is an issue faced by institutions who offer courses to students around the globe.

Another access issue faced by institutions whose students include government and corporate employees is that firewalls and security concerns do not permit students to access class materials at work and may limit personal use of Web 2.0 technologies as well. P8 noted:

> I work for a large security firm in Washington DC. My students are mostly IT specialists and work in similar companies. Firewall and other security issues just don't allow them to be able to use unsupported technologies while at work.

As important to participants were privacy concerns (their own as well as their students) when using social media. P2 stated:

> I don't have a Facebook account, and do not use social media. It's not that I think there isn't a place for these tools, but I am a very private person and just don't feel comfortable posting in these forums. If I feel this way myself, I likely have students with similar concerns.

Theme 4: Pedagogical Rewards

Making a difference. When asked what rewards participants enjoyed from their role as an instructor, responses were varied and patterns of responses appeared to align with years of teaching. Of those instructors responding to this question who had been teaching for more than 15 years, or those with between 11 – 15 years of experience, making a difference in the lives of the students and appreciating the opportunity given to instructors for continuous learning was most often cited. P10 cited:

> For me, the most rewarding part of teaching is knowing that I have contributed to my student's ability to succeed in their careers. Making a difference just feels good. When I can help a mature student…one who might be preparing for a second career…that can be even more rewarding. They are so appreciative but I am always telling them it is you who did the work, not me.

Opportunities for sharing. Amongst those participants who felt rewarded when students sought to improve themselves, some shared perceived differences in student motivation. P6 commented: "Some students just want to get the degree so they can move to another pay level. The most rewarding students are those who want to improve themselves on a more personal and professional basis." Being able to share technological innovation with students was cited as an incredible opportunity for faculty. P9 stated:

> I think we have an opportunity to share innovative practices with students. I teach education courses so my students will need to use technology whether they go into the classroom or into an administrative position. I believe we have a responsibility to show them how technology can be successfully integrated into their own classes. Sharing my own screen with them makes it so much easier and gives me immediate satisfaction that I have been able to help my student now and in the future.

Intellectual engagement and lifelong learning. On a more personal level, instructors cited maintaining intellectual engagement and curiosity followed by the significance of interaction with others. Virtual learning can be lonely for both instructors and students, and the collaborative nature of the online classroom was noted as being a way to remain current and to continue learning. P6 stated:

> My students force me to remain engaged and current. I use the web constantly to make sure that I am up to date. Working from home can be insular for me and my students. The interaction keeps me on my toes…sometimes I think I learn as much from them as they learn from me.

Of those with under five years of experience teaching, challenging students' concepts and being rewarded when the "light bulb came on" was an important finding. Understanding the need for students to use technology in their lives and the implications it may have for their future career was also cited as a motivating factor by less senior faculty. "As an employer and an instructor, I know how important it is to be comfortable with technology. It motivates me to spend more time introducing my students to different technologies because I know their future will rely on it," commented P3.

Interpretation and Discussion

Technology Implementation

The findings of this study were consistent with research that has been done within traditional learning contexts, suggesting that the goal for emerging technology is to provide for the use of participatory pedagogies within a personalized learning environment, providing for increased interaction and engagement with students that cannot be accomplished with the online course management system alone (Brady, Holcomb, & Smith, 2010; Daher & Lazarevic, 2014)). These findings align with constructivist principles of building knowledge through active learning and reflection upon experience, often within the sociocultural context of the learning environment (Vygotsky, 1978). Constructivist-based instructional activities such as collaborative discourse are considered to be an effective method of supporting students as they expand, alter, clarify, elaborate and manipulate content to create new meanings. By questioning and restating experiences and ideas, the knowledge spiral grows and students learn as new knowledge is constructed. Adult learning theorists have served to confirm the importance of adults creating knowledge from self-directed, learner-centered activities that draw from life experiences (Gorham, 1985; Knowles, 1978). According to Kemp et al. (2014), teacher-student communication is going through a significant shift that reflects "the culture of a new generation of students, as well as the rapid spread and advancement of communication technology." (p. 19) The authors also supported the findings of this study in that choice of communication method is often based on familiarity, ease of use and the convenience of the tools and applications (Kemp et al., 2014), one of the two predictors of behavioral intent according to the TRA (Venkatesh & Davis, 2000). The findings align with Ajjan and Hartshorne's study (2008) which found that faculty recognize the potential emerging technology tools have to increase interaction and improve student learning, despite ongoing instructional and technical challenges.

The findings do not support the finding from the same study that few faculty have the behavioral intention or readiness to actually adopt new technologies. In particular, many participants selected specific technological tools to support a particular instructional activity within their program where they believed that learning would be improved over restricting delivery to the course management system alone. This finding aligned with the second predictor of the TRA (Venkatesh & Davis, 2000), namely usefulness of the tool. As well, over half the participants cited the time intensive nature of learning new tools and the challenges of keeping up with technology. Thus, the primary predictors of a person's behavioral intent (ease of use and usefulness) are supported by the findings in higher education online contexts as well as traditional contexts.

Employment status. A more pressing reason for the lack of integration in this study may reflect the adjunct status of a greater number of participants. Most faculty are professionals in the area of instruction and serve in an adjunct role, leaving less time for augmenting web-based tools beyond what is offered by the university. Sub-themes emphasizing "working professional," "too busy," and "no time to attend workshops" all supported this perceived

challenge to technology integration, as did the emphasis on the need for the software to be fast and easy to learn for faculty and students. Further research done with full-time faculty may provide more diverse perspectives on this issue, but the challenge for online institutions seeking greater technological innovation is their reliance on adjunct faculty. While Mueller, Mandernach, and Sanderson (2013) found that student outcomes were favorable when students were taught by full-time faculty, they caution that their study design may have masked the results. Full-time faculty who participated in the study taught in physical proximity and had daily access to a community of scholars. The participants in this study reflect a more diverse population of faculty who represent multiple professional roles, yet the majority had been teaching for 11 or more years, and reflected a desire to expand learning opportunities for students as well as to make a difference in the students' academic and professional advancement. Successful adjunct development can be supported through opportunities for increased professional development and the involvement of full-time faculty (Kelly, 2013).

Curriculum choices. Faculty participants reported designing learning experiences for their students around the needs that are most critical to learning online, specifically those that address the isolation and lack of collaboration with others, factors not as important to traditional contexts. Communicating with students using virtual face to face technology made the online learning experience more personal by addressing issues important to online learning such as social presence, social cues, body language and interpersonal interaction (Brady, Holcomb, & Smith, 2010). This finding is supported by Daher and Lazarevic (2014) who found a statistical significance for student engagement and motivation when Web 2.0 tools were used for instruction.

Technology and Cognition

Participants also recognized the need to meet the expectations of technology savvy students for whom FaceTime has taken the place of the telephone, as well as those of employers who commonly cite communications skills within the top three requirements for job seekers (Forbes, 2014). The findings of this study suggest that faculty view technology that allows for an increased level of experiential learning as having the potential to impact student achievement. This finding aligns with social cognitive learning theory (Bandura, 1989, 2001) and is supported by the research of Kim and Reeves (2007) who found that the use of technologies appears to extend mental effort and capability when used as cognitive tools. Web 2.0 technologies give diverse learners an opportunity to communicate outside the structure of forums in a learning management system. However, according to an extensive review of the literature on persistence of online students (Hart, 2012), factors that enhance persistence and student success remain elusive in online learning contexts.

Diversity of applications. Faculty beliefs surrounding collaborative work and the use of sharable storage options suggest that individual and group accountability as well as a sense of commitment and trust in others are all potential benefits that can be achieved within such student-structured learning activities (Michaelsen, Knight, & Fink, 2002). The dynamics of working effectively within small groups support interpersonal skills that can be demonstrated in the online classroom as well as in the workplace. Meaningful team learning experiences were cited by participants as important for students and can be facilitated through collaborative technologies.

Participants involved in teacher education emphasized the importance of students understanding multiple ways of being able to demonstrate learning for the benefit of their own students, a strategy supported by Kolb's (1985) experiential learning theory. Focusing on improving the delivery of curriculum and assessment of learning outcomes through authentic learning tools indicates that faculty support the belief that technology can play an important

role in making teaching and learning more effective for students. However, considering the audience before making demands on the students was viewed as an important part of choosing the right tool. Meaningful tools for faculty members in education may not be appropriate or carry little meaning for IT students whose focus is on integration and development of information systems.

Pedagogical challenges. Participants experienced pedagogical challenges despite the fact that most were committed to implementing new strategies. Findings aligned with the literature that found faculty struggling to find strategies to adjust instruction using technology to positively impact student learning (Bennett et al., 2012; Boskz, 2012; Harris, Mishra, & Koehler, 2009). This perspective was closely linked to the lack of time available to explore technology options rather than an unwillingness to use technology. For example, participants in education and in healthcare were as concerned about demonstrating multiple learning paths as they were with the chosen technology. Participants felt time was better spent implementing those technologies that were easy to learn, less intrusive and were not viewed as peripheral to the goal of student learning (e.g., social networks). Unreliable technology for some applications, along with privacy and security concerns were cited as reasons for not pursuing further implementation of Web 2.0 technology. Such concerns most often surfaced in the disciplines of information systems and in business, and less in the social sciences. This may be an indicator of purposeful choice in selecting only those technologies that have the greatest impact on student engagement and the least potential for compromising privacy.

Best practices. Despite research suggesting that faculty are not convinced of the pedagogical value of emerging technology (Chen, 2008), certain tools have found their way into best practices for online learning. Technology most commonly cited by participants are those that have a foundation in learning theory; that are user friendly and provide free trials; that engage students in collaborative and inquiry-based learning, and where faculty have experienced an increase in student engagement suggesting a reduction in the feeling of isolation. It was apparent from the sample selected for this study that there are pockets of innovation, and faculty who are deeply involved and excited about technology integration and the potential it holds for students. There are also faculty who are closing in on retirement, but based on the results of this study, some are as actively involved as those who are just beginning their teaching career. While further research will be needed to assess the level of participant use based on age, years of experience, graduate or undergraduate or discipline represented, the research outcomes indicate that faculty see themselves in a leadership role with a responsibility to provide students with a learning experience that includes technology. This perception was evident regardless of the employment status of the faculty member, but spoke to an increased need for adjunct faculty to have not only professional development opportunities, but also opportunities to become involved with the community of full-time faculty.

Conclusion

This study provides new perspectives on technology integration within the context of higher education online environments where the amount of instructional control and scaffolding is more diverse and varied than in traditional learning environments. Prior research has focused on the effectiveness of the technology or application as opposed to whether faculty perceive advanced technologies to be effective teaching and learning tools from a pedagogical perspective (Conole & Alevizou, 2010; Veletsianos, 2010). As opposed to a discipline specific context as reflected in prior research (Veletsianos, 2010), this study contributed increased understandings within a broader higher education context representing multiple disciplines. While the learning curve for integrating Web 2.0 technologies is a common challenge for all faculty, the results demonstrate that when the technology reflects a foundation built upon

learning theory through the use of technology that supports shared knowledge, increased interaction and collaborative learning, faculty are more likely to choose those technologies to implement in their classes. While there is evidence that online faculty perceive that technology can have a positive effect on reducing isolation and on student achievement, longitudinal research will be needed to better understand the role that technology can play in student success. The perceptions of usefulness and effectiveness of emerging technology as described in prior research were confirmed by this study as factors that impact technology acceptance. The dynamic of learning theory provides a pedagogical foundation for technology integration by extending these understandings and is significant to the field. It serves to demonstrate how pedagogical values can influence acceptance of innovative technology and could lead to more effective policies surrounding technology choice and professional development needed for effective implementation. The perceptions of the intrusiveness of certain tools (social media) are another finding that may spark increased discussion about program specific technology use and highlight the need for a more common vision of institution-wide technology integration. The findings clearly demonstrated that online faculty are keen to find new ways to engage and to challenge their students. Future evidence-based research on curricular technological innovation over a longer term will be vital to illuminate the factors that have the greatest impact for student learning and to reduce the gap between the potential that technology holds and its integration by faculty.

Limitations of the Study

It is important to acknowledge the limitations of this study. The data collection instruments were designed through the lens of the TAM2 (a structured questionnaire primarily used to collect quantitative data) for the purpose of exploring qualitatively the attitudes and conditions under which faculty adopt technology. To support the relevance and clarity of the open-ended questions for both the survey and the interview protocol, and to mitigate any methodological tensions, I conducted a field test. Faculty reflective of the study population and experienced technology users were chosen to participate in the field test. The purpose of the field test in qualitative studies is to refine and improve the questions being asked to ensure that they will provide the information needed to inform the problem and purpose of the study. However, the potential existed for misunderstanding by participants unfamiliar with some of the terminology used related to Web 2.0 tools. Technology expertise does not necessarily provide clarity to all terms given the rapid growth of this sector. This limitation led me to conduct the interview prior to the survey in order to clarify any technology terms and applications used while speaking with the participants. A low response rate, as well as the fact that the responses were limited by the faculty who participated in the study suggests that findings must be interpreted with caution. My own prolonged experience and deep understanding of the setting of my research, as well as with technology integration, helped to mitigate this limitation. It might be argued in retrospect that student involvement in the exploratory case study, and an examination of the relationship between the perspectives of both faculty and students, would have had an impact on the interpretation of the outcomes. This remains as an area for future research. It was rewarding for me to hear the most commonly cited reward by faculty was to make a difference in the lives and careers of their students. While a longitudinal study would be required to demonstrate how technology integration may align with student success, the findings of this study could support a clearer understanding of how to decrease the gap between the potential for innovative practices using technology and the actual experiences of higher education online faculty.

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Appendix A: Interview Protocol

I.   The following questions will serve to generate knowledge on faculty experiences with emerging technology; to identify the technology tools being used; to describe the subject areas of implementation and perceived effectiveness, and to explore individual inhibiters and pedagogical concerns related to the integration of emerging technology. Data collected will address the following research questions:

RQ1. What are the factors that influence faculty to choose emerging technology to support teaching and learning?

RQ2. How does integration of emerging technology into instruction align with the pedagogical values and beliefs of faculty?

1. What is your academic/professional background? What are your areas of research interest? Teaching interest?

2. Which subject areas do you commonly teach?
    o   Business/Management
    o   Education
    o   Health
    o   Information Systems
    o   Other

3. How technically proficient do you consider yourself to be?
    o   Very proficient
    o   Some proficiency in certain technologies
    o   Not very proficient

4. In what areas do you currently use technology?
    o   Administrative
    o   Pedagogical
    o   Both

5. Do you regularly seek out, explore, and learn about new technologies? If you do, what motivates you to do so?

6. E-learning environments require students to be self-directed, resourceful independent learners. Do you believe technology can support these learner-centered characteristics? Describe. If not, do you think there is a potential for technology to have a negative impact on student learning? If so, in what way?

7. Considering the most commonly used Web 2.0 technologies (blogs, wikis, cloud computing, Facebook or other social networks, podcasts, Skype, Twitter), which of these would you consider for personal use only?

8. Which of the above technologies would you use for instructional use in the classroom? In what way would you use them? How do these technologies meet your students' needs?

9. Are there any tools or strategies that you have deliberately decided not to use? Why?

10. What sorts of instructional strategies would you use on a regular basis where you would integrate technology? (for example, asking your students to participate in a blog or create a wiki).

11. What are some of the challenges and issues you commonly face in using technology for teaching and learning, or that you perceive you would face if you are not using technology? Consider how you have addressed and/or overcome these challenges or issues? Would you change how you might address future challenges?

12. How often do you discuss instructional strategies or implementation issues for technology with colleagues or others outside of the discipline? Do you feel comfortable discussing technology implementation with your colleagues? Pressured by your colleagues? Pressured by your students?

13. Can you describe an effective technology application in a course that you have taught, or if you are not using technology, one that a colleague is using? What factors led you to feel that it was effective? Do you believe that technology if used effectively can provoke thoughtful debate and critical thinking?

14. What skills and perceptions do you hope students take away from your classes? Do you believe that your use of technology in instruction has had (or could have) an impact on these outcomes?

15. What rewards do you enjoy (personally, with colleagues, management or student) from your role as an instructor? How would you describe these rewards?

Appendix B: Questionnaire Instrument

    I.   The following information will be collected electronically to describe the faculty who are completing the questionnaire.

1. Please select your gender
   - o   Male
   - o   Female
2. Please select your age range
   - o   22-32
   - o   33-48
   - o   49-67
   - o   68 and older
3. Please select the number of years you have been teaching in higher education
   - o   Under 1
   - o   1-5
   - o   6-10
   - o   11-15
   - o   Over 15
4. Please select your current employment status
   - o   Adjunct
   - o   Full-time
   - o   Department/discipline Chair
   - o   Full-time - research
   - o   Other
5. Do you teach undergraduate or graduate courses?
   - o   Undergraduate
   - o   Graduate
   - o   Both

Faculty Perceptions

    II.   The following open-ended questions will serve to collect data related to the attitudes of faculty and the conditions under which faculty adopt emerging technology. Data collected will address the primary research questions:

RQ 1: What are the factors that influence faculty to choose emerging technology to support teaching and learning?

RQ 2: How does integration of emerging technology into instruction align with the pedagogical values and beliefs of faculty?
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6. Are you currently using some form of Web 2.0 technologies for teaching? If so, please indicate the applications (e.g. class exercises, assignments, assessment techniques or other).

7. If you are using technology in the classroom, what was the primary reason for doing so?

8. If you are using technology in the classroom, what experiences shaped your philosophy/ approach to using technology? Has your experience integrating technology into the curriculum been successful? Can you name some of your successful applications?

9. If you have not yet begun to use any Web 2.0 technologies, when do you intend to do so in the future?

10. What prevented you from integrating technology to this point in time? What would encourage or inspire you to move forward with technology integration?

11. Do you find technology easy to use and to become skillful to use effectively? What are the greatest challenges you have faced with regard to using technology?

12 a). If you had access to instructional design support and instructional advice on how to integrate Web 2.0 technologies, how would this change, if at all, your integration of technology in your courses?

12 b). If you had access to a series of readily adaptable course specific modules using technology, how would this change, if at all, your integration of Web 2.0 technologies in your courses?

13. Do you believe that technology can or has improved your performance or effectiveness in the classroom? Describe.

14. Do you believe that technology can have a positive impact on student learning? If so, in what way?

15. Are you concerned about class performance and retention in your classes? If so, does this impact your willingness to explore new technology?

16. Do you believe there is a deeper learning or greater interest in the course content on the part of students if technology is used? Describe.

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Appendix C: Deconstruction of Key Words in Context to Develop Sub-Themes

Data Collection Tool	Categories	Common Words/Phrases
Interviews	Instructional purpose	"Naturally curious" "Student assessment" "Learning activities" "Save time" "Use the tools they already have" "Collaborative nature of technology" "Motivation" "Learning activities"
	Instructional effectiveness	"Not one size fits all" "Learner-centered characteristics" "Thoughtful debate" "Critical thinking" "Evaluation of performance" "Future career requirements" "No pre-judgments and no visual cues"
	Pedagogical challenges	"Technology must be fast, easy" "Free trials of software" "Change is difficult" "Faculty too busy" "Working professionals" "No time for workshops and meetings" "Lack of access" "Security and privacy restrictions" "Getting stuck in institutional box"
	Pedagogical rewards	"Sense of appreciation" "Making a difference" "Intellectual engagement" "Continuous learning" "Challenging students' concepts"
Questionnaire	Instructional purpose	"Different learning styles" "Demonstrate knowledge" "Augments content able to share" "Convenience" "Active, authentic learning activities"
	Instructional effectiveness	"Learning opportunities for students" "Engaging students increases interest" "Enrich learning environment" "Clarity of concepts" "Better ways to communicate" "Increase participation" "Increased discussion"
	Pedagogical challenges	"Time constraints" "Access/security constraints" "Student proficiency with technology" "Hand holding" "Technology hard to learn" "Knowing what is out there" "Don't talk to colleagues regularly"

Framework adapted from Keywords-in-Context (as described in Onwuegbuzie, Leech, & Collins, 2012). Retrieved from http://nsuworks.nova.edu/tqr/vol17/iss28/2

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