

Examining the Digital Professor's Use of Technology and the Required Support

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This study explored faculty perceptions on the challenges and opportunities to engage and support digital natives, the new wave of students to include individuals who are now pursuing post-secondary education at colleges and universities across the country. The study also examined faculty perspectives on the kinds of support systems that they believe are most important to facilitate meaningful learning experiences in the classroom at a Southeastern University in the United States. Results indicate that institutions must have an enabling environment to help with greater integration and use of digital technology on campus. The data also showed there is need for strong operational support and tailored coaching to help faculty achieve desired learning outcomes in their assigned courses. Finally, the study found that a focus should be placed on creating a sense of a learning community among faculty and their peers to achieve the goal of sustained adoption and use of digital technology within a university.

Introduction

At present, faculty members at colleges and universities across the country face the major challenge of finding ways in which to engage, motivate, and coach today's learners inside and outside the classroom (Knepp, 2012; Rutledge, Crawford, Ford & Rausch, 2018). These students, often referred to as digital natives are said to be technologically social and always connected (Coleman, 2011; Howe & Strauss, 2000; Negron, 2017; Seemiller & Grace, 2016). This is because these digital natives grew up using a wide array of information and computing technology (ICT) systems and tools in all aspects of their lives (Toothaker & Taliaferro, 2017). Digital natives are known to be comfortable with smart phones, social media, tablet PCs, game boxes, and digital readers. As a result, academic institutions across the country now seek to offer a variety of training and support services to strengthen faculty's skills and capability for using or integrating digital technologies in teaching and learning to better support the generations of students on campus who are known as digital natives.

According to Bowen and Watson (2017), prior to the broad acceptance and use of the Internet, faculty members were provided very little training and support in the effective use of tools and technology in the classroom. At present, however, faculty members, and most specifically those who teach online, are offered the training and support required to create active and hands-on learning experiences with the use of modern technology (Kopcha, 2010). Yet, research shows that the successful integration of technology in instruction depends on many factors. At the top of the list of those factors is instructors' perceptions of the benefits of technology to help engage learners in classroom activities (Dougherty, 2015; Johnson, 2019). Therefore, as the use of technology in education has become more widespread, training and professional development of faculty must take center stage (Lawless & Pellegrino, 2007).

Scholars and researchers, such as Allen and Seaman (2013) and Reborá (2016), have noted that many faculty members are not yet embracing the idea of increasing the use of modern digital tools and technologies in teaching and instruction. According to Purcell (2014), many instructors currently use computers and mobile devices mainly to conduct online searches related to fact-checking. Reborá (2016) and Bowen and Watson (2019) specifically argue that ICT tools are often used on basic activities such as drill and review and therefore can actually hinder meaningful learning in the classroom.

Some faculty at higher education institutions are often resistant to change. Even so, as Bowen and Watson (2017) have argued, there should be clear and valid reasons for integrating new technologies or instructional practices in the classroom. In addition, research shows that sound pedagogy and clear instructional approaches are essential and necessary conditions to soliciting students' engagement and participation in the learning process (Chickering & Gamson, 1991; Gagné, 1985; Grasha, 1996). Therefore, faculty culture, as well as the level of support offered at their institutions, must be taken into consideration to create an effective, enabling, and nurturing learning environment for digital natives who are now studying at colleges and universities across the country.

In the next sections of the paper, we highlight the background and the level of technology use by digital natives. We will also discuss the needs and objectives for the revitalization of the professional development and training of faculty in higher education while exploring the impact of academic culture on adoption of innovations and use of appropriate pedagogy to fully engage digital natives in the learning process and the higher education classroom. We then present findings from the study and, most specifically, highlight faculty's

perceptions on the kinds and types of support that are most beneficial to them with regards to integrating and using digital technologies in the classroom.

Literature Review

Digital Natives and Academia

The overwhelming majority of students on today's campus, known as Gen Y'ers and Z'ers, have great facility with many digital tools and applications (Negron, 2017; Seemiller & Grace, 2017). Collectively known as digital natives, these students grew up having unlimited access to the Internet and computing and information applications (Allen, Allen, Karl & White, 2015; Cilliers, 2017; Rothman, 2016; Seemiller & Grace, 2016). Digital natives use a wide variety of information and computing technologies, such as smart phones, Social Media, tablet PCs, connected video game boxes etc. in practically all aspects of their lives at an early age (Burgess-Wilkerson, Hamilton, Garrison & Robbins, 2018). Digital natives are thus very accustomed to interacting with technology and doing multiple things such as communicating with peers, searching for information, and using multimedia simultaneously (Seemiller & Grace, 2017). Gen Y'ers and Z'ers who are termed digital natives began using iPhones at an early age and are known to prefer texting instead of using email (Venter, Carin & Myburgh, 2018). Therefore, the pedagogical implication for that generation of students involves ways in which to help them stay engaged and connected with instructional activities and learning experiences that occur inside or outside the classroom whether face-to-face or online (Tanaid & Wright, 2019).

Digital Natives and Competency with Academic Technology

In the last few years there has been a strong and vigorous debate concerning whether the constant use of and dependence on social media, messaging, Internet, and similar communications devices by digital natives can translate to proper and effective use of technology in academia (Margaryan, Littlejohn & Vojt, 2011; Prensky, 2001; Rothman, 2016). While some researchers accept that digital natives have great facility with technology in general, others argue that they exhibit some challenges with key academic tools and applications that are widely used in the academic setting. For instance, Anderson (2018) and Twenge (2017) offer that, despite greater use and familiarity with technology, digital natives often lack strong learning technology and information management skills. Doucette (2018) notes, "[Gen Y'ers and Z'ers] may be tech wizards in some areas, [yet] many [of

them] lack the digital literacy skills to be conscientious, responsible media consumers and members of the professional arenas they'll soon be joining." Indeed, while digital may be fluent with technologies and at ease with social media, according to the literature, this does not mean that they have the knowledge and the skills to be self-directed learners. Moreover, recent research argues that there is a need to avoid "myths that perpetuate unfounded generalizations about cohorts... and [that] minimize the unique needs of individuals" (Jauregui, Watsjold, Welsh, Ilgen & Robins, 2020).

New Approaches to Engage Today's Learners Still Needed

Given some of the unique profiles and characteristics of Gen Y'ers and Z'ers or the digital natives, there is a need for higher education institutions to adjust instructional support and delivery practices to meet the needs and requirements of these students (Pološki Vokić & Aleksić, 2020). As important, faculty need to be adequately trained and supported so that they can be prepared to help all of their students to fully engage in learning activities inside and outside the classroom (Davis, 2011). According to Keengwe, Kidd, and Kyei-Blankson (2009), digital natives are thought to view, consume, and process information differently than the preceding generations to include Millennials and Baby Boomers. As offered by Moran (2016), students on campus today exercise greater independence and autonomy in their learning preferences. However, other researchers do not support the view that the new generation on campus represents a different type of learner despite their constant, and almost ubiquitous, use of technology tools and other gizmos (Bowen & Watson, 2017; Fink, 2013).

While there are different ideas and perspectives on how the digital natives actually learn, it is nonetheless important for higher education to continue to integrate and use modern ICT tools and applications in the classroom (Hannay & Fretwell, 2011; Toothaker & Taliaferro, 2017). This is because there is a need to engage and motivate the new wave of students in higher education who bring a very different approach to information consumption and use to academia. In addition, given the acknowledged importance of fluency with technology for the 21st century workforce, faculty must have the required skills and capacity to create learning experiences that will help prepare the Digital Natives for their post-collegiate lives (Malat, 2016).

Faculty Preparation and Readiness for Digital Natives

Faculty members face many challenges in trying to promote student involvement and active engagement in

the learning process, particularly in online courses (Granberg, 2010). In a recent survey conducted by the Educause Center for Analysis and Research (ECAR), students found faculty technology skills to be adequate (Dalstrom, 2015; Pomerantz & Brooks, 2017). Yet, the survey also offers that students' activities frequently excluded problem-solving and critical thinking tasks (Raths, 2017). Moreover, Levin and Wadmany (2008) found that faculty uses of technologies mainly involved managing and organizing class instruction as opposed to placing emphasis on learning and outcomes. Other researchers have found that many faculty members use technologies for online document sharing tools that foster student collaboration (Ajjan & Hartshorne, 2008). Ajjan and Hartshorne (2008) also found that faculty believe that technology use in their instruction not only improved student learning, but that the quality of their teaching also improved. The good news is that as learning technology continues to take center-stage in all areas in the higher education environment, past resistance to technology among faculty is giving way to growing acceptance of integrating technology (Dysart & Weckerle, 2015). In addition, many faculty members are becoming more aware of the opportunities technologies can afford in eliciting student behaviors that foster deeper learning (Adams Becker et al., 2017; Granberg, 2010). Nonetheless, faculty need to have the appropriate training to use these technologies. Research shows that although faculty are committed to using technology in their instruction, the learning curve can be high. Moreover, most modern learning technologies require time to master. Thus, many faculty members find it beneficial to rely on their peers from their discipline to learn new technologies (Griffin-Sobel et al., 2010; Schlager & Fusco, 2003).

Faculty Adoption and Use of Technology

In his seminal work on adoption and use of technology, Rogers (1983) offers that adoption and use of new technology tend to follow a standard approach beginning with innovators, followed immediately by early adopters, then early majority and late majority, and finally laggards. Rogers' model has generated considerable debates over the years. Critics of the model have argued that it presents an overly simplified representation of a complex reality and carries universalistic assumptions about human behavior (Liao, Palvia & Chen, 2009). Further, Rogers' use of labels such as "innovators" for groups who readily adopt new technologies indicate that some groups have a preference for novelty items and new trends (Lundblad, 2003). Despite the criticisms, the model provides a useful means to gauge potential reasons for the lack of adoption of new technology amongst specific groups of people (Sahin, 2006). Moreover, faculty appear to especially

appreciate opportunities to observe the work of peers and to obtain feedback on their technology integration efforts (Koehler & Mishra, 2005; Schlager & Fusco, 2003). Thus, peer coaching is instrumental for offering sustained, ongoing assistance to faculty throughout their development from novice to experts (Mulholland & Wallace, 2005; White, Howell, Kunz & Nugent, 2015). Sufficient evidence exists to support that it can be very productive for the novice instructor to observe the practices of a more accomplished colleague (Gibbons & Cobb, 2016). Research by Hansman and McAtee (2014) shows that faculty who have worked with coaches demonstrate improved teaching as they employ more active engagement strategies, higher order questions, and differentiation in selection of instructional material and skills for their students. Nevertheless, in spite of that, faculty face challenges in trying to foster active engagement and promote greater student involvement in the learning process (Granberg, 2010).

The Modern Classroom and Faculty Training and Development

The integration and use of advanced learning and instructional technologies are key aspects of the modern classroom teaching and learning environment. For example, most schools nowadays have tools and applications that can be used by faculty to help students connect, communicate, share learning contents, and collaborate with each other in a much multifaceted fashion than they were able to do in the past (Davis, 2011; Dede, 2005). McKenna, Avery and Schuchardt (2000) highlight many advantages for integrating technology into instruction such as providing a new way of thinking and communicating for both students and professors, expanding the emphasis on problem-solving, and enabling the learning of higher-level skills. These include embedding learning in relevant contexts, critical thinking, goal-setting, planning and self-monitoring.

However, the traditional approach to training faculty often falls short with regard to helping them apply the available tools and applications in teaching and learning correctly (Koehler & Mishra, 2005). On an optimistic note, with the increasing number of college faculty teaching online, the acceptance of integrating technology use in instruction is growing (Dysart & Weckerle, 2015; Lederman, 2018). Even so, a strong need for appropriate training regarding the use of new and modern advanced learning technologies still exists.

Technology Adoption In the Context of Faculty Culture

Although faculty are committed to using technology in their courses, the perceived learning curve can be high as most modern learning technologies require time to

master the nuances and uniqueness of their graphical user interfaces, software interfaces, data exchanges, and network communication processes. As Rogers (1983) presented, there is a life cycle for the adoption of technology. Moreover, faculty often value learning and sharing with peers with whom they can interact and discuss relevant issues in Communities of Practice (Terosky & Heasley, 2014). These communities are comprised of learners with different levels of knowledge and expertise where novice learners can engage at the periphery and move toward the center as their knowledge matures (Lave & Wenger, 1991). Thus, an understanding of faculty culture is extremely important to gauge their disposition and orientation to adopting and using new learning technologies in the classroom. Furthermore, it can be concluded that faculty are poised to using technologies based upon the perceived support from their social environment and their involvement in the decision-making process of selecting and deploying new tools and applications in teaching and learning (Samarawickrema & Stacey, 2007; Schlager & Fusco, 2003).

Method

Research Questions

Given the increasing number of native digital learners on today's campuses, knowledge and use of digital tools and applications have now become very important aspects of the teaching and learning experience at practically all higher educational institutions. However, despite increased levels of investments in technology, engaged teaching and learning continue to lag in the classroom and online (Koehler & Mishra, 2009). As a result, there is a need to understand how academic culture, level of technology adoption, and professional development of faculty stand to influence sustained integration and use of technology in the classroom (Keengwe et al., 2009). While there are many factors affecting faculty's adoption and use of modern learning technologies in the classroom, this study was guided by the following two questions:

1. What are the reasons faculty choose to use digital technologies in instruction?
2. What are the types of support needed by faculty to facilitate their integration and use of digital technologies in teaching and learning?

Research Design

A basic qualitative research design was selected for the study. Merriam and Tisdell (2014) assert that such a design is derived philosophically from constructionism, phenomenology, and symbolic interaction and that it is used by researchers who are interested in "(1) how people

interpret their experiences, (2) how they construct their worlds, and (3) what meaning they attribute to their experiences." This research design can also help uncover in depth meanings that faculty apply to the context of using digital technology use in teaching and learning. Merriam (2009) offers: "The overall purpose is to understand how people make sense of their lives and their experiences" (p. 23). Data for such a design approach are collected through focus group interviews and analyzed inductively to address the research questions, therefore a basic qualitative research design provides a means for participants to express their experiences in their own voice (Merriam & Tisdell, 2014).

Site of Research

The study was conducted at a Southeastern University in the United States in the spring of 2018. The institution is classified as a higher research activity by the Carnegie Classification of Institutions of Higher Education. As a result, participants in the study represented a diversity of viewpoints, backgrounds, training, and teaching orientation with regards to the adoption and use of technology in teaching and learning.

Participant Selection

Purposive sampling was used to select participants for the study. Through the help of the Director at the Center for Teaching and Learning at the University, a list of faculty members who had who were known users of technology in their classes were obtained. Emails were sent to those faculty members inviting them to participate in a focus group for the study. Dates and times were coordinated to include as many of the faculty as possible who agreed to participate. Some faculty that agreed to participate could not attend due to extenuating circumstances. All faculty members who participated in the study were employed at the same university. Table 1 below presents demographics information and other characteristics of the participants in the study.

Data Collection Methods

Two separate 45-minute focus group interview sessions were conducted, and both were audio recorded. The same interview protocol was administered with semi-structured and open-ended questions. One group was comprised of five faculty members, and the other group consisted of three faculty members. The focus group interviews were moderated by a doctoral graduate assistant, who facilitated and jotted notes, and an assistant moderator, an Associate Professor of the Instructional Systems Technology program at the university who also took notes. Both interviews were conducted in the same conference room at the

Table 1
Focus Group Participants

Participant	AD ***	PMT	PLT	YT	YTB/H	YTFO	A/U T	FG
Senior Lecturer	Biology	Face-to-Face	Under-graduate	9	NA	NA	Early Majority	A
Professor	Marketing	Face-to-Face	Under-graduate	29	NA	NA	Early Majority	A
Teaching Professor	Chemistry	Face-to-Face	Under-graduate	18	NA	NA	Early Majority	A
Assistant Professor	Education	Online	Masters/Doctoral	10	4	6	Innovator	A
Associate Professor	Psychology	Online/Hybrid	Under-graduate	31	5	8	Innovator	A
Assistant Professor	Educational Research	Hybrid/Blended	Masters/Doctoral	NA	1	3	Early Majority	B
Teaching Assoc. Prof.	Computer Science	Face-to-Face	All	NA	10	NA	Early Adopter	B
Clinical Asst. Prof.	Education	Online	Masters/Doctoral	22	5	12	Innovator	B

*** **AD:** Academic Discipline; **PMT:** Primary Method of Teaching; **PLT:** Primary Level of Teaching; **YT:** Years Teaching; **YTB/H:** Years Teaching Blended/Hybrid; **YTFO:** Years Teaching Fully Online; **A/UT:** Adoption and use of technology (Self-identification based on Roger’s Diffusion of Innovation); **FG:** Focus Group A or B

university. The conference room had adequate seating where the participants could spread out and face each other as a means to encourage them to engage each other in discussion.

Data Analysis

Data analysis was primarily inductive and guided by the literature review conducted for the study. Audio recordings were transcribed verbatim and reviewed. The qualitative data analysis approach we adhered to was Smith, Flowers, and Larkin’s (2009) Interpretive Phenomenological Analysis (IPA) of placing focus on the group interviews to generate initial themes and codes in search of patterns across data sets. Data analysis involved a close reading of both faculty focus group interview transcripts. We began analysis of the transcript data by manually selecting raw words, phrases, and statements that were repeated, simultaneously grouping them to form codes related research questions of the study. The next phase of analysis involved examining codes to develop categories by grouping words and statements with similar meanings. During the process of categorizing codes, relationships between categories were examined. From this point, themes and sub-themes were formed based on common phrases and statements from the transcripts. The process of constant comparison was utilized to identify how other pieces of data could be grouped and categorized, as described by Ezzy (2002).

Results

Q1 asked: What are the reasons faculty choose to use digital technologies in instruction?

To answer that question, we reviewed the data and looked for emergent themes and sub-themes from the answers provided by the participants that touched on the reasons that they choose to use digital technologies in instruction. As shown in Table 2, three major themes and six sub-themes came out of the answers provided. Below are sample of comments provided by the participants with regards to the reasons that they choose to use technology in their courses. The comments are broken down by the themes and sub-themes that emerged from the data analysis of the study.

Engaged Instruction

Interaction:

- “I use technology to allow [students] to take a poll and then project the results back to them. This allows me to engage the entire class in the lecture and presentation.” Participant 2
- “I teach a large lecture of about 200 [students]. I use technology to keep students engaged and involved.” Participant 3
- “I do create my own videos. And also use it, um, to keep students engaged, online discussions and so forth.” Participant 4

Table 2
Reasons for Faculty of Use of Technology in Instruction

Reason for Use		Examples of Technology Used
Theme	Sub-theme	
Engaged Instruction	Interaction Collaboration	Polling tools, Interactive Posters Google Drive, Google Sheets
Student Learning	Ownership Motivation	Video Creation, YouTube Flipbook, Online Quizzes
Content Presentation	Organization Delivery	PowerPoint Canvas (Learning Management System)

Table 3
Faculty Support Needs for Greater Use of Technology in Instruction

Theme	Challenges	Opportunities
Flexible Training	<ul style="list-style-type: none"> • Scheduling • Set training times • Age of Current Set of Tools Available 	<ul style="list-style-type: none"> • Flexible Delivery • Targeted Instruction • Multimodal Instruction e.g., use of webinars and videos
Peer Connections	<ul style="list-style-type: none"> • Awkward Training Locations • Isolation from Peers and Colleagues 	<ul style="list-style-type: none"> • Community Sharing • Creation of Linkages • Availability of Clear Support System
Institutional Backing	<ul style="list-style-type: none"> • Unrealistic Expectations • Challenging Workload 	<ul style="list-style-type: none"> • Recognition • Reward for Efforts

Collaboration:

- “[I use] case-based learning strategies where [I give students] the opportunity to discuss relevant issues online, sometimes.” Participant 2
- “I make use a lot of collaborative tools, online Web 2.0 tools, where student can collaborate. [These include] Flipbooks, interactive posters, and video creation.” Participant 6
- “[I] encourage students to work together on [class assignments]. So, they are using Google Docs and stuff.” Participant 8

Student Learning

Ownership:

- “I do a lot of pre-quizzing using online technology, so [students] have to master a quiz before class.” Participant 3
- “[I have found that technology can] get my students to take ownership of their own learning.” Participant 2

- “I like using the technologies to make things easier for my students and not necessarily for myself.” Participant 8

Motivation:

- “Students like using technology such as YouTube, because it provides a certain motivating factor to them.” Participant 4
- “[I use] Instructional Games and simulations and podcast, I use those [tools] sometimes as supplements to my lecture.” Participant 6
- “It would be easier for me to say open my PowerPoint and just record narration and [make] a digital, which I know some faculty do ... But I tend to take on a little more work [on my use of technology] to make it easier for the students.” Participant 5

Content Presentation

Organization:

- “It keeps the expectations clear when technology

is used for organization ... and [to] structure for the class." Participant 3

- "PowerPoint and other modern educational really help keep everything organized." Participant 8

Delivery:

- "On the more efficiency side, when incorporating an online quiz it's going to be easier to grade. [Therefore] that technology helps with content delivery." Participant 1
- "LMS is beneficial from a course delivery standpoint. I use it both for my online and face to face courses." Participant 6
- "Power Point slides [are excellent] for teaching the same class and share demonstrations." Participant 7

As presented in Table 2, participants reported using technologies for a variety of reasons. Some of them perceived that technologies helped keep the students engaged during class and orient their learning behaviors. Participants shared some technology tools that they were comfortable using to connect with students with classes with them either online or face to face. Faculty also noted that student-centered learning approaches encourage students to be more responsible for their own learning.

Q2 asked: What are the types of support faculty need to facilitate their use of digital technologies?

Regarding supports to facilitate greater use of digital technologies, three themes with potential challenges and opportunities emerged from the analysis of the data. These are Flexible Training, Peer Connections, and Institutional Backing.

The data reviewed to answer question 2 reveal the approach of using set training times for faculty at their institution are insufficient and do not fully consider teaching schedules or the ebb and flow of school-related activities during the academic semester. Participants also shared that they and their colleagues desire to have training on technology that are offered in less traditional training spaces. The participants also noted that they desire technology training that is accessible and use a variety of delivery formats to accommodate the available times their schedules. In the area of peer support, participants shared that they wish to hear how other faculty members use technology in the courses. Thus, they believe that faculty should be encouraged to present their work in training sessions and discuss practices among peers within and outside their disciplines. Regarding the Institutional Backing theme that emerged from the data analysis, participants shared that they desired recognition and appreciation for the time commitment they devoted to developing technology-enabled instruction for student

learning. Below are samples of comments provided by the participants with regards to support needed to facilitate their use of digital technologies in the classroom. These are broken down by the themes, challenges, and opportunities noted by the participants in the study.

Flexible Training

Challenges

- "Expectations are high for faculty [so] support needs to be more strategic. How can we use technology to simplify things for students and for me in an efficient way?"
- "I go to a lot of the CTL events, but, you know, it's going to be, like, well at this time, in this month and I may be teaching a class, so I'm not going to be able to learn about Camtasia." Participant 1
- "I'm teaching a class or I'm doing something else that I can't be there and you know, I'd love to just have it at my disposal if I [want to] go home in the evening and do it or something like that." Participant 2

Opportunities

- "Personally, I would actually like to have, uh, online videos that I can watch whenever I [want to] watch for the digital technology that I could be using in class." Participants 5
- "Webinars are good ... They are available to watch at any time." Participant 1

Peer Connections

Challenges

- "[There is a need to] have more opportunities to view each other's online classes and sharing best practices. [But] people get compartmentalized. [We] need to break down barriers." Participant 8
- "One place we get to share many of these things is in the active learning academy we do get to discuss how things are going, and talk about your courses, what difficulties you're facing." Participant 3

Opportunities

- "Maybe they could come out to departments or have, you know, like we had biology and chemistry and psychology could have, you know, an event where we're [together] in one of the buildings." Participant 1

- “They also have something similar with the faculty fellows, where they have faculty that are doing these things well. Sharing their ideas. That is a wonderful thing to do for faculty that are doing these things well and sharing ideas with each other. That could be increased.” Participant 2

Backing from Institution

Challenges

- “A lot of time is put into developing instruction with technology.” Participant 5
- “Faculty are juggling class prep, advising, service in the department etc., there is very little time left to attend training and workshops during the semester.” Participant 7

Opportunities

- “Some schools offer course release or some form of compensation for time spent in training.” Participant 4
- "Institutional support that would help encourage faculty use of technologies would come in the form of grants or awards for experimenting and support" Participant 7
- "It might be helpful to have a faculty award for how the technologies are used in teaching and courses." Participant 2

Discussion

Participants in the study stated that they used the technologies to keep students engaged in the learning process. They also offered that the use of technologies enabled them to focus more on student-centered learning practices and activities during instruction. They also offered that the technology allowed them to create learning experiences that required students to interact with content and their peers. Moreover, the participants noted that the technology allowed students to develop a sense of ownership of their learning experiences and to be more engaged in collaboration activities in and outside the classroom. Some participants were very intentional in engaging the Digital Natives generation in digitally-oriented learning activities. Those participants, who for the most part were early adopters of technology based upon Rogers' model, created collaborative group interactions using Google applications that are specifically designed for collaboration. A few other participants use various technologies like games, simulations and resources from online sites as these would be very familiar with the Digital Natives generation of learners in their courses.

Hansman and McAtee (2014), in referencing King and Lawler (2003), offer, “The constantly evolving technological developments and innovation challenge all educators to learn and adapt new applications to design academically sound courses” (p. 12). Further, Austin and McDaniels (2006) notes that faculty simultaneously belong to, and work within, various cultural groups: their discipline, department, institutional type, and the profession and therefore must assume the appropriate roles, values, and norms for each context. All of these aspects of a faculty member's professional life and work setting directly influence their pedagogical beliefs, which in turn shape their perceptions of how technologies may be used for teaching and learning (Hansman & McAtee, 2014; Yee, 2015). Therefore, based upon the findings of the study, we believe that a model such as Covington Petherbridge and Warren (2005), with three systems of support services, can help faculty integrate more and/or better technology into their teaching practices, curricula, and research. These will lead to improved technology-enabled learning performance for students and further enhance the quality of decisions by IT and administrators to plan strategically to integrate technologies into the higher education mission of teaching and learning.

Implications

Given these findings, three key recommendations can be made on how to best facilitate greater integration and use of technology by faculty to engage and support today's learners. First, professional development programs should be offered in a manner that fully accommodate faculty's teaching schedules and the academic work cycles. In conjunction with the development programs, other forms of delivery should be considered, such as online video repositories for faculty to learn particular technologies at their own pace and at more convenient times. Second, coaching and mentoring should be integrated into professional development programs as faculty find it beneficial to have other faculty members, who are trained to use the technology in a particular content area, act as champions (Hill, Bahniuk, & Dobos, 1989). Such an approach serves also to scaffold pedagogical approaches used by faculty in support of student learning (Coburn & Russell, 2008; Griffin-Sobel et al., 2010). Third, there should be some recognition of innovative teaching approaches to incentivize faculty and promote experimentation.

Limitations and Suggestions for Future Research

Our study explored the technology integration experiences of eight instructors. Therefore, the findings

should be carefully interpreted as the focus of the study was on one university in the southeast U.S. Given the relatively small sample, broad generalization is limited. Nevertheless, the study can be viewed as contributing to the growing body of literature on faculty technology integration in pedagogical practice. Finally, a larger sample of one-on-one interviewees may have provided different perspectives regarding experiences. An area for further research is exploring the impacts of academic backgrounds on faculty readiness to use technologies in the classroom. By determining whether disciplines such as Arts and Sciences, Business, Engineering, Health etc., react differently to the use of technology in the classroom, policies can be developed to address the unique needs of each college and department of a university regarding faculty training. Context of the use of technology is another area for further exploration. Since this study was conducted at one specific institution, it could not be readily determined whether the existing leadership structure, administrative policies, or academic culture of various types of institutions have an impact on the faculty attitudes toward use of technology in the classroom. In this study we found scheduling to be a reason why faculty don't attend training. However, we hope future studies can examine this in depth on how faculty can prepare for this generation for students. Finally, an examination of how faculty development programs influence learning outcomes is needed. Such efforts will help in determining which items need to be incorporated in faculty training programs.

Conclusion

While digital tools and technologies are widely used in the modern world, their integration in teaching and learning to engage learners continue to lag. As a result, there is a need to understand the challenges involved in facilitating faculty use of technology in their courses. Moreover, given the current number of Digital Native learners on today's campuses, faculty members must employ new pedagogy, including more integration of technology in the classroom to engage, motivate, and support these new learners. As presented in this paper, a holistic faculty training and support approach is needed to help faculty obtain the technology skills and competencies they need to support and engage the Digital Natives Generation of learners.

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