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Adopting Educational Technology: A Study of Dominican Republic Higher Education Faculty Related to their Classroom Usage, Attitudes, Barriers, and Motivations

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ADOPTING EDUCATIONAL TECHNOLOGY: A STUDY OF DOMINICAN REPUBLIC HIGHER EDUCATION FACULTY RELATED TO THEIR CLASSROOM USAGE, ATTITUDES, BARRIERS, AND MOTIVATIONS

by

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Previous research has revealed that the integration of technology in education produces an improvement in the traditional teaching and learning process, but that there is a disconnect between faculty adoption of educational technology and the requirements of our current generation of students (Rhema & Miliszewska, 2014; Selwyn, 2009). While students are now fully immersed in technology, some faculty still do not give adequate significance to its adoption in their classes. This disconnect represents a problem for these students' learning experiences.

The purpose of this study was to explore faculty experiences regarding the adoption of educational technology within a private HEI in the Dominican Republic (DR). The goal was to obtain information related to faculty members' attitudes, barriers, and motivations for using or not using educational technology in their classes.

This study involved semi-structured interviews with 12 faculty members across three different schools. Each participant also provided documents and/or artifacts illustrating their experiences utilizing technology in their courses. Analysis of this data revealed five major themes and 13 sub-themes, organized by the theories guiding this study: (a) Rogers' (2003) Innovation Diffusion Theory (IDT), and (b) Herzberg's (1968) Motivators and Hygiene Theory (Two-Factors Theory).

Faculty revealed a regular use of educational technology in their classes. This level of usage was driven by their perceptions that such tools add positive meaning in their courses such

as having a better approach to students, saving time, and allowing students to better achieve the intended competencies of each subject. Participants also revealed factors that currently motivate them to use technologies, as well factors that might further motivate them and other faculty. The current factors that encourage these faculty included a sense of achievement, and the opportunity to grow and learn new skills. The factors that could influence them and others included economic compensation, peer interaction, and recognition. Challenges in the adoption of educational technology also emerged. They included students' difficulties when using educational technology tools, reliability concerns, generational gap issues, computer anxiety, and the lack of time for implementing technology. Finally, faculty's attitudes related to the adoption of educational technology were globally encompassed within faculty's challenges, motivations, and the merit educational technology holds for them.

Overall recommendations to encourage current faculty to use more technology and motivate additional adopters include: (a) share the positive benefits of how technology is helping current adopters to save time and remain up-to-date, and how it is helping students acquire competencies needed for their work field, (b) implement factors that could influence faculty to adopt technology, such as economic compensation, peer interaction, and recognition, (c) teach students educational tools before using them, (d) enhance technology resources, (e) assess and segment incentive policies according to the needs of generational groups, and (f) facilitate trainings to establish a comfortable learning environment.

The results of this study add to the literature on the experiences of adopting educational technology in higher education institutions. It also adds findings to research in the DR related to this topic.

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CHAPTER I

INTRODUCTION

In our globalized world, where it is a privilege to share information and even own it, using educational technology resources in higher education is essential to educate our students. Educational technology involves the effective use of technological tools for teaching and learning to achieve dynamism, collaboration, interaction, and better assimilation of knowledge among students (Januszewski & Molenda, 2013). Some examples of educational technology tools are web-conferencing or webinars, course management systems, such as virtual classrooms platforms, discussion forums, blogs, and other collaborative tools, podcasting, smarts boards, virtual reality, game-based learning, "bring your own device" (BYOD) strategies, robotics-based learning, software for the work field, and other innovative technology-based methodologies that can be used for the teaching and learning process (Akhras, 2011; Salazar, 2010; Uskov, Bakken, Penumatsa, & Rachakonda, 2017).

Such technology tools and strategies are becoming increasingly common in modern educational practice, and faculty and students need to be granted access to technology tools and become information users and providers. According to Cubukcuoglu (2013), many studies have shown that the integration of technology in teaching and learning is an effective manner to support the educational process. He also states the importance of identifying enablers to promote the use of technology in teaching and learning and removing possible barriers, which may prevent faculty from integrating such technologies in their classrooms.

In the case of the Dominican Republic (DR), previous research has found that in at least some higher education institutions (HEIs) in Santo Domingo, the faculty do have access to technology tools, such as virtual classrooms platforms, webinars, and discussion forums, but

they do not use them extensively for educational purposes (Coronado, Cantú, & Rodríguez, 2014). Consequently, it is essential to understand the factors that influence HEI faculty members from not adopting emerging technologies in their teaching or only to use them minimally. Therefore, this study seeks to understand the usage, barriers, and attitudes to adopt educational technology into classrooms by current HEI faculty in the DR, and to understand what motivates them to adopt educational technology in their classes.

Background

In recent times, there has been a remarkable increment in the number of people using technology in the educational field; however, there are still issues such as appropriate and effective use of such technology (Palmore, 2011). Other aspects of concern to educators are related to the availability of adequate training, the importance of maintaining suitable equipment, and the correct manner of incorporating educational technology into their subjects.

Many researchers in the field of using technology in education discuss the advantages and disadvantages of this practice. Technology is not magic, and it depends on how we use it; teachers may expect different results and learning outcomes just by using technology, without realizing that little will change if they teach the same way (Ehrmann, 1999; Smith, 2016). Advantages include access to distance learning, and research has shown good outcomes via the use of "blogs to encourage reflection on learning, wikis to facilitate collaborative learning, discussion boards for continued class discussions, links to library eResources, online simulations, interactive classroom" (Buchanan, Sainter, & Sanders, 2013, p. 5).

Digital inclusion for those with special needs has also been improved by the integration of technology (Ab Aziz, Ab Aziz, Paul, Yusof, & Noor, 2012; Zhao, 2007). Digital inclusion is essential for HEIs in developing countries since enhanced support for students with disabilities

is a target of the United Nations Educational, Scientific, and Cultural Organization's (UNESCO) development agenda (Cantabrana et al., 2015).

Technology is also significant to prepare students and teachers for global connectivity, to help such individuals to be flexible to changes, and to show them how to "learn to learn" (Carneiro et al., 2012, p. 39), preparing them to acquire knowledge by using emerging technologies as a global competence. Based upon the literature of the research McCampbell (2002) has done related to educational technology, another advantage is to improve teaching and learning innovation if technologies are used "in new and innovative ways to enhance learning environment" (p. 56). As Al-Ghazo (2008) described, teachers can use technology to "make explanation of content material easier in order to simplify learning" (p. 20).

Acknowledging that educational technology is not a panacea, these same authors also suggest some disadvantages. Technology affects costs, and sometimes the investment does not help the people who most need help; students who do not have enough technical skills and are not getting the technical support they need cannot take advantage of educational technology (Arkorful & Abaidoo, 2015; Erhmann, 1999). Technology can cause distractions from work activities, and the reduced use of technology will not allow achieving the purposes established (McKissic, 2012). There are some issues related to the use of the internet, which could be seen as disadvantages, such as ethics, security and privacy, copyright protection, and computer crime (Nosek, Banaji, & Greenwald, 2002; Von Solms & Niekerk, 2013).

Despite some disadvantages, it is essential to prepare students for our globalized world, and while various factors may inhibit the adoption of new technology, corrective measures can redress many of these problems such as purchasing highly reliable technology, improving systems, assure rapid responses, and providing the proper maintenance to classroom

technologies (Agbo, 2015; Butler & Sellbom, 2002). Elsaadani (2013) defines HEI faculty as key to the successful integration of educational technology, although there are still concerns regarding the extent HEI faculty are genuinely integrating technology into their classrooms (Buchanan et al., 2013).

Problem Statement

Practical and Researchable Problem

There is a disconnect between faculty usage, attitudes, challenges, and their motivations towards using educational technology and the demands of our new generation of students (Rhema & Miliszewska, 2014; Selwyn, 2009). While students are now fully immersed in technology (Dahlstrom & Bichsel, 2014), several faculty still do not place adequate importance on its usage. Many perceive time as a barrier for the usage of technology for educational purposes, and some feel they do not have the essential competencies to integrate new technologies in their classes, or do not have sufficient institutional support to adopt technologies for educational purposes (Watty, McKay, & Ngo, 2016). Such challenges increase when trying to influence faculty who are not familiar with how to integrate educational technology into their classes. Reid (2014) found that many faculty barriers to adopting educational technology in their classes are related to second-order change, such as beliefs and perceptions regarding abilities to adopt technologies and views related to effectiveness through technologies.

On the other hand, many new generation students perceive their teaching and learning experiences more enriched with the use of technology in their academic programs, and they are also asking for more online activities (Moore, Moore, & Fowler, 2005; Rhema & Miliszewska, 2014). Some authors present the attitudes of students and faculty related to the adoption of technology for educational purposes. As Rhema and Miliszewska (2014) found in their study

related to e-learning, students were positively disposed and believed in the benefits provided by the integration of this educational technology. Similarly, Dahlstrom and Bichsel (2014) through a survey sent to approximately 1.5 million students at 213 institutions, and receiving 75,306 responses from 15 countries, found that technology is "embedded into students' lives, and students are generally inclined to use and to have favorable attitudes toward technology" (p. 4).

This disconnect represents a problem for these students' learning experiences. Some solutions to this disconnect suggest understanding and enhancing the motivation of faculty and offering professional development to promote better attitudes towards adopting educational technology (Moore et al., 2005; Reid, 2014). Indeed, all higher education students must acquire the necessary skills using educational technology to access information available online via our global connectivity. Faculty and students need access to technology tools and need to become informed users and providers. The ability of teachers and students to gather and share information has helped with the transformation of teaching content (Chapman, Garret, & Mählck, 2004; Potter & Rockinson-Szapkiw, 2012). The adoption and integration of technology in education produce an improvement in the traditional teaching and learning process (Rhema & Miliszewska, 2014; Selwyn, 2009).

Thus, it is important to understand the experiences of faculty members in HEIs who are utilizing educational technology, their attitudes, perceived barriers, and their motivation toward technology usage to comprehend the adoption, or not, of educational technology into their classrooms.

Studies Addressing This Problem and Deficiency Statement

There are studies about using technology for educational purposes and the importance of adopting educational technology into classrooms. For example, some studies explain the

advantages and disadvantages of using technology for teaching and learning (Arkorful & Abaidoo, 2015; Erhmann, 1999). These studies show that educational technology offers both advantages and disadvantages, and we have to consider these factors before adopting and implementing emerging technology into classrooms. Other studies present the technology tools that can be used for special education and students with disabilities (Ab Aziz, Ab Aziz, Paul, Yusof, & Noor, 2012; Benton & Johnson, 2015; Zhao, 2007). These technologies are used to help people with hearing and blind disabilities, and those with difficulties in their motor skills, as well as providing other supports.

Faculty attitudes associated with using technology have also been studied by different researchers and reveal some factors regarding the adoption or not of educational technology in the classrooms by faculty members (Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012; Ottenbreit-Leftwich, Glazewski, Newby, & Ertmer, 2010). In Ertmer et al.'s (2012) study, interviews were conducted to examine the alignment of teachers' classroom practices and their educational beliefs. Findings showed that barriers related to the use of educational technology were existing attitudes and beliefs toward technology and their existing levels of understanding and expertise. Ottenbreit-Leftwich et al. (2010) found positive faculty attitudes to adopt technology for educational purposes based on their beliefs associated with the ability to use educational technology for improving both professional and student needs.

There is also previous research that has analyzed the factors that might be barriers to adopting technology for teaching and learning (Buchanan, Sainter, & Saunders 2013; McKissic, 2012; Palmore, 2011). Buchanan et al. (2013) found that two essential components suggest barriers to the adoption of technologies for educational purposes: (a) structural limitations within the HEI, and (b) perceived helpfulness of the technology tools. McKissic (2012) found

that faculty members were worried about the distraction that could raise the technology integration related to their work responsibilities and also the addition of more work to their demanding schedule. Faculty were also concerned with the potential changes in their job responsibilities that would take place if they adopted educational technology in their classes. Palmore (2011) found that faculty's adoption of technology for educational purposes is affected by technology availability, training, and support.

Such studies have been conducted worldwide, and we can see similarities and differences between them. Some studies have shown the significance of adopting technologies in the teaching and learning process to be an effective way of supporting the teaching and learning process (Cubukcuoglu, 2013). Regarding the differences, we find that some studies reveal that technology is not a panacea, and sometimes it is not necessary to introduce technology to have better results in the teaching and learning process (Saunders & Gale, 2012).

Other studies indicate that not all faculty members within HEIs integrate the use of educational technology in the classrooms, often due to internal or external factors that impact their beliefs regarding the integration of technology in education (Ertmer et al., 2012; Tondeu et al., 2012). These findings may be especially true within institutions established in countries like the DR in which all of their professors are contract-hired by hours of teaching; therefore, they are less likely to get involved with the objectives of the institution.

Overall, the literature has discovered remarkable aspects to consider when adopting educational technology into classrooms, including faculty motivations, challenges, and attitudes in the teaching and learning process. However, previous research has not revealed the behavior of these aspects among HEIs in the DR.

Study Significance

As Williamson (2017) states, technology might be used to "disrupt" the educational system and to revolutionize it. A growing number of institutions are working with educational technology around the world, and faculty members play a significant role in this teaching and learning "paradigm shift"; also, they must be "effective agents to be able to make use of technology in the classroom" (Afshari, Bakar, Luan, Samah, & Fooi, 2009, p. 78). As entrepreneurial investment and political support are growing in educational technology, we can see a "new digital future for education" (Williamson, 2017, p. 3), focused on a revolutionizing education, directly impacting the teaching and learning process.

It is relevant to study this phenomenon in our current changing world, where technology is growing exponentially in all of the knowledge areas and where digital education is experimenting with some radical transformations (Collins & Harvenson, 2018). A study to better understand what is happening with DR faculty members' integration of technology and the reasons why faculty members are or are not using technology in the classrooms is of value. The results could help others better understand this topic and perhaps benefit other schools with technology implementation issues.

Purpose Statement

The purpose of this study was to explore faculty experiences regarding the adoption of educational technology within a HEI in the DR that has made available significant technology classroom tools and training to its faculty. This goal was to obtain information related to faculty members' attitudes, barriers, and motivations for using or not educational technologies in their classes. At this stage in the research, educational technology referred to the effective use of

technological tools for educational purposes to achieve dynamism, collaboration, interaction, and better assimilation of the knowledge transfer process.

Such technology tools included the use of web-conferencing or webinars, course management systems (such as virtual classrooms platforms and discussion forums), and podcasting (Akhras, 2011; Salazar, 2010), as well as smart boards, virtual reality, game-based learning, "bring your own device" (BYOD) strategy, robotics-based learning, messaging applications, software used in the work field, and other innovative technology-based methodologies that could be used for the teaching and learning process (Uskov et al., 2017). For this research, I took into consideration any technology tool used by the faculty members within this private HEI in their teaching and learning process.

Research Questions

My research questions for this study were intended to explore the usage, motivations, attitudes, and barriers to adopting educational technology in the classroom by faculty members in a HEI in the DR. My overarching research question was: What are HEI faculty's experiences regarding their current adoption of educational technology in their classes and how do those experiences influence their dispositions toward utilizing the educational technology available to them?

Specific sub-questions included:

1) What levels of technology adoption within their classrooms are reported by HEI faculty?

2) What motivates faculty members to use educational technology, or not, in their classrooms?

3) What are the barriers such faculty perceive regarding the enhanced usage of educational technology in their classrooms?

4) What are the attitudes faculty show related to the use of educational technology in their classrooms?

Conceptual Framework

The conceptual framework for this study was developed on the assumption that the use of technology in the classrooms can transform the teaching and learning process. The way education is delivered to students when using educational technology suggests that technological tools can help teachers facilitate learning in an interactive educational environment created to fulfill individual needs (Shah & Murtaza, 2012). Nevertheless, there can be a disconnect between faculty's attitude and motivation toward using new educational technology and the demands of our digital-native students, and this disconnection represents a problem in the learning experiences of these students (Rhema & Miliszewska, 2014; Selwyn, 2009).

The adoption of technology in education may be used to produce an improvement in the traditional teaching and learning process. The ability of teachers and students to gather information via technology has helped with the transformation of teaching content (Chapman, Garret, & Mählck, 2004; Potter & Rockinson-Szapkiw, 2012). For this study, I captured the experiences around the levels of technological usage, the faculty motivation and attitudes regarding the usage of educational technology, and the barriers that faculty face when adopting technology in classrooms. Figure 1 offers a visual diagram of the critical elements in my study.

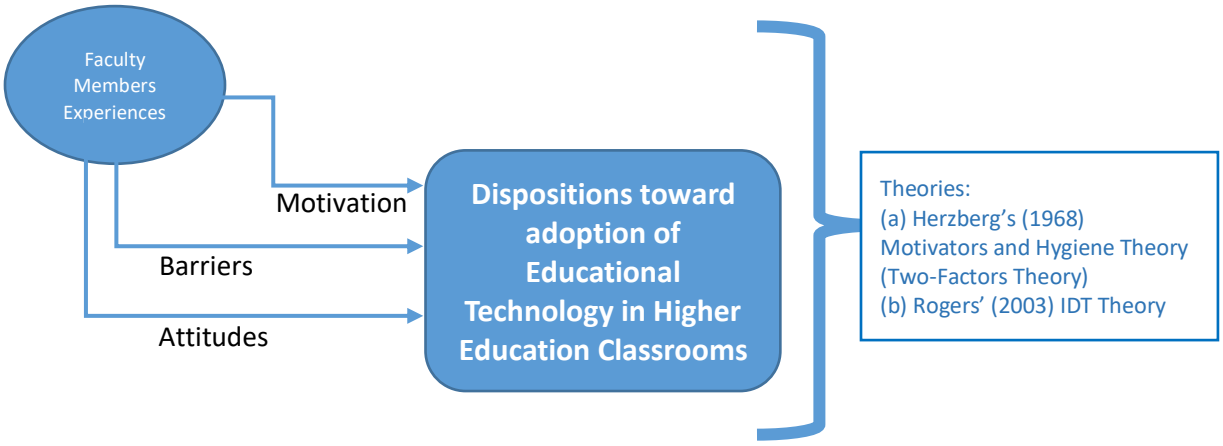

Figure 1. Conceptual framework map (Guzmán, 2020).

Two theories guided this study: (a) Rogers' (2003) Innovation Diffusion Theory (IDT), and (b) Herzberg's (1968) Motivators and Hygiene Theory (Two-Factors Theory). The IDT defines the patterns of adoption to understand how and why new inventions or ideas and technology proliferate and also if they will be successful for the user (Rogers, 2003). This theory is comprised by four main elements including: (a) innovation, explained as an idea or project perceived by an individual as new; (b) time, related to the rate of adoption involved; (c) communication channels, described as how the information is shared through networks between sources; and (d) the social system, defined as "a set of interrelated units engaged in joint problem solving to accomplish a common goal (Rogers, 2003, p. 23).

The IDT also explains an innovation-decision process describes by Rogers (2003) as "an information-processing activity, where an individual is motivated to reduce uncertainty about the advantages and disadvantages of an innovation" (p. 172). This process includes five main stages:

- the knowledge stage, where the individual does not have enough information about the innovation, but he is initially exposed to it;
- the persuasion stage, where the individual is looking for information since he is being interested in the innovation;
- the decision stage, where the individual values the advantages and disadvantages, and decides to adopt or reject the innovation;
- the implementation stage, where the individual starts to determine the usefulness of the innovation adopted, and the innovation is put into practice; and
- the confirmation stage, where the individual is looking for support on his decision; at this stage, use continuance or discontinuance depends on the support received and the individual's attitudes and perceptions related to the satisfaction of performance towards the innovation.

In addition, Rogers (2003) addresses five attributes of innovation and rate of adoption:

- relative advantage, defined as "the degree to which an innovation is perceived as being better than the idea it supersedes" (p. 229); its costs, effectiveness, social status, helpful experiences, and results;
- compatibility, described by Rogers as the "degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters" (p. 15);
- complexity refers to the perception of ease or difficulty to understand, adopt and use the innovation;
- triability, related to the possibility of experiments with the innovation before implement it; and

- observability, explained by Rogers as “the degree to which the results of an innovation are visible to others” (p. 16).

Finally, according to Rogers (2003), “the continuum of innovativeness can be partitioned into five adopter categories: innovators, early adopters, early majority, late majority, and laggards” (p. 298). Innovators are enthusiastic to try original ideas, to the point where this position of trying new concepts almost becomes an obsession. Early adopters tend to be incorporated into the local social system; their peers usually respect them for their successful use of new ideas. For the early majority, their adoption of new ideas takes more time than for innovators and early adopters. The late majority take more caution to get into the innovation. Finally, the laggards are the last category to adopt new ideas and innovation in the social system (Rogers, 2003).

Herzberg’s (1968) Motivators and Hygiene Theory (Two-Factors Theory) defines intrinsic and extrinsic factors essential to encourage people to obtain organizational goals. According to Herzberg (1968), motivational factors can move employees from satisfaction through no satisfaction; and hygiene factors from dissatisfaction through no dissatisfaction. Motivational factors, also called intrinsic factors, involve: (a) professional recognition, (b) growth/ development, (c) the work itself, (d) responsibility, and (e) achievement or the need to excel in their work. Hygiene factors, also known as extrinsic factors, involve: (a) salary and benefits, (b) interpersonal relationships, (c) types of supervision of superiors, (d) physical and environmental work conditions, (e) job security, and (f) company's policies and administration. Various motivating and hygiene factors may be boosting commitment (Herzberg, 2005) to adopt educational technology in the classrooms.

Methods Overview

To address my research questions, I conducted a multiple case study set within a private university in Santo Domingo, DR involving 12 HEI faculty from this institution. Data was gathered via faculty interviews and analysis of documents and/or artifacts of classroom technology adoption to capture experiences regarding faculty usage, attitudes, barriers, and motivations regarding the adoption of educational technologies into the teaching and learning process.

Chapter I Closure

This chapter offered an introduction to my study, including the background, problem statement, research questions, conceptual framework, and methods overview. Chapter II will now cover the literature review related to this topic.

CHAPTER II

LITERATURE REVIEW

In this literature review, I describe the concepts of technology education, educational technology, and their importance. Subsequently, I review the literature on the advantages and disadvantages of using technology for educational purposes. Finally, I explore the challenges, motivations, and attitudes that faculty members face related to the adoption of educational technology in their classes.

Educational technology is not only essential for faculty, students, and associated learning outcomes, but it is also needed to follow national and international development goals that include activities related to technology. As an example, the countries within the United Nations (UN) approved the “2030 Agenda for Sustainable Development” with objective number nine focused on industry, innovation, and infrastructure. One goal in the objective is to "significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in the least developed countries by 2020" (Tebbutt, Brodmann, MacLachlan, Khasnabis, & Horvath, 2016, p. 3).

The DR, as a member of the UN, has developed their “2016 – 2020 Digital Agenda” to “accelerate its process for Sustainable Development and its insertion towards a society of information based on the intensive use of information and communication technologies” (Comisión Nacional para la Sociedad de la Información y el Conocimiento, 2015, para. 1). Other national goals that embrace technology include the DR as a member of the Organization of American States (OAS) working with the cluster of the Inter-American Committee Against Terrorism (CICTE) to address national cybersecurity-related affairs. As a member of the OAS, the DR has been working for two years, with the CICTE, to define the Cybersecurity National

Security Strategy. As a final example, DR's National Security Strategy 2018 – 2021, described in the 230-18 decree (Presidencia de la República, 2018), incorporates the mandatory integration of education on protected technology in schools as well as in undergraduate and graduate levels. The use of technology for educational purposes is associated with this strategy because it is vital to ensure the use of protected technology tools in the teaching and learning process.

Dominican Context of Higher Education Institutions

From a historical perspective, higher education (HE) in the DR had its beginnings when the Universidad Autónoma de Santo Domingo (UASD) [Autonomous University of Santo Domingo] was created in 1538 ("Reseña histórica", n.d, para. 1). This institution was the only functioning university until 1962 when others started to appear. The first private university was the Pontificia Universidad Católica Madre y Maestra (PUCMM) founded on September 9, 1962 ("Conoce la PUCMM." para 1, n.d) in response to the unmet needs of the country (Farías, 2002). Today the DR has a total of 45 HEIs, including not only universities, but one community college, and other technical and specialized institutes (Ministerio de Educación Superior, Ciencia y Tecnología, 2018).

In August 2001, Law 139-01 was enacted creating the National System of Higher Education, Science, and Technology, to create regulations for the proper functioning of the country higher education system, and to establish the mechanisms that ensure "the quality and relevance of the services presented by the institutions that make up the System, in addition to laying the legal basis for national scientific and technological development" (Presidencia de la República, 2001, pp. 7-8). By article 25 of this law, the Secretary of State for Higher Education, Science, and Technology (SEESCyT - acronym in Spanish) was created. This institution is

responsible for "promoting, regulating, advising and administer the National System of Higher Education, Science, and Technology, ensure the execution of all the provisions of this law and the policies emanating from the Executive Power" (Presidencia de la República, 2001, p. 33). In 2010, the name of this institution was changed by the 56-10 Decree to Ministry of Higher Education, Science, and Technology (MESCyT – acronym in Spanish), point nine of article number one (Presidencia de la República, 2010).

Amongst the responsibilities of the MESCyT is to safeguard and ensure both the quality of the higher education system and the development of technological and scientific research (Quiénes somos?, n.d.). However, every institution is also responsible for evaluating its strengths and weaknesses, as well as the execution of their services, study programs, and graduate profiles, management, and research, following their institutional mission. Also, to define proper administrative and physical structures and continuous improvement strategies (Secretaría de Estado de Educación Superior, Ciencia y Tecnología, 2013).

In order to be certificated as a higher education institution, each institution must present to the MESCyT their mission, vision, values, and philosophical foundations. Higher education institutions must create and present their statutes identifying their nature, as well as regulations for admissions, academic life, research, faculty, discipline normative, students registry, laboratories for the different careers offered, and library (Secretaría de Estado de Educación Superior, Ciencia y Tecnología (SEESCyT, 2013).

According to the Law 139-01, the different educational levels certified by the MESCyT are:

- Higher-technical level: it is a level that gives an existing diploma for a technical career. Some universities offer it as an intermediate level offered before the graduate

level, which may lead to it. However, it is mostly offered by specialized technical institutes.

- Graduate-level: it is equivalent to a four-year university career. At this level are degrees such as “bachelor, engineering, architect, medical, and dentistry doctor and equivalents” (p. 26).
- Post-graduate level: this is the final level in the Dominican HEIs to contribute to science and technology development, research enhancement, and support the practice of each profession. Within this level, there are three offers with different levels of graduation requirements: specialty, master’s degree, and doctoral degree.

MESCyT’s strategic plan comprises five policies to guide its actions (Secretaría de Estado de Educación Superior, Ciencia y Tecnología, 2008). Policy number five is dedicated to Information and Communications Technologies (ICT) for educational purposes. Efforts have been dedicated in order to increment its use in HEIs to strengthen and support learning and research.

In the Memories of the MESCyT (Ministerio de Educación Superior, Ciencia y Tecnología, 2018), they state that one goal for 2018 was contribute to boost the use of ICT in higher education institutions, handing personal computers to students and professors by the Proyecto República Digital [Digital Republic Project], to enhance the development of digital technologies skills, focusing on better teaching and learning practices. This project is known as "One to One." This plan raised a national scope to four years (2017-2020) and sought to develop skills in the use of technology for educational purposes. Initially, it was contemplated to reach 18,000 students and 2,000 professors of the Education careers in the different Dominican public HEIs to teach them in the proper use of technology in education. It also contemplated

distributing laptops to professors and students. In this regard, on October 31, 2018, the Ministry started the distribution of gadgets to professors and students. The distribution included 3,399 laptops handed to students and 276 to teachers. The Memories of the MESCyT describes the achievements of this policy, so far, and the intention to continue contributing to achieving the goals contained therein.

Educational Technology and Technology Education

The terms "educational technology" and "technology education" are distinct concepts that are often confused. Educational technology refers to the integration of technology tools for educational purposes. Examples of educational technology include the use of social networks and simulators. Other examples include the use of software that: (a) allows instructors to record and share courses (such as Camtasia), (b) provides online testing (such as Hot Potatoes software), (c) offers virtual classrooms platforms, (d) allows podcasting, (e) enables web-conferencing, (f) allows collaborative work, (g) allows constant communication, and (h) are used in the work field to help students to develop correctly in a job. All offer an innovative experience within the teaching and learning process in a variety of content areas (Akhras, 2011; McCambell, 2002; Salazar, 2010).

Technology education, on the other hand, refers to “teaching technology as a curriculum item” (McCambell, 2002, p. 55) to develop students’ technological competences. These competencies are related to the ability to understand, implement, work, operate, apply, and give support for technology usage. Such technology classes are about the technology itself, such as hardware and software, antennas, networks, microprocessors, quality assurance of technology, databases, network operation centers, and data centers.

Educational technology is used to support a technology education curriculum. Likewise, technology education is needed to support the curriculum that integrates educational technology; consequently, these concepts are not mutually exclusive. Instead, they co-exist and work well together in educational environments. Importantly, as with any content area specialist, just because an educator is a technology professional does not mean that he knows how to incorporate technology into his teaching practice. As Davis and West (2014) stated, "educational technology includes both instructional technologies, which focus on technologies teachers employ to provide instruction, and learning technologies, which focus on technologies learners use to accomplish specific learning objectives" (p. 846). Therefore, technology teachers must be prepared to integrate tools to accomplish expected learning outcomes with effective integration of educational technology. This preparation can be achieved by seminars, courses, and previous instructions.

David and West (2014) based their statements on their study related to technology integration in schools. After reviewing researched literature between 1995 and 2012 and using 130 different articles, they concluded that access to technology does not necessarily improve learning outcomes. Increasing learning depends on additional factors, including the need to: (a) encourage faculty integration in professional development trainings; (b) work on faculty's attitudes related to technology adoption; (c) help faculty to increase specific technology experiences; (d) personalize trainings, if needed; (e) guide faculty to use technology for improving learning outcomes; and (d) support faculty with this type of transformation (adopting technology for educational purposes). Finally, they concluded that it is needed to establish best practices in the adoption and use of technology for educational purposes and to focus on professional development primarily on improving student learning outcomes.

Advantages and Disadvantages of Educational Technology

Continuous technological development, both locally and internationally, is very evident in current times, as is the increased application of technology in diverse corporate environments and different areas of knowledge. This globalization process is a boost to motivate the active participation of human beings within different environments where technology is highly linked (Luaran, Nadzri, Rom, & Jain, 2016). Technology has changed how we communicate, work, and learn (Ab Aziz, Ab Aziz, Paul, Yusof, & Noor, 2012; Zhao, 2007), information is readily available much faster thanks to broadband networks, and commerce has diversified from the physical to the virtual world (Martín-Gutiérrez, Mora, Añorbe-Díaz, & González-Marrero, 2017). Today, information is a fundamental asset, and technology has become the management tool for making the most of that asset, contributing to practical solutions in daily life matters. Each day physical presence is less needed to exchange ideas, conduct business, or aid in the process of teaching and learning (Arkorful & Abaidoo, 2015).

Many people directly involved with teaching and learning believe technology brings only advantages and promotes best practices when working with it in the classroom. It is essential to understand that educational technology offers both advantages and disadvantages. As a result, we have to consider several factors before adopting and implementing emerging technology into classrooms and subjects.

Advantages of Technology Adoption for Educational Purposes

Technology usage for educational purposes is increasing in the classrooms. It is important to recognize that there is a new generation of students coming to higher education institutions with specific knowledge of emergent technologies and with prior expertise. The expansion of technology in all fields and levels of society is occurring at a high velocity, and

each day, new elements appear that produce changes in our daily activities. For example, according to Luaran et al. (2016), “policymakers and educators agreed that ICT [information and communication technology] is a supreme factor in leveraging positive effects on the students' achievements at large” (p. 87). Luaran et al. conducted a study in Malaysia focused on indigenous students and their views related to the importance of technology for learning purposes. After receiving surveys’ responses from 94 indigenous students in Malaysia, they found that although indigenous students do not have acceptable technology competences, their attitude to using technology for educational purposes is highly positive.

This new generation of students must not feel the lack of those tools and new ones during the development of their stay at a higher education institution. Hence, it is crucial to encourage professors to become innovators instead of inhibitors in the adoption of educational technology in their classes (Watty, McKay, & Ngo, 2016). Watty et al. (2016) conducted a qualitative study using 13 semi-structured interviews across ten universities in Australia. Their findings showed that “technology can play a key role in reimagining how business education can be remodeled” (p. 12) to provide education for the 21st century, improving students’ learning outcomes. They explained that it is important to consider now that the ways we learn and interact have changed due to technologies and recognize the different models of teaching and learning they are providing. They conclude with the importance of contemplating a model based on technology innovation to provide education "anywhere, anytime, for anybody" (p. 12). Indeed, many studies reveal the advantages of using technology, and this section will cover some as examples to show knowledge gained on this topic over time.

Teaching and learning process and innovation. There are several advantages in the teaching and learning process that evidence the importance of adopting and using educational

technology in the classes. For example, after reviewing 21 articles published between 1983 and 2013, Stošić (2015) concluded that if the technology is used for educational purposes, students can:

- become proficient at teaching materials, moving ahead self-sufficiently, by their own,
- select by themselves their speed of working,
- review classes that were confusing to them, or not very clear, recapping those classes using technology tools,
- know their progress in class, and also results of a test, straightaway,
- maintain continuous interaction with other students and faculty members,
- develop and improve expertise and intellectual characteristics, and
- get a positive boost in receiving new knowledge. At this point, proper guidance is vital.

Similar to Stošić (2015), there is research supporting that technology lets students learn at their own pace, selecting their speed of working, showing them the value of using educational technology (Enfield, 2013). After surveying 37 students with a prior flipped classroom experience at California State University, Enfield (2013) found that this technology tool delivered an engaging learning experience for the students. He also found that it was a useful tool to assist students in learning the content, and also it increased their aptitude to learn independently at their own pace, with possibilities of reviewing the classes, maintaining interaction with their classmates and engaging by choice, and not by force.

As another example, Gillani, Gujjar, and Choudhry (2008) guided a study with selected students of the 10th class in Islamabad and found that the integration of educational technology

as an additional strategy in teaching biology was useful because it increased interest and boosted motivation levels. Educational technology was found to be similarly effective for low and high achievers, as well. This study explained the importance of technology used for educational purposes:

- It is an efficient method of designing, accomplishing, and assessing the teaching-learning process.
- It allows education to be more effective, understandable, and significant.
- The resources or technological tools for educational purposes make the learning process easier.
- It increases curiosity and interest and improves the levels of motivation and enthusiasm.

Another benefit of integrating educational technology into the classrooms is to help students become flexible to changes, showing them how to "learn to learn" (Collins & Halverson, 2018). As Collins and Harvenson (2018) explain in their book "Rethinking Education in the Age of Technology," this means being prepared to learn by themselves, learning emerging technologies that can be used in their future careers. Students can be encouraged to take advantage of gadgets for learning on their own for educational purposes and not just used for entertainment. Gaming, tablets, mobiles, robots are excellent approaches to let students learn on their own, helping them to achieve entrepreneurial skills and profound learning. Collins and Halverson also explain that the ability to more easily customize the teaching and learning process is becoming a great advantage of technology. Different electronic gadgets can react to the specific "interests and difficulties that learners have and provide content on any topic of interest" (p. 2). They also state that as learning has been exponentially growing,

it is almost impossible to cover topics only with textbooks. It is vital to access knowledge through digital sources, and as mentioned above, to learn how to learn and to have access to all information that the globalized world is spreading through digital access.

Besides, another advantage of using educational technology is improved teaching and learning innovation. As Blessinger and Carfora (2015) explain in the book "Inquiry-based Learning for Multidisciplinary Programs: A Conceptual and Practical Resource for Educators," innovation can be developed in the teaching and learning process with the implementation of new or improved practices that can result into improving learning outcomes. These practices include the use of technology tools selected to produce optimal learning support for students. The use of different tools such as blogs, wikis, discussion boards, and other technology tools can facilitate collaborative learning, boost reflection, build a robust environment, and transform the teaching and learning process. Such tools can help to close the gap between developed and undeveloped nations, as Lloyd and Barrenech (2014) state in their book named "Educational Technology for the Global Village." They explain the need for today's students to be prepared for globalization. It is essential to help them develop their skills to succeed worldwide. It is important to use educational technology to achieve this kind of international education.

Students who interface with knowledge transfer in a dynamic, self-directed, and productive way are positively influenced by the integration of technology (Afshari et al., 2009). Afshari et al. described that the effective practice of diverse educational technologies in the classrooms shapes a great environment, transforming the teaching and learning process. In their study reviewing literature in 83 articles published between 1991 and 2006, they explained that technology is more than an instrument that could be used to replace old teaching approaches but a critical tool to give support to innovative techniques in the teaching and learning process.

When adopting educational technology, it is crucial to focus on the technological tools that might contribute to the teaching and learning process and if they are suitable in the development of the knowledge transfer practice. He concluded that two principal factors are affecting the integration of technology for educational purposes: school and teacher factors. He makes recommendations to amend those barriers as well.

Finally, it is essential to expose students to new teaching and learning process experiences and know-how as required in our modern society in accordance with globalization (Friedman & Friedman, 2013). After reviewing relevant literature between 1996 and 2012, Friedman and Friedman (2013) concluded that students are quitting university, not because of costs, but because they find it uninteresting. They explain it is significant to transform education according to the real world we are leaving, integrating educational tools such as social media. They also concluded that faculty members who are reluctant to adopt new technologies for the teaching and learning process are going to be obsolete soon; if faculty want to increase their value in their institutions, they have to embrace technology tools and integrate them in the teaching and learning process.

E-learning. There are multiple advantages of using distance learning or e-learning daily. In their book related to rethinking education in the digital age, Collins and Harvenson (2018) cite an example of a university in the United States that has over 30,000 online students. They explain that adult learners with career and family responsibilities are increasingly opting to take distance learning courses as an option to take advantage of these methods of education.

Arkorful and Abaidoo (2015) conducted a study reviewing researched literature from 1975 to 2012, giving an academic context of contributions made by several scholars and organizations related to e-learning, specifically its usage in the teaching and learning process in

HEIs. They explain the advantages of using technology for teaching and learning, specifically the integration and use of e-learning in education. As they describe, e-learning implicates the usage of digital tools to allow learners to have access to knowledge anytime, anywhere. E-learning offers the flexibility of time and place, and this availability of discussion forums worldwide also eliminates barriers and fears related to the involvement and sharing of knowledge with other students. Besides, e-learning is more cost-effective than traditional face-to-face teaching because it eliminates (or at least reduces) the need for traveling. In their study, they found that e-learning lets students access knowledge, receive training, interact with faculty, and receive feedback anytime and anywhere. This technology tool encourages students to interact with classmates and professors, enhancing their relationships by exchanging ideas that stimulate learning and promoting respect with each other. They conclude that creating a proper setting for collaboration among students may lead to an increase in academic standards.

E-learning can be further enhanced if we introduce more technology into it, such as cloud computing. Riahi (2015) reviewed researched literature from 23 articles between 2001 and 2015, and concluded that e-learning based on cloud computing has many advantages such as (a) low costs; (b) the ability to increase performance when working on the platform; (c) an automatic updated software; (d) a better compatibility with document formats; (e) benefits for students and faculty such as collaboration, interaction, feedbacks; and (d) platform security benefits.

Support for students with special needs. Another advantage of using technology for educational purposes is supporting learning for students with special needs. Different scenarios, such as the use of distance learning previously explained, speech technology, and virtual or augmented reality, are unusual settings for enhancing the teaching and learning process for

people with disabilities. Virtual environments using distance/e-learning offer virtual classrooms platforms for people who cannot enter into a traditional classroom, allowing these students to continue their formal education (Martín-Gutiérrez, Mora, Añorbe-Díaz, & González-Marrero, 2017). Martín-Gutiérrez et al. (2017) define virtual reality as “a whole simulated reality, which is built with computer systems by using digital formats” (p. 473). They explain that augmented reality superposes on real-world image details such as 3D objects and multimedia to allow interactions with the user. Martín-Gutiérrez et al. reviewed literature between 1993 and 2016, and they concluded that the use of virtual and augmented technology facilitates learning, and they explain that a good use of virtual technologies can impact students’ learning outcomes.

The use of augmented reality can be implemented in students with Attention Deficit Hyperactive Disorder (ADHD) to increase motivation in learning to increase motivation and attention in their teaching and learning process (Ab Aziz et al., 2012). Ab Aziz et al. (2012) reviewed 28 articles of researched literature between 1999 and 2011, and one conclusion was that using augmented reality for educational purposes in students with ADHD could better capture their attention and inspire active participation in their learning process.

As another example, speech technology can help students with difficulty reading or writing obtain access to the content they could not do in other ways, improving their learning outcomes (Zhao, 2007). After reviewing researched literature between 1995 and 2007, Zhao (2007) explains that "speed technology can enable machines to receive human language as input and respond with oral language as output" (p. 35). In his study, he concluded that the appropriate use of this technology could deliver a positive impact on literacy development and the performance of students with special needs.

Reduce costs for students. In the educational field, challenges are enormous. The world is moving quickly and, at the same time, are changing the methods for teaching and learning. Technology can bring changes to education. It can allow people in developing countries to receive knowledge and skills at fewer costs (Parvin, 2013). After reviewing literature in 16 articles published between 1992 and 2011 in a study related to the integration of technology for educational purposes for the advancement of the developing country in Bangladesh, Parvin (2013) concluded that despite living in a comparatively unfortunate economic situation, educational technology could achieve high success providing services at reduced costs. As the study explains, educational technology can provide access to higher education to more people at a lower cost. This fact can result in individuals obtaining the knowledge and skills to prosper and serve the nation.

Disadvantages of Technology Adoption for Educational Purposes

Technology is not magic, and its effectiveness depends on the planned integration of technology for educational purposes (Arkorful & Abaidoo, 2015; Ehrmann, 1999). Faculty members may expect improved learning outcomes due to the use of technology without realizing they need to understand their role being active agents in the integration of such technology (Afshari et al., 2009). Some disadvantages related to the use of educational technology include: (a) equity, (b) costs associated with the integration of technology for educational purposes; (c) distractions; and (d) security (Bulman & Fairlie 2016; Ehrmann, 1999; Goundar, 2014; Patterson, 2018; Von Solms & Niekerk, 2013; Warschauer, Zheng, Niiya, Cotten, & Farkas, 2014).

Equity. A fundamental disadvantage of using technology for teaching and learning is equity. People who have low incomes and limited resources do not always have ready access to

technology. Such individuals are at a disadvantage because they often do not have access to technology gadgets or enough technical skills, nor do they have technical support available to help them with needed tools for educational purposes (Bulman & Fairlie 2016; Warschauer et al., 2014).

After reviewing researched literature from 104 articles between 1979 and 2015, Bulman and Fairlie (2016) concluded that despite the current and planned interventions existing in the United States and other countries designated to bridge the digital gap, such as tax breaks, voucher programs, and laptop programs for educational purposes, they are not likely to reduce the bridge on its own. Similarly, Warschauer et al. (2014) conducted a mixed-method study in three districts of the United States, including 2,791 survey's respondents, 12 interviews, and a review of documents, and they concluded it is essential to develop programs to bridge these digital divides for low-income population, offering support structures both financial and social. Such measures may ameliorate specific barriers to participate in technology programs for educational purposes that underprivileged students face.

Institutional costs. There are often high costs within institutions that rely on technology for educational purposes to improve outcomes in the teaching and learning process. Consequently, it is vital to assess if these costs balance the benefits of using technology in a specific class or laboratory. Costs are related to the acquisition of hardware and software, the preparation of the physical places to install the laboratories and preparing courses to train the faculty members on how to use and adopt technology for educational purposes. Costs are also involved in organizing support teams such as a help desk group in maintaining the hardware and software performance (Bulman & Fairlie 2016).

After reviewing researched literature from 104 articles between 1979 and 2015, Bulman and Fairlie (2016) concluded that even though costs related to purchasing are decreasing, the equipment becomes obsolete rapidly; on the other hand, costs associated with maintenance are usually high, and they include annually costs related to equipment and software support and maintenance. They also concluded that these costs are rarely documented, and more research is required related to benefit-cost analyses. Even if the benefits and costs are positively balanced, the incorrect use of technology for educational purposes will not influence learning outcomes nor have the impact we are expecting within the teaching and learning process (Ehrmann, 1999).

Distractions. Another disadvantage of education technology is the potential distractions from work and educational activities when using technology in a classroom. Sometimes students do not have an interest in using technology for educational purposes, with their focus on using it only for recreation, even in the classroom. Technology can interfere with students' ability to achieve the objectives established in their classes (Goundar, 2014).

After conducting a quantitative study involving 54 survey responses across two HEIs in New Zealand, Goundar (2014) found that students were extremely distracted during lectures by the use of technology devices both by themselves and by their classmates. He also concluded that faculty that do not incorporate technology devices during their speeches in an integrated manner have to contemplate how to bound or regulate their use. He also found that these distractions were not only an issue within these two HEIs but a global issue. These distractions may result in undesirable consequences on the teaching and learning process. As an example, wireless networks with open access to the internet can provide a harmful source of distraction

during the teaching and learning process if students use it only for recreation (Patterson, 2018). Actions must be considered to avoid these distractions.

Patterson (2018) conducted a quantitative study administered by Standford University, involving 537 international students. The researcher divided the treatment groups into four categories: (a) control, (b) commitment device, (b) alert, and (c) distraction blocking. Students were randomly distributed to one of these four groups. After studying the distraction group, Patterson concluded that the existence of an open Internet is an essential distraction for students, and it decreases the possibility that they go through the assignments and complete coursework. He also concluded that using the blocking of web pages that distract students from classes may increase the likelihood that students pay attention and work during the class sessions.

Security. The use of the internet and cyberspace could also be seen as disadvantages, as well. Concerns related to information security and cybersecurity concepts such as ethics, security and privacy, copyright protection, and computer crime are vital to consider (Von Solms & Niekerk, 2013). After reviewing literature from 2002 to 2012, Von Solms and Niekerk (2013) explained the need to protect not only the information from vulnerabilities involved in the concept of information security but also the importance to protect those "that function in cyberspace and any of their assets that can be reached via cyberspace" (p. 101). They also explain that this added dimension of cybersecurity has ethical effects for the whole society, be understood as a collective responsibility.

It is significant to point out the setting up of the Inter-American Integral Strategy to Combat Threats to Cybernetic Security in the AG/RES 2004 resolution (XXXIV-O/04) (Organization of Inter-American States, 2004). This resolution allows the Inter-American Committee Against Terrorism (CICTE) to work in cybernetic security-related affairs, with

countries that belong to the Organization of American States (OAS), of which the DR is a member. It takes into consideration all of the concerns mentioned above. Faculty will need to change their behavior in the classrooms to ensure that they are adopting this resolution to maintain a truthful, accurate, and correct use of technology for educational purposes and to comply with national regulations.

Role of Faculty in Technology Adoption for Educational Purposes

The adoption of educational technology starts with the integration of several aspects of technology, such as hardware, software, accessibility to technological equipment, information and communication, and the development of technology tools for educational purposes. It takes relevance to the faculty role for effective adoption in the teaching and learning process.

Winn (2002) described the evolution of technology for educational purposes in his literature review that encompasses all relevant works between the years 1975 and 2001. He described the development of educational technology has involved instructional design based on content, message design based on format, simulation-based on interaction, and research focused on learning environments. According to Winn, all these stages involved faculty integration. Similarly, Afshari et al. (2009) conducted a literature review of studies between the years 1991 and 2006 on technology for educational purposes. They concluded that the practical usage of technologies builds a robust learning environment that allows students' knowledge transfer in a more dynamic, self-directed, and productive way. Afshari et al. explained that technology does not necessarily intend to replace old teaching approaches but that it supports the integration of innovative techniques to enhance the teaching and learning process.

Several studies refer to the use of educational technology as a facilitator of student-centered learning. The studies suggest that faculty can use educational technology innovatively

to improve the student education process, including student decision making, student behavior, student problem-solving skills, and thinking (Afshari et al., 2009; Drent & Meelisen, 2008). This improvement could be achieved via positive faculty attitudes toward the adoption of educational technology, computer competence, and faculty sharing knowledge with colleagues. It is also essential to consider some other factors, such as the relationship between the technology used for educational purposes and faculty beliefs, perceived barriers, and the school culture (Tondeur, van Braak, Ertmer, & Ottenbreit-Leftwich, 2017).

In a similar vein, Drent and Meelissen (2008) conducted a study on the factors that hinder or motivate the use of Information and Communication Technology (ICT). The study took place in the Netherlands, with 210 participants responding to a questionnaire and four individuals participating in interviews. They found four factors that positively influence the innovative use of technology by faculty: (a) a student-oriented pedagogical approach, (b) personal entrepreneurship, (c) faculty pedagogical approach, and (d) faculty attitude and perceived advantages on the integration of technology for educational purposes.

As Afshari et al. (2009) stated, “These are cognitive behaviors that children need to learn in an information age” (p. 78), and faculty must comprehend the importance of the role of educational technology in the teaching and learning process if they are to become “effective agents … to make use of technology in the classroom” (p. 78). Overall, based on researched literature between 1985 and 2005, Fisher (2006) suggests that faculty are agents of change and explained the importance of focusing on modifying faculty attitudes to show them the benefits that technology could yield if used more effectively. One of Fisher's conclusions is the need to embrace the importance of faculty and researchers as social agents in the development of a real transformation in education.

Challenges of Faculty Members in the Adoption of Educational Technologies

Several authors have addressed the challenges of adopting technologies into the classrooms, including: (a) approach and adoption delays, (b) reliability, (c) lack of time, (d) demographic characteristics, and (e) beliefs.

Approach and Adoption Delays

A global challenge faculty are facing in this century is related to finding the best approach for adopting and using educational technology in their classes. The teaching and learning process has been complicated by the increase of technologies for educational purposes (Afshari et al., 2009). After reviewing literature in 83 articles published between 1991 and 2006, Afshari et al. (2009) explained that technology is a significant tool to give support to innovative techniques in the teaching and learning process and not only an instrument that could be used to replace old teaching approaches. Due to the increase of technologies for educational purposes, it is important to focus on the technological tools that might contribute to the teaching and learning process. It is also essential to asses if they are suitable in the development of the knowledge transfer process.

During the development of his article, Afshari et al. (2009) explained that integration needs time for individuals to understand the innovation and to be able to adopt it. These findings are aligned to the Rogers' (2003) Innovation Diffusion Theory (IDT), where the latter defines the forms of adoption to appreciate how and why new inventions or ideas and technology increase, and also if it will be successful for the user, identifying five adopter categories partition the continuous innovative adoption: innovators, early adopters, early majority, late majority, and laggards.

According to Jaffer (2010), the adoption of technology for educational purposes is connected to a philosophy change, from instructivist to constructivist pedagogy. After reviewing literature from 1992 to 2008, Jaffer (2010) concluded that constructivism is the foundation of study and practice in the arena of educational technology. He also explains that educational technology needs to take into consideration several contexts when adopting it, such as teaching and learning social context, how knowledge is being taught, learned and evaluated, impacts of the teaching and learning process producing social differences, and how the nature of the relationship between faculty and students impact on the distribution of knowledge to diverse set of students. Consequently, the adoption of technology for educational purposes in the classrooms might have delays.

Reliability

A particular challenge addressed by several authors is reliability, particularly regarding technology used in classrooms; these studies revealed the importance of purchasing reliable equipment and software; guiding a properly maintenance of technology software and gadgets; and working on assuring quick responses to failures from support staff to diminish the impact of this barrier (Agbo, 2015; Buchanan, Sainter, & Saunders, 2013; Porter & Graham, 2016).

Agbo (2015) studied the factors affecting the adoption of educational technology in the Ohaukwu Local Government Area of Ebonyi State by interviewing, observing, and analyzing documents. Among other factors, he found that reliability brings obstacles to the adoption of technology for educational purposes. As Agbo explains, to foster reliability, it is vital to adopt technologies with higher reliability and to build methods and policies by the technical support team for quick responses to breakdown. It is also essential to verify technology tools by the

support team and to encourage faculty to test the technology tools previously installed for their programs before they start the classes.

Porter and Graham (2016) also found reasons related to reliability that cause faculty not to rely on technology. After surveying 214 faculty members at a HEI in Idaho, all in the adoption or early implementation stage of blended learning, Porter and Graham found that to influence faculty integration of technology tools for educational purposes there must adequate infrastructure, technological and pedagogical support, evaluation data, and a clear goal of the institution for integrating such tools. Also, universities must provide support for perceived delays by faculty in receiving the required support, failures in different educational software, software being out of date, and slow internet access.

Buchanan et al. (2013) also found reliability as a challenge for faculty to adopt educational technology. In their study, they address this issue as structural constraints or limitations. After surveying 114 faculty reporting their use of educational technologies and the challenges of their integration, Buchanan et al. found a significant barrier within the HEI was providing inadequate resources and technical support. They found that providing a solution to these issues is essential not to inhibit the progress or deployment of technology learning techniques.

As a first-order barrier, external to the individual, several authors refer to faculty's concern about the lack of time or recognition of the time spent to adopt and use technology for educational purposes (Afshari et al., 2009; King & Boyatt, 2015; Reid, 2014). Such lack of time can be a barrier to having faculty become an agent of change in the adoption or use of technology for educational purposes. After reviewing literature in 83 articles published between 1991 and 2006, Afshari et al. (2009) concluded that lack of time is a principal factor that affects

the adoption of educational technology by faculty members. He makes recommendations to amend those barriers, as well as boosting inspirations of professors to spend additional time getting involved with new technologies for educational purposes. Inspiring faculty to overcome this kind of obstacle can help make them active agents to foster the use of technology in the classrooms.

Some faculty members perceive that the integration of educational technology will be an additional workload to their responsibilities, and therefore, limited time is a concern. Adopting a phenomenological approach, King and Boyatt (2015) explored perceptions of 48 participants based on 11 interviews and 37 focus groups related to the factors that influence the integration of e-learning in HEIs. They found that time is an essential factor in developing content when using technology tools. Faculty often feel a deficiency of time to organize new content and activities when using technology for educational purposes.

Adopting and using educational technology requires extra time in some phases of the process. It is not merely learning the technology but acquiring the skills to use it for the teaching and learning process. Based on the literature reviewed between 1988 and 2012, Reid (2014) concluded that although the adoption of educational technology demands extra time from faculty, they receive insufficient or no incentives to integrate technology for educational purposes. Leaders sometimes do not understand the time required for training, and thus they failed to take into consideration extrinsic motivations, such as additional payments or other incentives such as professional development courses, as Herzberg (1968) explains in his Herzberg's Motivators and Hygiene Theory (Two-Factors Theory).

Age

Some research suggests that age does impact faculty adoption of technology, but these results are mixed. Some findings reveal age influences faculty adoption of technology for educational purposes (Al-Fadhli, 2009; O'bannon & Thomas, 2014), while others found age is not a significant factor in the adoption of educational technology (Fleming, Becker, & Newton, 2017).

After conducting a quantitative study in the United States with 1,095 participants from seven school systems in two states, O'bannon and Thomas (2014) found that faculty age has an impact on the adoption and use of technology, specifically mobile devices in their classes. They found that the age of faculty has a relationship with their technology ownership, perception of technology usefulness for educational purposes, and their technology beliefs. Similarly, Al-Fadhli (2009), after conducting a study in Kuwait City, involving questionnaire responses from 118 participants, found that the age of faculty is a factor in willingness to embrace technology tools such as e-learning. In a similar vein, Laabidi (2016) conducted a study related to the effect of age on professors' decision to integrate technology in their classes in Moroccan higher education institutions. The author surveyed 195 full time and part-time professors and found that younger professors tend to adopt and use more educational technology than older faculty. The author concluded that faculty age might impact their decision to adopt technology for educational purposes.

On the other hand, other findings revealed no age-related impact in faculty adoption of technology for educational purposes. After surveying 979 participants in Australia, Fleming et al. (2017) found that age has no significant influence on the intention and willingness to use technology tools such as e-learning. This research revealed that age stereotype is an erroneous assumption about technology acceptance. Instead, they found other factors more significant in

determining the use of e-learning in the future, such as complexity, adequate technical support, and authentic learning.

Gender

There is research that references some differences in technology integration by gender, with some findings showing its use harder for females. For example, after conducting a quantitative study of gender and technology acceptance and receiving questionnaires responses from 339 participants in a South-East Asian country, Teo et al.'s (2015) findings revealed that female participants obtained lower scores than their male counterparts on perceived ease of use. This conclusion suggests that the use of technology is more challenging for females than for males in this specific study. Similarly, Agbatogun (2009) conducted a study related to gender diversity in technology literacy among Nigerian pre-service teachers, including 565 participants. The findings revealed that fewer female professors had explored the potential benefits of using technology in the classes to improve quality education. The researcher recommended cultivating female interest in educational technology by introducing technology concepts into the whole curriculum and engaging them in technology classes and workshops for educational purposes. He also proposed more academic activities related to the use of technology such as peer interaction with virtual communication, raising their interest in knowledge inquiry, and research in the use of technology in the classrooms.

In contrast, Al Gamdi and Samarji (2016) found that that female participants perceived fewer e-learning barriers than their male counterparts. After a quantitative study related to challenges towards e-Learning by faculty members in Saudi Arabia, using questionnaires, and receiving responses from 214 participants, the researchers found the adoption of e-learning is more challenging for males than for females; a different result than the study presented above.

Even though some research reveals gender plays a role in adopting technology for educational purposes, other authors explain that as technology has become standard for the workplace settings, its adoption, and use do not have to be influenced by gender (Sang, Valcke, Van Braak, & Tondeur, 2010). After surveying with 727 participants in China, Sang et al. (2010) found that potential technology adoption in the educational field significantly correlates with all faculty-related variables used in this study (constructivist beliefs, teaching self-efficacy, computer self-efficacy, and computer attitudes), except for gender. It reveals that gender does not impact their interests in adopting technology for educational purposes.

Beliefs

Some research has found that faculty beliefs may predict and determine their current teaching practices. For example, after surveying 481 participants in the southeastern United Stated, Wilkins (2008) found that teacher beliefs have a strong influence on teachers' practice. Also, he found that beliefs moderately foresee and have a direct effect on their adoption of instructional methods. Other research also addresses the connection between faculty beliefs about technology and its adoption and use for educational purposes to improve the teaching and learning process. A view to take into consideration is related to the question: is technology worth it? The additional responsibilities for faculty who engage in adopting educational technology in their classes may intensify this challenge (Butler & Sellbom, 2002). After reviewing literature from 1978 to 2000, Butler and Sellbom (2002) concluded that among the barriers to adopting technology for educational purposes is the uncertainty that shows faculty members when asking themselves if using technology in the educational field matters. Given the skepticism that technology tools facilitate or not the teaching and learning process, faculty ask wonder if it is worth their efforts to learn new technologies for their classes.

Although HEIs have launched initiatives to promote the use of technology for educational purposes, some faculty are still questioning their self-efficacy beliefs or abilities for assuming this integration. As Albion (1999) explains, beliefs towards self-efficacy are factors that influence technology integration. After reviewing literature from 1986 to 1998, Albion concluded that the adoption of technology for educational purposes is directly related to the faculty's self-efficacy beliefs about using technology in the teaching and learning process. He also concluded that their self-efficacy beliefs for technology use improved their expectations to incorporate technology in their upcoming classes.

Similarly, based on the literature reviewed between 1988 and 2012, Reid (2014) concluded that many faculty barriers to adopting educational technology in their classes are related to second-order change, such as self-efficacy beliefs to adopt technologies and beliefs to technologies' effectiveness. Self-efficacy is defined by Bandura (1997) as personal beliefs about the ability to acquire or execute activities at different stages. That means that self-efficacy perceptions also include beliefs related to faculty abilities (of working with technology in the classrooms and not only the perceptions they have about their knowledge about what to do in classes. In a similar vein, Tondeur et al. (2017) conducted a meta-analysis of 14 selected studies and found that beliefs are associated with faculty barriers for the adoption of educational technology because beliefs lead to action, and such actions can help to reiterate or not faculty beliefs. They also found that a positive or negative school culture influences the adoption of educational technology by faculty members.

Motivations of Faculty Members in the Adoption of Educational Technologies

Administrators and psychologists have long been concerned about understanding motivation and job satisfaction to help improve performance outcomes from employees (Locke

& Latham, 2002). Several motivation theories have been used to comprehend this phenomenon of cognitive growth necessities and psychological practices, such as (a) Herzberg's (1968) Motivators and Hygiene Theory (Two-Factors Theory), where satisfaction is the result of motivation factors and dissatisfaction is the result of hygiene factors; (b) Maslow's (1943) hierarchy of needs, related to the priorities given to the five basic needs; (c) Alderfer's (1969) ERG theory, similar to Maslow's theory, without taking into consideration the hierarchy; (d) Bandura's (1977) self-efficacy theory, which explains that goals and aspiration of individuals are determined by their efficacy; (e) Locke and Latham's (2002) goal-setting theory, related to the motivation of individuals based on finding different methods to accomplish extreme goals; and (f) Vroom's (1964) expectancy theory, where motivation is reliant on individual's beliefs related to whether his effort will result in success. For this specific study, I am using Herzberg's (1968) Motivators and Hygiene Theory (Two-Factors Theory).

Herzberg's (1968) Motivators and Hygiene Theory (Two-Factors Theory) explains hygiene factors as extrinsic to the job and they are important to avoid dissatisfaction at the workplace. Examples of hygiene factors include: (a) salary and benefits, (b) interpersonal relationships, (c) types of supervision by superiors, (d) physical and environmental work conditions, (e) job security, and (f) a company's policies and administration. Motivational factors are extrinsic to the job and essential satisfiers to encourage employees to perform better at work. These factors involve: (a) professional recognition, (b) growth/ development, (c) the work itself, (d) responsibility, and (e) achievement or the need to excel in their work.

Researchers have found that such hygiene and motivational factors can play a significant role in providing incentives to HEI faculty members to adopt educational technology in the

classrooms. The literature reviewed for this study presents findings related to different motivational aspects that can influence faculty within such adoption.

Intrinsic Motivators for Faculty Adoption of Educational Technology

Several authors describe the impact of introducing motivational factors to boost the adoption of educational technology in classes. These authors addressed such factors as relevance for various grade levels (Bacow, Bowen, Guthrie, Long, & Lack, 2012; Chapman, 2011; Cook, Ley, Crawford, & Warner, 2009; Gautreau, 2011; Nicolle & Lou, 2008; Parker, 2003; Potter & Rockinson-Szapkiw, 2012; Shea, 2007; Surry & Land, 2000; Wingo, Ivankova, & Moss, 2017). For this study, the literature explored was related to Herzberg's motivational factors intrinsic to the job, including recognition, growth/development, the work itself, faculty responsibility, and achievement.

Recognition. Some authors suggest that recognition is a prominent factor in promoting the adoption of educational technology by faculty. After surveying 42 faculty members at a public four-year university in southern California, Gautreau (2011) found that recognition for achievement was identified as critical to faculty in the adoption of technology tools for educational purposes. Similarly, after reviewing literature related to faculty use of distance learning in the context of technology acceptance models between 1996 and 2015, Wingo et al. (2017) found that recognition of their success is a significant factor that influences the adoption of technology in their classes.

In the book “Barriers to Adoption of Online Learning Systems in U.S. Higher Education” Bacow et al. (2012) describe that in each university, there are faculty with the willingness to adopt new approaches related to technological pedagogies. They explain that

encouraging and recognizing them for their embracing innovative ways of teaching could be an excellent strategy to boost their commitment to adopting and use technology in the classrooms.

Growth/Development. Another motivational factor for adopting educational technology is the opportunity to grow/develop and learn new skills. After surveying 386 faculty in 36 colleges in the United States, Shea (2007) found a need for ongoing professional development to boost motivation in the adoption of technology tools for teaching and learning. Similarly, after conducting a mixed-methods study, receiving responses from 117 surveys and interviewing nine participants and full-time faculty members at a considerable Research I University, Nicolle and Lou (2008) explain the importance of offering opportunities for professional development for technology adoption. In a similar vein, Chapman (2011) conducted a study related to the motivations and incentives to adopt distance learning by tenure-track/tenured and contingent faculty. After surveying 142 participants, Chapman found that the opportunities to use new technologies, develop new competencies, and enhance faculty skills were ranked among the top six motivators within the study.

Potter and Rockinson-Szapkiw (2012) also reviewed the literature regarding professional development towards technology adoption for education improvement. After reviewing literature between 1980 and 2010, they concluded that opportunities for professional development are among the prominent motivation factors that move professors to integrate technology in their classes. They also present three aspects as recommendations for increasing adequate professional development opportunities to encourage technology adoption: technology operation, application, and integration.

The work itself. There is research that reveals the importance of having an exciting and satisfying job, which helps keep employees motivated. Shea (2007) surveyed 386 faculty in 36

colleges in an extensive state university system in the US and found that individuals were motivated by having opportunities to learn new technologies for teaching and learning. Similarly, after comparing four studies from four different universities in the US related to motivators and inhibitors for faculty in distance learning, Cook et al. (2009) found that intellectual challenge and job satisfaction are relevant motivators to encourage faculty in using technology tools for educational purposes.

Faculty responsibility. Some research states that faculty responsibility may impact their motivation to adopt and use technology in the classrooms. Faculty feel that they ought to own their jobs may influence their motivation. Gautreau (2011) surveyed 42 faculty members at a public four-year university in southern California and found that strengthening faculty members' responsibility for teaching was placed in the second position of the seven motivation factors explored it her study.

In contrast, other research found responsibility having limited influence in motivating faculty. After reviewing literature from 1989 to 2001, Parker (2003) studied the motivation and incentive for distance education technologies and concluded that responsibility is the motivational factor with lowest impact in faculty toward the adoption of such technology tool for teaching and learning, behind self-satisfaction, flexible schedule, and intellectual challenge which had the first places within the conclusions of this study.

Achievement. It is essential that a job can provide a sense of achievement to an employee, a gratified sensation of having done something challenging and worth it. Gautreau (2011) conducted a quantitative study with 42 survey responses at a public four-year university in California study focused on motivational factors that move the adoption of a Learning Management System (LMS) technology tool by faculty and found achievement among the most

prominent factors that influence faculty in their decision to adopt such tool into their instructional practices.

Faculty also may perceive achievements such as opportunities for publications and grants as motivating factors to adopt technology for educational purposes. Surry and Land (2000) reviewed literature between 1983 and 1998 studying strategies for driving university faculty to use or adopt technology. They concluded that the opportunities for publications and traveling to present results and also seeking grants are important factors for motivating innovators, early adopters, early majority, and late majority individuals. For laggards, they found that mini-grants and improved research promote sufficient satisfaction to motivate such faculty.

Extrinsic Motivators for Faculty Adoption of Educational Technology

Several studies refer to the significance of using extrinsic motivating factors as strategies to promote the adoption of educational technology in classes. These studies addressed such factors as relevant in different grades to integrate technology for instructional purposes (Amiel & Orey, 2006; Afshari et al., 2009; Chapman, 2011; Gautreau, 2011; Parker, 2003; Porter & Graham, 2016; Shea, 2007; Surry & Land, 2000; Zellweger, 2007). For this study, the literature connected to Herzberg's extrinsic factors towards the use of technology for educational purposes was related to: (a) salary and benefits, (b) interpersonal relationships, (c) physical and environmental work conditions, and (d) company's policies and administration.

Salary and Benefits. There is research that reveals salary as the number one extrinsic factor for motivating faculty. For example, Parker (2003) studied the motivation and incentive for distance education technologies, and after reviewing literature from 1989 to 2001, she

concluded that salary is the most requested extrinsic reward for motivating faculty to adopt technology for educational purposes.

Similarly, Gautreau (2011) conducted a quantitative study with 42 survey responses at a public four-year university in California. This study revealed that salary was the number one in the ranking of extrinsic motivators to motivate faculty in the adoption of educational technology. In the same way, Chapman (2011) conducted a study related to the motivations and incentives to adopt distance learning by tenure-track/tenured and contingent faculty. After surveying 142 participants, Chapman revealed that salary was the most prominent motivating factor for tenure-track/tenured faculty and the second leading motivating factor for contingent faculty in the incentive comparison data to adopt such technology tools for educational purposes.

Interpersonal relationships. It is essential for faculty to have a healthy, cordial, and suitable relationship with their peers, supervisors, and subordinates. It is also important to promote useful peer interaction to motivate each other. After reviewing literature between 1983 and 1998 related to strategies for driving university faculty to use or adopt technology, Surry and Land (2000) concluded that the establishment of peer mentoring/tutoring involving innovative faculty sharing their know-how with others, may result in a good motivation strategy for early adopters, early majority, late majority individuals, and laggards. This interaction can provide adequate attention and confidence strategies to encourage them to adopt educational technology in their classes. After reviewing literature from 1994 to 2006, Zellweger (2007) found that negative peer experiences can result in a barrier for educational technology adoption. They also found that "team teaching had positive implications by way of peer pressure and competitiveness" (p. 67).

Physical and environmental work conditions. It is vital to provide proper equipment and an adequate work environment that promotes suitable outcomes to influence faculty in the adoption of technology in their classes. After reviewing literature from 1991 and 2006 on technology for educational purposes, Afshari et al. (2009) concluded that the usage of technologies in an effective way shapes an excellent learning environment that allows a more dynamic, self-directed, and productive teaching and learning process.

Faculty also need a proper infrastructure with proper equipment and support so they can be fostered to use technology. Porter and Graham (2016) conducted a quantitative study related to institutional drivers and barriers to faculty integration of blended learning in higher education and found reasons related to reliability that cause faculty not to rely on technology at Brigham Young University-Idaho in the US. After surveying 214 faculty members Porter and Graham found that to influence faculty integration of technology tools, the institution must provide adequate infrastructure, proper technological and pedagogical support, and a clear purpose of the institution for integrating such tools. Also, universities must provide support for perceived delays by faculty in receiving the required support, failures in different educational software, software being out of date, and slow internet access.

Company's policies and administration. The company's policies and administration need to be adequate, nondiscriminatory, and clear to every member of the institution. Faculty will show more commitment if they feel the policies are fair and suitable. The literature reviewed for this study shows some policies and administrative guidelines that encourage professors to adopt educational technology in their classes.

Flexible schedule. Literature shows that having a flexible schedule is significant for faculty when adopting educational technology. For example, Shea (2007) surveyed 386 faculty

in 36 colleges in an extensive state university system in the US and found that the most prominent motivation factor for faculty to adopt educational technology is to have a flexible schedule. In a similar vein, Chapman (2011) conducted a study related to the motivations and incentives to utilize distance learning by tenure-track/tenured and contingent faculty. After surveying 142 participants, Chapman found that a flexible schedule was a motivator for both tenured/tenure-track and contingent faculty to adopt technology tools for teaching and learning.

Decreased workload. There is research that points out that a smaller amount of workload is one of the most significantly requested extrinsic rewards. It involves the number of courses assigned and the extra work required during the semester. After reviewing literature from 1989 to 2001 studying the motivation and incentive for distance education technologies, Parker (2003) concluded that decreased workload and release time were the second most significant extrinsic motivators for faculty to adopt such technology for educational purposes.

As administrators encourage faculty towards introducing an online component to the curriculum, time commitment becomes an objection to adopt this technology. Amiel and Orey (2006) conducted a quantitative study investigating workload in an online classroom, with participants from five education classes (masters-level) using educational technology and taught for two years. They concluded that it is vital to analyze the best way to distribute time to specify more accurate measures of workload and time commitment. Realistically presenting these measures can help faculty and also students to get prepared better and accept these time commitments and workloads.

Retention and promotions. The use of technology tools sometimes is perceived as an opportunity to demonstrate competencies that can lead to promotion. For example, Shea (2007) studied the bridge and barriers to teaching online in an extensive state university system in the

US. The researcher surveyed 386 faculty in 36 colleges and found that younger faculty were more motivated by opportunities to prove capabilities they assumed important for tenure or promotion by using technology tools such as teaching online. Similarly, after reviewing literature between 1983 and 1998 related to strategies for motivating university faculty to use or adopt technology Surry and Land (2000) concluded that linking technological integration for educational purposes with the retention, tenure, and promotion (RTP) process is an excellent strategy to motivate early adopters, early majority, late majority individuals, and laggards in the adoption of educational technology.

On the opposite side, after surveying 214 faculty members studying the drivers and barriers to faculty integration of blended learning in higher education, Porter and Graham (2016) found that retention, tenure, and promotion considerations were not among the decisions faculty reported as influencing their decision to adopt such technology for this specific study.

Attitudes of Faculty Members in the Adoption of Educational Technologies

Roger (2003) states that a critical element in the diffusion of new technology is related to the individual's attitudes towards innovation. The terms innovation and technology are used interchangeably in Roger's Theory. Consequently, the framework of the diffusion of innovation framework looks appropriate for the study of the diffusion of such new technologies. As covered in this section, some previous studies refer to the impact of an individual's attitudes as a primary factor in the adoption of technology for educational purposes. Researchers have suggested that computer-related faculty attitudes may be influenced by some aspects presented during the adoption of educational technology. These studies addressed such elements as essential for faculty acceptance or resistance to the integration of technology for instructional purposes. The reviewed literature for this specific study included factors such as personal

characteristics, computer competency skills, perceived usefulness, fear of change, and computer anxiety.

Personal Characteristics

Age. Some studies suggest that age is a significant factor affecting faculty attitudes in the integration of technology in different educational institutions. Laabidi (2016) conducted a study related to the effects of age on English professors' integration of the new technologies in teaching. After surveying 195 participants in various Moroccan higher education institutions, Laabidi (2016) found that young professors tend to use technology for educational purposes more than older professors. As a result, the author concludes that age might influence the faculty's attitudes to adopt technology in their classes. Similarly, Ahadiat (2008) conducted a study related to technology use in accounting education, surveying 288 participants from all 50 states in the US. The study revealed that younger professors tended to use more technology tools that older professors and also had more positive attitudes than older professors towards the use and adoption of technology educational purposes.

Gender. There is research suggesting that gender is an important factor that affects faculty attitudes in the integration of technology in different educational institutions. A recent meta-analysis conducted by Cai, Fan, and Du (2017) related to gender and attitudes toward technology use covered empirical studies from 1988 to 2016 and suggested that males still embrace more positive attitudes toward technology use than females. When comparing this study with the last meta-analysis related to this topic about two decades ago, they found a decrease in the gender gap in general related to the use of technology in classes. Nevertheless, when general attitudes were fragmented into different dimensions of attitude, this specific study

revealed a decrease in gender difference in the "affect" and "self-efficacy" dimensions, but not in the "belief" dimension.

In contrast, some studies suggest that gender does not affect faculty attitudes in the integration of technology in different educational institutions. After surveying 288 participants from all the 50 states of the United States, studying the technology used in accounting education, Ahadiat (2008) found that both male and female faculty showed related attitudes in the use and integration of technology for accounting education. Similarly, Teo et al. (2015) conducted a quantitative study of gender and technology acceptance and based on questionnaires responses from 339 participants in a South-East Asian country they found that both genders have similar perceptions regarding the usefulness of technology for educational purposes, embrace related attitudes regarding technology use, and have similar intentions of using educational technology.

Computer Competency Skills

Some studies suggest that a relevant factor that might have an impact on faculty attitudes in the integration of technology is their technical competence and skills. Albirini (2006) conducted a study related to faculty attitudes toward technology, surveying 326 participants in Syria. The study revealed that the professor's attitudes are related to their computer competence. Also, the author found a connection between computer attitudes and competence, suggesting that higher computer competences may nurture positive attitudes of faculty and also may impact the adoption of technology in their classes. In a similar vein, after surveying 476 participants from various departments at a higher education institution of Turkey, studying the relationship among computer competence, attitudes and computer-assisted Education (CAE), Baturay, Gökçearslan, and Ke (2017) found a positive relationship among computer competences,

attitudes, and technology acceptance. They recommend the need to enhance computer competence to increase technology acceptance levels, suggesting that it could lead to more integration of CAE. In the same way, after conducting a mixed-method study within 72 participants related to faculty attitudes towards integrating technology and innovation, Marzilli et al. (2014) found that technology skills are related to the usage and attitudes toward the adoption of technology in the classrooms. They also found that faculty with higher levels of skills adopt and use technology easier than those with low-level technology skills.

Perceived Usefulness

Some faculty members perceive that applying technology in their classes will not provide advantages in the teaching and learning process, and this perception influences their attitude towards the adoption of educational technology. Some also believe that the classes they teach do not need to integrate technology to enhance learning outcomes. For example, Baturay, Gökçearslan, and Ke (2017) conducted a study related to the relationship between computer competence, attitudes, and computer-assisted Education (CAE). They surveyed 476 participants from various departments at a higher education institution in Turkey and found that perceived usefulness has a positive relationship with attitudes towards education assisted by computers. It is essential to work with the faculty's perceived usefulness of technology usage in classes to increase technology acceptance levels, suggesting that it could lead to enhance positive attitudes in the integration of technology for educational purposes.

In the same way, John (2015) conducted a study related to faculty attitudes towards technology integration in education in the Asian region. The author surveyed 261 full-time faculty members of different leading higher education institutions. The study revealed that attitude is influenced by several factors, including faculty perception of the advantages that the

use of technology in the teaching and learning process can bring. The study also revealed that this advantage perception has a positive influence on the adoption of technology in the classes.

Fear of Change

There is research that suggests different types of fear of change can influence the faculty's attitudes towards the adoption of educational technology. Marzilli et al. (2014) conducted a mixed-method study within 72 participants related to faculty attitudes towards integrating technology and innovation. This study revealed that some faculty fear the loss of the humanistic approach in education due to technology usage. They also found that faculty are worried that technology may substitute them if every class may be online, and traditional classes will be in the past.

Similarly, Smidt (2014) conducted a study at a mid-Atlantic state university related to faculty attitudes towards distance education. This study gathered data from posts of two discussion boards of 21 online program participants. The study revealed the faculty's concern related to the transformation of face-to-face classes into online courses. Faculty are also scary about the workload that this change can mean. Besides, the author warns of the importance of notifying the professors of the expectations and potential role changes that online teaching can bring.

Computer Anxiety

Some studies suggest that a relevant factor that might have an impact on faculty attitudes in the integration of technology is computer anxiety. Chang (2005) defines computer anxiety as "a generalized emotion of uneasiness, apprehension, anxiousness of coping, or distress in anticipation of negative outcomes from computer-related operations" (p. 715). Agbatogun (2010) conducted a quantitative study within 454 participants from the Ogun East senatorial

district of Ogun State, Nigeria, related to the contribution of self-concept, computer anxiety, and gender to faculty's attitude towards the use of interactive computer technology by faculty. This study revealed that in effect, computer anxiety is the potent predictor of teachers' attitudes towards their use of computer technologies. He also found that this anxiety produces apprehension of teachers towards the use of educational technology, which can impact the quality of education.

Similarly, Celik and Yesilyurt (2013) conducted a quantitative study in three different universities in Turkey related to computer anxiety, attitudes to technology, and computer self-efficacy and as predictors of computer-supported education. This study revealed that there is a correlation between computer anxiety and computer use. They also found that computer anxiety is an essential predictor of faculty's attitude toward using technology in education.

Chapter II Closure

This chapter offered the literature reviewed for this study, including advantages and disadvantages, the role of faculty, challenges, motivations, and attitudes towards the adoption of technology for educational purposes. Chapter III will now cover the methodology related to this topic.

CHAPTER III

METHODOLOGY

The purpose of this study was to explore faculty experiences regarding the adoption of educational technology within a HEI in the DR that has made available significant technology classroom tools and training to its faculty. This goal was to obtain information related to faculty members' attitudes, barriers, and motivations for using or not educational technologies in their classes. At this stage in the research, educational technology referred to the effective use of technological tools for educational purposes to achieve dynamism, collaboration, interaction, and better assimilation of the knowledge transfer process.

My research questions for this study were intended to explore the usage, motivations, attitudes, and barriers to adopting educational technology in the classroom by faculty members in a HEI in the DR. My overarching research question was: What are HEI faculty's experiences regarding their current adoption of educational technology in their classes, and how do those experiences influence their dispositions toward the use of educational technology?

Specific sub-questions included:

1) What levels of technology adoption within their classrooms are reported by HEI faculty?

2) What motivates faculty members to use educational technology, or not, in their classrooms?

3) What are the barriers such faculty perceive regarding the enhanced usage of educational technology in their classrooms?

4) What are the attitudes faculty show related to the use of educational technology in their classrooms?

Research Design

A multiple case study set within a single institutional context was used to gather data via faculty interviews and analysis of documents and/or artifacts of classroom technology use. I used multiple cases to address my research questions (Yin, 2009), as I intended to understand how individuals form attitudes or dispositions toward educational change and innovation based on initial experiences with educational technology. By recruiting multiple cases within a single setting, bounded by time and place (Creswell, 2013; Denzin & Lincoln, 2008), I was able to explore these cases as "an illustration of a larger phenomenon" (Marshall & Rossman, 2016, p. 20) taking place at a single institution, and perhaps other institutions. In other words, the process of a research study requires the researcher to define the unit of analysis. For this study, the units of analysis were the faculty members from three schools in one university (five faculty members per each school), who agreed to participate in this study. Each faculty member was served as a single case for this study, nested within a multiple institutional case.

In a qualitative research analysis, the first and one of the most critical steps is the description of the phenomenon (Patton, 1990). The presentation of concrete and robust descriptive data is imperative to show strong qualitative research. This action allows providing the reader with a detailed understanding of the experience under study (Denzin & Lincoln, 2008). The case study design integrated semi-structured interviews, documents, and artifact analysis (Creswell, 2013; Marshall & Rossman, 2016). For this study, the recruitment letter was sent in Spanish. Spanish is the first language in the DR; therefore, artifacts, and documents were delivered in Spanish. Interviews were also conducted in Spanish.

Results of the Pre-Dissertation Field Study

I completed a field test pilot study with four faculty members from one school within this university, from which only one participant for the pilot was agreed to be recruited again for this study. Individual interviews were conducted with each professor and lasted about 60 minutes. Based on this field test, I have revised my study design to include revisions to my interview protocol and to make it more precise in my recruitment and interviews that this study is not related to their permanence (either based on performance review or any other means) in this institution. For my full dissertation research, I used the data collected during this field test, and I built upon this by using my revised interview protocol to cover the additional questions that have been added. Furthermore, I re-interviewed one participant of this pre-study, and I recruited and interviewed 11 additional faculty members.

In my field test pilot study, I learned that culture is an important factor to take into consideration when evaluating any findings obtained during my dissertation research. In the DR, many people worry about what others think about them. I also learned that the organizational climate at a private university in Santo Domingo, and the fear of several participants related to the impact of this study on their jobs, could influence the responses of the interviews. I also found that some participants worried about the continuous institution monitoring regarding their performance of educational technology adoption in their classes and how the results of this monitoring could affect their job in the university. Based on such learning, I adjusted the interview protocol to help address these issues: I added a paragraph explaining to them that there is no relationship between their responses and an impact on their jobs. It also explains that this study is not related to institution monitoring regarding their

performance of educational technology adoption in their classes; therefore, they can feel free to share their experiences related to this topic.

Overall, I found that a case study approach was an excellent method to carry out this study, and the proposed design for the full dissertation study added the collection and analysis of participants provided documents and artifacts that illustrated their experiences utilizing technology in their courses. These additional data sources added to the understandings and insights gained through interviews and allowed me to develop a thicker-richer case description for each case (Stake, 2003; Yin, 2009)

Sampling, Subjects, Access, and Setting

Site or Source of Potential Study Participants

This study took place within three different schools at a private university in Santo Domingo, DR, which I will call the A, B, and C schools. The general criteria (Marshall & Rossman, 2016) for selecting this site and population relates to the fact that this HEI is interested in the level of educational technology adoption by its faculty in alignment with its strategic plan.

Population and Sample

To select the participants for this study, all faculty members who have been in A, B, and C schools within this private HEI in the DR for at least two semesters were invited to participate. Each of the schools from which I recruited participants had enough faculty to generate a total sample of 12 participants; the entire pool of potential participants across all three schools was approximately 110.

A criterion sampling approach for this study was used to select the participants. As Creswell (2013) indicates, this type of sampling is suitable when all the people studied represent

a person who has experienced the phenomenon. The criteria established for selecting the sample were: (a) being a faculty member of either school A, B, or C within the HEI, and (b) having been a faculty member in the school for at least two semesters within this institution. For this study, I did not have more volunteers than the 12 participants needed to select the sample that best matched my research requirements. After reviewing the academic responsibility of each professor who agreed to be part of the study and compared them to the established criteria, I found that all of them met the requirements to be part of this study.

Access and Recruitment

To avoid using my position in this HEI as an influence for recruiting the faculty members of the A, B, and C schools (Hennink & Bailey, 2010), I requested the director of each school (A, B and C) to forward a recruitment email to all faculty members who had been working at least two semesters in this institution (See Appendix A for recruitment email in English and Spanish). All e-mails specified the criteria for qualifying for my study. As not enough volunteers respond, I asked the director of each school to forward a second e-mail to invite faculty to participate in this study. By this second invitation, I had 11 faculty interested in participating in my study. Therefore, I asked the directors of each school to forward a third email, from which one additional professor was interested in participating in my study. At this stage, I reviewed the established criteria for selection and the academic responsibility of each professor, and I found that all faculty that responded to the invitation met the requirements to be part of this research. The distribution of participants who agreed to be part of this study was: (a) four participants from School A, (b) five participants from School B, and (c) three participants from School C.

I created a written informed consent form addressing the four key demands participants need to understand (Marshall & Rossman, 2016): (a) parameters and interests, (b) the freedom to participate in the study, (c) the plan to reduce potential risks, and (d) study's protections (see Appendix B for the consent form in English and Spanish). As Marshall and Rossman (2016) indicate, developing informed consent forms is the minimum requirement and is only the beginning to ensure that the researcher is conducting the study with sensitivity to ethical issues. Moreover, it is essential to address concerns that may arise during the research. Topics such as withdrawal from the study, confidentiality of information, and explanations related to the confidentiality protections were provided within the inform consent, and at the same time, discussed with each participant.

To ensure that this research proposal proceeded with the appropriate required protections for the participants of this study (Marshall & Rossman, 2016), an application was submitted to the Institutional Review Board (IRB) at the institution at which the research was conducted in Santo Domingo, DR, and the IRB Board at Western Michigan University (WMU). I received the letters of approval from both institutions, allowing me to collect the data and continue with the study. See Appendix E for the WMU HSIRB letter of approval. The letter of approval from the private HEI was received but not included for confidentiality purposes.

School Descriptions

The following descriptions were gathered from documents of each school within this institution. I have attempted to remove language which directly identifies the schools related to this study.

School A. School A is oriented towards the education of human resource professionals who can respond to the necessities in one area of health. The school's mission is to prepare

comprehensive professionals with a solid formation and high human sensibility, with ethical and moral values, service vocation, civism, responsibility, organization, and neatness while connecting with their peers; school A has traditionally been one of the institution's emblems thanks to its alumni's professional development, who lead various local specialized societies related to the career. Its alumni have an impact on the formation of new professionals in this private HEI and other educative institutions both in our country and overseas.

This school fosters the spirit of service with our community services outside our institution. It also conducts operatives in communities where there are special needs. Each year the school develops new operations in communities that ask for it. It creates a primary attention service, which includes prevention, instructions, surgery, and restoration in places where there is no access to these services. The external community clinics have been able to keep groups of children healthy, benefitting their long-term health.

Moreover, the students and teachers have been awarded acknowledgments by publishing their theses in various national and international journals. The school has an organized structure, which gives coherence to all its academic processes, preclinical and clinical, through coordinators for each area. Furthermore, an ethic and biosecurity committee ensure the compliance of the school's norms under the guidance of the institutional ethics committee. The school has a postgraduate unit that offers six programs. In addition, it offers various professional actualization programs through the Continuing Education Unit. These programs are concentrated in clinical practice in acquiring skills in multiple areas. To date, School A has 2,445 alumni who practice their profession in different specialties.

School B. School B's primary mission is to prepare international class professionals, promoting the development of abilities, professional ethics, social and environmental

responsibility, and innovation via the efficient use of technology. School B focuses on the development of research, which will contribute to scientific work and our nation's economic growth. To achieve this goal, the school is making strategic alliances with productive sectors and government institutions. School B wants to be the framework for good practices implemented on the education of professionals in the DR.

The school possesses state-of-the-art facilities, laboratories with multiple types of equipment, and programs that fulfill world-class demands. To complement the laboratories, it also offers software demanded by national and international businesses involved in the area.

The students' education process is guided through a faculty body with world-class experiences and knowledge, which allows knowledge transfer to permeate newer generations. In addition to the faculty's international class status, the school possesses two programs: one that is imparted solely in Spanish and another double degree program, in which approximately 50% of subjects are given in English. This dual degree program allows the school's alumni to obtain two degrees: (a) from this DR HEI, and (b) from a North American university.

The school offers its students in the Spanish program a specialization in Project Management, with which they can obtain a CAPM certification. Therefore, they may become members of the Dominican Republic's PMI. The PMI is a world-renowned institution in good practices within project management.

School C. School C’s mission is to prepare capable professionals in one of the areas of the creative arts, who are recognized for their creative and innovative work, founded upon ethical and moral values. The school´s faculty are active professionals in the industry; they implement avant-garde didactic techniques and innovative methodologies in the students’ teaching-learning process. The school incentivizes collaborative work, as well as students’

interaction with renowned personalities with the realm of national and international communication, so that they may share experiences and enrich their learning. Internationalization is an essential pillar of its programs. The exchange between professors and students from foreign universities is encouraged through workshops imparted with allied institutions.

Among the career's outstanding elements, there is the program concerning student internships. For the DR, internships are practical experiences needed in this country for all of the bachelor programs endorsed by the Ministry of Higher Education. In it, students apply their knowledge and abilities, which they have developed throughout the curriculum in the business with whom they have agreements. It makes the student's transition viable from the academy to work life. Likewise, it contributes to curricular actualization and transformation.

Another of the school's strengths is active participation in academic and professional events, as well as student and inter-university competitions. It allows more contact with the latest tendencies in communication, as well as interacting with the most avant-garde and renowned professionals within the career. School C builds students from a perspective of serving the community, supporting social causes through the students' and teachers' talents, who, through the Learning through Service strategy, conceive and develop communication proposals for foundations and NGOs with whom the university has signed agreements. Some of the initiatives include the promotion and defense of children's rights, equal rights between men and women, and the recognition of therapy centers for children with disabilities. The work of extension is founded upon values and coherent methodologies, which guarantee the initiatives' relevance and effectiveness, fostering in future professionals not only the conscience of social responsibility but also the necessary abilities to see them through.

Data Collection Methods, Procedures, and Instrumentation

Data Collection

I used three forms of data: (a) interviews, (b) faculty provided documents that described their courses and learning goals, and (c) artifacts that illustrated how the faculty participants utilized (or have previously used) technology in the teaching of their classes. The interviews were semi-structured, one-on-one interviews, transcribed and audiotaped. I developed an interview protocol for these one-on-one sessions with each faculty member (see Appendix C for the interview protocol in English and Spanish). I also sent a pre-interview questionnaire to each participant to start gathering information before the interviews (see Appendix D for the Pre-interview Questionnaire in English and Spanish). Individual interviews can produce excellent data for qualitative research; therefore, they were the primary source of data for this study. According to Merriam (2009), to receive useful data, it is crucial to ask the right questions, and I chose precise, concise, and explicit questions, each with a specific purpose.

I studied and verified my one-on-one interview and protocol questions before meet each faculty member. For the interview, I chose a neutral site to protect confidentiality for each participant. I set aside a period for a 60-minute interview; another 30-45 minutes were spent reviewing each syllabus and allowing participants to show how they are using some of the technology tools in their classes. I audiotaped the interview and took notes during the interview. After the interviews, I wrote memos to capture my impressions of each participant. I wrote transcriptions of the interviews, and I reviewed both the transcriptions and the audiotaped interviews multiple times as I coded and reduced the data into meaningful segments to facilitate the creation of categories, themes, and sub-themes.

For the document analysis, I reviewed school technology indicator records, class syllabi for the classes taught by each faculty member, and the pre-questionnaire sent to each participant. I asked participants to provide any artifacts that illustrate how they use (or used) technology in their classes. They showed me some examples of how they use some technology tools and some outputs, assignments, and grading examples. The information that I looked within these documents was oriented towards understanding the way faculty members have selected and utilized educational technology based on the educational goals for their courses and the fulfillment of their teaching responsibilities. Besides, these documents and artifacts served as information that helped to provide context for insights gained in the one-on-one interviews.

Trustworthiness in Collecting the Data

I used multiple techniques to enhance the trustworthiness within my data collection. First, to strength the design of my study I aligned my interview protocol with my research questions and the theories guiding this study to ensure that these questions would help me to better understand the factors that influence, or not, faculty in the adoption of educational technology.

To ensure credibility, I shared their case narrative with each participant (member check) to confirm the information I received during the data collection and to give all participants the opportunity to confirm the data or correct any errors perceived by them (Creswell, 2013; Lincoln & Guba, 1985; Marshall & Rossman, 2016). All participants agreed with the data that I collected related to them. This step was essential as interviews were conducted in Spanish, and I had to be sure that the translation into English did not change the meaning of the data collected from all participants.

I used memoing, writing reflective notes regarding my learning from the data collected (Creswell, 2013). I took notes during the interviews to discern the data I was collecting; later I combined these notes with the transcriptions of the interviews to better understand the data collected. Finally, and a significant step, I spoke with an expert in educational technology to get her involved with the data I collected to validate the process of the data collection. She also later assisted me with my interpretation of the data to prevent biases and to address credibility (Lincoln & Guba, 1985).

Data Analysis and Trustworthiness

To answer the research questions, my data analysis was based on the responses from the 12 faculty members, as well as my findings from the document and artifact analysis. To analyze the data, I used inductive analysis approach. This type of analysis process requires working back and forth between the individual meaning units from the data and the possible ways of grouping those meaning units until the researcher (in this case myself) can find a comprehensive set of themes and sub-themes that best illustrate each case (Creswell, 2013). This process of analysis is about discerning patterns, categories, and themes in one's data (Marshall & Rossman, 2016). Additionally, I compared themes and sub-themes across all cases to establish the common elements that make up the cross-case summary of themes and sub-themes.

As Creswell (2013) explains, to analyze the data using the inductive process, for each one-on-one interview first, I organized the data and used the memos written during the data collection to be more transparent during the interpretation of the data. Then I coded the interviews to allow categories to emerge. I distributed the codes or salient points within the coding categories. I created a category to put the codes that do not fit within the other coding categories to visualize the theme and the sub-theme that they could fit in later. I reorganized as

needed, the codes ordered before to interpret the data. After exhausting all possible ways of categorizing the data and settling on the categories that best align with my overall sense of the data, I identified the themes and examined the data in-depth to allow sub-themes to emerge. I also elaborated my analytic memos and field notes, and I went back and forth analyzing those memos, the field notes, the themes, the sub-themes. I also went back to the transcriptions and the audiotaped interviews to listen to reactions in some pieces of the conversation. Finally, I repeated all the steps explained to reach saturation to create a story based on the analysis, strong enough to respond to the research questions.

To ensure credibility and confirmability during the data analysis procedure, I used triangulation, comparing people with different points of view and using different sources such as interviews, documents and artifacts. The three forms of data were aligned with the data collected.

I reviewed with the participants the profiles I created from each of them (member check) to confirm if the results of the profile created by me reflected the veracity of what they wanted to voice (Creswell, 2013; Lincoln & Guba, 1985; Marshall & Rossman, 2016). I sent a separate email to the participants with each profile. All participants responded to the member check and confirmed the integrity of the profiles I created of each of them. Only one of the participants asked me to specify the software he utilizes in his classes to clarify that it was not suitable to be used in all branches of this career.

To ensure credibility, I used peer debriefing, to become aware of my posture toward data and analysis (Marshall & Rossman, 2016; Lincoln & Guba, 1985), and I shared the information with a person involved within this process in the university, who also has vast knowledge related to research. I talked to her about her impressions and thoughts regarding the analysis of

the data. She listened to my feelings and agreed with the method, the interpretation and the meanings of the analysis.

To address transferability, I developed a thick description (Creswell, 2013) of each participant, elaborating a detailed profile of each faculty, using the data collected (Lincoln & Guba, 1985).

As the perspective or position of the researcher shapes all research (Lincoln & Guba, 1985), to address confirmability, I was always aware of the reflection on my identity (my reflexivity and how I addressed it is explained in the next section), as this process could affect both the participant and the researcher (Merriam & Tisdell, 2016).

In addition to these methods, Shenton (2004) explains some strategies for ensuring trustworthiness that were important to use during the study. To ensure credibility, I also used the following: (a) a well-recognized research method, a case study analysis; (b) memoing, as explained before; and (c) frame my findings with an examination of previous research, supporting the findings with previous literature. Finally, as Shenton suggests, to ensure dependability and confirmability, I provided in-depth methodological explanations, addressed in the data analysis section to allow for dependability "study to be repeated" (p. 73) and to allow for confirmability "integrity of research results to be scrutinized" (p. 73).

Reflections on my Identity (Reflexivity)

There is always some influence of the researcher in any research (Gall, Gall, & Borg, 2007). I was aware of my biases as being a technology professional (Creswell, 2013). In a summarized way, after 10 years of experience as an educator, I have become passionate about the benefits of incorporating educational technology in the classrooms, and I have seen how these innovations help to improve the overall learning experience of students. I addressed my

reflexivity in various ways: (a) discussing with myself some of the questions that Creswell (2013) poses on his writings, such as considering how the use of "my words could be used for progressive, conservative, and repressive" (p. 216) policies; (b) offering an alternative to common sense, and being careful about a dominant discourse, as people involved in this study may feel they are going to be measured at the end of the qualitative research, and this feeling may guide them to feel skeptical (this was one of the hardest parts of the interviews because the participants were thinking that their jobs as faculty members were going to be measured in some manner, based upon those interviews); (c) being careful about theorizing the words of the participants of the study; and (d) avoiding to conduct questions that leads to the answers I always think I am going to find. In addition, I believe that it was an essential step to add individual introspection, considering possibly unconscious personal reactions, as well as inspecting the dynamic of the relations with participants and using an exploration of the relationships with the participants (De la Cuesta-Benjumea, 2011).

Delimitations and Limitations

The results were delimited to12 participants from three schools within one private university in Santo Domingo, DR. As a limitation, I could not find literature addressing this specific topic in the Dominican Republic, and therefore I had to review the studies provided worldwide because international literature related to this topic is extensive. Also, as the method that was used were interviews, document and artifact analysis, biases could emerge from the thoughts of the researcher; consequently, I could find inaccuracies in the data resulting in a misinterpretation of the data. Another significant limitation is that the faculty members could misinterpret that this study might be somehow connected to a review of their performance and thus might overstate their technology usage, attitudes, motivations and/or challenges.

Chapter III Closure

This chapter offered the methods used to gather my data, the sampling, subjects, access, and setting of potential study participants, as well as the data collection, analysis, and trustworthiness. It also presented a reflection of my identity to avoid influence in the results of the analysis. Limitations and delimitations were also provided. Chapter IV will now cover the findings related to this topic.

CHAPTER IV

INDIVIDUAL CASE NARRATIVES

This chapter provides individual narratives of my case study participants. The purpose of this chapter is to explain participant's experiences related to their barriers, motivations, attitudes, and usage of technology for educational purposes in a private higher education institution in the DR. Each narrative represents my within case summary and describes how each participant got into the adoption of technology for educational purposes, and how they are experiencing the use of educational technology in their discipline, as well as their challenges and motivations. Finally, I include some information extracted from their syllabi and documents provided focused on technology tools they use for educational purposes.

My sample included:

- four participants from School A, which is oriented towards the education of professionals who can respond to the necessities in one area of health;
- five participants from School B, which is geared towards the education of professionals who can respond to the needs of the construction field; and
- three participants from School C, with a mission to prepare capable professionals in one of the creative arts fields.

Table 1 offers demographic information on these 12 participants, including age, gender, educational level, years of teaching experience, years teaching in higher education, and years teaching in the current discipline. Pseudonyms are used to protect the identity of the participants and to provide additional identity protection, I present the names in alphabetical order.

Table 1

Participant's Demographics

Participant	Gender	Age	Highest Degree	Years of Teaching Experience	Years Teaching in Higher Education	Years Teaching in Current Discipline	School
Alan	M	43	Masters	13	13	13	B
Brigitte	F	28	Masters	3	3	3	C
Carol	F	50	PhD (c)	30	25	25	A
Denisse	F	30	Masters	4	4	4	C
Edward	M	63	Masters	6	6	6	B
Frank	M	40	Masters	15	15	15	B
Gary	M	33	Masters	4	4	4	B
Hannah	F	37	Masters	15	15	10	A
Isabella	F	53	Masters	19	19	19	B
Joyce	F	42	Masters	10	10	10	A
Kate	F	38	PhD (c)	14	14	10	A
Lilly	F	42	Masters	16	16	16	C

Alan

Alan is a 43-year-old faculty member in this private higher education institution. He has completed a bachelor's degree in the construction field and a master's degree in business administration. He is from School B.

Key Educational Technologies Being Used

Alan uses several key educational technology tools in his classes, including: (a) a program uses for cost and time management for the construction field, (b) a virtual classroom

platform, and (c) a mind mapping tool. Alan explained that all these technology tools are used to explain to students the main concepts of the class, allowing them to get introduced into the technology used in the work field for this purpose. “What we try is to develop or work with the basic concepts that are related to project management in a more manageable way.”

For the program used for cost and time management, Alan prepares a small workshop before assigning the delivery projects to teach the students how it works. Then he shows them the difference between using a spreadsheet and this tool so they can appreciate the differences and the advantages and disadvantages of each. The virtual classroom platform is used during the whole class, to upload the assignments, and to have discussion blogs, although he thinks the one used in the university right now is not very functional. Finally, the mind mapping tool is used for planning and idea-sharing with the group.

At this moment, Alan is teaching only one class related to project management in the construction field. He shared his syllabus with me as evidence of using such tools and how they are woven into his assignments. His syllabus visually reflects the technology tools he is using during the classes. In addition, it contains the deliverables and projects in which these tools are going to be used.

Why Adopt Educational Technology

The choice to use educational technology is directly related to Alan’s beliefs about the new generations of students who are coming to classrooms these days. “… both the generation that we have in the classrooms today and the generations that will continue to arrive… lead us to be clear about the need to implement technological tools in the classroom.”

Besides, he feels a sense of belonging with the strategic plan of the university related to the adoption of technology for educational purposes, balanced with the need to use technology tools in his work area on a daily basis.

> I feel very identified with what our university has done with the strategic plan regarding technological tools… In my daily life as a professional, I have to work with technological tools. We no longer work in isolation or work with what we traditionally trained when we were studying [name of the bachelor's degree] …. This is complemented by a very clear vision that the university has about the use of technological tools.

For Alan, it is essential to keep himself up to date with technology tools since they are always changing in his work field. "[It is important to keep up to date] because in my daily life as a professional, I have to work with technological tools, and we do not work in isolation, nor do we work with what we traditionally formed when we were students."

Alan believes that using technology tools helps him to save time and be more effective when teaching a class.

> The technological tools allow us to have better results, safer and in less time… I believe a lot in the cost-benefit relationship; I believe in doing less and in less time with better results. This fact will always be much more effective.

Experiences using Educational Technology in His Discipline

For Alan, his preference in the use of specific technology tools for his classes is aligned with his beliefs related to the importance of using tools that help the students to acquire the necessary skills for the labor market.

> These technologies are the ones that go the most with what is project management….
>
> What we try is to develop or work with the basic concepts that have to do with project management in a more manageable way…. I believe there is nothing that gives me more satisfaction in a classroom than to see the effort made in class to achieve the necessary competences gives the expected results.

He uses these specific tools because, as he explained, they are the most common tools used in Spanish-speaking countries.

> Why is this software so important? Because students regardless of whether they know the concepts, this is the most used tool in the Dominican Republic, and all Latin American countries, as I mentioned, of very important economies, such as the Mexican, the Chilean, Argentina, Uruguayan even in Brazil there are also many licenses.

In addition, Alan believes these tools are the most used in his discipline, and the university has the license to use them.

> …So that is why it is so important since we are the only university [in the DR] that has a software lab; the students get trained from the university. In addition, it is the most used software in engineering for project management.

Alan shared an experience in which, using a technological tool in one of his classes, he forgot how to use a command. He admitted to the students that he had forgotten it and that he would look for it at another time to bring the answer to the next class.

> I told them [students] that I forgot; I did not remember how to use that command. I told them when we finished the class, I was going to look for it, and I promised I was going to take it for the next class.

I asked Alan about the reaction of the students to this particular situation. He said that in his experience, he had treated the impasse with humility. He thinks humility is the key to overcoming this type of circumstance.

> When you face such situations with humility and understanding we are not perfect, and we are all wrong, people connect with you and sometimes connect much more, but if you try to do it with pride or trying to hide you do not know, people perceive it and criticism is much stronger, and there is much more resistance.

As for using technology tools in class, he understands the more he teaches how to use them, the more he learns. "When I teach a student to use a technology tool in a laboratory, I realize [that] I learn more... I find ways on how to do different things, so while I am teaching, I am learning."

Challenges

For Alan, implementing the technology tools he uses in his classes has been easy since, in addition to knowing technology, he has used these tools in his work field.

> It has been quite easy, first, because I already handled them and secondly because I come from a technological environment. Then on that side, we will say it was simply seeing it from that point of view because I already use the technological tools.

Regarding students, Alan believes they also represent a significant challenge since students know some technologies they are interested in, such as social networks; however, when assigning tools for educational purposes, they have difficulties in using them.

> Especially in the Dominican Republic, [students] use technology better for social interaction than academic purposes…. The Dominican students, in the years of

> experience I have at this University... are very good using social networks; however, in the emails, they are not much practical.

Alan believes that this situation is due to generational gaps in learning in general. “In my particular opinion, I believe that this has to do with a generation that, regardless of whether it was born in a more technological environment than ours, may require a greater learning effort.”

He also shared that he is surprised when he finds students believe that the professor is the one who has the responsibility of teaching everything. He explained that before implementing a technological tool in a class, such as the one used for budget management, he sends the manual to students to learn how to use it; however, they do not read it, and this represents another big challenge for him.

> I send them the manual two weeks before, and they must read the complete manual [before] arriving at classes... it is assumed that [upon arriving at classes] they have already read about it but what happens?... they understand the professor must get to the classroom and explain all the detail step by step [of how the technological tool is used].

Even though Alan considers that it has been easy to adopt these tools in his classes, he understands one challenge has been to know how to use them correctly so all students, together with the professor, keep the same pace. “What has been the hardest part? To understand that, you must use them [technology tools] correctly. That has been the most difficult part of the implementation.”

He also explained that in his experience, some students learn faster than others in the use of technology for educational purposes.

> That is the most challenging part because each student learns differently. Each person has a different pace; When I explained something in the use of the technological tools on the screen, some students quickly executed it in two seconds; however, there are others that can't find how to do it.

Finally, Alan thinks that some technology tools, such as the new virtual classroom platform, are challenging to use.

> I feel that some of the tools used in class, such as the virtual classroom platform, are not so intuitive…. I remember that at some point, I enabled the virtual classroom platform for students to upload an assignment, and then I couldn't find how to see it. When I spoke with the department of [name of the department in charge], sharing the screen and talking on the phone, the same person that was explaining to me understood that the process of analyzing and looking for the assignments was quite complex even for me as a professor.

Motivations

For Alan, the primary motivation for adopting and using technology for educational purposes lies in the satisfaction of transferring the knowledge he has to help students fulfill their objectives.

> What motivates me? Realizing that what I have learned can be shared with other people who do not have proper knowledge; that I can help people who may feel a little lost and direct them to achieve their goals correctly and efficiently. I think that is my biggest motivation.

Alan also feels that another main motivation for him is personal, and external factors do not influence it. "It is something totally personal. I believe there is nothing that gives me more

satisfaction in a classroom than to see the effort made in class to achieve the necessary competences gives the expected results."

Alan considers peer interaction as an essential method to encourage professors in the use of educational technology. "Designing a strategy that, through emotion, allows professors to feel encouraged to use it, such as social interaction. That approach is very effective."

Overall Attitude Toward Future Use of Technology

Alan likes to teach. He teaches by vocation.

> Teaching, I have it by vocation; it is not something I do for any reason other than contributing positively with my country, with society and giving back a little of what I have…. I believe that the professor who does things with his heart and does it with love learns more than he teaches.

Brigitte

Brigitte is a 28-year-old faculty member in this private higher education institution. She completed a bachelor's degree in the art field and a master's degree in education. She is from School C.

Key Educational Technologies Being Used

Brigitte uses several key educational technology tools in her classes, including: (a) a virtual classroom platform, (b) social networks, (c) a gaming application for learning purposes, (d) Cinephorus, (e) a messaging application, and (f) videos. Brigitte explained that all these technology tools are used to achieve dynamism in the teaching and learning process.

Brigitte uses the virtual classroom platform during the whole class to upload the assignments and to receive and evaluate them. She explained that the platform used in the university right now is not very functional, and she finds the previous platform more friendly.

Brigitte uses social networks to speak the same language as new generation students talk so that she can attract more learning interest from them. As Brigitte showed me, the gaming application for learning purposes brings the students a bit of humor, allowing them to boost learning a bit more and see that there are other platforms with which they can learn. Cinephorus is used to create discussions in forums after viewing a movie assigned in the classroom for learning purposes. Finally, she uses the messaging application to maintain constant communication with students and the videos to assign content they can discuss in class.

At this moment, Brigitte is teaching only one class related to creativity and innovation. She shared her syllabus as evidence of using such tools and how they are woven into her assignments. Brigitte also shared how she is using some of the technology tools she is working within her class. Her syllabus visually reflects some of the technology tools she is using during the classes. In addition, it contains the deliverables and projects in which these tools are going to be used.

Why Adopt Educational Technology

The choice to use of educational technology is directly related to Brigitte's beliefs about the new generations of students who are coming to classrooms these days. "All schools have to update themselves and get to the point of evolving into the technological aura… because that is what students demand today [using technology in the classrooms]."

Besides, she thinks technology is the future, and it is imminent to align with the use of technology to make classes more effective.

> It is very important we all focus on... technology and understand it is where we are going and we do not have a choice... that is the only way [for us] to ensure that our classes really leave an impact on students and classes are effective.

In addition, she feels a sense of belonging with the strategic plan of the university related to the adoption of technology for educational purposes, balanced with the need to keep up to date with technology. “Obviously, the university has included a very important component of technology in the development of its strategic plan, in which all schools have to update and ... evolve at the technology level.”

She feels she must update herself in technology to avoid being left behind and so she cannot continue teaching. “I am also afraid of reaching an age where I can no longer be a professor because I did not adapt to new technologies existing at the moment.”

Brigitte also believes that using tools for educational purposes helps a professor save time in the teaching and learning process. “Technology platforms are making life easier for teachers; it encourages me to take on more academic load because it doesn't take me so long to grade a class.”

Experiences using Educational Technology in Her Discipline

For Brigitte, her preference for using specific technology tools for her classes is aligned with her beliefs, considering that these tools are practical, useful and helps the environment.

> We use these tools because I understand that [for] all of us, it is easier and more effective. After all, you can do [homework] at home, in your free time; they [students] don't have to fill out exams here, and also, we help the environment.

Besides, she believes not all students have the same way of learning, and educational technology can help them with their teaching-learning process.

> Everyone has a way of expressing themselves, [a way] of learning, of knowing... Not all students learn in the classroom, or not all students learn on their own at home; then that

> facility of you... to choose how you are going to learn, I think it is only given by educational technology.

Challenges

For Brigitte, the biggest challenge to implement the technology she uses in her classes was the fear of the unknown.

> There will always be fear... to fail, fear of not being able to effectively impart knowledge to the student, fear of ... adopting a new system, and that fear I believe always exists, regardless of whether one already knows a platform or the tools.

Also, Brigitte believes that the virtual classroom platform, which is the tool she uses most in her classes, is not friendly, so it was also a challenge for her at the beginning.

> It was hard for me to be exposed to the new virtual classroom platform …. At first, [adopting the use of the virtual classroom platform] was something that scared me; I was afraid… I was a little scared to see the content and language that was not the same as I knew for those types of platforms…. After I learned the functions and I saw everything that is included and everything that [this] platform offered, I got on the boat because I understood that it made my life easier….[The virtual classroom platform] is not friendly, at least for my perception. Every time I have to grade a student, I have to call the technology help desk team to guide me again.

Although initially, she was scared, after learning how to use the tool, she understands that it facilitates everything related to the teaching process.

> After I learned to see the functions and I saw everything that included and everything that [this] platform offered, I got on the boat because I understood that it made my life easier…. This platform makes me everything, completely: it performs assessments, it

> gives me the opportunity to rate on the same portal and send comments to the students, it allows me to determine if there is plagiarism or not... to see the forum... also the videos... the tasks; all in the same place.

Brigitte believes students also represent a significant challenge since they know other technologies they are interested in, such as social networks; however, when assigning tools for educational purposes, they have some difficulty in using them.

> In the beginning, the students had many difficulties learning the language of the platform and being familiar with it to be able to do their assignments, so I was a little flexible with time so that they could learn and fulfill the assignments.

Besides, Brigitte has encountered little interest by some students when uploading tasks in the virtual classroom platform, so they look for excuses and are delayed with deadlines.

> [They said:] No, professor, I didn't upload it to the virtual classroom platform because the internet didn't let me upload the video. Then, you know that the internet here is not very good, and then I did it here, so that's why I didn't upload it… [then I answer them]: Oh, but then, you don't have internet in your house? Don't you watch Netflix at your house? You don't have the internet on your cell phone.... So, these are the basic excuses that students give for not entering [the platform].

Brigitte believes that another obstacle for adopting technology for educational purposes is related to generational gaps.

> My parents are lawyers and for me, they are the brightest people I have ever met in my life... but they tell me: Look, it will be very difficult for me and it will take me a long time to adapt to these new technological platforms, adapt to what new students demand.

Additionally, Brigitte considers students may mistakenly establish a connection between the professors' knowledge concerning their classes and their low management of technological tools. “And sometimes because a teacher does not know how to handle a technological tool well, students begin to say: well, the teacher may not have good knowledge of the content of this class.”

Finally, Brigitte shared with me her concern about the lack of attention to the classes that some students present when they are distracted by their own technological devices. This fact has been a challenge that she understands must be worked on the students.

> I feel that the student for having so much flexibility has hurt the discipline issue a bit…. The student always walks with a state-of-the-art device, always has the best computer, the best cell phone, the best tablet. The use of these gadgets usually helps us in many classes, but students also lose the attention of a class and use the devices to entertain themselves in other things, in other areas either watching Netflix or opening videos and social networks.

Motivations

For Brigitte, the main motivation for adopting and using technology for educational purposes is technological progress, which facilitates everyday people's lives. “My motivation is technological advancement; it is how applications are becoming increasingly easy to use and are becoming more on my side…. That [technological advances] makes life easier for many people. To me, personally, to the professor.”

Brigitte is also motivated by the fact that she is adopting and using technology, she can speak the language of the students, and in addition, she stays updated, achieving a more effective teaching and learning process. “It not only makes my life easier; it also helps me to

keep myself up to date with technology and... it allows me to have a connection and communication with the students where learning becomes more effective."

Brigitte believes salaries are low in the academic field. Therefore, some institutions provide specific incentives to professors to encourage them to spend more time preparing, organizing, and grading their classes out of their course schedule.

> I believe that as in other institutions around the world, how academic training is paid is also very low. It is generally seen that there are many institutions that provide additional incentives for overtime outside the classroom, where the professor is paid weekly for so many hours to devote himself to programming and the preparation of his academic programs.

Given this example, she believes that providing an economic incentive to all the faculty members of this university could influence the adoption of educational technology in their classes. "So, it is another economic incentive that may cost the University, but I think they are strategies that could mediate in that situation right now and significantly improve this issue [the adoption of educational technology]."

Overall Attitude Toward Future Use of Technology

As Brigitte said, she is very excited to continue learning new technologies for educational purposes because she understands that it is vital to stay up to date with technology.

> Then I would love to keep updated because if I do not do it, then I am leaving myself behind… That is something that is worth a lot that may not be paid in money, but it is paid in knowledge.

Carol

Carol is a 50-year-old faculty member in this private higher education institution. She completed a bachelor's degree in the health field and a master's degree in education. Carol is at the candidate stage in a Ph.D. in an education program. She is from School A.

Key Educational Technologies Being Used

Carol uses several key educational technology tools in her classes, including: (a) videos, (b) webinars, and (c) a messaging application. Carol explained that all these technology tools are used to achieve dynamism in the teaching and learning process and to help deepen the knowledge of the students.

Carol uses the videos for surgery and anesthesia classes to deepen student knowledge through tutorials. She also encourages them to follow different webpages from different surgeons and anesthesiologists so that they observe the way to do the surgeries and to work with the anesthesia. Then she conducts a discussion forum with the topics seen in the different videos. Carol uses webinars with a very similar purpose for using videos and with the same dynamics of conducting subsequent discussion forums. Finally, Carol uses the messaging application to maintain constant communication with her students and send information of interest they can later discuss in class.

At this moment, Carol is teaching two classes related to surgery and anesthesia. She shared two syllabi during our interview as evidence of using such tools and how they are woven into her assignments. She also shared how she is using some of the technology tools she is working within her class. Her syllabi visually reflect some of the technology tools she is using during the classes. In addition, they contain the deliverables and projects in which these tools are going to be used.

Why Adopt Educational Technology

The choice to use educational technology is directly related to Carol's beliefs regarding the importance of using educational technology as a vital tool to train integral students in our globalized world and her identification with the strategic plan of the university.

> Related to the university, it is an excellent strategy [strategy for using technology tools] because it allows new students to learn as it is being taught in various places of the world, so that allows teaching-learning strategies to be much more globalized and the students better insert themselves into the globalized world.

Due to Carol's beliefs about the importance of continually being at the forefront of technology, for her, it is vital to keep up to date with technological tools, "As long as I have time, I will always be willing to learn [new technologies for educational purposes], because that will be a benefit for me as a human being to keep me updated with the world."

Experiences using Educational Technology in Her Discipline

For Carol, her preference in the use of specific technology tools for her classes is aligned with her beliefs, considering that these tools are vital to help students to develop competences in a competency-based curriculum.

> When I don't use it [educational technology], the student finds it harder [to learn]… the use of appropriate technology for my class helps the student acquiring the skills and competences we want to develop in those classes... if I did not implement [the educational technology] or use it, my student does not learn or acquire the competences correctly. In this world, it is no longer valid to only teach a master class.

Carol also understands that in not all classes, technology can be integrated since their nature sometimes does not allow it. Therefore, the professor must teach traditionally. "Those

professors are not teaching theoretical classes, but a clinical class, [so] they do not use it, because it is not possible… because they are [working] with patients within the clinic [practice]."

For Carol, it is important to guide the students and use technology in her classes since not doing will cause the student of this generation to lose interest. Therefore, she must know and manage the technological resources the student has at hand to use them in pursuit of learning.

> The student must always be guided because the student has the information on the click. The student is a new generation student who wants everything fast because he/she has the ease of clicking. And, what happens? It happens that ... the student will not get concentrate on a class if the teacher does not guide him. There are students who have their phones in their hands ... and the teacher must ... be one step ahead of the student. The teacher must know when to ask each student to search for different information related to classes in their cell phones. That is, the teacher must know how to use that phone [for the benefit of learning] that the student has in their hands.

Challenges

According to Carol, one of the most critical challenges she has faced when adopting educational technology is the time being used in the implementation and learning stages.

> With the professor, it is a matter of time, [learning technology] it will take a long time and they think that even spending time learning the tools, they will not be able to have the right knowledge to use them… It is very unfortunate the difference in the time the teacher has available versus the time [he/she] can assign to the implementation of educational technology.

Besides, Carol believes that students also represent a significant challenge since they know the technology they are interested in, such as social networks; however, when assigning tools for educational purposes, they have some difficulty in using them.

> There are students that when I ask them to make a video, they tell me: ‘Oh! Doctor, but I don't know how to make a video. How am I going to do that?’... Then you must help them…. Sometimes there are groups of students who are more reluctant than others to use technology.

For Carol, facing difficulties when using technology resources can be an obstacle to use educational technology.

> It happened once that I wanted to prepare some exams... then, the laboratory was not enough... the number of positions [chairs and computers] for the number of students was not enough ... there was also no space. Then, that kind of class and practice in that laboratory had to be dismissed.

Carol believes that another challenge faced by faculty in adopting technology for educational purposes is related to generational gaps.

> … [many professors] wonder what they are going to do with new technology. That happens unfortunately with those who are older. I am not a young woman, but I have always remained active as far as technology is concerned, and I understand that without technology the student does not learn, so I have to stay at the forefront.

For Carol, another barrier in the adoption of technology for educational purposes is the fear faced by faculty when exposed to technology, something imminent because of the new generation students.

> Fear, that is something you see, because professors see that the student is going a little faster than them and they are afraid of being left behind. They are afraid that the student knows more than they do, or they are afraid to face the technology.

Additionally, Carol considers students may mistakenly establish a connection between the professors' knowledge concerning their classes and their low management of technological tools. “If the teacher does not adapt to the new times, [he/she] will lose the credibility of the student.”

Carol also thinks that the form used by the university to fill out the technology tool indicator is not friendly, and sometimes this issue may discourage her in the adoption of educational technology. “Technology is used, but the mechanism that the institution has to fill out the technology forms is not friendly… you have to write so much and fill out so much, and you don't have the time [to do that].”

Motivations

For Carol, the main motivation for adopting and using technology for educational purposes is to become a better professor and to be closer to her students. “[My main motivation] is being a better professor and getting closer and being a better professor to my students.”

Carol feels that something that would influence professors in the use of educational technology would be being well paid for her effort in integrating technology for educational purposes in her classes because he will be able to spend more hours teaching.

> You have to do many things, so there is no comparison of all the work that [a professor] has to do with the poor remuneration provided…. If the country system were different, where a professional who is dedicated only to university teaching would be well paid, that would impact on a better Dominican education professional, because he will have a

better remuneration and that person will be able to concentrate much more on Use all the tools required. That is my own opinion.

Besides, Carol also said that interactions with other professors could be helpful when adopting educational technology. “If a professor wants to do a good job, then he can also use other professors to teach him how to use it [educational technology].” She also considers recognition as a good motivator. “When it comes to the use of innovations, this type of motivation is important ... a recognition, ... recognition as a professional in this field by the institution”. Finally, for Carol, it is crucial the opportunity the university gives to professors to learn new skills. “The university always is offering training from kind of technologies, and faculty must take them. They are important because, with this opportunity, we learn.”

Overall Attitude Toward Future Use of Technology

Carol expressed she is inclined to continue learning new technologies for educational purposes. She said that if she has time to apply technology in her classrooms, she will do it, as it helps her stay updated with the new times. “As long as I have time, I will always be willing to learn [new technologies for educational purposes], because that will be a benefit for me as a human being to keep me updated with the world.”

Denisse

Denisse is a 30-year-old faculty member in this private higher education institution. She completed a bachelor’s and a master’s degree in the arts field. She is from School C.

Key Educational Technologies Being Used

Denisse uses several key educational technology tools in her classes, including: (a) Illustrator, (b) social networks, (c) a cloud service tool for data storage, (d) videos, (e) Photoshop, and (f) a messaging application. Denisse explained that all these technology tools

are used to get connected with the students, to have one standard file for all the classes, and to have a repository for complementary knowledge.

Denisse uses Illustrator to sectorize images and Photoshop to handle and treat photography digitally. Those technology tools are the leading software of her class. For Denisse, the cloud service tool for data storage is essential to maintain the synchronization with the other professor and with the students, including uploading and sharing assignments. Denisse uses the Facebook social network to upload videos to conduct subsequent discussion forums; besides, the videos that are taken during the classes are uploaded on Facebook for later review of past courses. Denisse uses the Pinterest social network for illustrations that are inspired by artists or movements and for the creation of typographic posters. Finally, she uses the messaging application to maintain constant communication with her students and send information of interest that they can later discuss in class.

At this moment, Denisse is teaching one class related to arts. She shared her syllabus with me as evidence of using such tools and how they are woven into her assignments. She also shared how she is using some of the technology tools she is working within her class. Her syllabus does visually reflect the technology tools she is using during the classes. Besides, they contain the deliverables and projects in which these tools are going to be used.

Why Adopt Educational Technology

The choice to use educational technology is directly related to Denisse's beliefs about the role of technology in a globalized world and the advantages provided by educational technology that, according to her perception, allow professors to manage students better and integrate more topics at the same time.

> I see it important because we are in a globalized world based on 100% technology so that technology is already part of our life on our daily basis…. Technological tools help professors to be able to have more freedom in terms of student management... and they also help us deliver more information in the same amount of time.

Denisse feels a sense of belonging with the strategic plan of the university related to the adoption of technology for educational purposes, balanced with the need to be aligned with all the changes technology promotes.

> I understand and share the vision of the university concerning educational technology since we are dealing with a target audience of students who are 100% immersed in technology… technology is already part of our life and our daily lives, so what the university has done is to move forward as society has progressed in its generality.

Another experience that led Denisse to start using technology in education was an incident she had when she used to handle her grades manually. She lost her notebook with the grades of all her students. From that moment on, she decided to start using technology to manage her grades to avoid another loss.

> It is not the same. I set my grades manually in a notebook that I can lose. It happened to me four years ago when I started teaching that my notebook was lost. It doesn't happen to me anymore because I already have everything [the grades] synchronized in the cloud…"

Experiences using Educational Technology in Their Discipline

For Denisse, her preference in the use of specific technology tools for her classes is driven by the nature of the classes. "The classes are 100% technological. The bases of the

classes are two programs... Illustrator and Photoshop; that is, by default, there is artistic technology."

Besides, she said that there are two sections of this specific class. Denisse teaches one section, and another professor teaches the second section. They found that using the cloud to synchronize their efforts has helped them achieve better organization of the two sections.

> We handle technology as support between us. There is a shared folder between the two of us, and we have the grades of her group and mine. We also work the feedback. If we both come up with an idea to work on the course that is not syllabus... or other things that are added, we work then in Google Drive and WhatsApp, both of us.

As for using technology tools in class, she understands she can learn new technologies by herself, doing practice.

> As for Pinterest, I arrived there by chance. I sat looking for information on the Internet and found Pinterest. I didn't know what it was, and then I saw many images that were of interest to me. Then, I browsed on the platform for a while without signing up. When I took the step, I already had three months using it.

Challenges

Denisse understands that the adoption, implementation, and use of technology for educational purposes have been very easy for her due to her age and her generation.

> I think that my agility in the use of technologies is due to my age…. I believe that one of the main factors that help me to easily implement technology in the classes is the generation to which I belong. I feel it is easier for me to understand technology.

For Denisse, the biggest challenge she experiences when using educational technology is related to the students in her classes. She told me that there are technology tools that students do

not know how to use. “I have a program that although it is not so extensive, it has two technologies together; the students have never seen it, so I need time for them to internalize in the steps that they must do.” There are other technology tools that students from this generation do not want to use it, like Facebook.

> The students do not like to work with Facebook, and we almost force them to use it... they don't like Facebook anymore because they say it is used by their parents… and they are already reluctant and do not like uploading assignments on Facebook.

Denisse shared another experience she had with a student whom she had requested to create an account on social networks for educational purposes. This student did not want to open an account on social networks for security reasons. “The student explained to me that through social networks, you can obtain personal information from each individual and that in his case, he did not want anyone to have his information.” “He explained that his information can be sold by certain social networks to certain companies and that once obtained, they make him buy certain things or make him accept certain things with which he is certainly not or directly aware.”

Finally, another challenge Denisse has is the time needed to implement technology for educational purposes.

> It's not that I find it harder to implement the technology; it is the factor time for me to implement it. The fact that I do not have enough time to implement all the technology I would like to use.

Motivations

For Denisse, the main motivation for adopting and using technology for educational purposes is her personality and curiosity.

> My own personality [encourages me], because I like technology, I like to search for new technology, I like to learn… if there is a new [technology] update, I try to find a way [to know it]. I am very curious, and that is personal motivation, curiosity.

Denisse is also motivated by the time savings involved in the use of educational technology in her classes. "Technology helps me to better use my time; for example, it helps me to organize the time I have."

For Denisse, recognition is also an important motivation. "People work for recognition. If a professor uses technology in a better way than others are using it, and the former receives recognition, it makes them feel good."

Denisse feels that something that would discourage her in the use of educational technology would be if the institution does not provide her with the necessary technological resources to implement the appropriate educational technology for her classes, and also, the technological equipment needs to be updated. "I think it is necessary to update the [technological] equipment…to achieve better use of technology."

Overall Attitude Toward Future Use of Technology

Denisse showed a positive attitude to continue learning and exploring technology for educational purposes.

> I am 100% interested [in learning new technology for education] because I like to learn, the class becomes more dynamic, and the students understand it [class content] better, they feel that there is not such a significant barrier between the student and the professor, and they feel more comfortable in terms of the learning process.

Edward

Edward is a 63-year-old faculty member in this private higher education institution. He completed a bachelor's and a master's degree in the construction field. He is from School B.

Key Educational Technologies Being Used

Edward uses several key educational technology tools in his classes including (a) a drawing program (Vectorworks), for engineering drawing interpretation; (b) an engineering design software (CIVIL 3D), for specialized analysis of engineering drawing; (c) a budget program (PRESTO), for engineering work budgets; (d) a geographic information system (Global Mapper), for geographic information processing and interpretation; (e) a messaging application (WhatsApp), to maintain a constant communication with his students; (f) drones, for images and aerial shots; and (g) a project management software, to create project plans, to follow up on progress, to allocate resources, to manage budgets, and track workloads.

At this moment, Edward is teaching only one class related to the final project in the construction field. He shared his syllabus with me as evidence of using such tools and how they are woven into his assignments. His syllabus only reflects some of the technology tools he is using during the classes, although he uses several tools. In addition, the syllabus contains the deliverables and projects in which these tools are going to be used.

Why Adopt Educational Technology

The choice of using technological tools is associated with Edward's beliefs that engineers of past generations are hiring engineers of a new generation because the former believes that the latter handles better the technological tools in their field.

> An older engineer is looking for a young engineer to work with the [technology] tools in his office. He [the older engineer] has the experience, but he needs people who handle

> these [technology] tools so that they can make their presentations properly and the calculations.

Edward understands that this is one of the reasons why he, as a professor, needs to be up to date with technology and also must ensure that students get those competences.

> I always try to keep myself updated…. I have always kept updated on technology. I think I have spent a lot of money updating myself because I like to be updated in the programs of my field of work…. So that is why… I need to take responsibility for ... the course that I am teaching right now, well ... I must demand in that tour throughout the bachelor they demonstrate that they have the capacity in the different programs to develop calculations... to have good communication and be able to apply [in the work field] what they just learned.

Experiences using Educational Technology in Their Discipline

His preference in the use of specific technology tools for his classes is aligned with his beliefs considering that these tools are the ones that best fulfill the purpose of facilitating the teaching of his courses.

> I understand that it is a basic tool that they should know, and they will give it different types of use in the work field…. We have Autocad and Vectorworks; The one that is most used is Autocad; however, I use Vectorworks. When the Cad arose... there was one called a minicab that was driven by Apple; that tool is almost the same as the one that exists today; So I followed that trend called Vectorworks, which is most used by architects because it is much higher in design. Autocad is more aimed at specific areas.

Edward feels comfortable using educational technology, and he said he has no major difficulties using technology tools. “I feel comfortable using those tools. I have always felt that

way; I have never had much difficulty. As I have told you, I always try to keep myself updated."

Challenges

For Edward, one of the difficulties implementing technology tools has been the skills to manage the technology tools in detail.

> I cannot handle the program in detail as the students do. I do know [handle it] in general, but I don't have the ability that they have today to handle a cell phone; they can do it with their eyes closed.

Edward recognizes that because of the generation he belongs to, he needs an extra effort to be up to date with technology.

> I cannot handle the program in detail as the students do. I do know [handle it] in general, but I don't have the ability they [the students] have today to handle a cell phone; they can do it with their eyes closed…. I started a course [of a technology tool], and I couldn't finish it, and ... this course is for modeling. Already all the buildings are modeling [with this tool] ... I went every Wednesday from 4 to 10 at night, ... Everyone who was there was younger, and I was the only one who was older; I was, more or less, up to date with them. But I had to pay the course to keep myself updated.

Another challenge Edward experiences when using educational technology is related to the students in his classes. He said there are technology tools students do not know how to use it well. "[Students] react to using more specialized programs…. Then they come to their reality when they work with me; when I am telling them to work with that program, there comes the clash." Also, he believes new generation students lack interest in learning. "There are many

students who are not interested [in learning], ... even if they are young, you do not see the interest. What they want is to get out of this [the bachelor], they don't want to learn."

Another obstacle for Edward to continue implementing new technology for educational purposes is time.

> For me, mainly, the biggest obstacle I have to come here is not if I get paid or not; it is that I use an hour to come here, and then ... an hour to get to [his home sector]….
>
> Sometimes, I have thought that these [technology tools] courses and meetings should not even be at the university; they could be somewhere else. Everything needs time… it is time. Time is the only thing; time to spend on that.

Finally, Edward explained that internet access is a significant challenge for using educational technology. "Look, internet access is one of the most challenging aspects I am facing when using technology tools … it is [a] key [factor] to use educational technology."

Motivations

For Edward, the main motivation for using technology for educational purposes lies in the satisfaction of transferring to students' knowledge regarding some technology tools that they currently need for working in the construction field.

> Realizing that I will have an answer [from the students] ... realizing that after 2 or 3 years these students will really have the knowledge they need; realizing that they will acquire a stronger experience. Realizing that this is happening, for me is very satisfying.

Another motivation for Edward is the feeling of professional achievement; the feeling that although something was difficult, it was worth it.

> I received [information] related to a seminar in Spain where they have the basis [of a technological tool for classes] and I signed up. The first day I was there in that virtual

> classroom platform, taking my course. Of course, I found it very advanced for me, but my first intention was to learn from the class, and there I was, in my class.

Overall Attitude Toward Future Use of Technology

During our conversation, Edward showed interest in keeping on learning educational technology. “I am totally inclined to this [to continue learning educational technology].” For Edward, it is important to continue strengthening his acquired knowledge.

> The course I took last month, and I could not complete ... I try to do some work and apply what I learned in that course, and I realize that I still have some gaps so today I would say that I need to try to continue applying it and in a couple of months after taking the course again, then I can emphasize those points.

Frank

Frank is a 40-year-old faculty member in this private higher education institution. He completed a bachelor’s degree in the construction field and completed a master’s degree in renewable energy. He is from School B.

Key Educational Technologies Being Used

Frank uses several key educational technology tools in his classes, including: (a) computer aid design software, (b) a virtual classroom platform, (c) power transmission and distribution software, and (d) a messaging application. Frank explained that he uses the class's software such as the computer aid design software and the power transmission and distribution software to increase the competences of students in the technical area related to design and facilities in edifications. Frank uses the virtual classroom platform to upload assignments and to manage the classes. Finally, he uses the messaging application to maintain regular communication with his students.

At this moment, Frank is teaching only one class related to design and electrical installations. He shared his syllabus with me as evidence of using such tools and how they are woven into his assignments. His syllabus visually reflects the main technology tools he is using during the classes. In addition, it contains the deliverables and projects in which these tools are going to be used.

Why Adopt Educational Technology

Frank told me that his beginnings in teaching were traditional. “I can say that I started *scratching chalk* [writing with chalk on the blackboard], that is, where technology or the word technology was difficult to hear.” Frank continues to relate how he begins with the adoption of educational technology upon entering this university.

> When I started here at the [name of the university], the first thing I learned was the educational model of the university. Immediately, we began to use technology tools for educational purposes, starting with the virtual classroom platform. It was one of my best experiences.

One of his main reasons for the adoption of educational technology is to develop as an excellent professional. “It is impossible to fulfill your function as a planner, as a designer without using these technological tools…. Today, I could not live without the use of technology.”

Experiences using Educational Technology in His Discipline

Frank’s preference in the use of specific technology tools for his classes is aligned with his beliefs that many such technology tools are easy to use. “They are friendly tools that are easy to apply ... easy to use where young people get to know them pretty quickly.”

Another reason for Frank to decide to adopt technology tools for educational purposes is the simplicity that they can bring.

> Something that can become complex, through a [technological] tool is seen in a simple way…. What it takes me to do in a month, with the tool I can do it in a few hours….
>
> It is not only that I have contact with the students in those assigned hours in the classrooms but … in one way or another, we maintained a type of interaction through the facilities granted by the same tool, such as a forum discussion and the assignment of countless topics at the same time.

He also thinks that educational technology saves time.

> What it takes me to do in a month, with the tool I can do it in a few hours…. It is a matter of efficiency... it is not the same to do something that takes more time than necessary. It is already unacceptable."

Besides, Frank shared that the technology tools he uses in the classrooms are regularly employed in the professional field, and students must start to work with them while at university.

> They are professional application tools that, as young people take classes with them, start from the classroom to get involved with tools that tomorrow or when they are in some industry, are already familiar with the tool or with the technology.

Challenges

For Frank, the biggest challenge he has faced in adopting technology tools in his classes has been the resistance of some of his students to specific technology tools. "It is a tool for professional use, exclusively for a specific purpose... normally those tools that are exclusively for modeling and obtaining a result... tend to bore them [students]."

For Frank, another challenge to continue implementing new technology for educational purposes is time. “There are many hours-man or woman if I could call it so, that you employ…. I remember preparing a two-hour class… it took me almost two weeks to implement educational technology.”

Additionally, Frank considers that a barrier in the adoption of technology for educational purposes is related to generational gaps. “My beginnings [in the use of educational technology] were quite interesting. I had the opportunity to share with teachers of different generations. Perhaps exposing them to a technological tool caused them sweat, to put it in some way.”

Motivations

For Frank, the main motivation for adopting and using technology for educational purposes lies in the satisfaction of speaking the same language as the next generation of professionals. “I would say that you speak the same language as the professionals of the moment, for me, that is one of the motivations that lead me always to be *puncturing [clicking, seeking]* or paying attention to the new tools.”

Frank believes that better remuneration may impact positively in the adoption of educational technology.

> A professor has to dedicate more than those 28 weeks assigned by an academic calendar [to implement a technology tool] …. The professor dedicates 5 times more [the time he is being paid], so I understand that he should be better paid.

Another aspect that Frank considers would motivate him to continue using technological tools for educational purposes would be to have a space for research within the university.

> Faculty should have at least a number of recognized hours to do research, applied research related to his field, his professional field… in order to do research, you

necessarily need, you need to use all technology available at the time… it will help you to grow as a professional.

Overall Attitude Toward Future Use of Technology

During our conversation, Frank showed interest in keeping on learning new technology for educational purposes. “Well, I do not know if it would be the term, but I am *puncturing [clicking, seeking]* new applications every day…. Sure, I'm still looking for more.”

Gary

Gary is a 33-year-old faculty member in this private higher education institution. He completed a bachelor’s degree in the construction field and a master’s degree in sanitary and environmental engineering. He is from School B.

Key Educational Technologies Being Used

Gary uses several key educational technology tools in his classes, including: (a) computer aid design software, (b) power transmission and distribution software (c) cloud services tool for data storage, and (d) a messaging application. He explained that he uses both the computer aid design software and the power transmission and distribution software to develop the competencies needed for project development in the construction field. Finally, he uses the messaging application and the cloud services tool for data storage to maintain regular communication with his students and to share valuable information with them.

At this moment, Gary is teaching only one class related to road infrastructure. He shared his syllabus with me as evidence of using such tools and how they are woven into his assignments. His syllabus visually reflects the primary technology tools he is using during the classes. Besides, it contains the deliverables and projects in which these tools are going to be used.

Why Adopt Educational Technology

The choice of use of technological tools is associated with Gary's belief that technology provides more quality and precision. "The technology of 10 years of presenting simply with the paper is already a bit old and not because the road was badly done but because of a speed issue and also a quality issue."

Gary also considers that technology allows us to visualize some construction projects in a faster way before carrying out the plan, and you can find alternatives.

> It is not a secret that every time [it is more necessary] to have the project as soon as possible ... for example if you are going to build a road tomorrow, you would want to check where [the road] is going virtually, if there is a community near, what signal to even set, how the streets of heavy vehicles will develop; this is becoming more urgent every day.

Considering that construction projects can be visualized before carrying out the plan, Gary also values that with technology tools, you can also consider alternatives.

> When you use tools like these that do, let's say it like this, the mechanical work, you have more time to think, that is, if I go for alternative A, what will happen? If I go for alternative B, what will happen?

Experiences using Educational Technology in his Discipline

For Gary, his preference in the use of specific technology tools for his classes is aligned with his beliefs considering that they are the ones that best fulfill the purpose of facilitating the teaching of his courses.

> For me, those are the key [tools] why? Because I really do not see any other type of technology, at least in my class, of course, much more interactive. If you want to do a

> road project tomorrow and you do it by hand, I will say -Well, in how many months can you finish the project?

He also thinks that they are tools that are used regularly in the professional field with excellent results, and students must start to work with them at university. “I spent several years in a company that luckily for me were using this technology, and I realized in that company that the relationship between the issue of efficiency versus time was already something extraordinary.”

In addition, he thinks that the proper use of these tools in the professional field saves time. “It is not a secret the [matter] of [requesting] to develop projects the sooner, the better. [This] becomes much more necessary now.”

Challenges

For Gary, an important obstacle he has presented in adopting technology tools in his classes has been the technical support with the primary technology tools he is using in his class. “At the beginning of the semester [helpdesk] uninstall the software, then sometimes you have to ask them to install it again.”

Another challenge he has faced is related to his students and their difficulty when using technological tools in the classes.

> If the student at first did not understand the interaction in the classroom, then it can be hard sometimes…. It is incredible that many people of the generation of whom I teach classes, some of them do not understand very well the cloud and the potential that it has.

Motivations

For Gary, the main motivation for adopting and using technology for educational purposes lies to receive any recognition from the institution. “I can be motivated not only by an

economic incentive but with recognition, such as receiving a diploma that certifies that I know about the tool."

Another motivation that drives Gary is the fact that he can convey good teaching to the student so that the student can develop professionally with that tool in the correct way.

> What motivates me internally? Well, that any student to whom I provide that tool can go out to do any project and that I can share experiences, and other topics with them…. Of course, it motivates me a topic of the discussion at a professional level; of course, this is something that the student can learn; in relation to this, that you feel you are giving something new to the student.

For Gary, to develop an incentive scheme may influence faculty in the adoption of educational technology. "What benefit do you find [in adopting technology tools]? It can even be up to: Ok, if you use this tool, I can give you something that motivates you, for example, an incentive. I dare to say salary, at some point."

Besides, Gary expressed that something that can motivate him to continue using technological tools for educational purposes is to make exchanges with other foreign universities.

> Let's set a case: if you use the computer aid design tool, the university is going to prepare an exchange with [name of the university]; you can go there within a semester, and you see the experience; you share experiences with those professors. It is a strong motivation.

For Gary, something that would discourage him from continuing to use technological tools for educational purposes would be that they don't recognize his effort. "I can be

discouraged by the fact that my effort is not recognized, that is, to say it in another way that your superiors say, -Look, it's fine, thanks but no, thanks."

In addition, Gary considers that he would be demotivated if the technology tool he uses is not updated. "Well, a tool that is outdated would demotivate me because I already reached a limit."

Overall Attitude Toward Future Use of Technology

During our conversation, Gary showed great interest in keeping on learning new technology for educational purposes. When asking how inclined he was to continue learning and adopting new technologies, his response was very positive. "A lot really, well, I am doing a Revit course, and I would like Revit to be included in the whole university."

Hannah

Hannah is a 37-year-old faculty member in this private higher education institution. She completed a bachelor's and a master's degree in the health field. Hannah also completed a master's degree in research and educational change. She is from School A.

Key Educational Technologies Being Used

Hannah uses several key educational technology tools in her classes including: (a) social networks, (b) flipped classroom approach, (c) a collaborative mind map tool, (d) virtual classroom platform, (e) a forms and survey creation tool, (f) interactive videos, and (g) a learning game tool. She explained that all these technology tools are used for assessments, to share resources, and for collaboration and interaction with students.

Hannah uses social networks for infographics and images of specific assignments to create dynamism in the class. The flipped classroom is used by Hannah to conduct guided studies of a topic outside the classroom, using time in the classroom to expand and discuss

questions where more considerable difficulties arise. She uses the collaborative mind map tool, as the tool says, to work mind maps collaboratively among all the students in the class. The virtual classroom platform is always used by her to upload assignments, to teach virtual classes, and to meet with students in virtual rooms for collaboration. With the forms and survey creation tool, she makes evaluations of activities or projects. She uses interactive videos to deepen student knowledge through tutorials; then, she conducts a discussion forum with the topics seen in the different videos. Finally, Hannah uses the learning game tool to create interactive evaluation questionnaires, to bring engagement and fun for students at the same time they learn.

At this moment, Hannah is teaching two classes related to pediatric dentistry and cariology. She shared two syllabi with me during our interview as evidence of using such tools and how they are woven into her assignments. She also shared with me how she is using some of the technology tools she is working within her class. Her syllabi visually reflect some of the technology tools she is using during the classes. Besides, they contain the deliverables and projects in which these tools are going to be used.

Why Adopt Educational Technology

The choice to use of educational technology is directly related to Hannah's beliefs about the new generation of students who demand a technological level in the professors who will teach their classes at the university. "The students themselves sometimes come from schools where technology has already been implemented ... and immediately they sit in a classroom at [this university] they ... demand that we [the professors] be at that technological level."

In addition, she feels a sense of belonging to the university's strategic plan related to the adoption of technology for educational purposes, which provides professors with learning facilities and constant updating in educational technology.

> I believe that the interest in being at the forefront of educational technology is remarkable every day in the university, and that is notable not only in the implementation of educational technology in classrooms but also in training offered by the university to faculty. I feel that there is always training, training spaces that allow us as professors to prepare and inform us of different technologies for educational purposes.

For Hannah, it is essential to keep herself up to date with technology tools. She is continually thinking about how to innovate and how things are going to be in the future.

> You know that in other countries optical simulators are used, and that is one of the concerns that I have, I do not know how expensive it is, I do not know what technology we would need to acquire, but I would like that in the future we also think that before the student have that contact with real patients, virtually can have some practice. … I want to innovate, I want to use something new, then I would like to see what other tools are available. Therefore, there are times when I approach other professors to ask them what tools they have used, and this approach has always helped me a lot.

Finally, Hannah considers that her own experience as a student has led her to adopt educational technology in her classes. “I would tell you that first, my own experience as a student has been significant; as a student, I always had the concern, what did the professors have to offer again? Not only about the discipline but also precisely about technology.”

Experiences using Educational Technology in Her Discipline

For Hannah, her preference in the use of specific technology tools for her classes is aligned with her beliefs, considering that these tools are vital to help students to develop competences in a competency-based curriculum.

> [I chose them] Basically, for the competencies that are expected to be developed in them [the students] …. These tools are important for the skills that are expected to be developed in the students since, in addition to the theoretical knowledge that is basic, there are competencies concerning the collaborative work that they will need both in the university and in their professional life… so, here I use the mind mapping tool….I am always aware of what tools have worked for me to learn, and I have taken it to my practice as a teacher, always seeking not only to innovate but that the tools are useful and have an impact on student learning.

Within her experience, Hannah told me that some mishaps have emerged using some tools.

> I can tell you that not always they [technology tools] worked the first time [I used them] or as I expected… for example, to tell the truth, I almost threw in the towel [give up] with the [virtual classroom platform for virtual meetings]. I remember that the first time I tried to record a class in [the university], I recorded twice [because] the video was not recorded. I tried it at my house. One of the technical support guys told me: 'it must be your equipment … because it works inside the university'. I told him that it did not work for me either using it inside the university nor from home. Then I was already with dark circles under my eyes because that night, I decided that this video had to be done by me, and well, it was not so easy… but it worked.

Hannah also understands that students get tired in classes, so professors must keep innovating. "Because students get tired if all professors [in] all subjects use the same tools."

Hannah is very curious, looking for technological tools for her classes. As specific needs arise, she investigates which tool can fulfill that objective.

> I needed to look for a tool that would allow us to work a map collaboratively. I said, well, I want to make a mental map but that we all do it in the class that everyone participates and that everyone's contributions are on that map, so I searched [on the Internet] what tools allowed me that. I tried it alone, and I saw that it worked for me and said: oh well, but let's try to use it in class. In the first semester, there was some resistance from the students. It cost me a bit until I already felt a little more expert using the tool. I continue using it.

Challenges

For Hannah, one of the essential difficulties she has faced in the adoption of technology for educational purposes has been the generation gap, which does not allow her to learn technology as quickly as her students.

> I do not feel as expert as my students in the use of all these digital technologies, but as I have always been interested, that has made things a bit easier, because sometimes I think that when the generational gap is very broad, it gives professors more work to get into the use of technology.

She also considers that fear, lack of training, and resistance to leaving the comfort zone are other obstacles to adopt technology for educational purposes.

> I think it's resistance, fear of change, sometimes maybe lack of training…. Well, if I have been teaching a class for 30 years only with slideshows or talking, and now we have to use technology that makes me leave my comfort zone, then there will be a lot of resistance…. Once, a technological tool didn't work well for me in the classroom and that made me feel very nervous because I came up with this idea and it wasn't working

> in front of the students. Not only at that moment that I remember now, but I have been afraid on some occasions.

She also explains that in her experience, some students represent an important challenge since they know the technology they are interested in, such as social networks; however, when assigning tools for educational purposes, she faces resistance from students in using them.

> I think that the use of social networks makes them feel more comfortable. For example, when I suggested to them the use of social networks in the class there was no resistance, but when I brought another tool for educational purposes unknown to them, I faced more resistance.

Finally, Hannah explained that internet access is an important challenge for using educational technology. “Students complain although less and less about internet access.”

Motivations

For Hannah, her main motivation for adopting and using technology for educational purposes is that she enjoys preparing innovative classes, and at the same time, for her, it is a motivation that her students enjoy them. “I enjoy preparing a class, designing it, using something innovative, but most of all I enjoy it when they [the students] also enjoy this process. So, that is a motivation for me.” Also, feeling a sense of fulfilling the class' needs is another satisfaction for her.

> I needed to look for a tool that would allow us to work a map collaboratively. I said, well, I want to make a mental map but that we all do it in the class that everyone participates and that everyone's contributions are on that map, so I searched [on the Internet] what tools allowed me that. I tried it alone, and I saw that it worked for me and

> said: oh well, but let's try to use it in class. ... It cost me a bit until I already felt a little more expert using the tool. I continue using it.

She also shared that another motivation to use technology could be given by receiving incentives and recognition.

> I would tell you the incentive [would be a motivation]. Sometimes we think of an incentive, and we go to salary but not necessarily; sometimes it is important to receive support of the school directors: Look, I like the technology that you implemented, I like what you did…. Recognition, even that is enough for people to feel motivated and continue to implement new technology tools and to innovate.

In addition to recognition, Hannah considers as an important motivation to have the opportunity to publish articles related to educational technology; not necessarily to publish them in indexed journals, but that professors can see these publications and share them with each other.

> We need dissemination, we need to publish… we can write papers of the experiences we have in the classrooms [implementing and using technology tools] and sometimes those articles do not necessarily have to go to an indexed journal… they can be published in the university's own magazines.

She also considers important and useful to share experiences with other colleagues to share ideas related to the adoption of educational technology.

> We need to create spaces for us [faculty] to share what we do…. At some point, I have planned to work some kind of training among colleagues or prepare some interest groups with professors who want to use technology, to share ideas related to technologies in education.

In a similar vein, Hanna shared that for her, it is crucial to work with a peer observation approach to learn from other professors.

> I think it is important that I can attend the classes of other professors who use technology and then implement those tools in my class because sometimes we believe that we are doing things well, and it is not so. But if we see another teacher implementing them, ideas can arise for our own classes.

For Hanna, the opportunity offered by the university to present innovative classes at the annual Teaching Innovation Day is an important motivation. “The Teaching Innovation Day that is held annually at the university, in my particular case, has also been motivational. I have presented two years, and the truth is that it is a source of motivation for me.”

Hannah believes that when she teaches, she learns, and that is another source of motivation for her.

> When I teach I also learn and I believe that this is an internal motivation for me because it is not only that I have knowledge related to pediatric health and that I know the challenges with which I will face in the professional field, but for me teaching is a challenge.

Overall Attitude Toward Future Use of Technology

Hannah showed a positive attitude to continue learning and exploring technology for educational purposes. “I am very open to learning new technologies [for educational purposes].”

Hannah is also always willing to investigate, learn, and implement new technologies for educational purposes.

> For example, that semester I recorded some videos but then we had the uncertainty of how to share those videos because they were very heavy. I had four videos, so the

> students said: ‘Professor, we are going to upload them on WeTransfer’, and then I said: ‘Perfect, I am going to share the link so you can access the videos’, and so we did it. The experience was wonderful…. I needed to look for a tool that would allow us to work a map collaboratively. I said, well I want to make a mental map where everyone can contribute on that map, so I searched on the Internet what tools allowed me to do that. I found one, I tried it alone, and I saw that it worked for me. Then I thought: oh well, let's try to use it in class.

Isabella

Isabella is a 53-year-old faculty member in this private higher education institution. She completed a bachelor’s degree in the construction field and a master’s degree in higher education. She is from School B.

Key Educational Technologies Being Used

Isabella uses some educational technology tools in her classes, including: (a) a computer aid design software, and (b) a messaging application. Isabella explained that these technology tools are used to fulfill the class requirements and to maintain continuous communication with students.

Isabella uses the computer aid design software to develop the competences of students related to technical design 2D drawing and 3D models, substantial aspects of the classes. The messaging application to maintain constant communication with her students and send information of interest to them.

At this moment, Isabella is teaching one class related to computerized drawing. She shared her syllabus with me during our interview as evidence of using such tools and how they are woven into her assignments. She also shared with me how she is using some of the

technology tools she is working within her class. Her syllabus visually reflects some of the technology tools she is using during the classes. In addition, it contains the deliverables and projects in which these tools are going to be used.

Why Adopt Educational Technology

The choice to use educational technology is directly related to Isabella's beliefs regarding the importance of keeping us updated in a globalized world. "In the world, we cannot be left behind; we have to move on, move forward, and education has to go forward with the world too."

Isabella also understands that students move ahead of professors in terms of technology, and faculty should not be left behind to reach them more naturally and speak their same language.

> Well, nowadays, if we don't integrate technology, we are not going to reach the kids [students] as we would like… Students go one step further than us in terms of technology... they create their own language... for them, social networks have become their daily lives… their way of life…. So, if we interact [this reality] with what education is, I think we're going to get to them easier than just staying in the classroom talking and talking to them.

Isabella enjoys using technology tools because she believes they help her to save time and be more effective when teaching a class.

> I enjoy it. Every time I need to do an update on my software, I enjoy everything I have to learn because I see how technology is increasingly facilitating what our daily life is and what our profession is. I think that if we learn technology and enjoy it, we will get many things in the short term."

Experiences using Educational Technology in Her Discipline

For Isabella, the use of this specific design technology tool for her classes is related to the fact this tool fulfills the purpose of facilitating the teaching of her courses. “Why do I use it [the computer aid design software]? … this software fulfills the class requirements.”

She also considers that the messaging application has been the best option to communicate with students since they do not check their emails. However, they do review this messaging application.

> WhatsApp is what kids [students] use the most. As much as one does not want, they are in WhatsApp all the time, and if you want to communicate with them in another way, there is no way because even an email I send them, you arrive at the course, and you say: did you check the email? And they answer: no. What they currently, at least here, what they use most is the WhatsApp.

Isabella considers that if she uses another technological tool in addition to those she uses, such as a smartboard, students could take better advantage of the classes.

> When I explain the [software] commands to them [to the students] they assume that they understand everything, but they forget them for the next class -professor, but how is such a thing or such a command done? But maybe if I have a smartboard where I can go writing and drawing graphics, and they keep this information, it would serve as a basis, and maybe they could take a better advantage, they can understand better and maybe they can take a step ahead of what the class is.

Challenges

One of the obstacles Isabella faces is the lack of interest of the students in the class. “They are often interested in other things, and when they are in the class, they do not have

enough interest, so they just leave everything to their memory, they think they memorize everything, and they will remember everything." She also considers that the same technology partly gives this lack of interest since students do not want to take notes or write because they understand that they can search for everything on the internet.

> And they say: 'why am I going to write that? I just have to look for it on Google, everything is there, you can search for the information, and it's already there on the Internet'… 'What am I going to write for? If I just have to watch a video on YouTube to tell me how to use that command'.

A big challenge Isabella is facing is related to computers. She said that most of them do not work correctly. "Sometimes, the computers do not work properly, and that's a problem." In a similar vein, she explains that another challenge is related to the software update. "We have to keep updated with the software, and sometimes that is another issue."

Motivations

For Isabella, her primary motivation for adopting and using technology for educational purposes is the fact that she enjoys it, she likes it, and it is personal satisfaction to stay updated in technology.

> I always encourage myself to keep updated in technology because I like it, because I feel that I might not want to grow old and that technology does not age with me…. If I leave my profession, I still want to continue with technology because it is more personal satisfaction. It is like staying closer to what the world is today.

For Isabella, the economic aspect could discourage her from continuing to use educational technology. "Now, what discourages me not to continue, perhaps in technology in class? Perhaps the lack of economic motivation."

She considers that, in effect, recognition and economic incentives can impact the adoption of technology in the classrooms. “Incentives can be used. Did you use technology better than others? ... you met that goal. So, what are we going to give you? Look, I recognize your work, and I give you this award.”

Overall Attitude Toward Future Use of Technology

Isabella is open to continuing learning technology for educational purposes. She thinks it is crucial to be updated in technology because students go very fast with the use of technology, and they can leave the faculty behind. That is why she considers that she should go hand in hand with the students in this learning.

> Fully open. why? ... if we do not update and keep updating, we will be left behind, and if I really want to continue using technology in my classrooms, I have to update myself… Why? Because … they keep moving forward, but the professor is falling behind, and when we come to talk about anything, they are far ahead.

In addition, Isabella considers herself self-taught when learning new technologies for educational purposes, and if she does not understand something, she looks for people who explain her doubts.

> What I did was to become a little self-taught. I began to look for myself, to try to learn for myself, and… I found a person that I thought could help me with these tools, and I started taking private classes at my house, and I paid for the classes.

Joyce

Joyce is a 42-year-old faculty member in this private higher education institution. She completed a bachelor’s and a master’s degree in the health field. She is from School A.

Key Educational Technologies Being Used

Joyce uses some educational technology tools in her classes, including: (a) a virtual classroom platform, and (b) social networks. Joyce explained these technology tools are used to achieve a better approach to students.

Joyce uses the virtual classroom platform to upload the assignments and to maintain constant communication with her students, and she uses social networks to ask students to upload videos of certain conditions of a patient, giving recommendations for clinical improvement.

At this moment, Joyce is teaching one class related to pediatric dentistry. She shared her syllabus with me during our interview as evidence of using such tools and how they are woven into her assignments. She also shared with me how she is using some of the technology tools she is working within her class. Her syllabus visually reflects some of the technology tools she is using during the classes. Besides, it contains the deliverables and projects in which these tools are going to be used.

Why Adopt Educational Technology

The choice to use educational technology is directly related to Joyce's beliefs about the need for reaching the new generations of students who are coming to classrooms these days.

> A professor who is not using certain tools and who does not know how to use them well, will not be able to reach students correctly, or keeping them motivated…. At the teaching level we need to be exposed to everything that [technology] gives us and use it as a tool to be able to contribute and reach students in a way that learning, well, I am not saying that it will be easier, but perhaps to reach them and stay with them in a better way, having a more specific approach.

In a similar vein, Joyce values the importance of being up to date with technology and be continually innovating.

> The one who is not innovating daily; the truth is that he fell asleep, he lagged behind….
>
> I like to be innovating… I can tell you that I see who my professors were and who are still teaching in certain classes, and I say: 'Wow! In that way, ... we can't go on. Then we must change'. We have to innovate.

In addition, she feels a sense of belonging with the strategic plan of the university related to the adoption of technology for educational purposes and considers the virtual classroom platform to facilitate the teaching and learning process in some manner.

> I see the vision of the university very positive. The tool that we use today at a general level [the virtual classroom platform] is very important because we even have opportunities to study in other universities outside of the country, where we can continue working as professors and transfer knowledge to the student without having to move to that country or that university.

Experiences using Educational Technology in Her Discipline

For Joyce, her preference in the use of specific technology tools for his classes is aligned with the fact that these tools fulfill the requirements of the classes. For example, she explained that the use of the virtual classroom platform is essential because she teaches with a blended learning approach.

> Long-time ago it was only at the face-to-face level, then the institution where I work ... gave the facility to the professor for using blended learning, in which only five weeks are face-to-face in the four-month period ... so the professor does not have to be physically present in the institution, but there must be a record, the professor also has to

> enter to the virtual classroom platform and have to, as I told you just now, ... upload the assignment and have contact with the student.

In her experience with the virtual classroom platform, Joyce said that a topic is placed on this platform, they discuss it, and each student gives their opinion until they get a conclusion.

> In... the virtual classroom platform then, we make different assignments. We work with forums, a topic is placed, and then each student must give his contribution, his knowledge, and… an opinion on the topic to be treated. Immediately they are answering, and I also intervene, I keep feedback on what they are answering, I correct some other things that are not adequate, and then we start a debate until we reach a conclusion.

Related to her use of Instagram in her classes, Joyce thinks that it is one of the best ways to engage her students. “Social networks, especially Instagram, is also a way to reach them faster.”

In her experience using educational technology in her classes, Joyce shared she thinks it helps her getting closer to the student in an easy and fast way.

> I can tell you an anecdote. A few days ago, we had an exam and the students sent me many emails asking me about certain concerns and class material, and we always communicated virtually. So, that communication they had with me was technological, at the right time and directly with me.

Challenges

The biggest challenge Joyce faces right now to adopt technology for educational purposes is the time required to implement it.

> The biggest challenge [to implement technology tools] perhaps could become, a little more personally, time; because as I say, you have to prepare everything, you have to see

> what you are going to upload on the platform. To do that, the professors work out of the time we are going to teach the class, so in my case, I am not only a professor in this institution, I have other jobs [outside the institution] as well.

In a similar vein, she said that students work with their assignments at the last moment, and this fact reduces her time to both correctly evaluate and place the grades in the system.

> The students leave everything [for] the last [moment]… when they leave everything for the last hours, for us [professors] it is a burden [because] we also leave everything to the end [for the last moment], so sometimes we are not able to evaluate correctly and we assign the grades late.

Finally, Joyce shared with me her concern about the lack of interest shown by some of her students in her classes, although she tries to create dynamism and keep them active.

> I do not know if the word would be 'sad' when we are teaching a class and we see that the students are in something else or that they are falling asleep, so that gives a lot to think about… personally, I try to make the class more dynamic to maintain a correct learning environment.

Motivations

For Joyce, one of her main motivations for adopting and using technology for educational purposes is to maintain a good reputation as a professor and maintain quality teaching. "Personally, and professionally an assessment is important for every human being, maintaining a good reputation and quality in your teaching method."

For Joyce, peer interaction may encourage professors to adopt technology tools in their classes.

> Thank God I have many coworkers that we all say to each other: I loved the class you taught, the way you taught it. That would also be good if we also exchange ideas among teachers; It is important that brainstorm having different options. And together we help each other prepare the classes more dynamically.

Joyce considers that the economic aspect may impact the adoption of educational technology. “There is also an economic aspect that is involved; maybe we do not like to mention it, but for some reason, we are all here too [economic incentive], besides we like to do what we are doing [teaching].”

Finally, she considers that, in effect, recognition can be a motivation to adopt technology in the classrooms. “When both students and directors assess a professor and the results in the use of technology tools are highly qualified, a motivating factor could be the recognition… of the contribution we have made [when using educational technology].”

Overall Attitude Toward Future Use of Technology

Joyce shared she is very inclined to continue adopting educational technology, due to her passion for learning and being up to date. However, a significant limitation is the time to learn and implement it. “I like it, but as I said, I need more time to get into that.”

Kate

Kate is a 38-year-old faculty member in this private higher education institution. She completed a bachelor’s and a master’s degree in the health field. Kate is a doctoral candidate within a Ph.D. in biomaterials. She is from School A.

Key Educational Technologies Being Used

Kate uses some educational technology tools in her classes including: (a) a virtual classroom platform, (b) Google Docs, and (b) videos. For her, the most important tool she is

using is the virtual classroom platform, because she teaches with a blended learning approach, combining online interactions with the traditional classroom. In the virtual classroom platform, Kate uploads the assignments and maintains a constant collaboration with her students. The students use Google Docs for collaborative, creating, and editing documents. Finally, Joyce uses tutorial videos to reinforce the class's knowledge and to teach them how to make effective presentations.

At this moment, Kate is teaching two classes: one is related to a fixed prosthesis, and the other one is related to the final project in the health field. She shared two syllabi with me during our interview as evidence of using these tools and how they are being used in her classes. Her syllabi reflect some of the technology tools she is using during the classes. In addition, it contains the deliverables and projects in which these tools are going to be used.

Why Adopt Educational Technology

The choice to use educational technology is directly related to Kate's beliefs about the new generations of students since they are digital natives who are familiar with the constant use of technology.

> It is easy for young people [the students] because they are very used to it [to technology]. As they were born as email has always existed in life; for them, it is easier…. Oh! I like it a lot - a lot [learning technology] because we really go back to the same thing. Since the students are so used to [technology], you must use them so that the boys [the students] wake up and show interest.

Besides, she feels a sense of belonging with the strategic plan of the university related to the adoption of technology for educational purposes, balanced with the facilities that the virtual classroom platform offers to her.

> It has been a long time since the university implemented blended learning. Many teachers have a diploma in teaching in virtual environments. A large group of teachers were trained and thank God I had the opportunity to participate. Then, from that moment on, the virtual teaching platform began to be developed here at the university, and the plan to teach in a blended learning approach began to be developed. With this process, the university has contributed to what is the inclusion of technology in the classrooms.

Kate thinks that the adoption of educational technology can help saving time, minimizing the speed in communication between people. “It's faster… people write you an assignment, send it to you, and you give it back.”

Another reason for Kate to adopt educational technology is the ease that the distance learning approach offers.

> For example, right now, … I am working on my doctoral dissertation, I am finishing a doctorate in [country in which she is studying the Ph.D.], so far away. I work everything like this: I sent it to my professor, my professor reviews my document and after he reviews it, he sends it back to me. I am using virtual classes right now. You don't have to travel so much.

She also values the fact that she is using technology, and people might be more eco-friendly. “The professors send you everything by email; a sheet is not printed, nothing is printed.”

Experiences using Educational Technology in Her Discipline

For Kate, the use of the virtual classroom platform in her classes is essential. Most of the classes are taught through this platform.

> There are many activities. We work with questionnaires, discussion forums, the material is uploaded, YouTube videos are uploaded, tasks are placed so they [the students] can work on them…. In that class, it is super important a tool that has the virtual classroom platform, which is anti-plagiarism; so, as I work with a final project, every time they send documents to me, it goes to anti-plagiarism.

In Kate's experience, students find it easy to work with the technological tools she uses in her classes because they were born in this new generation. “It is easy for young people [the students] because they are very used to it [to technology]. As they were born as email has always existed in life; for them, it is easier.”

In her experience using the virtual classroom platform, she acknowledges that currently, she has some problems with the new virtual classroom platform since it is less friendly than the one previously used in the university.

> Some time ago, here at the university, there was another platform that was [name of the previous platform]. The students and I found that it was easier and more friendly. The new [name of the new platform] is a little more uphill to use. So, it happened to me that after we moved from [the previous one to the new one], the students get a lot of work [it is very difficult] to use the platform, a lot.

Challenges

The biggest and most important challenge Kate faces right now to adopt technology for educational purposes is the migration from the previous virtual classroom platform to the new one.

> The hardest thing for me has been the change of the virtual platform [name of the new platform]. I find it hard to learn, and also the students find it difficult to use… it's

> frustrating for them because when they can't find where to upload the assignments, they don't want to use it. And really, when they get stuck, they don't want to [use the platform], [and] I can't press [them] either…. Oh! I begged the people here, from the technology help desk, to install for me the [name of the previous platform] again, and they are not able to. And I said: 'Oh! My son, but that one was easier', and they said: 'No doctor, you get used to it'. But look, I have two four-month periods using it, and I have noticed a lot of pressure from the students, and I can't delay classes due to a virtual platform.

Another challenge that Kate has encountered when adopting technology for educational purposes is learning totally via virtual courses to learn educational technology.

> Receiving classes via distance learning is not easy, it is more uphill than sitting in a classroom, because when you are in a classroom, the teacher can explain everything to you and if you do not understand you raise your hand and tell the teacher that you did not understand; the teacher comes back and explains to you…. In the virtual classroom platform they send you, for example, a document, you have to read it; if you did not understand you have to read it again, alone; if you did not understand what the assignment is, you write to the teacher and maybe the professor answers you.

Kate believes students also represent a significant challenge since they know some technologies they are interested in, such as social networks; however, when assigning tools for educational purposes, they have difficulties in using them.

> Based on my experience and what happened with the virtual platform, I can tell you that you cannot assume that because it is technology, it is native to young students and that they know how to use all platforms because sometimes you think that as they are new

> generation and have been born with computers and with a lot of technology, they know how to use everything, and it is not necessarily so.

Sometimes Kate faces fear during the adoption of technology for educational purposes, and she needs to be secure that technology is going to work before showing them to her students. “I would never risk using new technology if I didn't practice it at home.”

Kate also considers that a generational gap is a significant obstacle in the adoption of educational technology since she thinks it is easier to be understood by new generation students. “Younger students find it easier to work with technology because they were born with technology. For them, that is not so difficult.”

Finally, Kate explained that internet access is an important challenge for using educational technology.

> Sometimes the internet fails and if you are using Kahoot with 30 connected students and you want an efficient experience you need to know that you have to bring a WiFi because otherwise, Kahoot stops working.

Motivations

For Kate, one of her main motivations for adopting and using technology for educational purposes is that both good learning experiences and the class objectives are achieved. “For me, what would encourage me the most is that the students are learning, delivering the work on time, and achieving the objectives of the discipline. For me, that is the main thing.”

Kate is also motivated by peer interaction, either one by one or in classrooms or conferences.

> It would be great ... interaction with peers…. I am encouraged, for example, by conferences or presentations by other professors who use some technological tools. So, to see

how others are using other tools and receiving feedback is very cool because you say: Wow, but I can implement that in my class, too!

Kate believes that recognition and awards are very motivating when adopting and implementing educational technology.

> There are universities that award prizes to professors who use educational technology. A recognition in this line that indicates that the teacher used a lot of technology in his classes would be motivating... it could be interesting for a professor who implements educational technology; it would be very cool … I know that there would be many professors who would like to compete in that line.

She also believes that an economic incentive would have an impact on the adoption of educational technology. “It can be recognition, but if there is money involved, it is much better; or anything such as an iPad or a new computer; economic incentives always motivate people a lot.” She considers that peer interaction is a good motivation, as well.

> What could be interesting for motivating faculty, and at the same time can be a benefit for the university? To pay you an educational technology training outside [of the Dominican Republic]. Why? Because you are going to feel motivated because you are going to take a course [training] and you are going to share with other colleagues, and at the same time, what you learn you will apply it within the university. So, that could be something interesting.

For Kate, something that would discourage her in the adoption and use of educational technology is that the use of some technology tools becomes difficult for students.

> What would discourage me is that they [the students] find it hard to use it; that is, that it is really difficult for them to implement it, that they do not know how to use it and that extra learning is needed for them to be able to make an assignment.

Overall Attitude Toward Future Use of Technology

Kate shared with me that she is very inclined to continue learning technology for educational purposes. She understands that she connects better with the students of this new generation. “Oh! I like it a lot [learning technology] because we go back to the same thing. Since the students are so used to [technology], you have to use it so that the boys [the students] wake up and show interest.”

Kate also sees educational technology as an opportunity that provides various teaching opportunities to professors.

> A wide range of possibilities was opened for professors…. The university contributed too much to what is the inclusion of technology because, within a virtual platform, you can use many more tools; that is, not only the virtual classroom platform, but you can upload videos, tutorials, you can post the exams, etc.

Lilly

Lilly is a 42-year-old faculty member in this private higher education institution. She completed a bachelor’s degree in the art field, and a master’s degree in management and productivity. She is from School C.

Key Educational Technologies Being Used

Lilly uses several key educational technology tools in her classes, including: (a) videos, (b) social networks, (c) web pages, and (d) a messaging application. Lilly explained to me that all these technology tools are used to make learning easier for students in a dynamic way.

Lilly uses the videos to create discussions in forums after viewing a specific video assigned in the classroom for learning purposes. She explained that she uses both social networks and web pages links to send them some reading topics to discuss later in class. What Lilly uses most with her students is the messaging application. She believes that the messaging application is very natural for new generation students since they use it daily for any purpose. It is the main reason she has always chosen to use it in all her classes.

At this moment, Lilly is teaching two classes. One of them is related to corporate communication and the other with communication proposals. She shared her syllabi with me as evidence of using such tools and how they are woven into her assignments. She also shared with me how she is using some of the technology tools she is working within her class. Her syllabi reflect some of the technology tools she is using during the classes. Also, they contain the deliverables and projects in which these tools are going to be used.

Why Adopt Educational Technology

The choice to use of educational technology is directly related to Lilly's beliefs about the new generations of students who are coming to classrooms these days. "I think this [the use of educational technology] has a lot to do with the generations to which we are teaching. Basically, if you [as a professor] do not transform yourself at the same time as generations, you will not be able to teach."

She considers that professors must adapt to teach new generations students. "I strongly believe that in the end, you [professors] have to adapt to the student, not the student to you."

For Lilly, it is important to keep up to date with technology as she believes that it makes her a better professional.

> I believe that to the same extent that I learn to handle myself in digital environments ... I will also be a better-prepared professional because the technological issue is not a fashion, it is a reality. It is not a trend that tomorrow will not be, but quite the opposite.

Lilly believes using technology tools helps her to save time and be more effective when teaching a class.

> Because it's easy, it's fast, if we're going to see the positive things it has, we're going to start because it's a matter of efficiency, the university is going to spend less electricity, less environmental pollution, fewer cars on the street.

Experiences using Educational Technology in Their Discipline

For Lilly, her preference in the use of specific technology tools for her classes is aligned with her beliefs, considering that these tools are practical, and also, students prefer to use them.

> All of them are practical, and the students prefer them. For example, I always ask students -I will give you a specific example-: Do you want me to send the assignment via WhatsApp or via email? And they unanimously say: via WhatsApp; and in fact, anything that I send to them via email, I have to let them know via WhatsApp that I sent them something by email because if I don't [let them know] they don't see it.

Lilly believes that teaching is related to providing good customer service, where the clients are the students. Therefore, she always asks them with what tools they prefer to work in classes.

> So, it's about teaching has to do with customer experience. In this case, who is the customer? The student…. I was speaking at a conference for young people who were not more than 20 years old, and they were like 40 young people, and I asked them: Do you watch television? And no one watched television. No one raised his hands. Then I asked

> them: do you hear the radio? Two or three. I asked them why they hear the radio. They told me that when they are with their father or mother in the car, they listened to the radio; It's not even them who listen to the radio. I asked them if they use to read the newspaper. Nobody raised his hand; digital [newspapers] either. What do you hear? YouTube? Everyone raised their hands. Everyone watched YouTube. So how am I not going to use a channel where they are? So, it's about teaching having to do with customer experience. In this case, who is the customer? The student.

Besides, she considers that allowing students to help you in choosing the technology tools they prefer to use can help professors to be better teaching his classes.

> When you are willing to be a better professor, you must ask the student: In what environment do you want me to be? How do you want me to do it? And that will facilitate learning because they are going to feel ‘cool’, they are going to feel that they have a ‘cool’ teacher.

Challenges

For Lilly, one of the challenges she is facing to implement technology in her classes is internet access at the university.

> I believe that the challenge is sometimes in the same university when the internet fails.

Another obstacle that has been presented to Lilly is that students tell her that they lack the necessary technological equipment to use the technological tools in class.

> It had happened to me that [the students] don't have a computer. They don't have a cell phone. They don't have internet. They don't have anything. I tell them: Well, go to the lab here to find a computer and send it [the assignment] to me; There is no problem. Otherwise, when you get home, send it [the assignment] to me.

She understands that this situation is not real. She thinks students make excuses not to do the work in class or not to send assignments on time; therefore, she handles offering immediate and practical solutions. “I mean, the excuse is absurd and forgive me for the word, but that is. [Then I tell them] ‘Look at my cell phone, look at my computer, look at the internet, use them’.”

At first, when Lilly began adopting technology, fear was a significant obstacle, but later she overcame it.

> At first, I was afraid because I said: And what would the digital environment be like and teach in a digital environment be like? It scared me until I tried to do it and I said: But this is very cool, and this is very easy!

Another challenge that Lilly thinks the professor has when using distance learning is to maintain a natural and correct fluency in the classes so that students learn since human contact is lost.

> The bad thing about that [distance learning] is that it takes away the human connection and having contact with the students is always good, that is, they see you, you see them… this means a challenge for the professor to maintain the line of respect so that everything flows naturally and correctly, and obviously, that [students] learn because it is not about giving them a lot of information and that they do not learn anything.

Lilly believes that another obstacle to adopting technology for educational purposes is related to generational gaps.

> For example, it takes me more time to explain digital environments to my master's students than to those who are undergraduate and younger, and it is not that the age difference is radical; we are going to say that the students of degree are 20 years old and

> those of masters are not more than 30 or 35 years old, that is to say, that the generations are not so distant from each other, however, there are situations of the use of technology, while younger, it's easier; the older the person is, the harder it is

Finally, Lilly thinks that the form used by the university to fill out the technology tool indicator is not friendly, so sometimes she feels about not using technology tools, although she likes to use them, as not to have to fill out the form. “I opened the form one day and it was very hard to fill out, so I thought about not using technological tools, to avoid filling out the form."

Motivations

The main motivation for Lilly in the adoption and use of new technologies is when students request for the classes new digital platforms because she thinks technology tools work. “The student's requests would motivate me. As they ask me to try new digital platforms with them, I am going to do it, because I see that they work.”

Another motivation for Lilly with the use of technological tools in education is that she believes it saves her time and helps her recover it at the same time.

> The other day, I was late [to classes], but I had already graded two groups while I arrived, and I told the students I had already evaluated to leave…when I arrived, I said to those whom I had not evaluated: I am here, I am already going up [to the classroom], and they were very happy that I do things so quickly and easily.

Something that would discourage Lilly from continuing to use technological tools for educational uses is the fact that students stop using the content she develops on those tools with a lot of effort.

> I would be discouraged to see that they [the students] are not using it, that they do not appreciate it; I would kill myself for example, if I create a web page to upload all class

> content and after having a lot of work doing it, the students enter to the web page, and suddenly they tell me: 'No, professor, I don't like that'.

Overall Attitude Toward Future Use of Technology

Lilly is very inclined to continue learning educational technology and to continue using it in her classes. "A lot. Look, if it was really for me my classes were totally virtual, I didn't even come to university, I sat in my house in pajamas and taught classes from there." She considers the technology eco-friendly, efficient, and that it saves time.

> Because it's easy, it's fast, if we're going to see the positive things it has, we're going to start because it's a matter of efficiency, the university is going to spend less electricity, less environmental pollution, fewer cars on the street.

Chapter IV Closure

All twelve participants shared unique and interesting stories. They offered insight into their personal and educational experiences related to their processes in the adoption of technology tools for educational purposes. Chapter V will now cover the major themes and sub-themes that emerged from the interview data.

CHAPTER V

DATA ANALYSIS RESULTS

The purpose of this qualitative study was to explore faculty experiences regarding the adoption of educational technology within a HEI, that has made available significant technology classroom tools and training to its faculty in the DR. This goal was to obtain information related to faculty members' attitudes, barriers, and motivations for using or not educational technologies in their classes. The data was collected over a period of two months in 2019. Data was gathered via faculty interviews and analysis of documents and/or artifacts of classroom technology adoption to capture experiences related to faculty usage, attitudes, barriers, and motivations regarding the adoption of educational technologies into the teaching and learning process. This chapter presents the thematic findings that will be used to answer my research overarching and sub-questions.

Presentation of Themes and Sub-Themes

Based on the responses from the 12 faculty members as well as my findings from the document and artifact analysis, five major themes and 13 sub-themes emerged. This data analysis is based on the interviews from the 12 participants, working back and forth between the individual meaning units from the data and the possible ways of grouping those meaning units (Creswell, 2013), as well as my findings from the document and artifacts.

Table 2 summarizes the major themes and sub-themes that emerged from this study and shows the participants in which these themes and sub-themes were presented.

Table 2

Major Themes and Sub-Themes

Themes and Sub-Themes	Alan	Brigitte	Carol	Denisse	Edward	Frank	Gary	Hannah	Isabella	Joyce	Kate	Lilly
1. All faculty reported regular use of a variety of technology tools in their classes	X	X	X	X	X	X	X	X	X	X	X	X
2. All faculty believe technology adds positive meaning to their classes	X	X	X	X	X	X	X	X	X	X	X	X
2.1 Most faculty believe it is important to introduce technology for the current generation of students	X	X	X	X				X	X	X	X	X
2.2 Most faculty believe that using educational technology helps save class time	X	X		X		X		X	X	X	X	X
2.3 Most faculty believe that using educational technology helps students to achieve class competencies/skills	X	X	X	X	X	X	X	X	X			
3. All faculty face obstacles within the adoption of educational technology	X	X	X	X	X	X	X	X	X	X	X	X
3.1 Most faculty face challenges related to students' difficulties when using technology tools for educational purposes	X	X	X	X	X	X	X	X			X	
3.2 Many faculty face difficulties with technological resources			X	X	X			X	X		X	X
3.3 Most faculty face challenge with generational gaps	X	X	X	X	X	X		X			X	X
3.4 Some faculty face fears related to being exposed to technology		X	X					X			X	X

Table 2 – continued

Themes and Sub-Themes	Alan	Brigitte	Carol	Denisse	Edward	Frank	Gary	Hannah	Isabella	Joyce	Kate	Lilly
3.5 Some faculty have a lack of time for implementing educational technology			X	X	X	X				X		
4. Most faculty would be influenced by potential future factors to adopt and use educational technology	X	X	X			X	X	X	X	X	X	
4.1 Many faculty would be influenced by adequate economic compensation		X	X			X	X		X	X	X	
4.2 Many faculty would be influenced by having regular peer interaction	X		X				X	X		X	X	
4.3 Many faculty would feel motivated by receiving professional recognition when adopting or using educational technology			X	X			X	X	X	X	X	
5. All faculty are encouraged by existing factors to adopt educational technology	X	X	X	X	X	X	X	X	X	X	X	X
5.1 Most faculty are motivated by having a sense of personal or professional achievement	X	X	X	X	X		X	X		X	X	X
5.2 Most faculty are motivated by having the opportunity to grow and learn new skills		X	X	X		X		X	X	X		X

1. All Faculty Reported Regular Use of a Variety of Technology Tools in Their Classes

All participants reported regular use of technology for educational purposes in their classes, which was also evidenced by their syllabi and illustrated experiences utilizing technology in their courses.

Seven of the twelve participants reported the adoption of technology tools used in their work field. Seven participants reported the use of a messaging application. Six participants reported the use of the virtual classroom platform installed at the university. Six participants reported the use of videos and tutorials. Five participants reported the use of different social networks. Three participants reported the use of cloud services. Two participants reported the use of a gaming application. Two participants reported the use of a mind mapping tool. One of each participant reported the use of flipped classrooms, the use of webinars, the use of drones, and the use of a survey creation tool.

Table 3 offers a summary of the technology tools that each participant regularly uses in their classes. These data were collected from different sources: (a) syllabi, (b) examples of technology used by professors, (c) pre-questionnaire, and (d) confirming some of the data through the interviews.

Table 3

Technology Tools Used by Faculty in Their Classes

Used Technology Tools	Alan	Brigitte	Carol	Denisse	Edward	Frank	Gary	Hannah	Isabella	Joyce	Kate	Lilly
Own tools of the work field (7)	X	X		X	X	X	X		X			
Messaging Application (7)			X	X	X	X	X		X			X
Virtual Classroom (6)	X	X				X		X		X	X	
Tutorials | Videos (6)		X	X	X				X			X	X
Social Networks (5)		X		X				X		X		X
Cloud Services (3)				X			X				X	
Gaming Application (2)		X						X				
Mind Mapping (2)	X							X				
Flipped Classroom (1)								X				
Webinars (1)			X									
Drone (1)					X							
Survey Creation Tool (1)								X				

2. All Faculty Believe Technology Adds Positive Meaning in Their Classes

As previously described in Chapter I, Rogers' Innovation Diffusion Theory (IDT) defines the patterns of adoption to understand how and why new inventions or ideas and technology proliferate and if they will be successful for the user (Rogers, 2003). Rogers (2003) addresses five attributes of innovation and rate of adoption within which is compatibility. Rogers describes compatibility as the "degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters" (p. 15). If a person's needs, wants, values and beliefs patterns are compatible with an innovation, and it is meaningful to the potential adopter, the rate of adoption will increase.

For this specific study, all participants stated that technology for educational purposes was meaningful for them in one aspect or another. For this study, these aspects included three sub-themes: (2.1) to be aligned with the current generation of students, (2.2) to help saving time in classes, and (2.3) to help to achieve class competencies/skills.

2.1 Most faculty believe it is important to introduce technology for the current generation of students. Nine participants believe that using technology for educational purposes is important to be aligned with the current generation of students, to reach them, and to prepare them for the work field in a better way, as they are growing up in the digital age.

Alan stated educational technology is important because the current generation of students is growing up with technology.

> … both the generation that we have in the classrooms today and the generations that will continue to arrive [digital native]… lead us to be clear about the need to implement technological tools in the classroom... the generation of students we are currently

> dealing with ... was born in a technological environment… this generation handles technology better than us.

In a similar vein, Denisse stated the importance of speaking the same language of this generation of students to reach them and ensure a successful knowledge transfer.

> The language of this new generation of students is 100% technological. So, personally, I identify with this… we must reach that point [to adopt educational technology] so that they can better understand and assimilate knowledge.

As Denisse, Isabella stated that if professors do not use technology in the classrooms, they are not able to reach students properly.

> Well, nowadays, if we don't integrate technology, we are not going to reach the kids [students] as we would like… students go one step further than us in terms of technology ... they create their own language ... for them, social networks have become their daily lives… their way of life.. so, if we interact [this reality] with what education is, I think we're going to get to them easier than just staying in the classroom talking and talking to them… Why? Because … they [the students] keep moving forward, but the professor is falling behind, and when we come to talk about anything, they are far ahead.

Joyce also said that professors who do not use technology in their classes would not be able to reach students correctly or keep them motivated. She also believes that technology helps to reach students faster.

> At the teaching level we need to be exposed to everything that [technology] gives us and use it as a tool to be able to contribute and reach students in a way that learning, well, I am not saying that it will be easier, but perhaps to reach them and stay with them in a

> better way, having a more specific approach.… Social networks, especially Instagram is also a way to reach them faster.

Lilly thinks it is easier and faster to reach students with the technology they use on a daily basis.

> It is impressive to see how they concentrate faster and easier when you tell them to go to WhatsApp than when you are talking to them. When you are talking to them, they feel lost ... or they are on the cell phone or are looking for something on the computer

In the same vein, Kate believes that students may show more interest in classes if the professor implements the technology that students regularly use in their daily lives.

> It is easy for young people [the students] because they are very used to it [to technology]. As they were born as email has always existed in life; for them, it is easier… since the students are so used to [technology], you have to use them so that the boys [the students] wake up and show interest.

Kate also shared her experience being a mom of an eight-year-old as an example of how important it is for a university to be ready for those students that have used technology tools since elementary school.

> For example, my girl is eight years old and I review her exams from school in Kahoot… since she is seven years old, she is playing with Kahoot. Then, imagine that she arrives at the university and that everything is [teaching] on the board, pencil, paper, and photocopies... she will be amazed as if to say, 'but teacher there are more modern things!'

Hannah also thinks it is important to be ready for this new generation of students because they usually come from schools where they are exposed to technology tools in their

regular classes. “The students themselves sometimes come from schools where technology has already been implemented ... and immediately they sit in a classroom at [this university] they ... demand that we [the professors] be at that technological level.”

Brigitte believes that current students are demanding technology in classes, as they were born in the digital era.

> All schools have to update themselves and get to the point of evolving into the technological aura,… because that is what students demand today [using technology in the classrooms]… and that is why there are students who notice the difference between one class and another because there are some [professors] who use it [technology] and others who do not.

She also thinks that there are tools that help to reach students better and students are allowed to learn not only by being taught with traditional classes, but also with fun technology platforms for learning purposes.

> One of the main activities that we do are creative games on platforms such as Kahoot, which provides them with a bit of humor and moves them away from a traditional class ... which allows them to stimulate learning a little more and see that there are other fun platforms with which they can learn.

Carol also thinks that technology is important to ensure an appropriate knowledge transfer process for current students. “…it [using technology tools] allows new students to learn as it is being taught in various places of the world, so that allows teaching-learning strategies to be much more globalized and the student better insert themselves into the globalized world.”

Finally, Lilly believes that teaching is related to providing good customer service, where the clients are the new generation of students who think and learn differently from previous

generations. “So, it's about teaching having to deal with customer experience. In this case, who is the customer? The student… I strongly believe that in the end, you [professors] have to adapt to the student, not the student to you.”

She shared how in her classes she has managed this situation to reach the students of this new generation better.

> I was speaking at a conference for young people who were not more than 20 years old, and they were like 40 young people, and I asked them: ‘Do you watch television?’ And no one watched television. No one raised his hands. Then I asked them: ‘Do you hear the radio?’ Two or three. I asked them: ‘Why do you hear the radio?’. They told me that when they are with their father or mother in the car, they listened to the radio; it's not even them who listen to the radio. I asked them: ‘Are you used to read the newspaper?’ Nobody raised his hand; digital [newspapers] either. What do you hear? YouTube? Everyone raised their hands. Everyone watched YouTube. So how am I not going to use a channel where they are? So, it's about teaching having to do with customer experience. In this case, who is the customer? The student.

2.2 Most faculty believe that using educational technology helps save class time. Nine participants shared that using technological tools for educational purposes helps them save time in various stages of the teaching and learning process, such as teaching, grading assignments, and maintaining rapid contact with students.

Alan believes using technology tools helps him to save time and be more effective when teaching a class.

> The technological tools allow us to have better results, safer and in less time…. I believe a lot in the cost-benefit relationship; I believe in doing less and in less time with better

> results. This will always be much more effective… the trend is that technology makes our lives easier.

Isabella also said, “I think that if we learn technology and enjoy it, we will get many things in the short term.”

In the same way, Brigitte explained that technology helps save time both for the professor and for the students.

> We use these tools because I understand that [for] all of us it is easier and more effective because you can do it [homework] at home, in your free time; they [students] don't have to fill out exams here, and also we help the environment… I would love to [continue learning and implementing new technologies], and the more I can learn, it makes life easier for the students and for me.

Due to this ease and time savings offered by technological tools, Brigitte is motivated to take more class loads. “Technology platforms are making life easier for professors; it encourages me to take on more academic load because it doesn't take me so long to grade a class.”

Frank also stated that using technology tools for educational purposes brings simplicity and saves time when teaching his classes.

> Something that can become complex, through a [technological] tool is seen in a simple way… what it takes me to do in a month, with the tool I can do it in a few hours… it is a matter of efficiency... it is not the same to do something that takes more time than necessary. It is already unacceptable.

He also thinks that technology tools help to maintain quick contact with students when teaching classes.

> It is not only that I have contact with the students in those assigned hours in the classrooms but … in one way or another, we maintained a type of interaction through the facilities granted by the same tool, such as a forum discussion and the assignment of countless topics at the same time.

For Kate, like Alan, Brigitte, and Frank, using educational technology can help saving time and also minimizing the speed in communication between people.

> It's faster... people write you an assignment, send it to you, you give it back… it is easier to work with the virtual classroom [platform]. It is easier to go home and send the assignment. I am returning the reviews and so it works much faster too.

Kate also values the fact that using technology, you can learn from where you are, and it is not necessary to drive far away to teach. “It is not necessary to move so much. There is a lot of congestion on the streets. You don't have to move so much to achieve good learning.”

For Denisse, using technology helps her to organize her time, and she feels that technology tools are effective in adding more material to the classes and teach them on time. “Technological tools help teachers to have more freedom in terms of student management. It also helps us to integrate more topics [in class] ... and to deliver more information [to students] in the same amount of time.”

Denisse also thinks that the use of technology helps her maintaining rapid and constant communication with her students, and she shares an example related to her beliefs.

> As for WhatsApp, it is a feedback channel and a help channel. We have only one group for all class sections. If students have any doubts, this group functions as an open forum, because if there are students who read the message first and can answer then they answer. This is a community and we help each other; of course, managed by me and the

> other professor [a professor who shares classes sections with her], but it is a community to help students throughout the week. As these classes are not taught every day, they can communicate with us instantly by writing in that group.

Related to this quick contact with students, Joyce shared an example of a moment when she felt that technology helped her to have a consistent approach with the students at the right time.

> I can tell you an anecdote. A few days ago, we had an exam and the students sent me many emails asking me about certain concerns and class material, and we always communicated virtually. So, that communication they had with me was technological, at the right time and directly with me.

Hannah thinks that the use of flipped classrooms helps her to save time in the teaching and learning process. “The flipped-classroom allows a more interactive class, since many of the contents are worked at home and this allows the teacher to use class time for discussion, participation activities, which allows to save time.”

Finally, Lilly values the fact that, in addition to teaching classes in less time, she can grade assignments more quickly using technological tools.

> Traditional classes taught in three hours; I can teach them in less time using digital environments… you can grade quickly; students also send you the assignments faster… The other day, I was late [to class], but I had already graded two groups while I arrived, and I told the students I had already evaluated to leave…when I arrived, I said to those whom I had not evaluated: I am here, I am already going up [to the classroom], and they were very happy that I do things so quickly and easily.

Finally, as Lilly, Kate believes using some type of technology such as cloud services, helps her saving time grading students. “They [students] are working on the cloud, then right away they are uploading it to the virtual classroom, then I grade them faster when they work in pairs; they also help themselves to correct each other more rapidly.”

2.3 Most faculty believe that using educational technology helps students to achieve class competencies/skills. Nine participants shared their belief that using technological tools for educational purposes allows students to achieve class competencies or skills and in different ways such as collaborative work and things connected with their specific work field.

Alan said technology tools he uses are the ones that will help his students be prepared for the work field in the area he is teaching. “They are the ones that go the most with what is project management… what we try to do is to develop or work with the basic concepts that have to do with project management in a more manageable way.” He also expressed the satisfaction he feels when he helps develop these skills in his students. “I believe there is nothing that gives me more satisfaction in a classroom than to see the effort made in class to achieve the necessary competences gives the expected results.”

As Alan, Edward thinks these tools will help students acquire the skills to develop in their field of work. “I understand that they are basic tools that they should know now and will give different types of use when they are working in their field of work.” Edward shared an example of developing students’ skills when using a technology tool in his classes.

> For example, using these tools, students are already able to achieve the contours that we must calculate accurately in the field… then, they [students] can calculate the terrain profile, and they know where the water runs... with the Civil 3D program you will be

> able to automatically obtain what was previously done by hand. These are tools that facilitate work and help students to be ready for the work field.

In a similar vein, Frank considers it essential that students use technology tools since they are used in their field of work, and they are necessary for the development of their work skills.

> They are professional application tools that, as young people take classes with them, start from the classroom to get involved with tools that tomorrow or when they are in some industry, are already familiar with the tool or with the technology.… It is impossible to fulfill your function as a planner or as a designer without using these technological tools.

Isabella also thinks that the technology tool she is using in her classes helps her students achieve the skills needed in their work field. “Why do I use it [the computer aid design software]?... this software fulfills the class requirements [for them to learn how to use this tool in the work field], allowing students to use it in a [future or current] job.”

As Alan, Edward, and Isabella, Gary values the importance of acquiring the necessary skills for the work field by using these technology tools.

> For me, those are the key [tools] why? Because I really do not see any other type of technology, at least in my class, of course, much more interactive. If you want to do a road project tomorrow and you do it by hand, I will say: ‘Well, in how many months can you finish the project?’.… It is not a secret the [matter] of [requesting] to develop projects the sooner the better.... for example, if you are going to build a road tomorrow, you would want to check [the road] virtually; if there is a community near the road; what

> signal you are going to set; how the roads of heavy vehicles will develop. [This] becomes much more necessary now.

Gary shared a little experience related to his students when entering an institution in their work field.

> I have already had students who have left the university classrooms, who in their first job supervisors have asked them if they know how to use any tool used in the workplace, and they answer was 'Yes.' Then, they have done an exam in front of the computer. The students did it well, and those who are going to hire it... are amazed.

Carol considers if she does not use technology in her classes, it will be harder for students to acquire the intended class competences.

> When I don't use it [educational technology], the student finds it harder [to learn].
>
> ... the use of appropriate technology for my class helps the student acquiring the skills and competences we want to develop in those classes... if I did not implement [the educational technology] or use it, my student does not learn or acquire the competences correctly. In this world, it is no longer valid to only teach a master class.

Carol shared an example she uses in her classes to help students to acquire the competences in her class.

> The use of videos is very important. We can realize that technology is very important if we compare in the time in which I studied where there were no videos available. We can mention the surgical technique, there are procedures that the teacher wants to show so that the student use and this can be shown with the use of videos… if I see that there is a webinar that may be of interest to the student in relation to class competencies, I introduce it in the classes.

Denisse thinks if she uses a tool in the work field, it will work for students in the class. “If I find tools that attract my attention, and they work for me in my day-to-day work, I understand that they can also be useful during their bachelor's degree.”

She also considers that the tools she uses are essential because they help students to learn and develop skills easily.

> Everyone who develops in the field of arts is generally very visual. If I explain a class in a thousand ways and I don't see the result ... if the student cannot see how the assignment will look visually ... it is more difficult for the student to capture the information; so, that's why I thought Pinterest was the perfect tool because first, it gives me the opportunity to give my students something visual, that they can handle and can visualize as I expect the result and second, that it also serves as a guide with their ideas, ... for me the tool is very logical.

Finally, Hannah values the fact that the tools she uses in the classes work with collaborative work competencies in students.

> [I chose them] basically, for the competencies that are expected to be developed in them [the students]… these tools are important for the skills that are expected to be developed in the students since, in addition to the theoretical knowledge that is basic, there are competencies in relation to the collaborative work that they will need both in the university and in their professional life… so here I use the mind mapping tool.

She also thinks that tools such as Google forms helps her to validate the competencies acquire in classes.

> I like the Google forms ... when I do an activity that I want to do some evaluation of that activity or project, and verify if they acquired the knowledge and skills; I have also used it at the beginning of the semester as a way to gather previous knowledge.

In the same way, she looks for tools she has previously tested that she considers will have an impact on learning, to introduce them in her classes.

> I am aware of what tools have worked for me to learn, and I have taken it to my practice as a teacher, always seeking not only to innovate but that the tools are useful and have an impact on student learning.

3. All Faculty Face Obstacles within the Adoption of Educational Technology

As previously described in Chapter I, Rogers' Innovation Diffusion Theory (IDT) defines the patterns of adoption to understand how and why new inventions or ideas and technology proliferate and if they will be successful for the user (Rogers, 2003). Rogers (2003) addresses five attributes of innovation and the rate of adoption within which is the complexity. In the IDT, complexity refers to the perception of ease or difficulty in understanding, implement, and use the innovation. An excessive perceived complexity can be an obstacle in the adoption of an innovation.

For this specific study, all participants stated that they face different obstacles in the adoption of technology for educational purposes. These obstacles included five sub-themes: (3.1) challenges related to students' difficulties when using technology tools, (3.2) difficulties with technological resources, (3.3) barriers with generational gaps, (3.4) fears, and (3.5) lack of time for implementing educational technology.

3.1 Most faculty face challenges related to students' difficulties when using technology tools for educational purposes. Nine participants noted that they face some

challenges related to students' problems when using some technology tools for educational purposes. Faculty said that it is easier for students to work with technology they regularly use on a daily basis in their ordinary lives than to be exposed to technology tools for educational purposes.

Alan considers that students manage well their social networks, but they face some difficulty when using technology tools for educational purposes.

> Especially in the Dominican Republic, [students] use technology for more social than academic purposes… Dominican students, in the years of experience I have here at the university... are very good using social networks; however, in the emails, they are not so practical.

He also complains that the students do not strive to learn the technology tools used in classes and that they understand the professor is responsible for explaining everything, without them being able to try to understand the tools.

> I send them the manual two weeks before, and they must read the complete manual [before] arriving at classes... it is assumed that [upon arriving at classes] they have already read about it but what happens?... they understand that the professor must get to the classroom and explain all the detail step by step [of how the technological tool is used].

As Alan, Hannah thinks students handle better social networks than technological tools for educational uses.

> I think that using social networks makes them feel more comfortable. For example, when I suggested to them the use of social networks in the class there was no resistance,

> but when I brought another tool for educational purposes, this last one unknown to them, there was more resistance.

For Carol, sometimes students are reluctant to use some technology tools for educational purposes because sometimes they face difficulties using particular ones.

> There are many students that when I sent them to make a video, they tell me: 'Ay! Doctor, but I don't know how to make a video. How am I going to do that?' Then you must know how it is done, and you help them, and there are tutorials of everything, and sometimes there are groups of students who are more reluctant than others to use technology.

Edward thinks as Carol, and he said, "[Students] react to using more specialized programs… then they come to live their reality when they work with me; when I am telling them to work with that program, there comes the clash."

Denise said that students sometimes are reluctant to use tools they have not seen before, and also for some such as Facebook, they consider it is outdated and used by older people.

> I have a program that, although it is not so extensive, has two technologies together; the students have never seen it, so I need time for them to internalize in the steps that they must do… the students have something with Facebook, and we almost forced them to use it. They don't like Facebook anymore because they say it is used by their parents… they are already reluctant and do not like uploading assignments on Facebook.

Frank believes using tools that students are not familiar with tends to bore them, and they do not pay attention to how to use them. "It is a tool for professional use, exclusively for a specific purpose... normally those tools that are exclusively for modeling and obtaining a result... tend to bore them [students]… and sometimes it is difficult for them to manage them."

Gary is facing the same challenge when he tries to use cloud services for educational purposes.

> If the student at first did not understand the interaction in the classroom, then it can be hard sometimes… it is incredible that many people the generation of whom I teach classes do not understand very well the cloud and the potential that it has.

Finally, both Alan and Brigitte and Kate are presenting difficulties with the use of the new virtual classroom platform. Alan considers the new virtual classroom platform is not intuitive.

> I feel that some of the tools used in class, such as the virtual classroom [platform], are not so intuitive… I remember that at some point I enabled the virtual classroom [platform] for students to upload an assignment and then I couldn't find how to see it. When I spoke with the department of [name of the department in charge], sharing the screen and talking on the phone, the same person that was explaining to me understood that the process of analyzing and looking for the assignments was quite complex, even for me as a professor.

Brigitte explained that when the university migrated to the new virtual classroom platform, she had to be flexible with students uploading assignments and with timing because it was hard for them to use it.

> In the beginning, the students had a lot of difficulties learning the language of the platform and being familiar with it to be able to do their assignments, so I was a little flexible with time so that they could learn and fulfill the assignments.

Finally, Kate believes that because professors are dealing with a new generation of students, it does not mean that they know all about technology because sometimes they have faced difficulties when using technology for educational purposes in her classes.

> Based on my experience and what happened with the virtual platform, I can tell you that you cannot assume that because it is technology, it is native to young students and that they know how to use all platforms, because sometimes you think that as they are new generation and have been born with computers and with a lot of technology, they know how to use everything, and it is not necessarily so.

3.2 Many faculty face difficulties with technological resources. Seven participants explained they have obstacles with technological resources related to internet access and computer equipment.

For Edward, internet access is essential to use several technology tools he uses in his classes, and this can be a concern at times.

> Look, internet access is one of the most challenging aspects I am facing when using technology tools, both for students and me. Sometimes I ask them to upload some assignment and the internet fails, it can't be uploaded, and we fall behind in class... internet it is [a] key [factor] to use educational technology.

Hannah also uses tools that need adequate internet access, and she has sometimes faced internet failed during classes.

> And I can tell you that students complain although less and less about internet access. …For example, once the Kahoot did not work well for a failure on the internet in the classroom. The questions did not come out, and I was very nervous because I came up

> with this idea with everything prepared and it was not working for me, because of this failure on the internet.

Similarly, Kate shared that sometimes the internet slows down when she uses Kahoot in her classes, with many students connected to the tool at the same time. “Sometimes the internet fails and if you are using Kahoot with 30 connected students and you want an efficient experience you need to know that you have to bring your own WiFi connection otherwise, Kahoot stops working.”

As Edward and Hanna, Lilly has faced some inconveniences with internet access in classrooms when she is teaching his subject. “I believe that a challenge is sometimes in the same university when the internet fails. There is no point that we have the technological tools if the internet does not work properly.” Lilly also shared sometimes the lack of technological resources can be an obstacle when adopting educational technology in her classes.

> It had happened to me that [the students] don't have a computer. They don't have a cell phone. They don't have internet. They don't have anything. I tell them: ‘Well, go to the lab here to find a computer and send it [the assignment] to me; There is no problem. Otherwise, when you get home, send it [the assignment] to me.’

In the same context, Carol shared an experience she had once when she was trying to prepare an exam in a computer laboratory, and she found that the technological resources were not enough for all the students in her class.

> It happened once that I wanted to prepare some exams... then, the laboratory was not enough... the number of positions [chairs and computers] for the number of students was not enough ... there was also no space. Then, that kind of class and practice in that laboratory had to be dismissed.

For Isabella, the use of technological tools can be hindered when both the technical equipment is not working well, and the software she uses in her classes is not up to date.

> Sometimes the computers do not work properly, and that's a problem... students start using their own computers and sometimes they have a different operating system than the one I use in the classes, then we are not visualizing the same in the software and it is difficult for us to teach the use of this technological tool… we have to keep updated with the software, and sometimes that is another issue.

Finally, Denisse agrees with Isabella and Carol, and she considers important to update technological tools for having a better experience using technology tools in the classes.

> I think it is necessary to update the [technological] equipment… to have better use of technology, such as computers and sound systems. It would help me a lot because the [technological] tools I am using require a more robust platform.

3.3 Most faculty face challenges with generational gaps. Nine participants expressed age is an obstacle when adopting educational technology.

Brigitte believes that generational gaps are, in some manner, a barrier to the adoption of educational technology, and she shared a conversation she had with her parents.

> My parents are lawyers, and for me, they are the brightest people I have ever met in my life ... but they tell me: ‘Look, it will be very difficult for me and it will take me a long time to adapt to these new technological platforms, to adapt to what new students demand. I prefer to teach a lecture someday, but I cannot be a regular professor with all these new technologies that I won’t be able to use.’

In his experience, Frank believes that older persons require more effort to learn how to use technology. “My beginnings [in the use of educational technology] were quite interesting. I

had the opportunity to share with teachers of different generations. Perhaps exposing them to a technological tool caused them sweat, to put it in some way."

Although Carol understands that she tries to keep up with the use of technologies, she acknowledges, as does Frank, that older people find it harder to adopt the technology.

> … [many professors] wonder what they are going to do with new technology. That happens unfortunately with those who are older. I am not a young woman, but I have always remained active as far as technology is concerned and I understand that without technology the student does not learn, so I must stay at the forefront.

Hannah shares the same feeling as Carol. She says that although she was not born in the digital age, she tries to stay updated on technology because she likes it. She recognizes that she does not feel like an expert in the use of technologies as her students who were born using it.

> I do not feel as expert as my students in the use of all these digital technologies, but as I have always been interested, that has made things a bit easier, because sometimes I think that when the generational gap is very broad, it gives professors more work to get into the use of technology.

Edward recognized that new current students handle technology better than he does because of his generation's limited exposure to technology when they were younger.

> I cannot handle the program in detail as the students do. I do know [handle it] in general, but I don't have the ability that they have today to handle a cell phone; they can do it with their eyes closed.… An older engineer is looking for a young engineer to work with the [technology] tools in his office. He [the older engineer] has the experience, but he needs people who handle these [technology] tools so that they can make their presentations properly and also the calculations.

In her experience teaching, Lilly has realized that younger students have more ease with the use of technological tools than older students.

> With younger students, the topic of technology tools becomes easier because it is like their day-to-day life. It is amazing how they concentrate faster and easier when you tell them to go to WhatsApp than when you are speaking.… It takes me more time to explain digital environments to my master's students than to those who are undergraduate and younger, and it is not that the age difference is radical; we are going to say that the students of undergraduate degree are 20 years old, and those of masters are not more than 30 or 35 years old, that is to say, that the generations are not so distant from each other; however, there are situations of the use of technology, while younger, it's easier; the older the person is, the harder it is.… Sometimes [using technology tools] I get lost and I tell my son who is 16 years old: 'Oh! My God but where is this command, I can't find it?' and he tells me: 'Look there.' And I apologize. It is easier for him, he is a digital native and was born at this time, but I am not.

Although she acknowledges this generation gap, Lilly also believes that if an older person loses fear of being exposed to technology, they can learn how to use it.

> Just because you have a certain age does not mean that you cannot learn to use technological tools; That is not true. You can learn to use it, but you must lose your fear... there are 60 years old or 70 years old who are native digital professionals.

For Kate, as for all the participants above, technology tools are easier to use for younger students. "Younger students find it easier to work with technology because they were born with technology. For them, that is not so difficult."

Finally, Denisse expressed that adopting technology is easy for her because she was born within this new generation.

> I attributed my agility with technology to my age… well, I think that one of the main factors that make it easier for me to implement the technology is the same generation to which I belong; that is, I feel it is easier for me to capture the technology because of my age.

3.4 Some faculty face fears related to being exposed to technology. Five participants said they had experienced fears in some way when being exposed to technology for educational purposes.

Brigitte stated that she had faced fear of being exposed to technology tools or to not being able to learn how to use them properly.

> It was hard for me to be exposed to the new virtual classroom [platform]… at first [adopting the use of the virtual classroom platform] was something that scared me, I was afraid… I was a little scared to see the content and language that was not the same as I knew for those types of platforms… after I learned the functions and I saw everything that it [the platform] included and everything that [this] platform offered, I got on the boat, because I understood that it made my life easier.…There will always be fear ... to fail, fear of not being able to effectively impart knowledge to the student, fear of ... adopting a new system, and that fear I believe always exists, regardless of whether we already know a platform or the tools…

As Brigitte, Lilly shared she faced fear at her beginnings adopting educational technology, although later, she was confident using it.

> At first, I was afraid because I said: 'And what would the digital environment be like and teach in a digital environment be like?' It scared me until I tried to do it and I said: 'But this is very cool, and this is very easy!'

Kate showed some fear when using technology in front of her students unless she practices first at her home because she does not know if they are going to work when using them in class.

> I would never risk using new technology if I didn't practice it at home… For example, when I was taught to use Kahoot in a course here at the university, the first thing I did was to practice with my husband at home. That's when I realized the challenges that arise using that tool.

A similar fear was shared by Hannah when she implemented a new technology tool in her classes. At that moment, she was in the classroom trying to use the latest technology tools she had practiced at home, and the technology tool did not work.

> Once, a technological tool didn't work well for me in the classroom and that made me feel very nervous because I came up with this idea and it wasn't working in front of the students. Not only at that moment that I remember now, but I have been afraid on some occasions.

To avoid resistance to new technologies and fear of change, Hannah believes that professors should leave their comfort zone and try to be exposed to technology.

> Well, if I have been teaching a class for 30 years only with slideshows or talking and now, we have to use technology that makes me leave my comfort zone, and then there is a lot of resistance… I think it's resistance, fear of change, sometimes maybe lack of training.

Finally, for Carol, fear faced by faculty when exposed to technology is related to the fact that professors are afraid to be left behind because students go so fast with technology exposure.

> Fear, that is something you see, because professors see that the student is going a little faster than them and they are afraid of being left behind. They are afraid that the student knows more than they do, or they are afraid to face the technology.

3.5 Some faculty face a lack of time for implementing educational technology. As professors reported that the use of technological tools helps them save time once implemented, the same professors have revealed that the process of implementing these technology tools requires time and dedication for which they do not have adequate availability. Five participants said they had experienced a lack of time when implementing technology for educational purposes.

Joyce stated that the biggest obstacle she is facing right now to adopt technology for educational purposes is the time required to implement it.

> The biggest challenge [to implement technology tools] perhaps could become, a little more personally, time; because as I say, you have to prepare everything, you have to see what you are going to upload on the platform. To do that, the professors work out of the time we are going to teach the class, so in my case, I am not only a professor in this institution, I have other jobs [outside the institution] as well.

In a similar vein, she said that students work with their assignments at the last moment, and this fact reduces her time to both correctly evaluate and place the grades in the system.

> The students leave everything [for] the last [moment]… when they leave everything for the last hours, for us [professors] it is a burden [because] we also leave everything to the

> end [for the last moment], so sometimes we are not able to evaluate correctly and we assign the grades late.

As for Joyce, Frank considers time as a challenge to continue implementing new technology for educational purposes. “There are many hours-man or hours-woman if I could call it so, that you employ… I remember preparing a two-hour class… it took me almost two weeks to implement educational technology.”

Denisse expressed the same concern related to the time she needs to implement technology for educational purposes.

> It's not that I find it harder to implement the technology; it is the factor time for me to implement it. The fact that I do not have enough time to implement all the technology I would like to use.

Edward is also concerned about the time needed to learn and implement technology for educational purposes.

> Sometimes, I have thought that these [technology tools] courses and meetings should not even be at the university; they could be somewhere else. Everything needs time and dedicated people for that… It's time. Time is the only thing; time to spend with that.

Finally, Carol stated that the time being used in educational technology, both to learn it and to implement it is a barrier for faculty to adopt educational technology.

> With the professor, it is a matter of time [learning technology], it will take a long time and they think that even spending time learning the tools, they will not be able to have the right knowledge to use them… It is very unfortunate the difference in the time the teacher has available versus the time [he/she] can assign to the implementation of educational technology.

4. Most Faculty Would be Influenced by Potential Future Factors to Adopt and Use Educational Technology

For this specific study, nine participants showed some sense of influence in the adoption of technology for educational purposes by three factors from Herzberg's Theory as detailed within two sub-themes: (4.1) economic compensation, (4.2) peer interaction and (4.3) recognition.

4.1 Many faculty would be influenced by adequate economic compensation. Seven participants said proper economic compensation would be important to continue implementing or using educational technology in their classes.

Brigitte believes that including additional economic incentives for professors would help encourage them to adopt technology for educational purposes.

> In other institutions around the world when academic work [teaching] is not well paid, it is generally seen that there are many institutions that provide an additional incentive [to the professor] dedicated to overtime outside the classroom where the professor is paid weekly for hours. In this way faculty can be dedicated to the programming and preparation of their academic programs either to grade assignments, to develop or improve the syllabus, among others. And with that additional injection, the teacher does not have to think: 'I am only being paid for these two hours a week,' but also think: 'I am also being paid to take additional time to better program myself better, to learn how to use new platforms and to give each student a better experience.' So that is another economic incentive that may represent additional costs to the university, but I think they are strategies that could mediate in that situation right now and significantly improve this issue [the adoption of educational technology].

Similarly, Carol thinks that if teaching were better paid in our country, this would positively impact the adoption of educational technology in the classroom.

> If the country system were different, where a professional who is dedicated only to university teaching was very well paid -that is a very personal opinion that I have- would impact on a better Dominican teaching professional because he will have a better remuneration and obviously that teacher will be able to concentrate much more on using all the tools that are needed and required.

As Brigitte and Carol, Joyce is also of the idea that the economic factor would be important to influence faculty in the adoption of technology for educational purposes. “There is also an economic aspect that is involved; maybe we do not like to mention it, but for some reason, we are all here too [economic incentive], besides we like to do what we are doing [teaching].”

For Kate, involving economic factors as an incentive, such as money of technological gadgets as rewards, would favor the adoption of educational technology by teachers in their classes. “It can be recognition but if there is money it is much better or anything such as an iPad or a new computer; economic incentives always motivate people a lot.”

For Frank, the implementation of educational technology leads to greater dedication of time than is received in payment for teaching, so he understands that the salary would be revised.

> A professor has to dedicate more than those 28 weeks assigned by an academic calendar [to implement a technology tool]… the professor dedicates five times more [the time he is being paid], so I understand that he should be better paid, and I mean salary.

Gary also thinks that an increase in faculty' salaries would be a benefit that could impact the adoption of educational technology. “What benefit do you find [in adopting technology tools]? It can even be up to: ‘Ok, if you use this tool, I can give you something that motivates you,’ for example, an incentive. I dare to say salary, at some point.”

Finally, Isabella believes that both recognition and economic incentives may impact the adoption of technology in the classrooms. “Incentives can be used. Did you use technology better than others? ... you met that goal, so what are we going to give you? Look, here is an acknowledgment [recognition], and here an economic incentive for you to continue.” She also considers that the economic aspect could discourage her from continuing to use educational technology. “Now, what discourages me not to continue, perhaps in technology in class? Perhaps the lack of economic motivation.”

4.2 Many faculty would be influenced by having regular peer interaction. Six participants said interacting with peers would impact the adoption of educational technology in their classes.

Alan considers peer interaction would be an important method to encourage professors in the adoption of educational technology. “Designing a strategy that, through emotion, allows professors to feel encouraged to use it, such as social interaction. That approach is very effective.”

Carol also said that interact with other professors would be helpful when adopting technology for educational purposes.

> There is always someone who knows more than others and we [professors] can use these other people and can ask them [how to use a tool]… sometimes they are not professors of the same bachelor's degree, but employees of the university's technology department,

> or also people who know how to use that kind of technology… when people want to do a good job, they use others to help them use technology better [in their classes].

Similarly, Kate understands that interaction with peers would impact her on the use of technology in her classes since exchanging ideas and supporting each other has been very encouraging for her.

> Thank God I have many coworkers that we all say to each other: I loved the class you taught, the way you taught it. That would also be good if we also exchange ideas among teachers; It is important that brainstorm having different options. And together we help each other prepare the classes more dynamically.

For Gary, exchanges with other foreign universities and interacting with foreign professors would encourage him to continue using technological tools for educational purposes.

> Let's set a case: if you use the computer aid design tool, the university is going prepare an exchange with [an international] university; you can go there within a semester and you see the experience; you share experiences with those professors. It is a really strong motivation.

In a similar vein, Kate considers international training would impact professors in the adoption of educational technology because, in addition to learning, you will interact with professors at global universities.

> What could be interesting for motivating faculty, and at the same time can be a benefit for the university? To pay you an educational technology training outside [of the Dominican Republic]. Why? Because you are going to feel motivated because you are going to take a course [training] and you are going to share with other colleagues, and at

the same time, what you learn you will apply it within the university. So, that could be something interesting.

She also believes that participating in conferences prepared by other professors and receiving their feedback would influence her to continue using educational technology.

I am encouraged, for example, by conferences or presentations by other professors who use some technological tools. So, to see how others are using other tools and receiving feedback is very cool because you say: Wow, but I can implement that in my class, too!

Finally, for Hannah is important to have sharing spaces to interact with other professors about new technologies in education.

We need to create spaces for us [faculty] to share what we do…. At some point, I have planned to work some kind of training among colleagues or prepare some interest groups with professors who want to use technology, to share ideas related to technologies in education.

She also considers peer observation is an important method that would influence the use of technology in classes.

I think it is important that I can attend the classes of other professors who use technology and then implement those tools in my class because sometimes we believe that we are doing things well, and it is not so. But if we see another teacher implementing them, ideas can arise for our own classes.

4.3 Many faculty would feel motivated by receiving professional recognition when adopting educational technology. In Herzberg's (1968) Motivators and Hygiene Theory (Two-Factors Theory), recognition refers to what extent employees are praised or recognized by the supervisors for their achievements. In my study, seven participants expressed they would

feel motivated by receiving recognition from the institution such as receiving support from their directors, receiving a diploma certifying they used well technology in their classes, and receiving awards.

Denisse considers recognition is essential to professors who make good use of technology in their classes. “People work for recognition. If a professor uses technology in a better way than others, and he/she receives an institutional recognition, it can make them feel satisfied for doing a good job.”

In the same way, Isabella believes that recognition would be used for those professors who overachieve in the use of technological tools for educational purposes in their classes. “Incentives can be used. Did you use technology better than others? ... you met that goal. So, what are we going to give you? Look, I recognize your work and I give you this award.”

Carol stated that recognition is vital for professionals to continue using technology tools in their classes. “When it comes to the use of innovations, this type of motivation is important ... a recognition, ... recognition as a professional in this field by the institution.”

For Hannah, incentives are a great motivator. She said when referring to incentives, people associated it with economic compensation, but it is not necessarily so. Non-economic incentives would motivate people, such as recognition.

> I would tell you the incentive [would be a motivation]. Sometimes we think of an incentive, and we go to salary but not necessarily; sometimes it is important to receive the support of the school directors: ‘Look, I like the technology that you implemented, I like what you did’…. Recognition, even that is enough for people to feel motivated and to continue implementing new technology tools and to innovate.

Joyce thinks that it is crucial to recognize professors after conducting an assessment by students and directors regarding their use of educational technology in their classes, and it would be a good motivation for faculty to use technology in their classes. “When both students and directors assess a professor and the results in the use of technology tools are highly qualified, a motivating factor could be the recognition… of the contribution we have made [when using educational technology].”

Kate stated that receiving awards would also motivate professors in the adoption of educational technology in their classes. She referred to other universities that work with this type of recognition.

> There are universities that award prizes to professors who use educational technology. A recognition in this line that indicates that the teacher used a lot of technology in his classes would be motivating... it could be interesting for a professor who implements educational technology; it would be very cool … I know that there would be many professors who would like to compete in that line.

Finally, Gary also stated that he would motivate with recognition, such as receiving a diploma certifying he handles some technologies in his classes. “I can be motivated not only by an economic incentive but with recognition, such as receiving a diploma that certifies that I know about the tool.” He also said he would be discouraged if his effort using technology tools in his classes is not valued. “I can be discouraged by the fact that my effort is not recognized, that is, to say it in another way that your superiors say: ‘Look, it's fine, thanks but no, thanks’.”

5. All Faculty are Encouraged by Existing Factors to Adopt Educational Technology

For this specific study, all participants said they felt motivated in the adoption of technology for educational purposes by two motivational factors from Herzberg’s Theory as

detailed in three sub-themes: (5.1) sense of achievement, and (5.2) opportunity to grow and learn new skills.

5.1 Most faculty are motivated by having a sense of personal or professional achievement. Herzberg's (1968) Motivators and Hygiene Theory (Two-Factors Theory) explains employees will feel satisfaction if they perceive good results from their job and that their efforts were worth it. Therefore, they will have a sense of achievement that will lead them to feel motivated. Ten participants reported they are motivated by having a sense of personal or professional achievement in the adoption of educational technology, such as feeling satisfaction from seeing expected results.

For Alan, his main motivation is seeing how students are acquiring the required competencies in his classes.

> It is something totally personal. I believe that there is nothing that gives me more satisfaction in a classroom than to see that the effort made in class to achieve the necessary competences gives the expected results…. what motivates me? Realizing that what I have learned can be shared with other people who do not have proper knowledge; that I can help people who may feel a little lost and direct them to achieve their goals correctly and efficiently. I think that is my biggest motivation.

He considers another motivation to receive a good response from students, to see them with dynamism and enthusiasm when a professor is using technology in his classes.

> The professor feels very willing to use technology whenever he sees a positive response from the student [in relation to the use of that technology] ... to the extent that the professor sees that the response to the use of the technology tool that is using is not what

> he expects or is not appropriate [such as they get bored or distracted], then automatically there is also some discouragement from the professor.

Brigitte feels motivated by speaking the language of the students. She also feels satisfied by achieving a more effective teaching and learning process using technology in her classes. “It allows me to have a connection and communication with the students where learning becomes more effective…. this is the language that students speak, so I can reach them easier.”

Carol feels motivated by the feeling she is achieving in being a good teacher and having a closer relationship with her students. “[My main motivation] is being a better professor and getting closer and being a better professor to my students.”

For Denisse, her main motivation is to see she is achieving expected results with students learning and seeing them feeling comfortable using the technology she uses in her classes.

> [Using educational technology] ... the class becomes more dynamic, the students understand it [class content] better, they feel that there is not such a big barrier between the student and the professor, and they feel more comfortable in terms of the learning process.

Edward feels motivated by receiving a good response from students and realizing that they are learning when he uses such type of technology in classes.

> Realizing that I will have an answer [from the students] ... realizing that after 2 or 3 years these students will really have the knowledge they need; realizing that they will acquire a stronger experience. Realizing that this is happening, for me is very satisfying.

For Gary, a strong motivation to adopt educational technology if both he perceives dynamism and enthusiasm from students when using technology in classes and if he feels they are being prepared for the work field.

> Well, it motivates me a lot when I see that there is a spark in the students; then I can go on and I can spend dead hours implementing [technological] tools…. What motivates me internally? Well, that any student to whom I provide that tool can go out to do any project. Also, I can share experiences and other topics with them.

As for Gary, Hannah feels encouraged to adopt educational technology if she perceives that her students are enthusiastic using them in classes. "I enjoy preparing a class, designing it, using something innovative, but most of all I enjoy it when they [the students] also enjoy this process. So, that is a motivation for me." She has faced hard work implementing tools, but she feels it is worth it. "Then I was already with dark circles under my eyes because that night, I decided that this video had to be done by me, and well, it was not so easy… but it worked."

For Joyce having a good reputation as a professor by adopting educational technology is an essential motivation for her. "Personally, and professionally an assessment is important for every human being, maintaining a good reputation and quality in your teaching method." She is also motivated by realizing that she will be able to reach students properly and that they are going to feel the enthusiasm in her classes.

> For me, it is important to be sure that in this way [by adopting educational technology] I could reach more students. It motivates me to know that students will be more motivated and will feel more dynamic when taking classes [with me].

Kate feels motivated by achieving good learning in her students and accomplishing the objectives of the classes. "For me, what would encourage me the most is that the students are

learning, delivering the work on time, and achieving the objectives of the discipline. For me, that is the main thing [when using technology in class].” She added she would feel discouraged if students think hard to use the technology tools in her classes or if after she implemented them, she realizes they are nor working appropriately for her classes.

> What would discourage me is that they [the students] find it hard to use it; that is, that it is really difficult for them to implement it, that they do not know how to use it and that extra learning is needed for them to be able to make an assignment…. It would discourage me a lot to plan a very cool activity using technology and in the end to see that the results are not what I expected and that the tool did not bring me the benefits that I expected for the classes.

In a similar vein, Lilly stated she would be disappointed to use technology in her classes if she realizes students feel uncomfortable using them.

> I would be discouraged to see that they [the students] are not using it, that they do not appreciate it; I would kill myself for example, if I create a web page to upload all class content and after having a lot of work doing it, the students enter to the web page, and suddenly they tell me: ‘No, professor, I don't like that.’

5.2 Most faculty are motivated by having the opportunity to grow and learn new skills. Herzberg’s (1968) Motivators and Hygiene Theory (Two-Factors Theory) explains employees will feel satisfaction if they perceive they can learn new or additional difficult tasks, they couldn’t handle before. Eight participants reported they are motivated by this sense of meaning given by continuous learning and the opportunity to grow.

Brigitte feels motivated by the fact that when adopting and using technology she has the opportunity to continue learning and staying up to date with technology.

> It not only makes my life easier; it also helps me to keep myself up to date with technology…. my motivation is also the advance of technology; it is how applications are becoming increasingly easy to use and are becoming more on my side… and that [technological advances] make life easier for many people. To me, personally, to the professor.

In a similar vein, Carol feels adopting educational technology in her classes benefits herself and gives her the opportunity of being up to date with technology. “As long as I have time, I will always be willing to learn [new technologies for educational purposes], because that will be a benefit for me as a human being to keep me updated with the world.” Carol also appreciates the change given by the university of learning new technologies by the training offered within the institution. “The university offers a lot of educational technology training, and we [the professors] have the opportunity to learn how to use new tools in our classes. We learn a lot in this training.”

Denisse shared that she stays motivated by learning new technologies because one of her personal characteristics is being curious.

> My own personality [encourages me], because I like technology, I like to search for new technology, I like to learn… if there is a new [technology] update, I try to find a way [to know it]. I am very curious, and that is personal motivation, curiosity.

She also said she is always trying to find a way to be up-to-date with technology as she finds it important because she thinks we live “in a globalized world based on 100% technology so that technology is already part of our life on our daily basis.”

Frank considers he will have an opportunity to grow if the university involves him in doing research. He stated it would motivate him to continue using technology in his classes.

> Faculty should have at least a number of recognized hours to do research, applied research related to his field, his professional field… in order to do research, you necessarily need, you need to use all technology available at the time… it will help you to grow as a professional.

Hannah's main motivation goes hand in hand with Frank's motivation, to have a space to do research and to publish articles that come out from the research.

> We need dissemination, we need to publish… we can write papers of the experiences we have in the classrooms [implementing and using technology tools] and sometimes those articles do not necessarily have to go to an indexed journal… they can be published in the university's own magazines.

For Isabella, if she does not get up to date with technology, she will be left behind; therefore, she feels motivated by the opportunity he has to learn new technologies to use them in her classes.

> In the world we cannot be left behind, we have to move on, move forward, and education has to go forward with the world too… if we do not update and keep updating, we will be left behind, and if I really want to continue using technology in my classrooms, I have to update myself…. I always encourage myself to keep updated in technology because I like it, because I feel that I might not want to grow old and that technology does not age with me…. even if I leave my profession, I still want to continue with technology because it is more personal satisfaction. It is like staying closer to what the world is today.

Joyce thinks that she feels motivated, keeping her up to date with technology. She stated that by having the opportunity to learn new technologies, she would become a better

professional, and this chance to grow motivates her into the adoption of technology in her classes.

> The one who is not innovating daily; the truth is that he fell asleep, he lagged behind….
>
> I like to be innovating…. I can tell you that I see who my professors were and who are still teaching certain classes, and I say: Wow! In that way... we can't go on. Then we must change. We have to innovate.

Finally, and similarly to the majority of participants, the sense of growing and learning new skills motivates Lilly into the adoption of educational technology in her classes.

> To keep myself updated would encourage me to continue using educational technology.
>
> I believe that to the same extent that I learn to handle myself in digital environments, ... I will also be a better-prepared professional because the technological issue is not a fashion, it is a reality. It is not a trend that tomorrow will not be, but quite the opposite.

She also feels that students' requests for introducing some technology tools in the classes encourage her to introduce new technology, especially if she is convinced that they will work in her classes. "The student's requests [of introducing some technology tools in the classes] would motivate me. As they ask me to try new digital platforms with them, I am going to do it, because I see that they work."

Chapter V Closure

This chapter showed the major themes and sub-themes that emerged from the 12 participants' interviews, documents and artifacts for this study. In Chapter VI, I will discuss the findings related to my research questions, aligned with the theories embedded within this study. I will also offer recommendations for future research and leaders.

CHAPTER VI

FINDINGS, DISCUSSION, AND RECOMMENDATIONS

This final chapter addresses the research questions of my study by using the themes and sub-themes that emerged from the data collected during the development of the study. Within this interpretation of the findings, I offer relationships to the literature posed in Chapter II. In addition, I provide recommendations for leaders and for future research on the adoption of educational technology by HEI's faculty members in the DR.

Two theories supported the conceptual framework of this study: (a) Rogers' (2003) Innovation Diffusion Theory (IDT), and (b) Herzberg's (1968) Motivators and Hygiene Theory (Two-Factors Theory). The IDT defines the patterns of adoption to understand how and why new inventions or ideas and technology proliferate and if they will be successful for the user (Rogers, 2003). On the other hand, Herzberg's (1968) Motivators and Hygiene Theory (Two-Factors Theory) defines intrinsic and extrinsic factors essential to encourage people to obtain organizational goals.

The purpose of this study was to explore faculty experiences regarding the adoption of educational technology within a HEI in the DR that has made available significant technology classroom tools and training to its faculty. This goal is to obtain information related to faculty members' attitudes, barriers, and motivations for adopting educational technologies in their classes. For this study, educational technology refers to the effective use of technological tools for educational purposes to achieve dynamism, collaboration, interaction, and better assimilation of the knowledge transfer process (Januszewski & Molenda, 2013). Such technology tools include the use of web-conferencing or webinars, course management systems (such as virtual classrooms platforms and discussion forums), and podcasting (Akhras, 2011;

Salazar, 2010), as well as smart boards, virtual reality, game-based learning, “bring your own device” (BYOD) strategy, robotics-based learning, and other innovative technology-based methodologies that can be used for the teaching and learning process (Uskov et al., 2017). For this research, I took into consideration any technology tool reported to be used by the faculty members within this private HEI in their teaching and learning process.

This study involved 12 faculty members of a private HEI in the DR who use in different ways technology for educational purposes in their classes. During the data collection of this study, I conducted a semi-structured interview with each participant, and each also provided documents and/or artifacts illustrating their experiences utilizing technology in their courses. These additional data sources added to the understandings and insights gained through interviews, and allowed me to develop a thicker-richer case description for each case (Stake, 2003; Yin, 2009). As previously described in Chapter V, these documents and/or artifacts included school technology indicator records, class syllabi for the classes taught by each faculty member, a pre-questionnaire, and some examples of using educational technology in faculty’s classes.

The participants' interviews, documents, and artifacts revealed five major themes and 13 sub-themes for this research, as organized in chapter IV by the theories guiding this study. These themes and sub-themes provided relevant insights related to faculty use, motivations, barriers, and attitudes related to their adoption of educational technology in their classes. In this chapter, I will interpret these themes and sub-themes to show the findings that lead to answering my research questions.

Research Questions Analysis and Connections to Previous Research

Research Question 1

My first research question focused on the reported levels of technology adoption by HEI faculty within classrooms. In general, all participants described the regular use of educational technology in their classes, and they showed enthusiasm regarding the role technology tools have in their teaching and learning processes.

The technology tools reported as most used by faculty are the ones related to their specific work field, and the use of a messaging application (Theme 1). Faculty revealed they consider that tools associated with their particular work field are vital because such tools help students both in acquiring the competencies of the class and the skills needed for their field of work (Sub-theme 2.3). They stated that a messaging application is essential to ensure proper communication with new generation students (Sub-theme 2.1).

The second most used technology tools reported by faculty in their classes are the virtual classroom platform and the use of videos and tutorials (Theme 1). Faculty revealed they consider the use of virtual classroom platforms as useful because, once implemented, it helps save time class (Sub-theme 2.2). They said that videos and tutorials are essential so students can see in advance topics related to their classes and beyond; these tools also help students in acquiring the required competencies and skills for the course (Sub-theme 2.3).

The third most used technology tools reported by faculty in their classes are cloud services, gaming applications, and mind mapping tools (Theme 1). Such faculty stated that the use of cloud services is essential to be aligned with the way new generation students manage their information storage (Sub-theme 2.1), and it helps save time since it allows collaborative work in the same document (Sub-theme 2.2). Faculty said that gaming tools are vital to

maintaining new generation students' interests in class, talking the same language, and achieving dynamism (Sub-theme 2.1). Finally, they consider essential the use of mind mapping tools, which help students in acquiring the required competencies and skills of the class, specifically the team working competence (Sub-theme 2.3).

The less commonly technology tools reported, but which some faculty also consider meaningful, are a flipped classroom, webinars, drones, and a survey creation tool (Theme 1). Such faculty stated that the use of a flipped classroom is vital to conduct guided studies of a topic outside the classroom, using time spent in the classroom to expand and discuss more critical questions; it also allows them to save time in class (Sub-theme 2.2). The professor who uses webinars considers they enable students to see in advance conferences related to specific topics, helping students to acquire the required and intentional competencies of the classes (Sub-theme 2.3). The use of drones also helps to achieve the necessary skills for the work field, as it is a technology regularly used for specific projects (Sub-theme 2.3). Finally, the survey tool helps to assess different assignments, activities, or projects to validate the knowledge acquired during the class.

The level of usage of such tools by faculty members in this study is driven by them being vital to reach and provide a better teaching experience to the current generation of students. The majority of participants reported they have a better connection with current students by using technology in their classes (Sub-theme 2.1). These statements are aligned with the literature related to the importance of introducing technology for educational purposes to new generation students Many new generation students perceive their teaching and learning experiences are more enriched with the use of technology in their academic programs, and they are also asking for more online activities (Moore et al., 2005; Rhema & Miliszewska, 2014).

Another reason driving technology usage by faculty members is that technology tools save time for faculty in the process of teaching their classes (Sub-theme 2.2). The majority of participants reported that once a technology tool is implemented, its use helps them save time when teaching their classes. No previous literature was found which had revealed this finding.

A find key reason driving technology usage by faculty members is that such technology tools help students acquire the competencies and skills needed for their future work field. The majority of participants reported that by using technology in their classes, their students have more opportunities to achieve the intended competencies of a given area within a career field. This finding is supported by the literature, which addresses the importance of technology tools to help students acquire the competencies needed within the knowledge transfer process (Sub-theme 2.3). For example, Rhema and Miliszewska (2014) and Selwyn (2009) found that the adoption of technology in education produces an improvement in the traditional teaching and learning process, allowing better results in learning. A study conducted by Afshari et al. (2009) also revealed that technology is a valuable tool to support innovative techniques in the teaching and learning process, not just tools that can be used to replace old teaching approaches. Therefore, it is crucial to focus on the technological tools that actually contribute to the teaching and learning process, and adopt those that can help students acquire the necessary skills during the teaching and learning process.

In conclusion, while all participants reported some obstacles related to the adoption of technology for educational purposes (Theme 2), they reported significant use of various tools. Such usage was also evidenced by their syllabi and illustrated experiences utilizing technology in their courses (Theme 1). Therefore, an overall finding for my first research question is that

participants use technology tools in their classes which they perceive are meaningful and essential to achieving dynamism, collaboration, interaction, and better assimilation of content.

Research Question 2

My second research question centered around the motivations for faculty members to use educational technology, or not, in their classrooms. Identifying the factors that motivate faculty to adopt technology for educational purposes in their classes can help institutions develop plans to encourage more faculty to introduce such technology. Such plans should take into consideration these motivating aspects that encourage faculty use technology. To answer research question 2, I went back to professors' responses related to the factors that currently or potentially encourage them to adopt technology in their classes.

Current factors that motivate or influence faculty in the adoption of educational technology. All participants revealed they are currently encouraged by two factors to adopt educational technology in their classes (Theme 5). These factors included sense of achievement (Sub-theme 5.1), and the opportunity to grow and learn new skills (Sub-theme 5.2).

Sense of achievement. One finding from my study is that faculty's sense of achievement, and their perceptions that their efforts were worth it, motivate them to adopt technology in their classrooms (Sub-theme 5.1).

The majority revealed they feel motivated by having a sense of personal or professional achievement in the adoption of educational technology, such as feeling satisfaction from seeing expected results. They also revealed that this sense of achievement encourages them to continue using technology tools in their classes. This sense of achievement includes realizing students are experiencing proper learning using the technology, realizing that technology creates a better

teaching approach including good responses from students, and also gaining a good reputation as a professor.

When participants realized that technology helps students to learn more, they felt a sense of achievement after adopting technology in their classes. For example, Alan revealed that one of his biggest motivations for using technology is to see how his efforts allow students acquire the course skills. He feels strongly satisfied when his endeavors "give the expected results." Brigitte said she feels motivated to use technology in her classes because when using it, "learning becomes more effective." Denisse declared as a great motivation the fact that technology brings dynamism to her class, and that the learning process is more effective. Denisse also affirmed that technology diminishes the barrier between faculty and students, which is a great motivation for her. Edward said it is very satisfying to help students acquire the knowledge they need for their work field by using the appropriate technology tools in classes. Gary is also motivated by the fact that students he teaches know how to use a technology tool needed for their work field. Kate said what encourages her the most is that "the students are learning."

Participants also shared they feel motivated when they perceive that using technology enhances their teaching approaches for the students. For example, Alan feels "very willing to use technology" in his classes whenever he sees dynamism and enthusiasm as a positive response from the students. Gary said using technology in classes "motivates me a lot when I see that there is a spark in the students." Hannah shared that she feels a sense of achievement when she spends time designing the use of technology tools for a class, and she then sees students enjoying the results. She shared even though she ends with "dark circles under my eyes," she feels satisfaction and that "it is worth it."

Another sense of professional achievement motivator for adopting is that these faculty feel they are becoming better professors and gaining a strong reputation as good professors. For Joyce, maintaining a good reputation around her work environment is important as a professional and motivates her to continue adopting technology in her classes. Carol is also encouraged to adopt technology in her classes because it helps her become a better professor and remain up to date with technology.

This finding of faculty being motivated by a sense of achievement is supported by previous literature. Indeed, sense of achievement is among the most prominent intrinsic factor that motivates faculty in their decision to adopt such tools into their instructional practices (Gautreau, 2011; Surry & Land, 2000).

Grow and learn new skills. A second finding from my study is that faculty feel motivated to adopt educational technology if they have the opportunity to grow and learn new skills (Sub-theme 5.2).

For example, Brigitte feels motivated by the opportunity to learn and stay up to date with technology because she wants to grow with technology. Carol said that in her experience, adopting educational technology in her classes benefits herself, and as Brigitte, she thinks the use of technology in her classes gives her the opportunity to be up to date with technology. Carol also appreciates the training opportunities provided by the university related to technologies for educational purposes.

Isabella is worried about being left behind, and is motivated to adopt new technologies so she is always up to date. In a similar vein, Joyce feels motivated by learning new technologies, because as she said, she will become a better professional. She used phrases such as “The one who is not innovating daily; the truth is that he fell asleep, he lagged behind” and “I

like to be innovating." Lilly described it as necessary "to keep myself update," and recognizes that being at the forefront of technology "would encourage me to continue using educational technology." Denisse said she is always trying to find a way to be up-to-date with technology as she finds it important because she thinks we live "in a globalized world based on 100% technology so that technology is already part of our life on our daily basis."

For Frank, a strong motivation to adopt technology in his classes is to have a space to do research, as he considers it is a significant growth opportunity. Hannah is aligned with Frank, as she feels motivated by having the opportunity to write papers and publish articles related to technology tools used for educational purposes.

Being motivated by the ability to grow and learn new skills is supported by previous literature. Opportunities for professional development, developing new competencies, and enhancing faculty skills are among the prominent motivation factors that move professors to integrate technology in their classes (Chapman, 2011; Nicolle & Lou, 2008; Potter & Rockinson-Szapkiw 2012; Shea, 2007).

Potential factors that would motivate or influence faculty in the adoption of educational technology. The majority of faculty identified some factors that may influence faculty to the adopt educational technology (Theme 4). Faculty's reactions were diverse and related to economic compensation (Sub-theme 4.1), peer interaction (Sub-theme 4.2), and recognition (Sub-theme 4.3)

Economic compensation. One finding from my study is that economic compensation may influence faculty in the adoption of technology for educational purposes (Sub-theme 4.1). Many participants said proper financial compensation would be essential to continue implementing or using educational technology in their classes.

Brigitte gave an example of institutions around the world that provide additional economic incentives to professors for their extra work outside the classrooms, such as grading, mentoring, implementing technology tools; yet, she noted that this is not contemplated in our Dominican system. Therefore, she believes implementing such additional payments would influence professors in adopting technology for educational purposes in their classes. Carol offered the same idea as Brigitte, adding that she believes such compensation would result in having a better Dominican teaching professional. She voiced that if professors received such additional payments, they would be influenced to use educational technology in their classes. In a similar vein, Franks explained that in the DR, the hours that are paid to teach do not adequately cover the time each teacher uses to prepare and teach a class with quality; therefore, this reduces the motivation to adopt educational technology since such adoption also takes additional time. He noted that if the time to prepare technology tools for use in classes was compensated, he would be encouraged to even more adopt educational technology in his classes. Gary also considers receiving an economic incentive; specifically, an increment in salary would be an additional benefit that may influence more professors to dedicate extra time to implement technology tools in their classes.

Similarly, Kate also considers that receiving financial incentives such as money or a technology gadget (iPad or a new computer) may move professors to adopt technology in their classes. Isabella believes that a professor who meets a goal in the adoption of technology tools in classes should be rewarded with some economic incentive to encourage continued implementation and usage of technology.

Finally, Joyce seemed a little shy when talking about economic compensations, as she said, “maybe we do not like to mention it, but for some reason, we are all here too,” referring to

economic incentives. But she, like many others, recognizes that economic compensation would be a good incentive to influence professors in the adoption of educational technology.

Economic incentives as an extrinsic factor to influence faculty to use technology for educational purposes is supported by previous literature. Economic compensation is the most requested extrinsic reward and number one in the ranking of extrinsic motivators for faculty to adopt technology for educational purposes (Chapman, 2011; Gautreau, 2011; Parker, 2003).

***Peer interaction*.** Another finding from my study is that adequate interpersonal relationships further influence the adoption of technology for educational purposes by faculty (Sub-theme 4.2). Many participants said that having regular interaction with peers would move them to adopt even more technology in their classes.

Alan considers that peer interactions among professors to do brainstorming and other techniques would influence faculty in the adoption of educational technology in their classes. As he said, "that approach is very effective." Carol thinks that for professors who want to do a good job with technology, it is important to interact with other people to talk about how to use specific technology tools. She also believes they are more motivated when they have this type of interaction because they can clarify their own doubts. In her own experience, Kate shared that she has had some interactions with peers and this has impacted her use of technology since exchanging ideas and supporting each other has been very encouraging for her. She said, "together, we help each other prepare the classes more dynamically." She thinks that having a continuous peer interaction would influence faculty in the adoption of technology for educational purposes.

Gary and Kate noted that allowing professors to make exchanges with international universities and interacting with professors at those universities would result in a strong

motivation for them to continue using educational technology in their classes. Kate said local interaction with peers would be a motivation for her, as well. For Hannah, interaction with other teachers is so meaningful that she has thought about organizing spaces to discuss topics related to the adoption of educational technology in classrooms. She voiced that this would be an excellent influence for her to continue adopting new technology tools in her classes.

Current engagement with peers, or this possibility, is a valuable motivation as supported by previous literature. It is essential for faculty to promote useful peer interaction to motivate each other, having a healthy and suitable relationship with partners (Surry & Land, 2000). On the other hand, Zellweger (2007) found that negative peer experiences can result in a barrier to educational technology adoption by faculty.

Recognition. Another finding from my study is that recognition of faculty success in the use of technology tools for educational purposes would be an excellent strategy to boost their commitment to adopt and use technology in their classrooms (Sub-theme 4.3).

Many faculty revealed they would feel motivated by receiving recognition, and it would encourage them to continue using technology tools in their classes. This recognition could include institutional and professional recognition, receiving support from their directors, and sometimes that this recognition could be accompanied by diplomas.

For example, Denisse believes people work for recognition. She expressed that she would feel satisfied if the institution recognizes her success of properly using technology tools in her classes, by receiving institutional recognition for doing a good job. In the same vein, Isabella expressed her need to feel recognized as she feels she is doing an outstanding job using technology tools in her classes, and she would like to see that the institution appreciates her outcomes. Carol also revealed that, especially when adopting innovations, receiving

professional recognition from the institution could encourage her continued use of technology tools in her classes.

Additionally, Joyce revealed it is important for her to receive professional recognition after receiving the results of directors' and students' assessments related to her work using technology in classes. She posed that if the results show that her use of technology tools is highly effective and the school director recognizes her effort in using educational technology, it would have a positive impact for her to continue using technology in her classes.

Hannah perceives people regularly associate recognition with economic compensation. Nevertheless, she said she would feel more encouraged to innovate and use technology tools by receiving professional recognition for her good practices in the implementation of different technology tools in her classes. Kate spoke about other universities that award prizes to professors who make good use of educational technology in their classes. She was very enthusiastic, proposing such a system could be implemented to achieve a significant impact on the adoption of educational technology within the institution. Similarly, Gary revealed he would feel motivated to continue using technology tools in his classes if receiving a diploma that certifies that he knows how to use such tools properly.

My finding that recognition is an important motivator to influence the adoption of educational technology is supported by previous literature. Recognition for achievement and success embracing innovative ways of teaching is a significant factor that influences the adoption of technology for educational purposes (Bacow et al., 2012; Gautreau, 2011; Wingo et al., 2017).

Research Question 3

My third research question focused on the perceived barriers by faculty regarding the enhanced usage of educational technology in their classrooms.

All participants revealed they had faced obstacles within the adoption of educational technology in their classes (Theme 3). Their responses varied among factors such as students' difficulties when using technology tools for educational purposes (Sub-theme 3.1), problems with technological resources or reliability (Sub-theme 3.2), challenges with generational gaps (Sub-theme 3.3), fears related to being exposed to technology (Sub-theme 3.4), and lack of time for implementing educational technology (Sub-theme 3.5).

Challenges related to students' difficulties when using technology tools for educational purposes. One finding from my study is that the challenges faced by students when using specific technology tools for educational purposes constitute a significant barrier for professors in the adoption of educational technology (Sub-theme 3.1). Nine faculty revealed that students have difficulties when using some technology tools for educational purposes since students work more naturally with the technology they regularly use in their everyday lives, not tools for educational purposes.

For example, Alan considers that, especially in the DR, students are exposed to social networks daily. He shared that in his experience, students use social networks very well, but this is not the case when exposing them to technology for academic purpose. In Kate's experience, even though current new generation students were born in the digital era, it does not mean that they know all about technology; they face obstacles in her classes with some tools she regularly uses for educational purposes, such as the virtual classroom platform.

Carol shared an experience she had when she asked students to make a video for her. Her students were reluctant to work with this tool and told her they did not know how to use it

to complete the assignment. In the end, she had to teach them how to use the tool so they could make the video. Denisse also considers that students are reluctant to use particular tools they have not seen before, and she needs time for them to learn to use them. Also, they are not familiar with, and unwilling to use Facebook, since they say this tool is intended for use by their parents' generation.

In Edward's experience, he has seen that students do not react favorably when he asks them to use specialized programs for academic purposes because they do not know how to use certain educational technology tools. In a similar vein, Frank noted that if students are asked to use technology tools which imply only professional use, they tend to feel bored and not interested. Thus, it is difficult for them to manage the tools because they are not paying attention to them. For Gary, it is incredible how new current students are only interested in social networks or technology they are exposed to in their daily lives, and they do not understand how to use powerful technology tools such as cloud services and its vast potential.

The new virtual classroom platform adopted in the university is also a considerable challenge for some of the professors. Alan, Brigitte, and Kate shared how hard it is for them to work with this new virtual classroom platform. They consider it not friendly, intuitive, and it is quite complicated, both for the professors and for the students. They face problems finding the spaces to teach their classes correctly, such as assigning homework and uploading assignments, uploading videos and tutorials, and grading.

On the other hand, Hannah shared that in her experience, students have difficulty when using some technology tools for educational purposes; however, she noted that when they use social networks in classes, students feel more comfortable and it helps her to avoid the resistance she faces when using other technology tools that students are not exposed regularly.

Overall, students having difficulties with technology tools for educational purposes was not previous found in the literature.

Challenges related to failures or lack of technological resources. Another finding from my study is that the lack of reliability in technological resources due to hardware, software, or service failures constitutes a critical barrier to the adoption of educational technology (Sub-theme 3.2). Many faculty reported obstacles with technological resources related to internet access and computer equipment failures.

Internet access is essential for some technological tools to work correctly. For Edward, when the internet access fails, he feels he and his students face one of the most challenging aspects to using technology in his classes because it is impossible to run specific tools. In a similar vein, Hannah reported some internet access failures, especially when using Kahoot. She explained that when she uses Kahoot, and many students are connected at the same time, it can lead to slow internet access, and sometimes it simply stops working. Due to these consequences, she had to abort the activity she was carrying out in class using Kahoot the first time she used it.

As Hannah, Kate also shared that sometimes when using Kahoot in her classes, the internet access slows down if many students are connected to the tool at the same time; therefore, she has to bring her own WiFi to overcome that obstacle. She voiced that if this problem is not permanently solved, it will cause her to stop using that specific tool. Lilly also thinks that if the issue with internet access is not addressed, it makes no sense to continue using technological tools in her classes since most technological tools need appropriate internet access to work properly.

Lilly also sometimes faces a lack of technological equipment that hinders her from carrying out different activities when each student needs to have access to a computer or other

gadget to use a specific technological tool. Carol also shared an experience in which the existing technological resources in a laboratory were not enough for all the students in her class; therefore, this obstacle led her to dismiss the practice she was trying to carry out using the technological tool she had planned to implement for that class.

Isabella faces significant challenges when she arrives at the laboratory and realizes sometimes the computers do not work correctly, or the software she uses in her classes is not up to date. She shared that this obstacle has led her to cancel some class sections until the problems are resolved. Finally, Denisse considers that some technology tools require a more robust platform, and she said if the technological resources in the classrooms or laboratories are not updated, it represents a significant obstacle to the implementation of some tools that do not work with outdated equipment.

Challenges related to inadequate internet access and/or outdated or inadequate tools are supported by previous literature. Problems encountered related to technology resources can cause faculty not to rely on technology, and as researchers state, it becomes a significant challenge that can create a barrier in the adoption of technology for educational purposes by faculty. Previous studies revealed the importance of purchasing reliable equipment and software; guiding a properly maintenance of technology software and gadgets; and working on assuring quick responses to failures from support staff to help diminish the influence of this obstacle (Agbo, 2015; Buchanan et al., 2013; Porter & Graham, 2016).

Challenges related to generational gaps. Another finding from my study is that generational gaps may constitute a considerable challenge in the adoption of technology for educational purposes, since younger people tend to use more and different types of technology

than older individuals (Sub-theme 3.3). Most participants reported that age is an obstacle when adopting educational technology in their classes.

Brigitte believes that older individuals tend to be reluctant to use technology in educational environments. She had invited her parents to teach at the university since she considers them the brightest people she has ever met in their discipline. She received a negative answer from them, as they claimed that due to their age, they do not have the abilities required to teach with the new technologies now available. Frank also believes age is a significant obstacle for faculty to adopt educational technology, since he has worked with older people in the university and realized they require more effort to learn how to use technology.

Other participants recognized they have to make additional efforts to adopt educational technology due to their generation. For example, Carol acknowledges she is not a young woman; however, she tries to keep up to date with technological tools since she understands that technology brings a better learning experience. As Carol, Hannah understands that she does not feel like an expert because she was not born in the digital age in the use of technologies, compared to her students who were born using it. Nevertheless, she makes an effort to keep applying technologies in class since she understands they are beneficial in the teaching-learning process. Edward feels he is not an expert using technology compared to his students. He acknowledges they were born in the digital age, and he belongs to a generation in which there was little technology. He admits he must make considerable efforts to be at the forefront with the technological tools he uses in his classes.

Lilly has realized that the use of technology tools becomes easier for younger students since using technology is like their day-to-day life. She shared that she sees how her undergraduate students concentrate faster and easier when using technology in classes that are

familiar to them. On the other hand, she shared that for her it is harder, and it also takes more time, to introduce technology tools to her master's students who are between 30 and 35 years old. Like Lilly, Kate has experienced that younger students find it easier to work with technology they commonly use. She believes that this is related to the generation in which they were born.

Finally, Denisse, who was born in the digital age, expressed that adopting technology is easy for her. She thinks her age helps not only to find easy the adoption of technology but to be always willing to find new technologies to implement them in her classes.

Challenges related to generational gaps in the adoption of technology for educational purposes are supported by previous literature. The age of faculty is a factor in willingness to embrace technology tools, and it does influence in their adoption of technology for educational purposes (Al-Fadhli, 2009; O'bannon & Thomas, 2014). In a similar vein, this finding is supported by Laabidi's (2016) study, which revealed that younger professors tend to adopt and use more educational technology than older faculty.

Challenges related to fears of being exposed to technology. Another finding from my study is that fears faced by faculty when being exposed to technology constitute a critical barrier for the adoption of educational technology (Sub-theme 3.4). This fear is also known in the literature as computer anxiety. Chang (2005) defines computer anxiety as "a generalized emotion of uneasiness, apprehension, the anxiousness of coping, or distress in anticipation of negative outcomes from computer-related operations" (p. 715).

Some faculty reported they had experienced fears in some way when being exposed to technology for educational purposes. For example, Brigitte stated that she faced fear the first time she was exposed to the new virtual classroom platform. She said, "I was a little scared to

see the content and language that was not the same as I knew for those types of platforms." She believes faculty will always face anxiety of failing when adopting a new technological system. As Brigitte, Lilly was also scared when she was exposed to digital environments; she did not feel confident and felt some apprehension until she decided to use it. In a similar vein, when Kate started adopting educational technology, she felt some anguish in anticipation of adverse outcomes. Therefore, before selecting any technology tool, she practices first at her home until she was sure that everything will work out in class.

Hannah faced a similar fear as she initially implemented a new technology tool in her classes. Similar to Kate, Hannah feels some anguish in anticipation of adverse outcomes. She described a situation when she had practiced at home before using the tool in her class, but the tool ended up not working correctly with the students, and she panicked. She said it was only an example, but she has faced apprehension and anxiety when using new technology for educational purposes on several occasions.

Finally, for Carol, fear faced by faculty when exposed to technology is related to the fact that professors are afraid that the student knows more than they do; it is a kind of generalized emotion of uneasiness, and anxiousness to deal with technology in front of the current generation of students.

A feeling of anxiety in the adoption of educational technology is supported by previous literature. Such anxiety is a potent predictor of faculty's attitude towards using technology in education. These studies also showed this anxiety produces apprehension of teachers towards the use of educational technology, which can impact the quality of education (Agbatogun, 2010; Celik & Yesilyurt, 2013).

Challenges related to the lack of time for implementing educational technology.

Another finding from my study is that an essential obstacle in the adoption of technology for educational purposes is the lack of time for faculty to implement these technology tools in their classes (Sub-theme 3.5). Some participants reported that even though the use of technological tools helps them save time once implemented, this process of implementing the technology tools requires additional time and dedication.

For example, Joyce reported that one of the biggest obstacles she is facing right now in adopting technology for educational purposes is the time required to implement it. Joyce said she is not only a professor within this institution, but she has other jobs outside the institution; therefore, her time to implement technology is short. As Joyce, Frank said he had spent two weeks working on the implementation of a technology tool for a two-hour class, and it has been challenging for him; he also has responsibilities with other jobs that require his time, so he cannot dedicate an extra-long time to implementing technology. He said this situation represents a barrier for him to continue adopting educational technology in his classes.

Denisse said that although it is easy for her to implement technological tools for educational purposes, the lack of time is a significant obstacle during this implementation. She voiced that she needs to spend extra time outside the classroom to carry out a proper implementation of the technological tools she uses in her classes, and she has other jobs outside the institutions that also demands time from her.

For Edward, the lack of time is also a challenge to adopt educational technology in his classes. He said time is more important than money since when he goes to university, he is not thinking about payment, but about the time spent traveling from his home to the university. In this vein, he considers that training related to educational technology should not even be at the

university but in the center of the city or online. He said, “Time is the only thing; time to spend with that [adopting educational technology].”

Finally, Carol feels the lack of time as an obstacle for professors to adopt technology in their classes, as she considers that the difference between the time the professor has available versus the time [he/she] needs for implementing educational technology is huge. Professors in the DR have other jobs and responsibilities outside the institution, and they are not full-time professors within the institution. Besides, she is concerned that no additional payment is involved in recognizing the time a professor has to spend implementing technology for educational purposes.

Faculty’s lack of time to implement technology for educational purposes is supported by previous literature. Several studies revealed the lack of time as the main barrier in the adoption of educational technology. King and Boyatt (2015) found that some faculty perceive that the integration of educational technology will be an additional workload to their responsibilities, and therefore, limited time is a concern (King & Boyatt, 2015). In a similar vein, several authors refer to faculty’s concern about the lack of time or recognition of the time spent to adopt and use technology for educational purposes; in addition, faculty receive insufficient or no incentives to integrate technology in their classes (Afshari et al., 2009; King & Boyatt, 2015; Reid, 2014). They also found that such lack of time can be a barrier to having faculty become an agent of change in the adoption or use of technology for educational purposes.

Research Question 4

My fourth research question centered around the attitudes showed by faculty related to the use of educational technology in their classrooms. Rogers’ (2003) Innovation Diffusion Theory (IDT) describes an individual's attitudes towards innovation as a crucial aspect in the

diffusion of new technology. Herzberg (1968) also considers motivational factors as essential influencers in individuals' attitudes.

Upon an overall reflection on my research question number 4, I found that within my study, attitudes in general towards the adoption of educational technology are globally encompassed within all the challenges faculty have faced (Theme 3), all faculty's motivations (Theme 4 and Theme 5), and how meaningful educational technology is for faculty (Theme 2) in the adoption of technology in their classes.

My study also revealed diverse attitudes related to: (a) the age of participants and the gap they think it represents (Sub-theme 3.5), (b) faculty perceived usefulness of technology tools in their classes (Theme 2), and (c) faculty's computer anxiety when exposed to technology (Sub-theme 3.4). Because of these themes and sub-themes were already previously discussed in the chapter, no additional detail will be offered here.

Faculty attitudes related to personal characteristics, perceive usefulness, motivations, perceived meaningful, and computer anxiety are supported by previous literature. Individual's attitudes towards technology are related to several factors such as age (Ahadiat, 2008; Laabidi, 2016), gender (Ahadiat, 2008; Cai, Fan, & Du, 2017), computer competency skills (Albirini, 2006; Baturay, Gökçearslan, & Ke, 2017; Marzilli et al., 2014), perceived usefulness and meaningful (Baturay, Gökçearslan, & Ke, 2017; John, 2015), fear of change (Marzilli et al., 2014; Smidt, 2014), and computer anxiety (Agbatogun, 2010; Celik, & Yesilyurt, 2013). According to these previous studies, attitudes, in general, are related to different perceptions, beliefs, obstacles, and motivations embedded in each individual.

Summary of Findings and Connections to Previous Literature

In this study is my goal was to obtain information related to faculty's attitudes, barriers, and motivations for using or not educational technologies in their classes.

Based on my findings, all participants in my study are using technology tools for educational purposes in their classes, and consider that such tools add positive meaning in their courses. The majority of faculty reported they have a better approach to students when they use technology in their classes, and they also revealed that once the technology tools are implemented, they help them save time in the teaching and learning process. Faculty also expressed that the use of technology in their classes allows students to achieve the intended competencies of each subject. These findings align with Rogers' (2003) Innovation Diffusion Theory (IDT) and the compatibility attribute of innovation and rate of adoption. These findings are also similar to previous research (Afshari et al., 2009; Enfield, 2013; Friedman & Friedman, 2013; Gillani et al., 2008; Lloyd & Barrenech, 2014; Moore et al., 2005; Rhema & Miliszewska, 2014; Selwyn, 2009; Stošić, 2015), except no previous research had been found on faculty reporting that technology tools save time when using them within the classrooms.

This study also revealed that these faculty are motivated in different ways to adopt educational technology in their classes, such as gaining a sense of achievement and having opportunities to grow and learn new skills. Similarly, this study found that other faculty might be influenced to adopt technology in their courses by other factors, such as economic compensation, peer interaction, and recognition of faculty success in the use of technology tools. These findings are aligned with Herzberg's (1968) Motivators and Hygiene Theory (Two-Factors Theory), where motivating and hygiene factors may be boosting commitment to adopt technology for educational purposes. These findings are also in line with previous research

(Bacow et al., 2012; Chapman, 2011; Gautreau, 2011; Parker, 2003; Surry & Land, 2000; Wingo et al., 2017; Zellweger, 2007).

Findings also revealed that all participants faced different obstacles while adopting educational technology in their classes. The majority faced obstacles related to students' difficulties when using technology tools for educational purposes, while many faculty reported some problems with technological resources, and challenges with generational gaps. Finally, some faculty voiced they have faced obstacles related to computer anxiety, and lack of time for implementing educational technology. These findings are aligned with Rogers' (2003) Innovation Diffusion Theory (IDT), its innovation-decision process, and the complexity attribute of innovation and rate of adoption explained in detail in Chapter 1. All such findings are also in line with previous research (Agbatogun, 2010; Agbo, 2015; Afshari et al., 2009; Al-Fadhli, 2009; Buchanan et al., 2013; Celik & Yesilyurt, 2013; King and Boyatt, 2015; Laabidi, 2016; O'bannon and Thomas, 2014; Porter & Graham (2016); Reid, 2014), except no previous research had been found on faculty reporting obstacles related to students' difficulties when using educational related technology tools within the classrooms.

My study also revealed that attitudes towards the adoption of educational technology are globally encompassed within the merit educational technology holds for faculty, all the challenges faculty have faced, and all faculty's motivations in the adoption of technology in their classes. This is in alignment with previous research (Agbatogun, 2010; Ahadiat, 2008; Albirini, 2006; Baturay, Gökçearslan, & Ke, 2017; Cai, Fan, & Du, 2017; Celik & Yesilyurt, 2013; John, 2015; Laabidi, 2016; Marzilli et al., 2014); Smidt, 2014).

Overall, while findings revealed some obstacles faced by faculty related to the adoption of technology for educational purposes, all participants are using technology tools in their

classes, and they feel inclined to continue using them, showing a general positive attitude to the adoption of educational technology. Table 4 offers my summary of major findings and connections to previous literature.

Table 4

Findings Summary

Guzmán (2020) Major Findings	Related Literature - Similar Findings
Use of technology tools is vital to reach and provide a better teaching experience to new generation students (Sub-theme 2.1)	Friedman and Friedman (2013); Gillani et al. (2008); Moore et al. (2005); Rhema and Miliszewska (2014).
Use of technology tools helps students acquire the competencies and skills needed in classes to have a better performance in their work field (Sub-theme 2.3)	Afshari et al. (2009); Enfield (2013); Lloyd and Barrenech (2014); Rhema and Miliszewska (2014); Selwyn (2009); Stošić (2015)
Use of technology tools saves time for faculty in the process of teaching their classes (Sub-theme 2.2)	No previous research found; thus, a new finding
Faculty's sense of achievement and their perceptions that their efforts were worth it lead faculty to feel motivated to adopt technology in the classrooms (Sub-theme 5.1)	Gautreau (2011); Surry and Land (2000)
Faculty feel motivated to adopt educational technology if they think they have the opportunity to grow and learn new skills (Sub-theme 5.2)	Chapman (2011); Nicolle and Lou (2008); Potter and Rockinson-Szapkiw (2012); Shea (2007)
Economic compensation could influence faculty in the adoption of technology for educational purposes (Sub-theme 4.1)	Chapman (2011); Gautreau (2011); Parker (2003)
Faculty feel adequate peer relationships could impact the adoption of technology for educational purposes (Sub-theme 4.2)	Surry and Land (2000); Zellweger (2007)
Recognition of faculty success in the use of technology tools could be an excellent strategy to boost their commitment to continue and enhance use of such technology (Sub-theme 4.3)	Bacow et al. (2012); Gautreau (2011); Wingo et al. (2017)
Difficulties faced by students when using specific technology tools for educational purposes constitute a significant barrier for faculty in the adoption of educational technology (Sub-theme 3.1)	No previous research found; thus, a new finding.
Lack of reliability in technological resources due to hardware, software or technological services failures constitute a critical barrier for the adoption of educational technology (Sub-theme 3.2)	Agbo (2015); Buchanan et al., (2013); Porter and Graham (2016)

Table 4 – continued

Guzmán (2020) Major Findings	Related Literature - Similar Findings
Generational gaps constitute a significant challenge in the adoption of technology for educational purposes since younger people tend to use technology more than older individual (Sub-theme 3.3)	Al-Fadhli (2009); Laabidi (2016); O'bannon and Thomas (2014)
Fears faced by faculty when being exposed to technology constitute a critical barrier to the adoption of educational technology (Sub-theme 3.4)	Agbatogun (2010); Celik and Yesilyurt (2013)
Lack of time for faculty to implement technology tools in their classes is an important obstacle in the adoption of technology for educational purposes (Sub-theme 3.5)	Afshari et al. (2009); King and Boyatt (2015); Reid (2014)
Attitudes in general towards the adoption of educational technology are globally encompassed within the merit faculty believes technology has, all the challenges they have faced, and all their motivations in the adoption of technology in their classes (Themes 2, 3, 4, and 5)	Agbatogun (2010); Ahadiat (2008); Albirini (2006); Baturay, Gökçearslan, and Ke (2017); Cai, Fan, and Du (2017); Celik and Yesilyurt (2013); John (2015); Laabidi, (2016); Marzilli et al. (2014); Smidt (2014)

Recommendations

Recommendations for Future Research

This qualitative study attempted to capture the experiences of 12 faculty members from three different schools within one private university in Santo Domingo, DR. Findings from this research contribute to the literature related to the adoption of educational technology in higher education institutions, especially in countries like the DR with part-time faculty. However, obtaining more information about the factors that may influence faculty in the adoption of technology for educational purposes would be valuable to encourage more faculty to adopt technology in their classes.

Additional research could be carried out by including faculty members from additional schools within this private university. Obtaining data to capture other case experiences would facilitate better understanding of the factors that contribute to the adoption of technology for

educational purposes within this HEI. Conducting a survey of all faculty and analysis of such data could also broaden knowledge of the factors affecting or not the use of technology for educational purposes, as well as predict the adoption of technology, based on the motivations, attitudes, and challenges of participants in the study.

Finally, since all participants in this study were limited to a private university, and data was collected via interviews, documents and artifacts, I recommend conducting a study with a mixed-method approach in the universities all over the countrywide. Conducting this type of study could contribute to address the transferability of results throughout the national territory. The qualitative data could be gathered via case study interviews, collecting the perceptions and beliefs of faculty members related to the adoption of educational technology in their classes. Such qualitative data could support the numeric data of the quantitative results.

Recommendations for Leaders

All participants in this study overall spoke positively related to the adoption of technology for educational purposes. This was not too surprising since these participants volunteered for this research study on technology usage. Yet, ideas can be extracted from these individuals that can use technology to encourage other faculty who might not hold such positive thoughts regarding technology usage.

Since my participants are motivated by factors such as sense of achievement and the opportunity to grow and learn new skills, I recommend that such positive benefits be shared with all faculty. Hearing how technology is helping their colleagues to save time and remain up-to-date, and how it is helping students to acquire the competencies and skills needed in their work field, could serve as motivators for others.

In addition, I recommend universities contemplate implementing additional motivating factors that could influence faculty to adopt technology in their classes, creating a plan which includes: (a) some economic compensation incentives that recognizes the time that teachers should spend implementing educational technology in their class, (b) a professional recognition mechanism such as certificates or other awards to motivate and boost their commitment in the use of technology in their classes, and (c) the creation of spaces for personal interrelationships among faculty so that they can share ideas and interact with each other regarding the use of technology.

All participants expressed obstacles faced during the process of adopting technology for educational purposes. I recommend elaborating a plan to build capacity to overcome those challenges revealed within this study. To address student's difficulties when using technology tools for educational purposes, I suggest: (a) universities prepare short training sessions for students on common technology tools used throughout the university, and (b) individual programs/schools/colleges prepare short training sessions focused on the particular technology tools used in specific career courses. This would mean individual faculty members could focus on using these technologies with their students, not wasting class time teaching the mechanics of the tool. To deal with reliability related to technological resources, I recommend assessing the capacity of the existing resources within the institution and enhance needed hardware, software and improved internet access. To work with faculty's obstacles regarding generational gaps, I suggest assessing different incentive policies and segment these specific incentives according to the diverse needs of each generational group. Finally, to face computer anxiety I recommend technology trainings follow Dupin-Bryant's (2002) orientations to establish a comfortable learning environment in which humor can be used to build rapport, teaching

lessons that start with basic concepts, and restrict the use of computer lingo when necessary to avoid anxiety. In conclusion, it is essential to help others understand that there is a real benefit when adopting educational technology in their classes.

Overall, I recommend universities in countries like the DR with part-time faculty create plans to assess the capacity of their institutions to accomplish their vision related to technology adoption. For this plan it is essential to take into consideration the obstacles faculty face and the motivating factors that impact professors into the adoption of technology tools in their classes.

Figure 2 shows a graphic representation of recommendations based on the findings of my study.

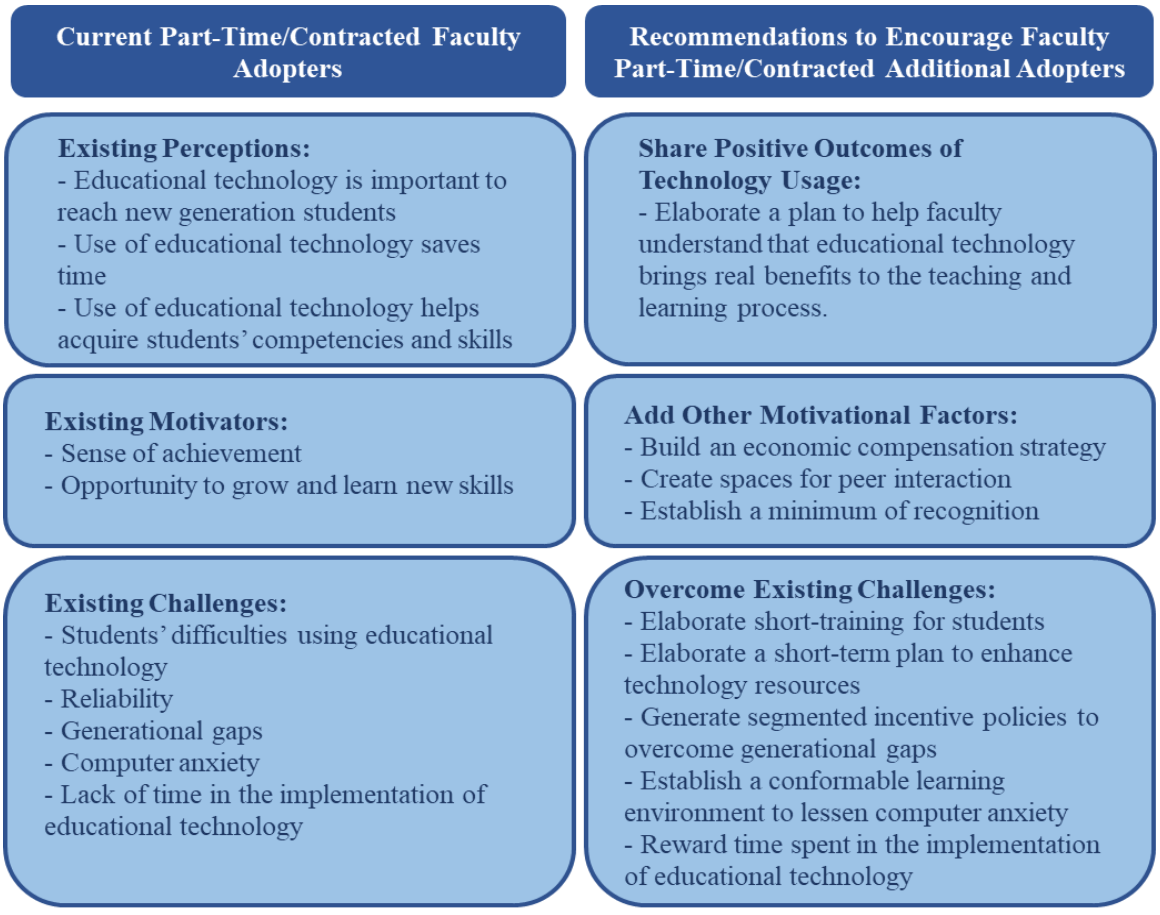

Figure 2. Representation of recommendations based on findings related to the adoption of educational technology (Guzmán, 2020).

Chapter VI Closure

The purpose of this study was to explore faculty experiences regarding the adoption of educational technology within a HEI in the DR that has made available significant technology classroom tools and training to its faculty. This goal was to obtain information related to faculty members' attitudes, barriers, and motivations for using or not educational technologies in their classes. I interviewed 12 participants, hearing their voices, listening to their stories, and reviewing their documents/artifacts, in order to capture their experiences regarding the adoption of technology in their classes.

I concluded that all my participants are inclined to use technology tools within their classes, and they feel such tools are necessary for the adequate development of their courses. This is not surprising since they all had volunteered to participate in this study on technology usage. At the same time, they have faced obstacles that have limited them in the use of various technologies in their classes. These obstacles must be addressed to help these and other faculty to continue using technology in their classrooms.

Most importantly, these faculty revealed various factors that motivate them to continue using technologies for educational purposes in their courses. Taking these voices and stories into account, and creating a plan to address the issues raised, can help motivate more faculty to adopt technology tools in their classes.

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Appendix A

Recruitment Email – English/Spanish

Recruitment Email

Dear Professor,

My name is Leipzig Guzmán Mena and I am the Director of the Information and Communication Technology Engineering School at this university. I am also a Ph.D. student at Western Michigan University (WMU).

I am recruiting faculty to participate in a qualitative research study related to the usage, motivations, barriers, and attitudes of faculty members in the adoption of educational technology into their classrooms. This research will be held in three different schools at this institution.

Participating in this study will include an interview conversation that should last approximately 60 minutes and that will be conducted before or after school hours in a private setting in this university. Prior to this conversation, I will send to you a consent form and a pre-interview questionnaire that you may fill out and bring it to the interview. This conversation will be recorded, and I will also be taking written notes. I will also ask to share a copy of the syllabus and other artifacts such as tests, essays, projects, presentations, or anything else assigned to the use of technology in classes for the courses you commonly teach. Participation in this study is completely voluntary and there is no penalty for not participating or for withdrawing from the study. All the responses will be managed with strict discretion, and they will not be connected with any job evaluation within this institution. If you agree to participate in this study, your identity will be kept strictly confidential.

If you are interested in learning more about participating or are willing to participate, please contact me by replying by email to leipzigelizabe.guzmanmena@wmich.edu or you may feel free to contact me by phone at 809-722-6096. You may also reply to the electronic message from whom you are receiving this recruitment email.

Sincerely,

Leipzig Guzmán Mena.

Correo de Reclutamiento

Estimado Profesor,

Mi nombre es Leipzig Guzmán Mena y soy la Directora de la Escuela de Ingeniería en Tecnologías de la Información y la Comunicación de esta universidad. También soy un estudiante de Ph.D. Western Michigan University (WMU).

Estoy reclutando profesores para que participen en un estudio de investigación cualitativa relacionado con el uso, las motivaciones, las barreras y las actitudes de los docentes en la adopción de tecnología educativa en sus aulas. Esta investigación se llevará a cabo en tres escuelas diferentes en esta institución.

La participación en este estudio incluirá una entrevista que debe durar aproximadamente 60 minutos y que se llevará a cabo antes o después del horario de clases en un entorno privado en esta universidad. Antes de esta conversación, le enviaré el consentimiento informado y un cuestionario previo a la entrevista con la finalidad de traerlo completado el día de la entrevista. Esta entrevista se grabará y también tomaré notas escritas. En adición le pediré que comparta una copia de los sílabos y algunos artefactos tales como exámenes, ensayos, proyectos, presentaciones, o cualquier documento adicional asignado para el uso de tecnología en las clases de los cursos que imparte habitualmente. La participación en este estudio es completamente voluntaria y no hay ninguna sanción por no participar o por retirarse del estudio. Todas las respuestas se manejarán con estricto criterio y no serán conectadas con ninguna evaluación de trabajo dentro de esta institución. Si acepta participar en este estudio, su identidad se mantendrá estrictamente confidencial.

Si está interesado en obtener más información sobre la participación o si está dispuesto a participar, comuníquese conmigo respondiendo por correo electrónico a leipzigelizabe.guzmanmena@wmich.edu o puede comunicarse conmigo por teléfono al 809-722-6096. Usted también puede responder al correo desde donde se le está enviando este correo de reclutamiento.

Sinceramente,

Leipzig Guzmán Mena.

Appendix B

Approved Consent Form – English/Spanish

Western Michigan University
EDUCATIONAL LEADERSHIP, RESEARCH AND TECHNOLOGY

Principal Investigator: Louann Bierlein Palmer, Ed.D.
Student Investigator: Leipzig Guzmán Mena
Title of Study: Adopting Educational Technology: A Study of Dominican Republic Higher Education Faculty Related to their Classroom Usage, Attitudes, Barriers, and Motivations

Study Summary

This consent form is part of an informed consent process for a research study and it will provide information that will help you decide whether you want to participate in this study.

The purpose of this study is to explore faculty experiences regarding the adoption of educational technology within a HEI in the DR, that has made available significant technology classroom tools and training to its faculty. At this stage in the research, educational technology refers to the effective use of technological tools for educational purposes in order to achieve dynamism, collaboration, interaction, and better assimilation of the knowledge transfer process.

To gain this understanding, I will conduct a multiple case study to explore higher education (HE) faculty's experiences regarding the adoption of educational technology within a HEI in the Dominican Republic (DR) to obtain information related to faculty members' attitudes, barriers and motivations for using or not educational technologies in their classes, and will serve as Leipzig Elizabeth Guzmán Mena's dissertation, research project in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Educational Leadership, Research, and Technology.

If you take part in the research, you will be asked to participate in an interview and also to share documents and artifacts such as your syllabi, student tests, technology tools' reports, essays, projects, presentations, or anything else you use related to educational technology in your classes. Your time in the study will take 90 minutes. There are no known risks associated with participating in this study beyond normally experienced in everyday life. Your participation is completely voluntary and you may refuse to answer any questions you choose, or not be part of the study at any time. There is neither compensation nor costs associated with the participation in this study. The alternative if you do not agree is to not participate in the study.

You have been invited to participate in a research project titled "*Adopting Educational Technology: A Study of Dominican Republic Higher Education Faculty Related to their Classroom Usage, Attitudes, Barriers, and Motivations"* and the following information in this consent form will provide more detail about the research study.

This consent document will explain the purpose of this research project and will go over all of the time commitments, the procedures used in the study, and the risks and benefits of participating in this research project. Please read this consent form carefully and completely and please ask any questions if you need more clarification.

After you review the consent form and all of your questions have been answered, if you decide to participate in this study, you will be asked to sign this consent form. By signing this consent form and agreeing to take part in this research, you are not giving up any of your legal rights.

What are we trying to find out in this study?

Studies suggest that there is a disconnect between faculty usage, attitudes, challenges and their motivations towards using educational technology, and the demands of our new generation of students (Rhema & Miliszewska, 2014; Selwyn, 2009). While students are now fully immersed in technology (Dahlstrom and Bichsel, 2014), in some aspects some faculty still don't place adequate importance on its usage.

The purpose of this study is to explore faculty experiences regarding the adoption of educational technology within a HEI in the DR, and to obtain information related to faculty members' attitudes, barriers and motivations for using or not educational technologies in their classes. At this stage in the research, educational technology refers to the effective use of technological tools for educational purposes in order to achieve dynamism, collaboration, interaction, and better assimilation of the knowledge transfer process.

Who can participate in this study?
The criteria established for selecting the sample are: (a) being a faculty member within three schools within this private institution, and (b) having been a faculty member with the school for at least two semesters. If more volunteers than the five per school needed are interested, the academic responsibility of each professor who agrees to be part of the study will be reviewed, taking into consideration the courses currently teaching, and the courses teaching in other schools in order to select the sample that best matches the research. Faculty members with more classes assigned per semester and those who have taught classes to students from another school in this university will be preferred.

The exclusionary criteria: If you meet either of the following, you cannot participate in the study:

1- Faculty member of another School not being the A, B and C.
2- To have less than two semesters in the teaching and learning process.

Where will this study be carried out?
Interviews and documents sharing will take place in a conference room or a computer lab within the HEI.

What is the time commitment for participating in this study?
As a participant, you will be asked to complete one interview that will last approximately 60 minutes. I will also ask that you share a copy of the syllabus and any artifacts related to technology for the courses you currently teach. This time will depend on the total of courses you use to teach.

What will you be asked to do if you choose to participate in this study?
The interview will take place in a conference room or a computer lab within the HEI. During the interview, you will be asked a list of questions prepared by the researcher and the interview will be audio-recorded. You will have the freedom to choose not to answer any of the questions at any time in the interview. Some additional questions could arise during the interview different than the questions in the interview protocol.

The review of the syllabi and other documents could include some questions related to the use of educational technology within the classes you teach. I will also may ask for other artifacts used during the educational technology adoption or use in your classes. I may ask you to bring your personal computer to the interview.

What information is being measured during the study?
The researcher will collect information from you regarding your perceptions, knowledge and experiences that can answer the usage, attitudes, barriers, and motivations to adopt educational technology into the classrooms in a higher education environment. The researcher will ask you to describe the types of classes you teach and types of educational technology you regularly use or do not.

What are the risks of participating in this study and how will these risks be minimized?
For this specific study, there are no known risks participating in this study other than that would normally experience in everyday life. Some participants may find some interviews questions to be sensitive. However, your participation is voluntary and you may refuse to answer any questions they choose.

What are the benefits of participating in this study?
There are no benefits to you. However, this study may allow us to better understand what is happening with DR faculty members' integration of technology and the reasons why faculty members are or are not using technology in the classrooms would be of value. The results could help others better understand this topic and could help to benefit other schools with this technology implementation issue.

Are there any costs associated with participating in this study?
There are no costs associated with participating in this study.

Is there any compensation for participating in this study?
There is no compensation or other incentive for participating.

Who will have access to the information collected during this study?
The results of this study could be published in national or international events, indexed journals or magazines.
To protect the confidentiality of each participant, your identity will be protected assigning you a pseudonym or a code.
The information collected about participants for this research will not be used by or distributed to investigators for other research. At the end of the study, the collected data will be stored on a digital storage device, in a password protected file.
The device will be in my custody during the interview, during transportation and after the end of the study.
These files will be kept for at least 3 years, after close of the study, in a secure location on the Western Michigan University (WMU) campus.

What will happen to my information collected for this research after the study is over?

The information collected about participants for this research will not be used by or distributed to investigators for other research.

What if you want to stop participating in this study?
You can choose to stop participating in the study at any time for any reason. You will not suffer any prejudice or penalty by your decision to stop your participation. You will experience NO consequences either academically or personally if you choose to withdraw from this study.

The investigator can also decide to stop your participation in the study without your consent.

Should you have any questions prior to or during the study, you can contact the student investigator, Leipzig Guzmán Mena at 809-722-6096 or leipzigelizabe.guzmanmena@wmich.edu. You may also contact the Chair, Human Subjects Institutional Review Board at 269-387-8293 or the Vice President for Research at 269-387-8298 if questions arise during the course of the study.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board (HSIRB) as indicated by the stamped date and signature of the board chair in the upper right corner. Do not participate in this study if the stamped date is older than one year.

I have read this informed consent document. The risks and benefits have been explained to me. I agree to take part in this study.

_____

Please Print Your Name

_____ _____

Participant's signature Date

Western Michigan University
LIDERAZGO EDUCACIONAL, INVESTIGACIÓN Y TECNOLOGÍA

Investigador principal: Louann Bierlein Palmer, Ed.D.
Estudiante investigador: Leipzig Guzmán Mena
Título del estudio: Adoptando Tecnología Educativa: Un Estudio de los Docentes de Instituciones de Educación Superior de la República Dominicana Relacionado con el Uso en Clases, Actitudes, Barreras y Motivaciones

Resumen del Estudio

Este formulario de consentimiento es parte de un proceso de consentimiento informado para una investigación y proporcionará información que lo ayudará a decidir si desea participar en este estudio.

El propósito de este estudio es explorar las experiencias de los docentes con respecto a la adopción de tecnología educativa dentro de una institución de educación superior en la República Dominicana, que ha puesto a disposición de sus docentes herramientas tecnológicas y entrenamientos. En esta etapa de la investigación, tecnología educativa se refiere al uso efectivo de herramientas tecnológicas con fines educativos para lograr dinamismo, colaboración, interacción y una mejor asimilación del proceso de transferencia de conocimiento.

Para obtener esta información, llevaré a cabo un estudio de caso múltiple para explorar las experiencias de docentes de educación superior con respecto a la adopción de tecnología educativa dentro de una institución de educación superior en la República Dominicana. En específico, obtendré información relacionada con las actitudes, barreras y motivaciones del cuerpo docente con relación al uso o no de tecnologías educativas en sus clases, y servirá como proyecto de investigación de tesis doctoral de Leipzig Elizabeth Guzmán Mena, en cumplimiento parcial de los requisitos para el grado de Doctor en Filosofía en Liderazgo Educativo, Investigación y Tecnología.

Si participa en la investigación, se le pedirá que participe en una entrevista y también que comparta documentos y artefactos como su programa de estudios, exámenes de los estudiantes, informes de herramientas tecnológicas, ensayos, proyectos, presentaciones o cualquier otra cosa que use relacionada con la tecnología educativa en sus clases.

Su tiempo en el estudio tomará 90 minutos. No se conocen riesgos asociados con la participación en este estudio más allá de lo que normalmente se experimenta en la vida cotidiana. Su participación es completamente voluntaria y puede negarse a responder cualquier pregunta que elija, o no ser parte del estudio en cualquier momento. No hay compensación ni costos asociados con la participación en este estudio. Su alternativa si no está de acuerdo, es no participar en este estudio.

Usted ha sido invitado a participar en un proyecto de investigación titulado “Adoptando Tecnología Educativa: Un Estudio de los Docentes de Instituciones de Educación Superior de la República Dominicana Relacionado con el Uso en Clases, Actitudes, Barreras y Motivaciones” y la información siguiente en este consentimiento informado le proveerá mayor detalle acerca del estudio. Este documento de consentimiento explicará el propósito de este proyecto de investigación y repasará todos los compromisos de tiempo, los procedimientos utilizados en el estudio y los riesgos y beneficios de participar en este proyecto de investigación. Por favor, lea este formulario de consentimiento cuidadosa y completamente y haga cualquier pregunta si necesita más aclaraciones.

Después de revisar el formulario de consentimiento y de haber respondido todas sus preguntas, si decide participar en este estudio, se le pedirá que firme este formulario de consentimiento. Al firmar este formulario de consentimiento y aceptar participar en esta investigación, no renuncia a ninguno de sus derechos legales.

¿Qué estamos intentando descubrir en este estudio?
Estudios sugieren que hay una desconexión entre el uso, actitudes, retos y sus motivaciones de docentes hacia adoptar y utilizar tecnología educativa y las demandas de nuestra nueva generación de estudiantes (Rhema & Miliszewska, 2014; Selwyn, 2009). Pese a que los estudiantes se encuentran completamente inmersos en tecnología (Dahlstrom and Bichsel, 2014), en algunos aspectos aún no se le da la importancia adecuada a su uso.

El propósito de este estudio es explorar las experiencias de los docentes con respecto a la adopción de la tecnología educativa dentro de una Institución de Educación Superior en la República Dominicana y obtener información relacionada a sus actitudes, las barreras y motivaciones para usar o no las tecnologías educativas en sus clases. En este punto de la investigación, la tecnología educativa se refiere al uso efectivo de herramientas tecnológicas para propósitos educativos a fin de obtener dinamismo, colaboración, interacción y una mejor asimilación del proceso de transferencia de conocimientos.

¿Quién puede participar en este estudio?
Los criterios establecidos para seleccionar la muestra son: (a) ser docente de una de las tres escuelas seleccionadas en esta Institución de Educación Superior y, (b) tener más de dos semestres siendo docente de una de estas escuelas. Si se registran más de los 5 voluntarios necesarios por escuelas, se revisarán las responsabilidades académicas de cada docente que esté de acuerdo con ser parte del estudio, tomando en consideración los cursos que imparte en la actualidad y los cursos que imparte en otras escuelas, con la finalidad de seleccionar la muestra que mejor se ajuste con las necesidades de la investigación. En este último caso, se les dará preferencia a los docentes con mayor número de clases asignadas por semestre y aquellos que han impartido clases a estudiantes de otras escuelas en esta Universidad.

Los criterios de exclusión: Si usted cumple con cualquiera de los siguientes, no puede participar en este estudio:

1- Ser docente de otra escuela que no sean la A, la B o la C.
2- Tener menos de dos semestres en el proceso de enseñanza y aprendizaje.

¿Dónde se llevará a cabo este estudio?
Tanto las entrevistas como la revisión de documentos se llevarán a cabo en un salón de conferencias o en un laboratorio de computadores de la Institución de Educación Superior.

¿Cuál es el compromiso de tiempo necesario para participar en este estudio?
Como participante, se le pedirá que complete una entrevista que tomará aproximadamente 60 minutos. También se solicitará que comparta una copia de los sílabos y cualquier artefacto relacionado al uso de tecnología de los cursos que regularmente imparte tales como exámenes, ensayos y cualquier documento relacionado al uso de tecnología en sus clases. Este tiempo dependerá del total de cursos que usted imparte.

¿Qué se le pedirá que haga si decide participar en este estudio?
La entrevista se llevará a cabo en un salón de conferencias o en un laboratorio de computadores de la Institución de Educación Superior en República Dominicana. Durante la entrevista, se le realizará una lista de preguntas preparadas por el investigador y la entrevista será grabada en audio. Tendrá la libertad de no responder cualquier pregunta en cualquier momento de la entrevista. Algunas preguntas adicionales pudieran surgir a lo largo de la entrevista que difieren de las del protocolo de entrevista. La revisión de los sílabos puede incluir algunas preguntas relacionadas con el uso de tecnología educativa y de otros documentos en las clases que usted imparte con regularidad. También le solicitaré cualquier artefacto que se utilice durante el uso de tecnología educativa en sus clases. Podría solicitar que trajera su computador portátil a la entrevista.

¿Qué información se mide durante el estudio?
El investigador recolectará información suya relacionada con sus percepciones, conocimiento y experiencias que pueden responder al uso, actitudes, barreras y motivaciones para la adopción de tecnología educativa en las aulas en un ambiente de educación superior. El investigador le solicitará describir los tipos de clases que usted imparte y los tipos de tecnologías que usted utiliza o no con regularidad.

¿Cuáles son los riesgos de participar en este estudio y cómo se minimizarán los mismos?
Para este estudio en específico no hay riesgos conocidos, salvo los que se puede experimentar normalmente en la vida diaria. Podrá encontrar que algunas preguntas de la entrevista son delicadas. De todas maneras, su participación es voluntaria y puede rehusarse a responder cualquier pregunta que elija y/o retirarse de la entrevista en cualquier momento.

¿Cuáles son los beneficios de participar en este estudio?
No existen beneficios directos para usted. Sin embargo, este estudio nos puede permitir tener un mejor entendimiento sobre lo que sucede con los docentes de la República Dominicana, su adopción de tecnología educativa y las razones por las cuales los mismos están o no utilizando tecnología en las aulas de clases. Los resultados pueden ayudar a otros a entender mejor este tema y podría beneficiar otras escuelas con el tema de la implementación tecnología educativa.

¿Hay costos asociados a participar en este estudio?
No hay costos asociados con la participación en este estudio.

¿Hay alguna compensación por participar en este estudio?
No hay compensación ni ningún otro tipo de incentivo para participar en este estudio.

¿Quién tendrá acceso a la información recolectada durante este estudio?
Los resultados de este estudio podrían ser publicados en eventos nacionales o internacionales, revistas o revistas indexadas. Para proteger la confidencialidad de cada participante, su identidad será protegida asignándole un pseudónimo o un código.
La información colectada acerca de los participantes en este estudio no será utilizada ni distribuida a investigadores para otro estudio.

La data colectada será guardada en un dispositivo digital, en un archivo protegido. Durante la entrevista, el transporte y después del cierre del estudio, tendré la custodia del dispositivo. Estos archivos se mantendrán durante al menos 3 años, después del cierre del estudio, en un lugar seguro en el campus de Western Michigan University (WMU).

¿Qué pasará con mi información colectada para esta Investigación luego que el estudio finalice?

La información colectada acerca de usted en esta investigación no será utilizada ni distribuida a investigadores para otra investigación. Los datos electrónicos se mantendrán en un dispositivo de almacenamiento electrónico protegido con contraseña. Mantendré todos los datos en un lugar seguro y me aseguraré que las copias impresas estén en un lugar cerrado al que nadie pueda tener acceso, excepto el investigador principal y el estudiante investigador.

¿Qué pasa si usted quiere dejar de participar en este estudio?

Puede elegir dejar de participar en este estudio por cualquier razón. No sufrirá ningún tipo de prejuicio o pena por su decisión de dejar de participar. No experimentará consecuencias, ya sean académicas o personales, si decide retirarse del estudio.

El investigador también puede decidir detener su participación en el estudio sin su consentimiento.

Si tiene cualquier duda antes de o durante la investigación, puede contactar al estudiante investigador, Leipzig Guzmán Mena, al 809-722-6096 o leipzigelizabe.guzmanmena@wmich.edu. También puede contactar al presidente de la Junta de Revisión Institucional de Asuntos Humanos al 269-387-8293 o al vicepresidente de Investigación al 269-387-8298 si cualquier pregunta surge durante el transcurso del estudio.

Este documento de consentimiento ha sido aprobado para su uso por un año por la Junta de Revisión Institucional de Asuntos Humanos (HSIRB), indicado por la fecha estampada y la firma del presidente de la junta en la esquina superior derecha. No participe en este estudio si la fecha estampada es anterior a un año.

He leído este documento de consentimiento informado. Los riesgos y beneficios me han sido explicados. Acepto participar en este estudio.

_____

Favor imprimir su nombre

_____ _____

Firma del participante Fecha

Appendix C

Interview Protocol – English/Spanish

Interview Protocol

ADOPTING EDUCATIONAL TECHNOLOGY: A STUDY OF DOMINICAN REPUBLIC HIGHER EDUCATION FACULTY RELATED TO THEIR CLASSROOM USAGE, ATTITUDES, BARRIERS, AND MOTIVATIONS
Interview Number:
Interviewer:
Interviewee:
Date:
Place:
Time of Interview:
Gender: Age:
Profession:
Educational Level:

Thank you for agreeing to participate in this study about the usage, attitudes, barriers and motivations related to the adoption of educational technology into classrooms by current Higher Education Institution (HEI) faculty members. I'm seeking to understand the factors that could be considered as barriers to integrate educational technology in the classes, the enablers for using, the attitudes related to the integration and the usage of technology for educational purposes in the classes.

For the purpose of this study, we are defining educational technology as the effective use of technological tools for teaching and learning in order to achieve dynamism, collaboration, interaction, and better assimilation of knowledge among students. Some examples of educational technology are web-conferencing or webinars, course management systems (such as virtual classrooms, discussion forums, blogs and other collaborative tools), and podcasting There are also other educational technology tools such as smart boards, virtual reality, games-based learning, "bring your own device" (BYOD) strategy, robotics-based learning, and other innovative technology-based methodologies that can be used for the teaching and learning process, all of which are becoming increasingly common in modern educational technology practice. For this research, I will take into consideration any technology tool used by the faculty members in their teaching and learning process.

In our interview today, we are interested in any experiences you have had where you found yourself exposed or asking to use technology for teaching and learning or for other purposes. We are interested in how you felt, what you thought, and your perceptions about it.
Thank you for bringing completed your pre-interview questionnaire to our meeting.

For this study it is important that you understand that there is no relationship between your responses and an impact on your jobs. It is also important that you understantd that this study is not related to an institution monitoring regarding your performance of educational technology adoption in your classes. Therefore, you can feel free to share your experiences related to this topic.

Interview Questions:

1) As I explained when I recruited you for this study, I am interested in learning how faculty from various programs are experiencing and responding to the university's strategic plan for the use of educational technology. Please start by telling me how you learned about and understand the university's vision for the use of educational technology.
(After the participant responds, go on as follows:)

2) Thank you for sharing that background. To help me learn more about how you are experiencing the use of educational technology in your discipline, please talk about each of the courses you currently teach (here you can refer to the information they already provided in the questionnaire and ask the following questions for each course:

    a. What technologies have you used in this course?

    b. What influenced your decision to use or not use technology in this course? What tends to motivate your professionally or personally to use technology?

3) If the participant indicates they used any technology at all in the course, go on to the following questions {if use none, go on to #5):

    a. What led you to select this technology (or these technologies) for this course?

    b. Can you explain the process since you knew about the technology tools until you decided to implement it?

    c. How did you use this technology (or those technologies) (purpose, frequency, etc.)?

    d. Can you share and explain any example that you brought with you?

    e. How did students respond?

    f. What factors made it easier or harder for you to use technology in this course?

    g. How did you address any challenges you experienced, or your students experienced in using this technology (or these technologies)?

4) Thanks for giving me such a complete picture of how you use technology in teaching your courses. Now, let's talk about how you learned to use technology for teaching

    a. Where and how have you learned to use any of technologies the university provides to teach your courses?

    b. How effective was that learning experience for you? What would make such learning experiences even more effective for you?

c. How inclined are you to continue learning about and trying out different ways to use educational technology for teaching your courses? What encourages or discourages you from wanting to learn about and experiment with educational technology?

d. Who or what has had the greatest influence on your motivation to use educational technology? Why/how?

e. What steps would you suggest the university take next in supporting faculty in the use of educational technology?

Thank you for sharing your experiences and thoughts about educational technology with me today. Is there anything I did not ask that you would like to add to this conversation?

Thanks, again.

5) For those who do not use any type of technology (or very little), further questions:

a) Please share why you have decided not to use any (or very little) technology in your classroom.

b) Can you describe your best and your worst experience using (or attempting to use) educational technology in your classes?

c) In any previous attempts to use technology, what major challenges have you encountered? What did you so when faced with such challenges?

d) What has the university done to help you implement technology, and what more might they do to support you in this effort? What are your thoughts about the educational technology courses offered for faculty by this university's Department of Technological Innovation?

e) What types of motivations might be effective in helping you implement more technology?

Thank you for sharing your experiences and thoughts about educational technology with me today. Is there anything I did not ask that you would like to add to this conversation?

Thanks, again.

Protocolo de Entrevista

ADOPTANDO TECNOLOGÍA EDUCATIVA: UN ESTUDIO DE LOS DOCENTES DE INSTITUCIONES DE EDUCACIÓN SUPERIOR DE LA REPÚBLICA DOMINICANA RELACIONADO CON EL USO EN CLASES, ACTITUDES, BARRERAS Y MOTIVACIONES.
Interview Number:
Interviewer:
Interviewee:
Date:
Place:
Time of Interview:
Gender: Age:
Profession:
Educational Level:

Gracias por aceptar participar en este estudio sobre el uso, las actitudes, las barreras y las motivaciones relacionadas con la adopción de tecnología educativa en las aulas por parte de los profesores de esta Institución de Educación Superior (IES). Estoy tratando de comprender los factores que podrían considerarse como barreras para integrar la tecnología educativa en las clases, los facilitadores y motivaciones para su uso, las actitudes relacionadas con su integración y el uso de la tecnología con fines educativos en las clases.

Para el propósito de este estudio, estamos definiendo la tecnología educativa como el uso efectivo de las herramientas tecnológicas para la enseñanza y el aprendizaje con el fin de lograr dinamismo, colaboración, interacción y una mejor asimilación del conocimiento entre los estudiantes. Algunos ejemplos de tecnología educativa son conferencias web o seminarios web, sistemas de gestión de cursos (como aulas virtuales, foros de discusión, blogs y otras herramientas de colaboración) y podcasting. También existen otras herramientas tecnológicas educativas como pizarras inteligentes, realidad virtual, juegos. También, el aprendizaje basado en la estrategia de “traiga su propio dispositivo” (BYOD), el aprendizaje basado en la robótica y otras metodologías innovadoras basadas en la tecnología que se pueden usar para el proceso de enseñanza y aprendizaje, cada vez más comunes en la práctica moderna de la tecnología educativa. Para esta investigación, tomaré en consideración cualquier herramienta tecnológica utilizada por los docentes en su proceso de enseñanza y aprendizaje.

En nuestra entrevista de hoy, estamos interesados en cualquier experiencia que haya tenido en la que se haya visto expuesto o que solicite el uso de la tecnología para la enseñanza y el aprendizaje o para otros fines. Estamos interesados en cómo se sintió, lo que pensó y sus percepciones al respecto. Gracias por traer su cuestionario de pre-entrevista completado el día de hoy.

Es importante que usted comprenda que no existe ninguna relación entre sus respuestas para este estudio y algún impacto con su trabajo. También es importante que usted comprenda que este estudio no está relacionado a algún monitoreo institucional acerca de su desempeño en la

adopción de tecnología educativa en sus clases. Es por esto que puede sentirse en plena libertad de compartir sus experiencias relacionadas con este tópico.

Preguntas de la Entrevista:

1) Como he explicado cuando le hemos solicitado su aprobación para su reclutamiento en para este estudio, estoy interesada en aprender cómo docentes de diferentes programas de estudio están experimentando y respondiendo al plan estratégico de la institución con relación al uso de tecnología educativa. Por favor, iniciemos contándome cómo usted ha aprendido y comprendido la visión de la Universidad con relación a la adopción y uso de tecnología educativa en las aulas de clases.
(Mientras el participante responde, se trabaja la siguiente pregunta)

2) Gracias por compartir esos antecedentes. Para ayudarme a entender mejor acerca de cómo está usted experimentando el uso de tecnología educativa en su disciplina, por favor compártame acerca de cada uno de los cursos que usted imparte actualmente (aquí se referirá a la información provista previamente en el cuestionario y se pasará a las siguientes preguntas)

    a. ¿Cuáles tecnologías ha utilizado en este curso?

    b. ¿Qué ha podido influenciar su decisión para utilizar o no tecnología en este curso? ¿Qué le ha motivado personal o profesionalmente para usar tecnología educativa?

3) Si los participantes indican que usaron alguna tecnología en el curso, dirigirse a las siguientes preguntas. De lo contrario, ir a la pregunta #5:

    a. ¿Qué le llevó a seleccionar esta tecnología (o estas tecnologías) para este curso?

    b. ¿Puede explicar el proceso desde que conoció las herramientas tecnológicas hasta que decidió implementarlas?

    c. ¿Cómo utilizó esta tecnología (o esas tecnologías) (propósito, frecuencia, etc.)?

    d. ¿Puede compartir algunos ejemplos? (Sería bueno pedirles a los participantes que traigan ejemplos de cómo han utilizado las tecnologías en sus cursos a la entrevista, para que puedan estar listos para esta pregunta. Esto lo ayudará a obtener los artefactos para el plan de recolección de datos)

    e. ¿Qué factores le hicieron más fácil o más difícil utilizar la tecnología en este curso?

    f. ¿Cómo abordó los desafíos que experimentó o sus estudiantes experimentaron al usar esta tecnología (o estas tecnologías)?

4) Gracias por darme una imagen tan completa de cómo utiliza la tecnología para enseñar en sus cursos. Ahora, hablemos sobre cómo aprendió a usar la tecnología para enseñar en sus clases

    a) ¿Dónde y cómo ha aprendido a usar alguna de las tecnologías que la universidad proporciona para impartir sus cursos?

    b) ¿Qué tan efectiva fue esa experiencia de aprendizaje para usted? ¿Qué haría que tales experiencias de aprendizaje fueran aún más efectivas para usted?

    c) ¿Qué tan inclinado está usted a seguir aprendiendo y probando diferentes formas de usar la tecnología educativa para enseñar sus cursos? ¿Qué lo anima o desanima de querer aprender y experimentar con tecnología educativa?

    d) ¿Quién o qué ha tenido la mayor influencia en su motivación para usar tecnología educativa? ¿Por qué / cómo?

    e) ¿Qué pasos sugeriría que la universidad tome a continuación para apoyar al cuerpo docente en el uso de la tecnología educativa?

Gracias por compartir sus experiencias y pensamientos sobre la tecnología educativa conmigo hoy. ¿Hay algo que no le pregunté y que desearía agregar a esta conversación?

Gracias nuevamente.

5) Para aquellos que no usan ningún tipo de tecnología (o muy poco):

    a. ¿Puede compartirme por qué decidió no usar ninguna (o muy poca) tecnología en su salón de clases?

    b. ¿Puede describir su mejor y su peor experiencia usando (o intentando usar) tecnología educativa en tus clases?

    c. En cualquier intento previo de usar la tecnología, ¿qué desafíos principales ha encontrado? ¿Qué hizo cuando se enfrentó a tales desafíos?

    d. ¿Qué ha hecho la universidad para ayudarlo a implementar tecnología en sus clases, y qué más podrían hacer para apoyarlo en este esfuerzo? ¿Qué piensa sobre los cursos de tecnología educativa ofrecidos para los profesores por el Departamento de Innovación Tecnológica de esta universidad?

    e. ¿Qué tipos de motivaciones podrían ser efectivas para ayudarlo a implementar más tecnología en sus clases?

Gracias por compartir sus experiencias y pensamientos sobre la tecnología educativa conmigo hoy. ¿Hay algo que no le pregunté y que desearía agregar a esta conversación?

Gracias nuevamente.

Appendix D

Pre-interview Questionnaire – English/Spanish

Pre-interview Questionnaire:

Please provide the following information to help create a profile for you as a participant in this study:

a. Total number of years of teaching experience ___
b. Total years teaching in higher education ___
c. Total years teaching in current discipline ___

Please list the courses you have taught over the last two years and indicate what types of educational technology you have used to teach those courses:

- Course Name_____
- Technologies used in this course_____
- Purpose for using this technology_____

- Course Name_____
- Technologies used in this course_____
- Purpose for using this technology_____

Please, add list as needed to include all courses taught using educational technology, since 2017

Please list any university training and any other professional development you have participated in regarding the use of educational technology:

- _____
- _____
- _____
- _____
- _____
- _____

Cuestionario Pre-entrevista:

Por favor, provea la siguiente información para ayudar a crear un perfil de usted como participante en este estudio:

d. Número total de años de experiencia docente ___
e. Número total de años en educación superior ___
f. Número total de años enseñando en la disciplina actual ___

Por favor, liste los cursos que ha enseñado en los pasados dos años e indique que tipos de tecnología educativa ha utilizado en esos cursos:

- Nombre del curso_____
- Tecnología utilizada en el curso_____
- Propósito de utilizar esta tecnología_____

- Nombre del curso_____
- Tecnología utilizada en el curso_____
- Propósito de utilizar esta tecnología_____

Por favor, agregue tantas listas como necesite para incluir todos los cursos impartidos por usted en los que ha utilizado tecnología educativa desde el año 2017.

Por favor, liste cualquier capacitación ofrecida por la universidad y cualquier otra actividad que haya influido en su desarrollo profesional en las que usted ha participado, relacionado al uso de tecnología educativa:

- _____
- _____
- _____
- _____
- _____
- _____

Appendix E

HSIRB Approval Letter

WESTERN MICHIGAN UNIVERSITY

Institutional Review Board
FWA00007042
IRB00000254

Date: October 28, 2019

To: Louann Bierlein Palmer, Principal Investigator
Leipzig Guzmán, Student Investigator for dissertation

From: Amy Naugle, Ph.D., Chair

Re: IRB Project Number 19-10-13

This letter will serve as confirmation that your research project titled "Adopting Educational Technology: A Study of Dominican Republic Higher Education Faculty Related to their Classroom Usage, Attitudes, Barriers, and Motivations" has been **approved** under the **expedited** category of review by the Western Michigan University Institutional Review Board (IRB). The conditions and duration of this approval are specified in the policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note: This research may **only** be conducted exactly in the form it was approved. You must seek specific board approval for any changes to this project (e.g., ***add an investigator, increase number of subjects beyond the number stated in your application, etc.***). Failure to obtain approval for changes will result in a protocol deviation.

In addition, if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the IRB for consultation.

The Board wishes you success in the pursuit of your research goals.

A status report is required on or prior to (no more than 30 days) October 27, 2020 and each year thereafter until closing of the study.

When this study closes, submit the required Final Report found at https://wmich.edu/research/forms.

Note: All research data must be kept in a secure location on the WMU campus for at least three (3) years after the study closes.

Office of the Vice President for Research
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PHONE: (269) 387-8293 FAX: (269) 387-8276
WEBSITE: wmich.edu/research/compliance/hsirb

CAMPUS SITE: Room 251 W. Walwood Hall