An investigation into faculty developers' experiences in the process of assisting faculty in teaching with technology in higher education: A multiple case study

by

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Diploma, State University of Haiti, Ecole Normale Superieure, 2003
M.A., School for International Training, 2006
M.S., Purdue University, 2016

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

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Abstract

Many higher education institutions (HEIs) struggle with preparing their faculty to teach with technology in diverse teaching settings, be it traditional, hybrid, or online. Numerous studies examined how HEIs equipped faculty members (FM) to leverage technology tools in their teaching. However, most of these investigations gathered data from the perspectives of FMs. The literature has largely overlooked the pivotal roles of faculty developers (FD), professionals who assist faculty in leveraging technology in their teaching. This qualitative multiple-case study, guided by the Technological Pedagogical Content Knowledge (TPACK) Framework and the Awareness, Desire, Knowledge, Ability, Reinforcement (ADKAR) Change Management Model, examined the experiences of four FDs in assisting FMs to use technology for teaching and learning at two research-intensive universities. Findings revealed five major themes that capture FDs' experiences and perceptions of their work and roles. Precisely, this study revealed that: (a) change was a fundamental aspect of the FDs' work and role, (b) FDs' work assisting FMs to teach with technology was a complex, multifaceted process of navigating change to develop faculty's technological and pedagogical knowledge and skills, (c) FDs' experiences were multifaceted, defined by both professional opportunities and institutional challenges, (d) FDs worked to overcome role ambiguity and misconceptions to justify their value as academic partners and collaborators, and (e) various factors, including organizational structure, leadership support, and FD unit location on campus influenced FDs' work. Practical implications for educational programs that train FDs and HEI administrators who hire FDs are discussed. Recommendations for future studies are also provided.

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Major Professor
Haijun Kang

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Chapter 1 - Introduction

Background

In the realm of academia, technology has become ubiquitous. Higher education institutions (HEIs), comprising universities as well as two and four-year colleges, have increasingly integrated various technological tools to fulfill their objectives. Historically, HEIs have harnessed technology to streamline administrative functions (Goodhue & Thompson, 1995), facilitate organizational assessment (Van Haneghan, 2011), and foster innovation (Hughes, 2005). Indeed, technology stands as a pivotal component in the routine operations of higher education.

Beyond administrative functions, technology plays a crucial role in academic research and pedagogical practices. To cater to the varied requirements of their student body, numerous HEIs have adopted technological means to deliver in-person, online, hybrid, and Hyflex, in-person and virtual courses. The onset of the COVID-19 pandemic in early 2020, which led to the global closure of HEIs, underscored the significance of technology. It was the technological infrastructure that enabled many HEIs to transition to virtual classes (Dill & Nandwani, 2021; Núñez-Canal et al., 2022; Sims & Baker, 2021). This unforeseen challenge prompted HEIs to further invest in digital solutions (Garrett et al., 2023), deepening their dependence on technological tools and platforms. As we navigate the post-pandemic landscape, the inclination towards technology-driven online, hybrid, and Hyflex classes shows no signs of waning (Garrett et al., 2023).

It's undeniable: technology has been instrumental in enabling HEIs to uphold their commitment to delivering top-tier education. However, a persistent challenge remains. Many HEIs grapple with equipping their faculty to use technology in diverse teaching settings adeptly, be it traditional, hybrid, or online (Garrett et al., 2023; Reid, 2017; Schieffer, 2016; Thompson et al., 2007). While technology holds the potential to enhance student learning experiences (Núñez-Canal et al., 2022; Schacter, 2001; Thompson et al., 2007; Wenglinsky, 2005), a significant portion of FMs is yet to master the competencies required to integrate technology into their teaching methodologies (Alexander, 2019; Govindarajan & Srivastava, 2020; Lowenthal et al., 2019). This disparity in technological proficiency among FMs underscores a prevalent digital divide (Govindarajan & Srivastava, 2020) in higher education. Moreover, training initiatives often fall short, failing to address the immediate technological and pedagogical needs of faculty in alignment with their specific teaching contexts (Rokenes & Krumsvik, 2016). As Sorcinelli and Austin (2010) aptly noted, "Technology is one of the most compelling issues in higher education overall and in educational development in particular" (p.28).

The COVID-19 pandemic compelled HEIs to pivot swiftly to online teaching, revealing a glaring gap in many faculty member's (FM) technological proficiency. This abrupt shift posed significant challenges for numerous FMs, primarily due to their limited technological proficiency (Portillo et al., 2020; Trust & Whalen, 2020). Concurrently, faculty developers (FD), comprising instructional designers, technology trainers, academic developers, and technology mentors and coaches, found themselves under immense pressure, assisting faculty in navigating the intricacies of online learning (Barton, 2020; Chen, 2021). While technology has deeply entrenched itself in higher education (Grajek, 2018), the pandemic underscored that many HEIs remain unprepared to harness the potential of digital transformation fully.

Intriguingly, even after the pandemic-induced lessons, a recent national survey by Garrett et al. (2023) highlighted that a significant portion of FMs at HEIs still lack the requisite technological and pedagogical knowledge and skills to facilitate online instruction. Garrett et al.

(2023) remarked that despite the abrupt shift to remote learning during the pandemic and subsequent investments in faculty training, it's startling that institutions remain complacent with a substantial fraction of their faculty lacking online teaching experience. They further posited that considering the escalating demand for online courses and the potential of future events mandating a complete reliance on virtual learning, "it seems not only practical, but also perhaps imperative, that faculty develop online teaching acumen" (Garrett et al., 2023, p.28). Evidently, if HEIs aspire for their faculty to utilize technology to enrich student learning experiences adeptly, they must devise robust strategies to consistently enhance FMs' technological competencies (Lowenthal et al., 2019). Moreover, as Belt and Lowenthal (2020) pointed out, a pressing need remains to discern the most effective methods to facilitate faculty's integration of technology into teaching.

Therefore, it's imperative for researchers to persistently probe into the strategies HEIs employ to empower faculty in the realm of technology-enhanced teaching and learning. Murthy et al. (2015) noted a dearth of studies focusing on HEIs' systemic approach to technology implementation, as many institutions tend to grant faculty the autonomy to integrate technology at their discretion. Echoing this sentiment, Belt and Lowenthal (2020) argued that "questions remain on the best ways to help faculty teach with technology" (p.248). Khan and Smuts (2019) also advocated for studies exploring how change management frameworks can mitigate challenges in technology integration. In conclusion, as Núñez-Canal et al. (2022) articulated, upcoming research endeavors should scrutinize the strategies universities employ to foster faculty's adeptness with Information Communication Technology (ICT).

Statement of the Problem

Numerous studies have delved into how HEIs prepare FMs to utilize technology tools in their teaching (Belt & Lowenthal, 2020; Daher & Lazarevic, 2014; Keengwe et al., 2009; Niebuhr et al., 2018; Thompson et al., 2007). However, a common limitation of these studies is their narrow focus on a singular group: the FMs themselves. As Núñez-Canal et al. (2022) highlighted, the evolution of technology in education has been significantly shaped by instructors' skills and attitudes. Concurrently, the landscape of faculty technology training has undergone transformations. As Alexander (2019) observed, "Professional development supporting the use of digital tools has evolved into collaborations with instructional design teams and other professionals in the learning science field " (p. 19). This shift underscores the involvement of a myriad of stakeholders in the orchestration and delivery of technology integration training and support services.

Yet, a glaring gap persists. Most investigations into technology integration have predominantly sourced data from the vantage point of FMs, often emphasizing their individual perceptions and self-assessments of technological adeptness (Basilotta-Gómez-Pablos et al., 2022).

Specifically, the literature has largely overlooked the pivotal roles of faculty developers (FDs), professionals dedicated to aiding faculty in leveraging technology in their teaching. Faculty development is anchored in the mission of "helping colleges and universities function effectively as teaching and learning communities" (Felten et al., 2007, p. 93). In this capacity, FDs don multifaceted hats (Dawson et al., 2010) and emerge as catalysts for change within higher education (Gosling et al., 2007). Their influence is particularly pronounced in championing the integration of technology in pedagogical practices (Dexter et al., 2003; Reid, 2017; Reiser & Dempsey, 2012). The COVID-19 pandemic further spotlighted FDs' significance as they played a central role in facilitating the shift to remote teaching (Baker & Lutz, 2021). Yet, despite their monumental contributions, the research landscape scarcely captures the experiences and insights of FDs. Echoing the sentiments of Baker et al. (2018), "While the literature is replete with program descriptions and program evaluations, the roles and experiences of faculty developers, the people who plan and deliver these activities, largely have been overlooked" (p. 265).

The imperative to explore FDs' experiences and perceptions cannot be overstated. As key players in curating and delivering technology training and support to faculty, FDs bring a wealth of diverse educational and professional experiences (National Center for Education Statistics [NCES], 1998). Their roles span a spectrum, from trainers and coaches to consultants and instructional designers, operating within varied institutional frameworks like Teaching and Learning Centers (TLC), IT units, libraries, or audio/video support centers. Capturing the perspectives of FDs can offer a fresh lens, potentially enriching the discourse in technology integration and educational technology research.

As the landscape of teaching and learning evolves, HEIs grapple with the challenge of refining faculty development services to stay abreast of these changes (Burdick & Hallman, 2021). FDs, given their expertise, are uniquely positioned to provide insights into these challenges. With the rising prominence of remote teaching, hybrid, and Hyflex learning modalities, FDs must be both proactive and well-informed to mentor FMs effectively. Highlighting the pivotal role of FDs amidst pedagogical shifts, Burdick and Hallman (2021) posited, "Faculty developers will no doubt continue to be in the thick of the changes, as they are the ones who will support faculty and identify what constitutes the best ways to teach and learn on the road ahead" (p. 123). Neglecting the insights of FDs in technology integration research in higher education not only omits valuable knowledge but also undermines the depth of the discourse.

Furthermore, it's imperative that technology integration research adopts a multifaceted approach, capturing diverse perspectives. Often, stakeholders responsible for orchestrating and delivering technology training and support to faculty operate with varied understandings and expectations. Kang (2012), for instance, identified a discrepancy between online FMs' and trainers' perceptions of training. Consequently, Kang (2012) advocated for a more holistic research approach, suggesting the inclusion of varied participants such as "as policymakers, training designers, etc." (Kang, 2012, p. 21). Moreover, many FDs have expressed concerns over the dearth of robust studies exploring effective strategies for technology integration (Sorcinelli & Austin, 2006). It is evident that there is a pressing need for research that delves into the experiences of FDs. Specifically, as Lowenthal et al. (2019) emphasized, the contributions of Instructional Designers in supporting faculty warrant closer examination. In light of these considerations, this study investigated the experiences of FDs as they assisted FMs in harnessing technology for pedagogical purposes within higher education.

Research Purpose

This qualitative multiple case study investigated four FDs' experiences in the process of assisting FMs in using technology for teaching and learning within the context of two research-intensive universities located in the United States. As Baker et al. (2018) stated, "While the literature is replete with program descriptions and program evaluations, the roles and experiences of faculty developers—the people who plan and deliver these activities—largely have been overlooked" (p. 265).

Research Questions

This investigation examined four FDs' experiences within the context of two research-intensive universities (R1) by addressing the following questions:

1. What are FDs' experiences in the process of assisting FMs in using technology for teaching and learning?
2. How do FDs perceive their roles in the process of assisting faculty in using technology for teaching and learning?
3. What factors facilitate or hinder the process of assisting FM in using technology for teaching and learning?

Conceptual Framework

This multiple case study delved into the experiences of four FDs as they supported FMs in integrating technology into teaching and learning within two research-intensive universities. This investigation was guided by two theoretical perspectives: the Technological Pedagogical Content Knowledge (TPACK) Framework (Koehler et al., 2013) and the Awareness, Desire, Knowledge, Ability, Reinforcement (ADKAR) Change Management Model (Hiatt, 2006).

The TPACK Framework was particularly apt for this study, offering a comprehensive perspective on technology integration. It delineates the conditions and considerations essential for effective educational technology utilization. For impactful technology-aided teaching, educators must possess Content Knowledge (CK), Pedagogical Knowledge (PK), and Technological Knowledge (TK) (Koehler & Mishra, 2009; Mishra & Koehler, 2006). Conversely, the ADKAR model provided a structured lens to scrutinize FDs' experiences in aiding faculty with technology-enhanced teaching. This model elucidates the various stages, awareness, desire, knowledge, ability, reinforcement, of individual adaptation to technology-driven changes.

By synergizing insights from both the TPACK Framework and the ADKAR Change Management Model, the researcher was equipped to understand FDs' experiences comprehensively. This approach illuminated FDs' role in assisting FMs to harness the core facets of educational technology integration while navigating the nuances of individual change management.

Methodology

This study utilized qualitative multiple case study methodology to investigate the experiences of four FDs as they aid FMs in the realm of technology-enhanced pedagogy within two research-intensive universities. The choice of case study methodology was grounded in its ability to facilitate deep, nuanced explorations of individual or multiple bounded cases, as Yin (2018) and Stake (2017) articulated. This study recruited four participants from two R1 universities in the United States. The teaching context at R1 universities varies from one institution to the next. Likewise, FDs' experiences vary from one university to the next. Therefore, using a multiple case study approach enabled the researcher to conduct a comprehensive examination of two distinct cases, each including two units of analysis from two different R1 universities. As Stake (2017) explained, multiple case study methodology is appropriate to "examine how the program or phenomenon performs in different environments. This often means that cases in both typical and atypical settings should be selected" (p. 23). With that in mind, this study selected two similar cases in two different teaching and faculty development contexts, but each case consisted of two FDs or units of analysis.

Moreover, the inclusion of multiple cases augmented the rigor and depth of the investigation (Yin, 2014), enabling the researcher to gain a thorough understanding of the FDs' experiences. Specifically, this approach facilitated the gathering of extensive data, paving the way for both within-case, including data analysis for each unit, and cross-case analyses (Stake, 2017) to discern commonalities and variances between the cases. In this context, the four FDs represented the unit of analysis, and their experiences in aiding FMs in the use of technology were scrutinized within their professional milieu.

The population for this study was four FDs, which included two instructional designers, one assistant director, and one director of faculty development a unit. Their jobs are to assist FMs in teaching using educational technology in higher education. The researcher employed purposeful sampling (Schoch, 2020) to select four experienced participants or FDs from two different R1 universities. A set of predefined criteria guided the recruitment process.

To ensure I gained a holistic understanding of the cases, I utilized data triangulation for the methods and data sources. I gathered various data types, such as data from semi-structured interviews, documents, archival records, and open-ended questionnaires, from diverse sources (Merriam, 1998). The data collection for this study was also executed in several stages.

In this multiple case study, data analysis informed by the six phases of ADKAR, awareness, desire, knowledge, ability, and reinforcement, and the constructs of TPACK, technological, pedagogical and content knowledge, consisted of within-case analysis that included data analysis for each unit and cross-case analysis that compared and contrasted both cases. The data analysis approach was inductive, eschewing a predetermined set of codes and, instead, embracing multiple iterative coding cycles and phases (Saldaña, 2021). The final report contained the findings of the study as a whole, including a summary of each case.

Significance of the Study

Building upon the foundation laid by prior research, this study expanded upon existing findings and recommendations, offering several contributions to the current body of literature. Firstly, it enriches our understanding of technology integration by delving into the experiences of four FDs and offers a new conceptual framework that can be applied to investigate similar phenomenon in technology integration in higher education. Notably, in line with the suggestions of scholars like Wright et al. (2018), this research probed into pivotal questions concerning the efficacy of certain facets of educational development. Secondly, the study unveiled insights that bear significance for educational programs that train FDs and for HEI administrators and leaders responsible for recruiting and overseeing FDs and their units at R1 universities. Thirdly, by highlighting the challenges faced by FDs in aiding FMs, this research paved the way for future investigative endeavors. Lastly, the study pinpointed crucial factors that should guide HEI administrators in the design and execution of faculty technology training and support initiatives.

Limitations

Analogous to numerous case studies, the limitations of this multiple case study were evident. It delved into experiences of four FDs at two distinct research-intensive or R1 universities. The emphasis was on the four experienced FDs, thereby excluding data gathering from FMs, students, and administration officials. Moreover, participants were FDs provided dedicated support to help FMs leverage technology for teaching in higher education. Lastly, this study was limited to two research-intensive universities and no observation data were collected.

Terms and Definitions

Awareness, Desire, Knowledge, Ability, and Reinforcement (ADKAR) Change Management Model—This model outlines five key objectives essential for guiding individuals through successful change processes (Hiatt, 2006). These objectives encompass fostering awareness about the change, cultivating a desire to participate in the change, enhancing knowledge to ensure success, building the ability to implement the change, and reinforcing new behaviors and practices.

Educational Technology—As defined by Roblyer and Doering (2013), "Educational technology is a combination of the processes and tools involved in addressing educational needs and problems, with emphasis on applying the most current digital and information tools" (p. 16).

Faculty Developers (FDs)—These are professionals dedicated to training FMs in best teaching practices. Their role also encompasses providing continuous support in the integration of technology into teaching. Common job titles that fall under this category include technology trainers, instructional designers, academic developers, and technology coaches or mentors.

Faculty Members (FMs)—These are instructors, whether full-time or part-time, who conduct both in-person and online classes at institutions such as community colleges, four-year colleges, or universities.

Higher Education—Refers to post-secondary education programs provided by two-year community colleges, four-year colleges, or universities.

Instructional Designers—These are professionals skilled in designing, developing, and evaluating both face-to-face and online courses. Their responsibilities also include offering technology training and support to FMs and other staff.

R1 or Research-intensive Universities—They are HEIs that (1) have a research budget of $5 million or higher, (2) promote and engage in very high academic research projects, and (3) issue at least 20 doctoral degrees annually.

Technology—This encompasses both hardware (e.g., audiovisual tools, smartboards) and software (e.g., Canvas, Blackboard, wikis, video editing, audio recording) utilized to facilitate various aspects of course management, including development, delivery, evaluation, and feedback, as well as fostering student collaboration and communication.

Technological Pedagogical Content Knowledge (TPACK) Framework—This framework outlines the essential knowledge instructors should possess to integrate technology into their teaching effectively. It encompasses three main components: technology knowledge (TK), pedagogy knowledge (PK), and content knowledge (CK) (Koehler et al., 2013).

Technology Training—Practical sessions aimed at equipping FMs with the skills to integrate technological tools and software (e.g., Canvas, Blackboard, wikis, videos, audio recordings) into their teaching to enhance student learning, collaboration, and communication.

Technology Trainers—Professionals dedicated to instructing faculty on the integration and use of various technological tools within their courses.

Training—Refers to activities aimed at enhancing participants' knowledge and skills in specific areas or job functions. As Kang (2012) defines it, "training refers to the act, process, or method that has both parties (trainers and trainees) equally involved; therefore, training requires skill, knowledge, and experience from both parties (trainers and trainees)" (p. 4).

Overview of this Study

This research endeavor is structured into five distinct chapters. Chapter one introduces the research context, delineating the problem and establishing its significance. It underscores the pivotal role of technology in higher education and highlights the technology proficiency gaps among HEIs' faculty. Crucially, it emphasizes the dearth of research focusing on the experiences of FDs, despite their integral role in advancing technology integration in higher education. This chapter succinctly outlines the problem statement, research objectives, and questions and delves into the significance and limitations of the study.

Chapter two offers a comprehensive review of the existing literature on technology integration and educational technology within the higher education landscape. It critically examines and juxtaposes studies that probe into the significance of technology-enhanced teaching, determinants influencing faculty's adoption and application of technology, institutional strategies for faculty technology training, the efficacy of such training initiatives, faculty's preferences for professional development, roles of various stakeholders, the repercussions of the COVID-19 pandemic on technology integration, and the change management dynamics inherent to technology assimilation. Furthermore, this chapter identifies and deliberates on the gaps and inconsistencies in the current literature, making a compelling case for a deeper exploration of FDs' experiences. The chapter culminates by elucidating the research philosophy and conceptual frameworks that guided the study implementation.

Chapter three provides a detailed account of the research design and methodology. It describes how the multiple-case study approach is aptly suited to address the research queries. This chapter will delve into the specifics of the research methods, encompassing participant recruitment strategies, data collection and analysis techniques, and ethical considerations.

Chapter four is dedicated to presenting the research findings, bolstered by pertinent data and illustrative diagrams.

Chapter five offers a thoughtful discussion of the research outcomes, positioning them within the broader academic discourse. It discusses the findings implications for HEIs' administrators and educational programs that train FDs. It offers recommendations for subsequent research endeavors and concludes with a summation of the entire research project.

Chapter Summary

To summarize, this chapter discusses the study background, the research problem, the purpose, and the questions. In this study, a multiple-case study design was employed to investigate the experiences of four FDs as they aid FMs in using technology-enhanced pedagogy within two research intensive university. Moreover, it was guided by two theoretical perspectives: the TPACK Framework (Koehler et al., 2013) and the ADKAR Change Management Model (Hiatt, 2006). The participants for this study were FDs who provide dedicated support to help FMs leverage technology for teaching in higher education. Lastly, key terms used in this study include educational development, technology, higher education, technology training, and FMs.

Chapter 2 - Literature Review

Chapter Overview

This chapter presents the current state of literature concerning the preparation and support higher education institutions (HEI) provide to their faculty members (FM) for utilizing technology in teaching and learning. It underscores the significance of integrating technology into teaching practices and delineates the factors influencing FMs' adoption and utilization of technological tools in their pedagogical approaches. It offers a critical analysis and synthesis of the ways in which HEIs facilitate FMs in employing technology, evaluates the efficacy of technology training and support services, explores the change management dimensions of technology integration, and delves into FMs' preferences for professional development. Subsequently, it examines the ramifications of the COVID-19 pandemic on HEIs and their technology integration efforts and provides a comprehensive discussion on the roles and responsibilities of stakeholders, highlighting existing inconsistencies and gaps in the literature. Addressing these gaps, this section posits the necessity of investigating faculty developers' (FDs) experiences in aiding FMs to teach with technology. In the final part, the chapter delineates the conceptual framework that guide the implementation of this investigation.

Importance of Teaching with Technology in Higher Education

A consensus exists among scholars regarding the imperative nature of teaching with technology, emphasizing the need for higher education FMs to attain competence and proficiency in its use (Basilotta-Gómez-Pablos et al., 2022; Council of the European Union, 2018; Durán, 2019; Drent & Meelissen, 2008; Lidolf & Pasco, 2020; Sorcinelli & Austin, 2010). Núñez-Canal et al. (2022) state, "The use of technology in classrooms is a topic of increasing research linked to the evolution of labor skills demand and the university role in digital society"

(p. 9). Globally, public institutions have demonstrated a vested interest in fostering educational technology. For instance, governments in the United States (Lidolf & Pasco, 2020), Australia (Romeo et al., 2012), and the Netherlands (Drent & Meelissen, 2008) have actively and financially endorsed faculty development and teacher training initiatives aimed at enhancing instructional technology in classrooms. In this context, universities and colleges have not only championed the implementation of technology but have also become reliant on it for the continuity of their operational activities.

Technology has thoroughly infiltrated and profoundly influenced every facet of higher education (Grajek, 2018), proving indispensable to the success of HEIs. These institutions have leaned on Information and Communication Technologies (ICT) for a myriad of purposes, including student recruitment, staff training, catering to students' learning requirements, and ensuring the continuity of their operations. A substantial number of HEIs have allocated resources to educational technology, aiming to enhance the caliber of teaching and learning within their premises (Browne et al., 2010). Furthermore, technology has facilitated partnerships between some American HEIs and universities across the globe, enabling them to offer online international courses. This initiative fosters communication and exchange between students based in the United States and their counterparts abroad (Jie & Pearlman, 2018).

Crucially, in the period between 2019 and 2021, numerous universities and colleges, along with their FMs, depended on technology to deliver Emergency Online Instructions (EOI) amidst the COVID-19 pandemic (Barton, 2020; Chen, 2021; Sims & Baker, 2021). The pandemic "created the largest disruption of education systems in history affecting nearly 1.6 billion learners in more than 190 countries and all continents" (United Nations Sustainable Development Group, 2020, p. 2). As a result, remote teaching and learning became the prevailing norm (Sims & Baker, 2021), serving as the sole means of conducting courses. This shift necessitated FDs to devise and implement new online solutions swiftly (Kuntz et al., 2022).

In tandem, numerous universities and colleges facilitated the transition of students and faculty to emergency remote learning, providing a variety of technology training and support opportunities (Brooks et al., 2020; Kuntz et al., 2022; Núñez-Canal et al., 2022; Portillo et al., 2020). The competencies of FMs in utilizing technology to foster learning are of paramount importance in this context.

Consensus prevails among scholars specializing in faculty development and educational technology: higher education FMs must exhibit proficiency in employing technology for planning and facilitating learning. In essence, instructors at HEIs must be adept users of ICT, as digital competency has emerged as a ubiquitous and indispensable element in education (Basilotta-Gómez-Pablos et al., 2022). The responsibilities of FMs extend to nurturing technology skills (Cabero et al., 2020), and their ability to conduct effective online learning is contingent upon possessing adequate skills in both technology and pedagogy (Belt & Lowenthal, 2020; Sims & Baker, 2021).

Moreover, the technological proficiency of FMs can significantly enhance students' learning outcomes and overall performance. Galanek and Gierdowski (2020) argued that technology empowers FMs to involve students in online learning actively and to harness open educational resources (OER), thereby alleviating some textbook expenses for students. The integration of technology in pedagogical practices not only refines the teaching methodologies of instructors but also augments students' academic achievements (Azlim et al., 2015; Plesch et al., 2013; Schacter, 2001; Shachar & Neumann, 2003). Of paramount importance is the FMs' adeptness in utilizing assistive technology, ensuring that courses remain accessible to all students. This is particularly crucial in community colleges, where approximately 20% of the student population grapples with accessibility challenges (Galanek & Gierdowski, 2020). It is also imperative to define the definition of technology competency as posited by scholars in the domain.

Technology competency transcends the mere utilization of rudimentary tools for routine tasks and elementary teaching and learning endeavors. The Council of the European Union (2018) asserts that digital competence encompasses the requisite knowledge and skills to: (a) manage data and diverse media, (b) employ technologies for communication, collaboration, and content creation, and (c) resolve issues safely and securely in digital realms, adhering to prevailing legal frameworks. In a similar vein, Durán (2019) contends that digital competency encapsulates the knowledge and skills associated with technology usage, coupled with the essential attitudes to deploy technological tools for collaboration, communication, and instruction. Drawing from these definitions, it is evident that FMs, in alignment with the Technological Pedagogical Content Knowledge (TPACK) Framework (Mishra & Koehler, 2006), must be equipped with both technological and pedagogical knowledge and skills. This equips them to devise and implement technology-centric teaching methodologies that bolster student learning.

Despite HEIs enhancing their engagement with technology (Browne et al., 2010; Grajek, 2018), numerous academics have expressed skepticism regarding the efficacy and advantages of instructional technologies (Blazer, 2008; Kirkwood & Price, 2013; Murthy et al., 2015; Sinclair & Aho, 2018). Murthy et al. (2015) conducted a study on the impact of professional development on FMs' utilization of technology, concluding that while access to technology has increased, instructional practices have not seen corresponding improvements. The contribution of educational technology to student learning remains a contentious topic (Blazer, 2008; Kirkwood & Price, 2013). In a similar vein, Sinclair and Aho (2018) highlighted a pervasive lack of innovation in the usage of Learning Management Systems (LMS) by teaching staff. The proficiency of instructors in utilizing technology varies significantly (Govindarajan & Srivastava, 2020). In essence, the insufficient training and lack of proficiency in technology among educators result in its underutilization in courses (Fernández-Batanero et al., 2021). This issue is critical because, as Belt and Lowenthal (2020) contend, the true value of technology tools hinges on the frequency and manner of their application by users.

Many HEIs are devoid of clear intentionality and strategic objectives in advancing the integration of instructional technology into their curricula. Bates and Sangra (2011) undertook a comprehensive literature review to ascertain the extent of technology integration in HEIs and discovered a prevalent failure in leveraging technology to foster teaching innovation and enhance course design, development, and execution. Often, the responsibility of implementing instructional technologies is left to the discretion of FMs (Murthy et al., 2015). It is evident that "Despite steady progress in research in technology-enhanced learning (TEL), the translation of research findings and technology into educational practices falls short of expectations" (Plesch et al., 2013, p. 92). To put it succinctly, the tangible benefits that both students and instructors derive from employing instructional technology tools remain ambiguous, as highlighted by Kirkwood and Price (2013).

In summary, numerous HEIs, scholars, and governmental bodies have recognized the crucial role of technology, concurring that educators ought to exhibit proficiency in employing technology for both teaching and learning purposes. Various studies have illustrated the positive influence of technology on students' learning experiences, although some academics have presented conflicting views regarding instructional technology. These scholars have cast doubts on the advantages and effectiveness of utilizing technological tools to aid instruction. They argue that innovation in the application of technology by HEIs is insufficient, and the actual impact of technology on student learning remains ambiguous. Furthermore, HEIs consistently face challenges in adequately preparing their FMs to leverage technology to enhance student learning. In simpler terms, educators frequently lack the requisite skills to instruct utilizing technological tools (Polly et al., 2021; Vignare, 2017). Additionally, it is worth noting that the deficiency in technology competency among FMs stems from a range of personal, institutional, systemic, and technology-related barriers.

Factors that Hinder How FMs Teach with Technology in Higher Education

HEIs and FMs have encountered a plethora of challenges in their quest to weave technology into the fabric of teaching and learning (Fernández-Batanero et al., 2021; Ivala, 2016; Keengwe et al., 2009; Lammers et al., 2017; Polly et al., 2021). These obstacles span across various categories (Dillu & Nandwani, 2021; Reid, 2017), exhibiting significant variability across different teaching contexts. As a result, individual studies have generally spotlighted a limited selection of barriers to technology integration, influenced heavily by the specific context under investigation. To achieve a comprehensive grasp of the factors that stymie technology integration, it is imperative to scrutinize studies that incorporate the perspectives of a diverse array of stakeholders across a multitude of teaching and research settings.

An assortment of issues has thwarted the efforts of FMs to employ technology effectively in higher education environments. Keengwe et al. (2009) delved into the elements that affect technology integration and utilization, sourcing data from administrators, technology leaders, and FDs. Their findings spotlight technology resistance, flawed policies, the absence of a clear vision and goals, motivational deficits, time constraints, a scarcity of quality resources, and a lack of incentives as predominant obstacles to technology adoption. Echoing the sentiments of Keengwe et al. (2009), Lowenthal et al. (2013) highlight time constraints as a formidable barrier to technology integration. In alignment with these findings, Polly et al. (2021) explored the perceptions of FMs, administrators, and FDs with respect to impediments to technology integration. They unearth a tendency among FMs to shun the learning and adoption of technology when they perceive these tools as temporary and challenging to master.

Furthermore, Ivala (2016) scrutinized training strategies deployed by universities across the globe, placing a special emphasis on the Cape Peninsula University of Technology (CPUT) in South Africa. The study identifies frail IT infrastructure, time constraints, insufficient ongoing support post-training, and a dearth of information regarding available training opportunities as deterrents to FMs' use of technology in their teaching endeavors. Although some barriers remain specific to particular contexts, an analysis of the extant literature unveils patterns, enabling scholars to categorize the most prevalent issues.

Types of Barriers

Various scholars have explored the challenges of technology integration in higher education, proposing categorizations for these common impediments. Reid (2017), in a conceptual publication, tackled the factors influencing FMs' adoption of technology, arranging them into five distinct categories:

1. Process barriers, which cover the management of technology projects by HEIs and the provision of support to encourage technology adoption;

2. Administrative barriers, including the absence of incentives and budget allocation for technology acquisition, as well as the neglect of prioritizing teaching and learning with technology;
3. Technology-related challenges, such as limited access, complexity, and technical issues associated with technology tools;
4. Organizational culture barriers emerging when users resist changes;
5. Personal and affective barriers, encompassing fear, perceptions regarding technology, and a lack of technological proficiency.

Dillu and Nandwani (2021) conducted an examination of the barriers that 109 FMs encountered in online teaching during the COVID-19 pandemic, discovering that 72% of the participants faced substantial challenges. Their findings align with Reid's (2017) categorizations, as they also identified individual, organizational, and technology-related hurdles reported by the participants.

Faculty's Individual and Personal Issues

FMs encounter a range of personal and affective challenges in their endeavors to incorporate technology into their teaching practices. These challenges manifest in diverse ways. As Sinclair and Aho (2018, p. 23) state, " staff beliefs and affective barriers to adoption are more complex and nuanced than existing models or training provision encompass." Addressing these personal and affective barriers comprehensively proves to be a formidable task for HEIs. These barriers include:

- FMs' lack of confidence and self-efficacy regarding technology use (Sales et al., 2020; Reid, 2017);

- Fear among FMs about engaging with technology (Johnson et al., 2012; Sinclair & Aho, 2018);
- Perceptions of technology as complicated and challenging to learn (Keengwe et al., 2009; Polly et al., 2021; Reid, 2017), alongside views of technology tools as being of little value (Allen et al., 2012; Keengwe et al., 2009);
- FMs' deficiency in technology proficiency (Polly et al., 2021; Vignare, 2017).

Consequently, HEIs need to foster environments and opportunities that allow instructors to experiment with and learn about technology tools until they attain a comfort level sufficient for teaching (Johnson et al., 2012). Essentially, instructors require ongoing training and support to use technology effectively (Kopcha, 2012).

It is imperative to acknowledge that while FMs can address personal and affective barriers, their ability to tackle administrative, process, and inherent technology barriers is often limited by a lack of resources and authority (Reid, 2017). Additionally, technology tools have inherent limitations and complexities that need consideration.

Challenges Inherent to Technology Tools

Technology tools possess inherent issues and glitches that impede users' learning and utilization. Polly et al. (2021) conducted an investigation to discern the impediments faced by higher education instructors in implementing technology for teaching. The study gathered insights from FMs, administrators, and staff, revealing that technological tools bear features that pose barriers to users. For instance, some tools are not user-friendly or beneficial (Keengwe et al., 2009), and they necessitate frequent updates (Polly et al., 2021). A significant issue arises when FMs perceive these tools as having a steep learning curve, being complex, and undergoing frequent changes; consequently, they tend to avoid them (Polly et al., 2021). Reid (2017) noted that inherent barriers are ingrained in the tools or software, encompassing issues such as lack of access, frequent glitches, and complexities. Additionally, the rapid evolution of technology hardware and applications stands as a prevalent barrier to utilizing instructional technology (Dillu & Nandwani, 2021).

Structural and Organizational Barriers

A variety of environmental, institutional, and structural factors hinder FMs from incorporating technology into their teaching methods (Brooks et al., 2020; Dillu & Nandwani, 2021; Georgina & Hosford, 2009). Bates and Sangra (2011) undertook a systematic literature review, analyzing and synthesizing findings from 11 case studies. Their research indicates that despite the eagerness of senior administrators in various HEIs to foster technological innovation, they face cultural and institutional obstacles. These barriers encompass FMs' inclination to safeguard their status and privileges as researchers. Essentially, the prevalent structures and cultures within most HEIs act as deterrents, impeding the potential of technology to enhance course facilitation, delivery, and student learning experiences (Bates & Sangra, 2011). In a similar vein, Brooks et al. (2020) conducted a survey to assess the readiness of HEIs to provide 100% online courses using technology. They discover that several institutions trailed behind in the implementation of educational technology. Corroborating the findings of Bates and Sangra (2011), Brooks et al. (2020) observed that numerous HEIs lacked governance mechanisms to regulate or guide the application of technology in teaching and learning. This absence of governance frequently results in ambiguity, inconsistencies in technology selection and usage, and variations in the quality of support services available to users (Brooks et al., 2020). Additionally, some HEIs have neglected to consider FM's input in the selection and application of technology tools (Belt & Lowenthal, 2020; Singh & Hardaker, 2017).

A variety of institutional and environmental barriers obstruct the ability of FMs to learn, plan, and instruct by utilizing technology. These hindrances include an absence of technology-equipped classrooms (Johnson et al., 2012), a lack of incentives (Polly et al., 2021), insufficient institutional support (Keengwe et al., 2009), no established standards (Dillu & Nandwani, 2021), an absence of technology training (Lammers et al., 2017), and the presence of siloed departmental structures (Bates & Sangra, 2011). Moreover, unclear technology implementation goals, differing opinions among stakeholders, and a lack of pedagogical frameworks present challenges to the integration of technology (Wastiau et al., 2013). Polly et al. (2021) also contended that a focus on research over teaching and a failure to provide incentives have adversely affected FMs' drive to enhance their teaching through technology.

The most commonly cited institutional and contextual barriers to implementing technology are the lack of time and heavy workloads faced by FMs. As highlighted by numerous scholars (Dillu & Nandwani, 2021; Georgina & Hosford, 2009; Gregory & Lodge, 2015), the increasing academic work responsibilities of FMs have led them to deprioritize teaching with technology. The majority of FMs find themselves without sufficient time to learn, plan, and apply technology to advance their teaching practices (Polly et al., 2021). Compounding this issue, HEIs often schedule technology training sessions at times when FMs are unavailable to attend (Lammers et al., 2017). Moreover, requesting faculty attendance at specific training sessions is impractical due to their time constraints (Lowenthal et al., 2013; Lucas & Murry, 2011). Although training and individualized consultations are usually accessible to FMs, often the majority are unable to take advantage of these services (Polly et al., 2021) to bolster their teaching skills. Further complicating matters is the challenge of motivating instructors to alter their course planning and teaching methods.

It is important to acknowledge the inconsistencies present in the literature concerning barriers to technology implementation. Overall, the adoption of technology to support teaching and learning has encountered resistance (Keengwe et al., 2009). Nevertheless, studies investigating these barriers have yield inconsistent results. For instance, Lammers et al. (2017) identify the absence of contextualized training as a barrier, whereas Bates and Sangra (2011) pinpoint issues with siloed departmental structures and professional development activities. In contrast, Azlim et al. (2015) conclude that administrative support, access to technology, and computer self-efficacy do not impede FMs' integration of technology. Conversely, other research highlights that insufficient institutional support (Keengwe et al., 2009) and a lack of technology-equipped classrooms (Johnson et al., 2012) pose significant challenges to technology integration.

All HEIs and FMs do not encounter the same obstacles at identical intensity levels. A barrier significant in one teaching environment might be irrelevant in another. Eaton et al. (2015) highlights the variability of contexts, particularly in HEIs where teaching receives precedence over research. For example, the teaching environment of community college instructors stands in contrast to that of their counterparts at universities and four-year colleges, with community colleges placing a greater emphasis on teaching than on research (Galanek & Gierdowski, 2019). These distinct institutional characteristics might explain the inconsistent results found in research on technology integration barriers at four-year colleges and research-intensive universities.

An additional anomaly arises from the observation that studies addressing these issues predominantly occur at research-intensive HEIs (Eaton et al., 2015) and primarily reflect the perspective of the FMs. Consequently, there exists a pressing need for scholarly efforts to delineate the barriers unique to research-focused HEIs from those prevalent at institutions centered around teaching. The aforementioned inconsistencies underscore the critical influence of teaching culture and research context in pinpointing and overcoming obstacles to implementing educational technology tools and strategies.

Existing literature tends to overlook other severe barriers and challenges potentially influencing the technologies adopted by HEIs and their FM in instructional settings. These overlooked challenges include concerns related to data privacy and the threat of data breaches (Plesch et al., 2013; Sood, 2012), susceptibility to cybersecurity attacks (Aldawood & Skinner, 2018), and security vulnerabilities within e-learning systems (Bandara et al., 2014). Hence, these issues could impose limitations on the utilization of instructional technology, acting as impediments to innovation in teaching and learning practices.

To encapsulate, HEIs and FMs face a multitude of barriers to leveraging technology to enhance learning experiences. These challenges manifest across various domains, including individual, administrative, organizational, and technical facets, and they exhibit substantial variation across different teaching contexts and HEIs. For instance, the barriers confronting research-focused and teaching-centric universities and colleges markedly differ. Additionally, studies exploring technology integration barriers across various HEIs have produced inconsistent findings. Moreover, some severe and systematic barriers, despite their profound implications on technology use in educational settings, remain underexplored. It is also evident that the complexity and interconnection of technology integration barriers surpass the descriptions available in the current body of literature. As such, no single research study can fully capture or offer insights sufficient to navigate and address all potential obstacles faced by HEIs and FMs in their endeavors to integrate technology into teaching.

Change Management Barriers in Faculty's Adoption of New Technologies

Preparing FMs for teaching with technology entails managing changes and addressing resistance. Offering FMs training and support in technology encompasses encouraging alterations in their planning and teaching methodologies. Garavan (1997) defined training as "a planned and systematic effort to modify or develop knowledge, skills and attitudes through learning experiences, to achieve effective performance in an activity or a range of activities" (p. 40). Similarly, the promotion of technology utilization in education entails multifaceted processes, necessitating modifications in educational decisions and practices (Top et al., 2021). Furthermore, the escalating costs and constant evolution of technologies pose considerable challenges for colleges and universities (Sasseville, 2004). Additionally, the cultural milieu at some HEIs does not readily embrace changes prompted by technology training and integration.

Despite a consensus among HEIs on the indispensability of teaching with technology and the need for FMs to be proficient in using technology (Basilotta-Gómez-Pablos et al., 2022; Drent & Meelissen, 2008; Durán, 2019; Lidolf & Pasco, 2020; Sorcinelli & Austin, 2010), resistance to technological innovation and change is inherent in their institutional cultures. The structures and cultures of most universities and colleges act as barriers to leveraging technology to enhance course facilitation, delivery, and student learning (Bates & Sangra, 2011). Moreover, issues such as lack of leadership (Keengwe et al., 2009) and misalignment among stakeholders (Belt & Lowenthal, 2020) impede initiatives for technology implementation (Georgina & Hosford, 2009). Effective promotion of technology integration is more likely when the goals for implementation are clear, and stakeholders are unified (Wastiau et al., 2013) and when the decision-making and planning processes regarding technology implementation are inclusive (Bates & Sangra, 2011).

FMs occupy pivotal positions in advancing instructional technology (Basilotta et al., 2022; Belt & Lowenthal, 2020; Jaipal-Jamani et al., 2018), serving as learners, course designers, and researchers in instructional technology (Lidolf & Pasco, 2020). Nonetheless, studies have shown their resistance to changes induced by technology training and integration. As Reid (2017) postulated, stakeholders' tolerance for change constitutes an institutional barrier influencing FMs' teaching practices with technology in higher education. Specifically, FMs tend to eschew learning and employ complex, constantly evolving technology tools that demand substantial time and effort to master (Polly et al., 2021). Bates and Sangra (2011) identify cultural and institutional barriers, such as FMs' preferences and academic status, as significant impediments to administrators' efforts to foster technological innovation at HEIs.

The COVID-19 pandemic expedited transformations in higher education, presenting numerous challenges to the leaders and FDs of HEIs (Sims & Baker, 2021). This crisis necessitated a swift adaptation to digital technologies, compelling HEIs to allocate resources for ICT, enhance digital competencies among FMs and students, and embrace innovative pedagogical methods suitable for remote education (Núñez-Canal et al., 2022). Additionally, the pandemic has altered the manner in which FDs conduct workshops, fostering social and peer learning (Kuntz et al., 2022). Hughes (2021) observes that the velocity of these changes during the pandemic left numerous leaders unprepared, lacking the requisite skills and knowledge to effectively navigate the new landscape, resulting in actions that were, at times, haphazard. Undoubtedly, the pandemic has exerted its influence on all constituencies within the realm of higher education.

From an overarching perspective, the process of planning and integrating technology necessitates adept change management and the mitigation of resistance. Despite the aspirations of HEIs to capitalize on technology to optimize teaching and learning, their institutional cultures are often not aligned with the successful implementation of these technologies, marked by a lack of deliberate strategies. Furthermore, existing research presents a dichotomy in FMs behavior toward technology integration, with some studies highlighting their active involvement while others underscore a tendency to resist pedagogical shifts induced by new technologies. Compounded by the COVID-19 pandemic, the higher education sector has undergone extensive transformations, compelling all stakeholders to adapt swiftly to remain relevant. It is evident that HEIs, FDs, faculty, and students were ill-equipped to confront the pandemic, exhibiting responses that lacked innovation and creativity (Roy et al., 2023).

In conclusion, there remains a conspicuous gap in the literature concerning the change management aspect of aiding FMs in adopting technology to revamp their course planning and facilitation methods. Numerous studies have scrutinized the challenges of change management in administrative initiatives within higher education (Bridges, 1986; Burke, 2018), yet there has been a pervasive neglect of examining how these issues impinge on faculty technology integration and ongoing professional development. Given the imperative for instructors to "continually adapt to changes in information technology" (Koehler et al., 2013, p.14), there is an urgent need for clarity on how FDs navigate the change management process while concurrently providing technological training, course design support, and ancillary services to FMs.

How HEIs Prepare Faculty to Teach with Technology

HEIs proactively engage in diverse professional development (PD) initiatives, aiming to enhance FMs capabilities in employing technology to facilitate effective learning processes (Belt & Lowenthal, 2020; Bostancioglu, 2018; Hellyer & Boschmann, 1993; Ivala, 2016; Teräs, 2016). The utilization of various PD formats to augment FMs proficiency in teaching with instructional technologies is a well-established practice. In one of the initial explorations of this domain, Hellyer and Boschmann (1993) conducted a comprehensive analysis of faculty development practices across 94 HEIs. Their findings highlight the prevalence of specific PD formats, including: (a) intimate group discussions and workshop sessions, (b) personalized consultation services, (c) introductory training and pedagogical guidance for novice instructors, (d) explorations into effective learning facilitation strategies, (e) financial incentives for faculty development engagement, and (f) meticulous assessments to identify needs and preferences (Hellyer & Boschmann, 1993). Nevertheless, by 2001, Zhoa and Cziko (2001) posited a shift towards a dominant reliance on expert-led or trainer-centric training programs to enhance FMs' technological proficiency.

Over a decade subsequent to Hellyer and Boschmann's seminal work, Ivala (2016) conducted a global and institutional analysis focusing on the PD formats prevalent in HEIs, specifically at the Cape Peninsula University of Technology (CPUT). Despite noting trends aligning with the earlier study by Hellyer and Boschmann (1993), Ivala's (2016) investigation unveils a significant upswing in the adoption of online platforms and resources to cater to the evolving needs of instructors. The study details the provision of succinct online or in-person training sessions, comprehensive workshops, project-oriented learning opportunities, informative webinars, and seminar events. Additionally, Ivala (2016) highlights the availability of collaborative peer engagement opportunities, concise technology demonstration sessions, individual mentorship programs, and resource-rich websites incorporating wikis and blogs.

In more contemporary contexts, additional studies describe trends and echo findings from previous research. A systematic literature review by Belt and Lowenthal (2020), encompassing studies published between 2013 and 2018, affirms the multiplicity of PD formats offered by

HEIs. The array of options identified includes: (a) brief technology-centric workshops, (b) extended PD sessions, (c) mentorship programs, (d) virtual training, (e) peer-supported learning, and (f) initiatives encouraging inter-departmental collaboration (Belt & Lowenthal, 2020). Concurrently, Bostancioglu (2018) observe active faculty participation in online communities aimed at bolstering collaborative efforts and peer-to-peer learning. Furthermore, Becuwe et al. (2017) discover that faculty engagement in team-based design of technology-driven course modules significantly enhances their capacity to teach effectively using technological tools.

It is imperative to acknowledge the diverse roles FMs undertake in PD activities, which are contingent upon the nature and structure of the PD engagements. Lidolf and Pasco (2020) conducted a thorough examination and synthesis of 35 studies pertaining to technology PD, uncovering that FMs alternated between roles as learners, designers, and investigators, with the specific role dependent on the PD event's focal point. This multifaceted participation enabled FMs to assimilate technology from a variety of perspectives (Lidolf & Pasco, 2020).

Although anticipating a PD event to encompass all three roles delineated by Lidolf and Pasco (2020) may be deemed impractical, numerous individual studies elucidate the impact of each distinct role on faculty's learning and teaching methodologies in the realm of instructional technology. Jaipal-Jamani et al. (2018) discover that assuming the role of training facilitators yielded a positive effect on FMs' application of TPACK in their pedagogical practices. Furthermore, the collaborative endeavor of developing courses in teams has been instrumental in enhancing FMs' proficiency in facilitating technology-enhanced learning (Becuwe et al., 2017). Studies also showcase that FMs have acquired novel technological and pedagogical skills through peer collaborations, encompassing meetings and informal interactions (Davis et al., 2015; Shagrir, 2017; Wu et al., 2016). In the final analysis, engaging in research pertaining to educational technology teaching practices has augmented FMs' technological acumen and fosters a positive disposition toward the implementation of educational technology (Drent & Meelissen, 2008; Lidolf & Pasco, 2020).

Promoting Instructional Technologies and Pedagogy in R1 Universities

R1 or research-intensive universities possess a unique culture and characteristics that make them different from other HEIs. First, based on the 2021 Carnegie HEI classifications, institutions with R1 status have met the following eligibility requirements: (a) having a research budget of $5 million or higher, (b) promoting and engaging in very high academic research projects, and (c) issuing at least 20 doctoral degrees annually.

Second, at R1 universities, academic publications, and the ability to secure grants are the primary factors that impact career advancement and tenure (Beach et al., 2016). In other words, research-intensive HEIs reward and celebrate FMs' research and publications more than their teaching efforts. It is, therefore, challenging for FDs and TLC leaders to engage FMs in the promotion of technology integration for effective teaching in a research-intensive context. Given this context, TLCs and their leaders must develop and apply appropriate strategies to promote effective teaching (Beach et al., 2016). Relatedly, Bates and Sangra (2011) were correct to assert that training faculty and administrators to effectively apply technology does not align with research-intensive universities' culture and context that prioritize research. However, despite the above mentioned challenges, many research-intensive HEIs have used several initiatives to promote best practices in teaching and technology integration.

Third, in a seminal work that included the examination of the purpose, priorities, and directions of the faculty development field, Beach et al. (2016) present essential insights into the work of TLC leaders and FDs in the context of research-intensive universities. For instance, the authors reported that TLCs were often centralized units and often between six and 20 years old. In addition, more than 50% of TLC leaders or directors often worked under the supervision of vice or associate provosts while 32% worked directly under a provost (Beach et al., 2016). Beach et al. (2016) further explain that TLCs in research-intensive universities have budgets between \$100,000 and \$200,000 and that TLC teams often include a director, an assistant or associate director, an instructional support employee, and administrative staff.

Fourth, according to Beach et al. (2016), the top two services that TLC directors often prioritize and offer at research-intensive universities include active learning, which is guided by inquiry or problem-based teaching approaches, and technology integration to drive technology and learning. Specifically, 22% of research-intensive TLC leaders viewed the scholarship of teaching and learning (SoTL) activities, which enables FMs to examine their teaching practices and student learning, as an important service (Beach et al., 2016). Also, 23% of TLC leaders acknowledged that student assessment was a top service (Beach et al., 2016) research intensive institutions need to prioritize.

Lastly, Beach et al. (2016) revealed that TLC leaders at research-intensive universities expressed the desire to expand and improve on some services, address some key issues, and focus on some specific faculty development approaches. For example, they wanted to increase their efforts in: (a) SoTL, (b) midcareer and senior faculty development, and (c) departmental leadership and management. Moreover, the TLC leaders hoped to focus on top faculty development issues, including student assessment and online and distance teaching. It is worth noting that focusing on distance and online teaching necessitates FMs to possess solid technology and pedagogical knowledge and skills. Furthermore, among the top faculty development approaches that TLC leaders wanted to focus on were: (a) faculty and professional learning communities and (b) asynchronous online programs, which also requires proficiency in the use of technological tools and pedagogical principles.

Despite the abovementioned contextual challenges, the work of TLCs and FDs remains critical to helping R1 universities leverage technology on their campuses (Cano, 2021; Carroll, 2019). For example, Carroll (2019) investigated how FMs, staff members, and administrators received guidance and assistance on the use of software at an R1 university. The findings reveal that the participants relied on the university's education technology center as a main source of help concerning the use of new technology software. Likewise, when Cano (2021) examined how FDs and FMs redesigned minor courses and applied technology in their curricula at the beginning of the COVID-19 pandemic, the researcher finds FD's technological and pedagogical guidance and support to be indispensable in the process. The findings of the abovementioned studies align with those of Beach et al. (2016), which indicated that the roles of FDs and TLCs have become increasingly necessary on HEI campuses.

Synthesizing the findings across various studies, it is evident that HEIs have furnished FMs with a plethora of PD opportunities spanning diverse formats. These studies have chronicled faculty's engagement in peer collaborations across varied teaching contexts (Belt & Lowenthal, 2020; Davis et al., 2015; Teräs, 2016; Wu et al., 2016), participation in mentoring programs (Beisser, 2000; Thompson et al., 1996; Thompson et al., 2007), involvement in meetings and informal interactions (Shagrir, 2017), and attendance at expert or trainer-led training sessions (Georgina & Hosford, 2009; Zhoa & Cziko, 2001). Additionally, FMs have partaken in formal technology training programs (Holmes & Kozlowski, 2015; Kenney et al., 2010) and engaged in course design and development collaboratively (Becuwe et al., 2017). Complementing these, other investigations have highlighted FMs' role in facilitating PD activities (Jaipal-Jamani et al., 2018), their access to sustained institutional support (Zheng et al., 2018), and their exposure to scholarly publications on teaching and learning (Chism, 1998), all of which have collectively contributed to an enhancement of their technological knowledge.

Nevertheless, the aforementioned studies were plagued by constraints concerning their duration, methodology, results, and participant numbers. Predominantly, these investigations gathered input primarily from FMs, with a conspicuous dearth of contributions from FDs. Consequently, the outcomes predominantly mirror the viewpoints of FMs, overshadowing the perspectives of other crucial stakeholders engaged in PDs for technology adoption. Furthermore, a substantial number of these studies were of brief duration, scrutinizing short-term PD initiatives and events and thereby neglecting to document longitudinal PD data and trends. Murthy et al. (2015) observe that only a limited number of studies delve into how HEIs systematically implement technology, noting a prevalent trend where FMs are left to their own devices in technology adoption. It is imperative to highlight that FMs exhibit preferences concerning their participation in PD programs.

FMs' Technology PD Preferences

FMs exhibit a spectrum of preferences relating to PD activities and services, with these preferences contingent upon their unique teaching contexts and needs. Initially numerous investigations conducted prior to the advent of the COVID-19 pandemic indicated a propensity among FM towards in-person technology PD and services (Belt & Lowenthal, 2020; Rienties et al., 2013; Wynants & Dennis, 2018). These findings are congruent with Zhoa and Cziko's (2001) assertion that the predominant method employed by HEIs to equip FMs with technology skills was through expert or trainer-led training. Nevertheless, FMs' preferences diverge when it comes to the scheduling of face-to-face sessions. For a substantial number, the requirement to attend training at specific times poses significant challenges due to time constraints (Lowenthal et al., 2013; Lucas & Murry, 2011). Thus, it is logical that some FMs express a preference for individual consultations and brief, small-group training sessions that incorporate both face-to-face interactions and online materials (Alexander et al., 2019; Polly et al., 2021; Seale, 2014). In simpler terms, certain instructors find structured or formal training sessions to be less appealing (Banks, 2002).

Conversely, some FMs express a preference for autonomous learning of technology, seeking assistance from their colleagues when necessary (Becuwe et al., 2017; Georgina & Hosford, 2009; Podorova et al., 2019; Price & Kirkwood, 2014; Shagrir, 2017). Belt and Lowenthal (2020) argue that FMs frequently utilize peer collaboration as a means to forge networks and engage in discussions centered on teaching best practices. In their investigation into the influence of technology training on faculty's utilization of technologies to bolster their pedagogical decisions, Georgina and Hosford (2009) discovered a preference among FMs for small group sessions, soliciting assistance from colleagues, and self-paced learning. Research conducted by Basilotta et al. (2020) and Podorova et al. (2019) corroborated these findings, revealing that instructors tend to prefer exploring new technologies through experimentation, seeking answers online, and consulting colleagues for guidance.

Various researchers have reported an increased interest among FMs in expanding their opportunities for collaboration with a broader spectrum of peers (Davis et al., 2015; Wu et al., 2016; Wynants & Dennis, 2018). Shagrir (2017) makes a compelling argument, emphasizing that FMs show a marked preference for engaging in meetings and informal exchanges with their peers rather than participating in formal in-house training sessions. In a similar vein, Price and Kirkwood (2014) discover a tendency among FMs to seek assistance from FDs and their peers rather than resorting to academic publications. It is crucial to highlight that both the institutional culture and the opinions of peers play significant roles in shaping FMs' perceptions of educational technologies and their subsequent implementation of these tools (Dougherty, 2015). Simply put, FMs place a high value on the insights and support they receive from their peers. Consequently, Ertmer (2005) and Mayo et al. (2005) aptly asserted that the most effective professional development sessions are those that create space for peer discussion and collaboration through activities that facilitate peer learning.

Additionally, some FMs exhibit a penchant for online PD. Lowenthal et al. (2013) identify a subgroup of FMs who expressed a preference for shorter PD sessions that are conducted online over other types of PD activities. Furthermore, Wynants and Dennis (2018) conducted an exhaustive study to examine the benefits and drawbacks of an online training program, concluding that FMs appreciate the pace and flexibility afforded by online PD.

To encapsulate, the existing body of research on faculty technology PD preferences does not provide conclusive results. While FMs' preferences for PD activities vary widely, depending on their teaching contexts and individual needs, it is evident that they predominantly prefer PD activities that incorporate opportunities for collaboration and peer learning. Nonetheless, it remains ambiguous whether FMs have a preference for long-term over short-term collaboration, group discussions over project-based collaboration, or collaboration with colleagues from their own department as opposed to those from different departments. Notably, studies investigating emergency remote teaching during the pandemic have not addressed FMs' PD preferences, a gap that suggests HEIs may not have had the capacity to tailor their emergency PDs and support to align with faculty preferences during that critical time.

COVID-19 Impact on HEIs and Their Technology PD Activities

The COVID-19 pandemic exerted a profound impact on education across the globe (Baker & Lutz, 2021; Dill & Nandwani, 2021; Govindarajan & Srivastava, 2020; Sims & Baker, 2021). The crisis disrupted the higher education system. This abrupt transformation necessitated that schools, parents, and students quickly adopt novel formats and methodologies for learning (Sims & Baker, 2021). Higher education, too, was compelled to undergo significant academic and logistical shifts. The crisis mandated a swift transition in teaching and learning delivery formats, establishing emergency remote teaching as the prevalent mode of instruction (Sims & Baker, 2021).

This health crisis has disrupted HEIs globally (Dill & Nandwani, 2021). It has necessitated that universities and colleges swiftly implement emergency online teaching (EOT), engendering a stressful atmosphere on campuses of HEIs (Brooks et al., 2020) due to various factors. The pandemic urged HEIs to reevaluate and modify their teaching strategies to suit remote learning environments (Brooks et al., 2020; Núñez-Canal et al., 2022; Sales et al., 2020). Prior to the pandemic, some HEIs had embraced digital transformation, offering entirely online degrees through sophisticated technological infrastructure. However, numerous others have yet to develop the requisite expertise and capacity for comprehensive online teaching. Consequently, while a segment of FMs possess the necessary skills to utilize instructional technology, encompassing LMSs, presentation tools, and conferencing applications, others were unacquainted with these tools and exhibited reluctance toward learning them pre-pandemic (Govindarajan & Srivastava, 2020).

Impact on FMs

The outbreak of COVID-19 necessitated that instructors rapidly modify their instructional methodologies to sustain course delivery via online platforms (Basilotta et al., 2022). The health crisis also had a significant impact on FMs. Trust and Whalen (2020) disclose that instructors encountered emotional turmoil due to these abrupt adjustments, coupled with a pervasive sense of unpreparedness for employing effective teaching strategies in remote settings. Additionally, Trust and Whalen (2020) highlight the challenges instructors faced in tailoring their teaching practices to accommodate the unique personal circumstances of students, such as issues related to internet connectivity and the lack of clear guidance from organizational or governmental authorities.

FMs encountered additional challenges pertinent to accessing technology and their proficiency levels in technology usage. "To teach effectively online, faculty must possess content knowledge, computer proficiency, and the capacity to conduct minor technological troubleshooting, as well as other teaching, social, and technical skills" (Sims & Baker, 2021, p. 347). Nevertheless, at the onset of the pandemic, the majority of FMs lacked sufficient competencies in technology and pedagogy. Portillo et al. (2020) highlight that the principal challenge FMs faced was their inadequate preparation in the utilization of instructional technology. This limitation in technological proficiency led to the emergence of negative emotions and a perceived increase in workload during the shutdown (Portillo et al., 2020). In a similar vein, Sims and Baker (2021) observe that instructors encounter difficulties throughout the transition, attributing these challenges to a deficiency in online pedagogy training and access to appropriate technological resources within their living spaces. Specifically, Sims and Baker

(2021) note that a considerable proportion of FMs, approximately 29%, at a midwestern university in the United States had no previous experience in remote teaching.

Concurrent with these observations, a study by Dillu and Nandwani (2021) presents findings that corroborate the previously mentioned studies. This research scrutinizes the perceived challenges faced by 109 FMs in delivering online instruction during the COVID-19 pandemic. The results demonstrate that a predominant majority of the participants, constituting 72%, experienced substantial difficulties, 27% opted not to provide any comments, and a mere 1% indicated they faced no challenges. Dillu and Nandwani (2021) deduce that the difficulties encountered by instructors fell into three categories: (a) human concerns, (b) organizational obstacles, and (c) technological challenges.

Impact on Faculty Developers

The abrupt shift to emergency online instruction placed considerable strain on both TLCs and the faculty (Brooks et al., 2020). Hughes (2021) highlights that the health crisis introduced three distinct challenges for training specialists: (a) organizations did not possess the requisite physical and structural foundation to integrate technology; (b) discord arose among employees responsible for key company operations; and (c) there was a pressing need to locate resources that would allow remote staff to quickly assimilate new technological tools. Moreover, a significant number of FMs were not equipped with digital technology competencies or the necessary devices (Sims & Baker, 2021). It is notable that a considerable segment of instructors, students, and administrative staff demonstrated technological unfamiliarity (Alexander, 2019) at the pandemic's commencement. As such, anticipating an immediate shift to remote instruction and study from both students and educators at the onset of the pandemic appeared unrealistic

(Sims & Baker, 2021). This compelled many HEIs to disproportionately lean on FDs to assist both FMs and students in their migration to online platforms.

Consequently, FDs found themselves under duress to cater to the technological training, advisement, and support requisites of FMs and students. As Kuntz et al. (2022) indicate, FDs were pressed to devise new online strategies swiftly; a majority of educators were allotted a mere seven days or fewer to metamorphose their lectures into digital courses, necessitating proper training or direction. Baker and Lutz (2021) aptly encapsulated the predicament of FDs:

> Instructional technologists and staff employed in centers for teaching and learning were in overdrive supporting faculty members who were tasked with re-envisioning their courses and with filling in technology voids for students with limited online access, with little time and few resources to do so (p. 56).

It is worth noting that, early in the outbreak, FDs recognized the potential risks to their own well-being from extended working hours and elevated work burdens, mirroring the challenges faced by students and FMs (Kuntz et al., 2022).

Impact on Students

The epidemic exerted varying degrees of influence on students, contingent upon the HEIs and the teaching contexts. It necessitated students' engagement with digital textbooks (Brooks et al., 2020) and mandated the online execution of class evaluations and assessments (Dill & Nandwani, 2021). Nevertheless, the Global Strategy Group (2020) disclosed that approximately 50% of university and college attendees encountered challenges related to inadequate access or internet connectivity. In a parallel vein, Aguilera-Hermida (2020) noted that the living conditions, environments, and negative emotional responses of numerous students to the pandemic drastically hindered their participation in remote courses. The paramount issues students grappled with during home-based classes were inattentiveness and diminished concentration (Aguilera-Hermida, 2020).

Conversely, studies conducted by Brooks et al. (2020) and Shim and Lee (2020) present divergent findings. Brooks et al. (2020) ascertain that a majority of students either owned or had access to technological equipment and received ample training and support across various HEIs. Shim and Lee (2020) highlight students' preference for home-based work, attributing it to the creation of a personalized virtual learning environment. Their research deduces that the majority of students perceived remote learning as meeting their educational expectations and facilitating their academic progression.

Undoubtedly, the COVID-19 pandemic has profoundly influenced stakeholders across all HEIs, necessitating a swift pivot to EOT despite the faculty's technological inexperience and dearth of online teaching skills. Challenges such as FMs limited technological proficiency, device inaccessibility, and internet connectivity issues were paramount, placing immense pressure on both HEIs' staff and students (Brooks et al., 2020). Specifically, the crisis altered the manner in which FDs plan and provide faculty development services. Nonetheless, it is crucial to acknowledge the pandemic's impact varied across institutions.

Preparing FMs for Emergency Remote Teaching

The advent of the COVID-19 pandemic compelled HEIs globally to rapidly transition to Emergency Remote Teaching (ERT). Consequently, these institutions adjusted and migrated their PD activities and services to the digital realm, aiding instructors in their shift to remote instruction (Brooks et al., 2020; Kuntz et al., 2022; Lach et al., 2021). A study by Kuntz et al. (2022) collated insights from FDs, sharing learnings from their inaugural year of ERT at the 2021 EDUCAUSE Annual Conference. The findings reveal that HEIs employed a variety of PD activities, including tailored consultations, small-group training, extensive workshops via Zoom or MS Teams, and micro-credentials, to prepare FMs for this transition. Additionally, these institutions archived their training sessions to accommodate those unable to attend and developed websites and platforms for the dissemination of resources and best practices. They also provided both live and recorded modules on utilizing their LMSs (Kuntz et al., 2022).

Lach et al. (2021) describe the approach a mid-size regional university in the Midwest of the United States adopted to equip its business school faculty for ERT. The authors gathered qualitative data from both the faculty and the Center for Teaching and Learning (CTL) staff, unveiling that the institution implemented two principal strategies. Firstly, it established an online course encompassing guides, technology tips, and tutorials. Secondly, CTL staff engaged in collaborative efforts with seasoned online faculty from diverse schools to provide training and support to novice instructors (Lach et al., 2021).

During the pandemic, certain FMs enhanced their technological skills. Núñez-Canal et al. (2022) orchestrated a study evaluating the digital competence (EDC) of over 251 participants employed across various universities in Madrid. The findings echo those of Lach et al. (2021), highlighting a substantial improvement in FMs' technological skills attributed to the swift transition to ERT. As FMs assimilated basic applications and found them straightforward to implement, this mastery mitigated their resistance to adopting technology (Portillo et al., 2020). Nonetheless, given the exigency of the crisis, it remained unlikely for HEIs to offer anything beyond rudimentary training support (Brooks et al., 2020) at the beginning of the health crisis.

Aligning with the previously mentioned studies, research conducted by Brooks et al. (2020) and Xie and Rice (2021) report analogous trends and methodologies in emergency professional development. Brooks et al. (2020) explain that HEIs proffered training sessions, personalized consultations, and institutional backing during the pandemic to fortify FMs readiness for ERT. Moreover, FMs capitalized on communities of practice with a focus on technology integration, thereby cultivating and solidifying their online teaching competencies (Brooks et al., 2020). Diverging from the other researchers mentioned herein, Xie and Rice (2021) probed into ERT from the vantage point of instructional designers. Employing grounded theory, they examined how eight instructional designers from four U.S. universities in the Midwest perceived alterations in their roles and responsibilities during the pandemic as they facilitated ERT. The findings disclose that these professionals: (a) executed FMs needs assessments, (b) rendered teaching resources accessible, (c) developed online courses for faculty training, (d) provided basic technology skills training, and (e) curated a variety of course curricula to satisfy the diverse needs of the FMs (Xie & Rice, 2021).

Moreover, investigations into ERT yielded inconsistent outcomes and perspectives. Some results suggested that FDs perceived the pandemic and subsequent shift to ERT as a golden opportunity to enhance the skills of FMs and augment the integration of technology in teaching and learning (Kuntz et al., 2022). Similarly, other scholars advocated that HEIs should capitalize on the advancements made in technology training and integration. This includes bolstering faculty involvement in training programs (Xie & Rice, 2021), expanding the adoption of hybrid learning models (Núñez-Canal et al., 2022), and recognizing the increasing prominence of Communities of Practices (CoPs) (Brooks et al., 2020). Nevertheless, a number of studies present conflicting views and lessons learned from ERT (Cabero, 2020; Casado-Aranda et al., 2021; Usher et al., 2021). These works highlight that numerous educators persisted in applying their conventional teaching methodologies in online settings. Despite a surge in faculty engagement with training and online instruction, Núñez-Canal et al. (2022) point out that certain

FMs harbored skepticism regarding the utilization of technology in hybrid teaching scenarios. Consequently, it is plausible to infer that the applicability and effectiveness of the lessons drawn from the pandemic and ERT are contentious and contingent upon the teaching context and the perceptions of the stakeholders involved. There linger unresolved inquiries pertaining to the transferability and practical utility of emergency technology PD practices in the post-COVID-19 educational landscape.

To sum up, various studies have affirmed that HEIs exert optimal effort to facilitate the faculty's transition to ERT; nevertheless, the insights garnered from these endeavors offer limited applicability for stakeholders in the post-pandemic era. In essence, the pandemic compelled HEIs to migrate their PD activities and services to online platforms, employ these digital spaces to distribute resources and tutorials and enlist the expertise of technologically proficient faculty to mentor their less experienced peers. This necessitated the cessation of in-person training sessions. Concerning the quality of PD, it is tenable to surmise that HEIs were constrained to utilizing the resources and means readily available to them for preparing FMs for ERT. They lacked the luxury of time to adhere to stringent quality standards or to accommodate the diverse PD preferences of FMs. Ensuring the provision of high-quality PD activities and services was not the paramount concern for HEIs and FDs. As stated by Brooks et al. (2020), at the inception of the pandemic, the best HEIs could offer fundamental training support to FMs. While HEIs and FDs have gleaned certain insights from the ERT experience, it is imperative that they approach the application of these lessons in the post-pandemic context with discernment and caution.

Effectiveness of HEIs' Technology PD and Support Services

HEIs have proactively provided a variety of PD activities and support services, aiming to sufficiently prepare FMs for integrating technology into teaching and learning. Nevertheless, empirical investigations into the efficacy of these initiatives have yielded ambiguous and inconsistent outcomes. While a faction of the studies affirmed the role of PD in enhancing FMs' technological and instructional competencies, an opposing set disclosed results that stand in stark contrast. Despite the rapid escalation of technological applications in the educational sector (Núñez-Canal et al., 2022), this surge has not translated into revolutionary strides in pedagogy and learning within HEIs (Bates & Sangra, 2011; Kirkwood & Price, 2013; Murthy et al., 2015). Nawaz & Khan (2012) explained this paradox, noting, "…while developing and/or updating, most of the HEIs opt for cutting-edge technologies; however, experience shows that mostly these 'leading-edge technologies turn into bleeding-edge technologies' by eating up budgets and delivering nothing special" (Nawaz & Khan, 2012, p. 40). In simpler terms, the mere incorporation of technology into academic courses does not automatically equate to enhanced teaching quality in higher education settings.

Formal Training

PD programs and support initiatives have proven instrumental in empowering FMs to leverage instructional technology for pedagogical purposes (Kenney et al., 2010; Long et al., 2009; Mahapatra, 2020; Nugent et al., 2008). Such programs have positively influenced instructional practices (Mahapatra, 2020), spurred the adoption of technological tools in teaching (Kenney et al., 2010), and fostered favorable perceptions of technology's utility among educators (Holmes & Kozlowski, 2015). Furthermore, these initiatives have played a pivotal role in augmenting student engagement and participation in course-related activities (Kenney et al., 2010). Participation in structured technology training is poised to bolster FMs' confidence, subsequently leading to more frequent technology use and positively transforming classroom instruction (Kenney et al., 2010; Long et al., 2009; Nugent et al., 2008). In a related vein, Núñez-

Canal et al. (2022) explored how enhancing instructors' digital competencies influences students' learning experiences, deducing that such enhancements yield beneficial impacts on students' learning outcomes. Essentially, elevating the technological prowess of faculty has a ripple effect, culminating in improved teaching methodologies and enriched learning experiences for students (Núñez-Canal et al., 2022).

Individual Consultations

The deployment of mentoring or individual consultations has proven to be a potent tool in enhancing FMs' capabilities to integrate technology into their teaching repertoire. Beisser (2000) and Thompson et al. (1996) underscore the beneficial impact of individualized technology mentoring, highlighting its role in fortifying FMs' proficiency in crafting technology-infused course outlines and materials. In a parallel inquiry, Eaton et al. (2015) dissects the dynamics of departmental, college-level, and institutional support provided to a cohort of 104 FMs. Their study illuminates that the participating educators perceived the mentoring they received, coupled with their ability to maintain equilibrium between professional commitments and personal life, as paramount facets of institutional support (Eaton et al., 2015).

Peer Collaboration

The practice of peer collaboration has emerged as a facilitative force in the realm of faculty development, particularly in honing technology and teaching skills. Becuwe et al. (2017) deduce that a team-oriented approach to designing technology-enriched course modules significantly amplified the participating FMs' aptitude in technology-integrated instruction. Corroborating this stance, Teräs (2016) affirms that FMs could cultivate technology skills through collaborative engagements with their teaching counterparts.

Other PD Activities and Services

A spectrum of additional PD initiatives and services has been instrumental in propelling FMs towards mastery in technology utilization and instructional prowess. Jaipal-Jamani et al. (2018) established that FMs assuming leadership roles in technology training sessions or workshops experienced a notable surge in their technology-related competencies and confidence. This empowerment, in turn, translated into a more effective application of the TPACK framework in their teaching. Furthermore, numerous scholarly investigations attest to the positive influence of research endeavors focused on educational technology teaching practices. Such scholarly pursuits have enriched the faculty's technological knowledge base, reshaped their perceptions of technology integration, and enhanced their understanding of student needs, ultimately informing their pedagogical enhancements (Drent & Meelissen, 2008; Lidolf & Pasco, 2020).

Inconsistent Results in Studies on Technology Training and Services Effectiveness

The previous section delineated a series of studies substantiating the efficacy of PD events and services (Holmes & Kozlowski, 2015; Kenney et al., 2010; Mahapatra, 2020; Nugent et al., 2008). Nevertheless, certain academics have posited conflicting outcomes and perspectives on this subject (Aslan & Zhu, 2016; Kirkwood & Price, 2013; Núñez-Canal et al., 2022). Sprague et al. (1998) posited that isolated training sessions, devoid of ongoing individualized technological assistance, fall short of meeting the requirements of the majority of instructors. Contrary to the findings of Núñez-Canal et al. (2022), who highlight the positive influence of enhancing faculty's digital competencies on student learning, Kirkwood and Price (2013) maintain that the advantages of technology for student learning remain a contentious issue.

Additionally, Lidolf and Pasco (2020) underscore the scarcity of references to the impact of technology on student learning in the existing literature on technology integration. In specific scenarios, technology PD activities may not be in harmony with the PD objectives of FMs. Polly et al. (2021) elucidated that for tenure-track faculty, proficiency in technology-enhanced teaching does not constitute a pivotal criterion for achieving tenured status.

Despite the substantial investments of HEIs in faculty technology PD and support services, numerous questions regarding the effectiveness and impact of these initiatives on teaching and learning persist. The initiatives aimed at preparing instructors for technology-mediated teaching have not reached a level of maturity sufficient to enhance faculty's technological proficiency significantly. This is primarily due to the sporadic nature of these training events, which tend to emphasize theoretical knowledge while neglecting the practical applications of technology (Aslan & Zhu, 2016; Çetin, 2016; Karaseva et al., 2018; Paulus et al., 2020). Rokenes and Krumsvik (2016) contend that certain training programs fail to meet the immediate needs of FMs for learning technology and effectively integrating pedagogy into their specific teaching contexts. In a related vein, Castañeda et al. (2018) advocate for PD activities to be dynamic, systematic, context-sensitive, and capable of empowering FMs to utilize technology in their teaching practices proficiently.

The response of universities and colleges to the COVID-19 pandemic exhibited limitations in various teaching scenarios. The rapid pace of change during the pandemic left many leaders struggling to adapt and make timely adjustments, resulting in somewhat haphazard efforts (Hughes, 2021). Multiple researchers (Cabero, 2020; Casado-Aranda et al., 2021; Usher et al., 2021) note that numerous instructors transposed their traditional teaching methodologies into the online domain, thereby failing to harness the potential of technology to create and deliver teaching materials and activities tailored for online instruction. Additionally, the utilization of advanced applications and software conducive to facilitating experiments and hands-on activities was scarce (Brooks et al., 2020). Notwithstanding these challenges, FDs employed an array of technology tools and platforms to maintain communication with instructors and students, aiming to support them through the transition. However, the initial support extended during the pandemic was predominantly reactive in nature (O'Toole et al., 2022).

Overall, HEIs have implemented an assortment of PD events and services, formal training, peer collaboration and learning, and mentoring, to adequately prepare FMs for teaching with technology. Nevertheless, the research examining these interventions has yielded inconsistent results. In essence, while these PD events have demonstrated positive outcomes in certain educational settings, their impact has been minimal in others. A noticeable gap in the existing literature is the lack of a definitive guide on which types of PD activities are most effective in small, medium, and large HEI environments, respectively. Additionally, the majority of the studies reviewed focus on short-term training initiatives, confined to a single research site, and predominantly featured data gleaned from the perspectives of FMs. Moreover, the PD interventions employed by HEIs during the pandemic proved beneficial in specific contexts but were found to be limited in others.

Stakeholders Roles and Experiences in Promoting Technology in Teaching in Higher Education

A variety of stakeholders, FDs, FMs, Information Technology (IT) staff, administrators, and executive teams, have been instrumental in preparing FMs for the integration of technology into teaching and learning in higher education (Bates & Sangra, 2011; European Commission, 2019; Gathumbia & Nyagormeb, 2015; Keengwe et al., 2009; Lidolf & Pasco, 2020; Reid, 2017;

Zheng et al., 2018). The successful facilitation of technology integration hinges on effective leadership and guidance, as Bates and Sangra (2011) emphasized. However, it is imperative to acknowledge that the commitment and collaborative efforts of all stakeholders are critical for the successful implementation of technology. Furthermore, it is worth noting that individual stakeholders often assume multiple roles in the promotion of technology integration.

FMs: Foremost, FMs, including full-time, part-time, and adjunct professors, play a pivotal role in HEIs' endeavors to harness technology for teaching and learning (Alexander, 2019; Ali & Murthy, 2010; Belt & Lowenthal, 2020; Jaipal-Jamani et al., 2018; Lidolf & Pasco, 2020). Sorcinelli et al. (2006) captured this sentiment eloquently: "At the heart of the university or college are its FMs - the men and women who devote their lives to research, teaching, and service missions of higher education institutions" (p. xiii). These educators engage with technology in various capacities, serving as learners, course designers, and researchers in instructional technology (Lidolf & Pasco, 2020); their roles are shaped by their objectives in utilizing technology. They engage in collaborations with diverse stakeholders (Belt & Lowenthal, 2020), contributing, for instance, to the update of online courses and software in tandem with technical support staff or helpdesks (Ali & Murthy, 2010). Additionally, they assume leadership roles in technology, guiding and training their fellow instructors (Jaipal-Jamani et al., 2018).

FMs have collaborated with FDs to enhance the standard of technology training and support services for faculty (Sorcinelli, 2002). As elucidated by Sorcinelli and Austin (2010), the pivotal factors influencing the work and services of faculty developers encompass the needs and interests of the faculty alongside the priorities of executive leaders. This implies that the interests of FMs wield a more significant impact on faculty development activities than do the preferences of college deans and department heads (Sorcinelli & Austin, 2010). Concurrently, the realm of technology within education has witnessed a gradual expansion over time, predominantly shaped by the skills and attitudes of instructors (Núñez-Canal et al., 2022).

IT Staff: In the second instance, IT departments and personnel have played multifaceted roles in advancing the integration of instructional technology within HEIs. These entities frequently assume responsibility for the procurement and implementation of technology across HEI campuses (Bates & Sangra, 2011). They ensure the availability and reliability of network resources while also aiding FMs and staff in acclimatizing to various technological tools (British Educational Communications and Technology Agency [BECTA], 2006). Moreover, IT departments and personnel have furnished end-users with indispensable technical support and guidance (Bates & Sangra, 2011; Gathumbia & Nyagormeb, 2015). Research conducted by Gray et al. (2003) exploring the implementation of e-learning courses within HEIs revealed that the triumph of such e-learning initiatives hinges on the provision of adequate training and technical support to all stakeholders involved. Corroborating this viewpoint, both Zhao and LeAnna (2006) and Wastiau et al. (2013) advocate for the necessity of continuous technical support as a supplement to technology training, thereby empowering users in their utilization of technological tools. Acknowledging the critical role played by faculty developers in providing training and sustained support to the faculty is imperative.

HEIs' Senior Leaders and Administrators: Senior leaders and administrators at HEIs have assumed numerous crucial roles in equipping FMs for technology-enhanced teaching; their contributions include mitigating barriers, allocating resources, and offering proof of concept (Bates & Sangra, 2011; Ely, 1990; Keengwe et al., 2009; Thompson et al., 2007). The evolution of technology innovation within higher education is contingent upon the leadership provided at both executive and project levels; while executive leaders furnish strategic direction, project-level leaders meticulously oversee the various phases of technology project implementation (Ely, 1990). In alignment with this perspective, Thompson et al. (2007) posit that the establishment of efficacious technology mentoring programs necessitates leadership at both the community and executive strata. Keengwe et al. (2009), through their study encompassing administrative staff, FDs, and ICT leaders, accentuate that for technology integration initiatives to bear fruit, they must be steered by robust leadership and organizational support. In essence, the leadership and management teams at HEIs are entrusted with the responsibility of articulating a clear vision and setting strategic goals, thereby inspiring and motivating FMs to actively participate in the utilization of technology for teaching and learning purposes (Bates & Sangra, 2011; Keengwe et al., 2009; Wastiau et al., 2013).

Moreover, administrative support proves crucial in equipping and encouraging FMs to embrace and implement instructional technologies effectively (European Commission, 2019; Gu et al., 2013; Zheng et al., 2018). The role of administrators encompasses fostering productive communication with FMs and preparing them adequately for technology-enhanced teaching (Keengwe et al., 2009). FMs tend to appreciate instructional technology more when administrators cultivate a teaching culture that underscores the advantages of technology in instruction (Gu et al., 2013). To pave the way for successful technology implementation, administrators are tasked with formulating suitable policies and procedures (Alexander et al., 2019) and assigning priority to faculty professional development in terms of resources and time allocation (Eaton et al., 2015). In a related vein, Sorcinelli and Austin (2010) contend that administrators demonstrate their commitment to faculty development by providing financial support to faculty development programs and professionals and by striving to foster an environment that is conducive to effective faculty development activities.

FDs: In the third place, a plethora of publications have delineated the job responsibilities and contributions of FDs to higher education, predominantly providing anecdotal insights into their experiences, work contexts, and challenges. While the literature is replete with conceptual papers and reflective essays on FDs, systematic examinations of FDs' experiences and perceptions remain relatively sparse. In a recent auto-ethnographic reflection, O'Toole et al. (2022) share insights into their roles and experiences as academic developers or FDs, particularly in supporting the transition to ERT during the pandemic. The authors acknowledged that prior to the pandemic, FDs in higher education were often an obscured group with ambiguous roles and job responsibilities.

FDs play a pivotal role in assisting FMs with integrating instructional technology into teaching, thereby facilitating technology adoption in higher education (Reid, 2017; Reiser & Dempsey, 2012; Sorcinelli & Austin, 2010). As highlighted by Amundsen and Wilson (2012), faculty development events serve as interventions "aimed at enhancing teaching" (p. 90). Sorcinelli and Austin (2010) further note that directors of centers for faculty development wield a significant influence over the design and operation of educational development services within HEIs. FDs are found in various roles and hold diverse job titles across universities and colleges, with their invaluable contributions to the academic success of HEIs widely recognized (Sorcinelli & Austin, 2010). Specifically, FDs have harnessed the potential of technology and other resources to deliver high-quality instruction in higher education (Kirkwood & Price, 2013), employing various approaches to enhance educational development interventions (Fraser et al., 2010). However, it is pertinent to note that the work of FDs is subject to both internal and external influences, as well as the priorities of other stakeholders (Sorcinelli & Austin, 2010).

Additionally, FDs, such as instructional designers, play a crucial role in assisting FMs with the implementation of instructional technologies. They are instrumental in training FMs on both teaching practices and technology usage. Consequently, FDs must continually educate themselves on best practices within the field (Reiser & Dempsey, 2012). Moreover, FDs are pivotal in eliminating barriers to technology implementation (Reid, 2017). Various scholars (Akbaba-Altun, 2006; Avidov-Ungar & Shamir-Inbal, 2017) concur that the training and support provided by technology coordinators are indispensable for instructors to succeed in teaching with technology tools. Specifically, there has been a noticeable increase in instructors' utilization of instructional technology concomitant with receiving augmented training and support from technology coordinators (European Commission, 2019).

FDs are proactive in endorsing and managing instructional and organizational changes within higher education. Sorcinelli et al. (2005) firmly state that faculty development serves as a "key lever for ensuring institutional quality and supporting institutional change" (p. xi). By engaging in research, providing critical analysis, disseminating information, and offering coaching to faculty, FDs have significantly contributed to the advancement of HEIs. Additionally, they equip administrators with valuable insights, thereby enhancing decision-making related to teaching and learning (Chism, 1998). Furthermore, FDs: (a) act as catalysts, encouraging FMs participation in communities of practice, and (b) facilitate program evaluation, assessment, and data collection to improve decision-making processes (Chism, 1998). Corroborating the views of Sorcinelli et al. (2005) and Chism (1998), Baker et al. (2018) discover that FDs adapt their interventions based on their location and objectives, aiming to effectively address immediate contextual influences. The expertise and guidance of FDs proves instrumental in aiding HEIs during the transition to remote teaching amidst the pandemic (Beile et al., 2020; Kuntz et al., 2022).

Conversely, some scholars have provided a differing evaluation of FDs' capabilities in leadership and change management. Bates and Sangra (2011) posit that FDs frequently lack the necessary leadership skills to effectively oversee change management processes. In a similar vein, Belt and Lowenthal (2020) contended that training activities and support often fall short of fostering changes in pedagogical decisions and applications.

Stakeholder Collaboration

Although FDs, FMs, IT staff, administrators, and management teams represent stakeholders in the strategizing and preparation processes that HEIs employ to equip FMs for teaching with instructional technology, their perspectives on technology training and integration frequently diverge. Additionally, these stakeholders possess varying degrees of authority and influence over technology selection and application processes (Bates & Sangra, 2011; Belt & Lowenthal, 2020). The misalignment stems from numerous factors tied to organizational culture, stakeholders' job responsibilities, and their proficiency with technology.

Firstly, stakeholder engagement in decision-making is not uniform. Research conducted by Georgina and Hosford (2009) highlights that in certain HEIs, a select group of leaders make technology-related decisions unilaterally, bypassing input from other stakeholders. Bates and Sangra (2011) identify that stakeholders' recommendations are often overlooked, sometimes culminating in significant technology implementation hurdles that might have been preventable. For instance, many HEIs neglect to seek FMs input prior to procuring instructional technology tools, rendering FMs devoid of agency in choosing the technologies they must incorporate into their courses (Belt & Lowenthal, 2020; Singh & Hardaker, 2017).

Secondly, stakeholders' technology knowledge and awareness levels vary, affecting their capacity to contribute effectively to technology integration efforts. Bates and Sangra's (2011) extensive study across 11 HEIs uncovered several discrepancies in technology integration: a notable lack of technology training, a prevalent deficit of requisite knowledge and skills among administrators to spearhead technology integration initiatives, and the optional nature of educational development services for FMs. Additionally, certain FMs do not perceive training as necessary, while others remain oblivious to the professional development opportunities and support services available on their campus (Bates & Sangra, 2011; Galanek & Gierdowski, 2019). Another challenge arises from the fact that FDs hold diverse job titles yet lack the supervisory authority to exert influence over teaching staff decisions and actions (Dexter et al., 2003).

Thirdly, the diverse positions and job titles held by stakeholders affect the extent of their involvement in technology integration decisions and initiatives. Although administrative personnel in HEIs aspire to advance technology innovation, they frequently encounter cultural and institutional barriers. These impediments may take the form of faculty resistance to relinquish established privileges, a resistance closely tied to their status as researchers (Bates & Sangra, 2011). Concurrently, Allen et al. (2012) identify a dichotomy in perceptions between FMs and administrators at higher education institutions regarding the proliferation of online education. Allen et al. (2012) observe that FMs generally adopt a negative stance toward this trend, while administrative staff display optimism and a favorable viewpoint.

Moreover, the perspectives of FMs and administrators on PD needs differ significantly. Polly et al. (2021) identify administrators as proponents of technology modeling and classroom demonstrations for instructor development, whereas faculty preferences were more diverse, encompassing regular, timely, and personalized training within their teaching environments. Concerns have been raised by HEI administrators about the minimal faculty participation in costly professional development initiatives. Simultaneously, FMs have expressed dissatisfaction, citing a misalignment between professional development offerings and their specific needs (Baker et al., 2017).

Additionally, FDs and IT staff prioritize differently and hold distinct levels of authority on campus. Reid (2017) highlights that IDs lack the authority to eliminate all technological constraints that impede faculty's technology utilization. The connection between departments responsible for IT services and centers housing FDs or instructional technologists is ambiguous, with roles and services frequently overlapping (Bates & Sangra, 2011). Moreover, these entities typically report to different supervisory personnel, depending on the situation (Bates & Sangra, 2011). Despite these challenges, collaboration remains imperative for faculty development. Beile et al. (2020) state the role of FDs, stating, "Our role is to support teaching and learning by working with faculty and other campus entities" (p.47).

Furthermore, the absence of a clear organizational structure and established procedures for adopting technology tools hampers stakeholders' participation and hinders the alignment of their perspectives and understanding regarding technology integration. Brooks et al. (2020) note prevalent lack of technology governance across HEIs, which is essential for directing instructional technology in teaching and learning. Bates and Sangra's (2011) study across 11 HEIs reveals a complete absence of fully developed instructional technology governance structures critical for influencing and evaluating technology's role in teaching support. In addition, a tendency exists among some HEIs to prioritize department-centric professional development activities over collaborative efforts.

Technology governance is indispensable for effective technology integration. Bates and Sangra (2011) define technology governance as the framework establishing the selection and implementation of technology, as well as identifying the responsible decision-makers. Furthermore, they emphasize that "one way for the executive team to provide leadership in technology is through the development of a strong technology governance process" (Bates & Sangra, 2011, p. 122). However, an absence of technology governance often results in unclear policies and complications in technology selection, training, and integration (Brooks et al., 2020). Most crucially, without consensus among key stakeholders, efforts to train FMs in technology use will prove futile (Belt & Lowenthal, 2020). Therefore, establishing comprehensive technology governance is a critical necessity for universities and colleges aiming to optimize their faculty technology integration initiatives.

Overall, extensive research validates the involvement of a plethora of stakeholders in equipping FMs to employ technology for educational purposes within higher education institutions (Bates & Sangra, 2011; Galanek & Gierdowski, 2019; Georgina & Hosford, 2009; Jaipal-Jamani et al., 2018). Each stakeholder contributes uniquely to the process of technology integration. Nevertheless, the influence and technological acumen appear to vary significantly across stakeholders. Moreover, their diverse roles and distinct interests lead to varying perceptions of technology integration compared to their counterparts. Crucially, a prevalent lack of instructional technology governance in most HEIs hinders the provision of direction on the enhancement and evaluation of faculty's utilization of technological tools in teaching (Bates & Sangra, 2011).

Numerous studies highlight a lack of consensus among stakeholders regarding optimal strategies for planning and integrating technology into teaching (Bates & Sangra, 2011; Belt & Lowenthal, 2020; Georgina & Hosford, 2009). Conversely, some researchers document instances of productive collaborations among various stakeholders. Stakeholders, indeed, exhibit diverse levels of technological knowledge, authority, and decision-making influence. Yet, certain FDs have reported successful partnerships with other stakeholder groups (Beile et al., 2020; Lach et al., 2021). Beile et al. (2020) described a successful joint effort with diverse stakeholders to integrate open educational resources (OER) into courses. The authors highlighted their role as FDs, collaborating on curriculum development with campus leaders and spearheading innovative assessment projects and workshops focused on learning methodologies. Similarly, CTL staff and experienced online faculty from different departments collaborated effectively to offer training and support to new instructors (Lach et al., 2021).

It is crucial to acknowledge that only a limited number of studies concentrate on systematic approaches to faculty technology training and support. Additionally, few investigations have underscored the advantages and necessity of implementing technology governance. This dearth of focus on systematic faculty development and technology governance is likely attributed to the tendency of numerous studies to explore isolated, ephemeral training initiatives. Notably, these studies often overlook the change management aspect essential for implementing technologies, even though the successful adoption of instructional technology across faculty necessitates adept navigation, management of changes, and addressing unforeseen challenges by all stakeholders.

Conceptual Framework

This qualitative multiple case study was guided by two primary theoretical perspectives: the Technological Pedagogical Content Knowledge (TPACK) Framework (Koehler et al., 2013) and the ADKAR Change Management Model (Hiatt, 2006). Employing both the TPACK Framework and the ADKAR Change Management Model proves pertinent for this investigation.

The TPACK Framework

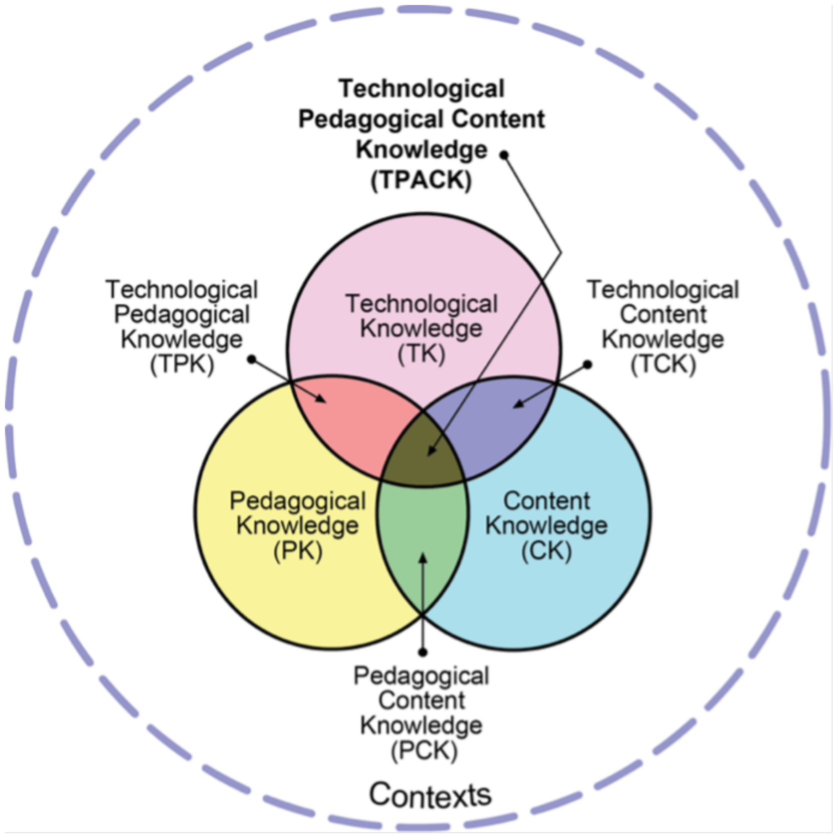
The TPACK Framework delineates the conditions and considerations necessary for effective technology utilization to yield tangible results. Koehler et al. (2013) assert, "At the heart of good teaching with technology are three core components: content, pedagogy, and technology, plus the relationships among and between them" (p. 14). For instructors to adeptly integrate technology into teaching, they must possess content knowledge (CK), pedagogical knowledge (PK), and technological knowledge (TK) (Koehler & Mishra, 2009; Mishra & Koehler, 2006). In essence, instructors should be proficient in applying technology to enhance pedagogical practices and content delivery (Anthony & Noel, 2021; Wang, 2023). The TPACK Framework serves as a valuable tool for HEIs and FDs, guiding them in addressing crucial aspects of technology integration in their professional development programs.

The TPACK Framework asserts that the trio of CK, PK, and TK is vital for technology-enhanced teaching across various settings. Mishra and Koehler (2006) elaborate that CK pertains to the subject matter being taught, necessitating that instructors have a thorough understanding of their course content. PK involves a comprehensive grasp of pedagogical strategies, teaching methods, student learning processes, and evaluation practices (Mishra & Koehler, 2006). Finally, TK extends beyond basic digital technology usage; given the ever-evolving nature of technologies, TK is subject to frequent changes (Koehler et al., 2013).

In explaining TK within the TPACK Framework, Koehler et al. (2013) reference the National Research Council's (NRC) (1999) concept of Fluency of Information Technology (FITness). The NRC (1999) defines FITness as the proficiency and awareness required to productively use technology across diverse tasks and contexts, along with the ability to adapt to technological changes and discern the suitability of specific technologies (NRC, 1999).

Moreover, the interrelationships between the CK, PK, and TK domains in the TPACK Framework generate additional elements crucial for technology-enhanced teaching (Koehler et al., 2013). These interactions result in the creation of Pedagogical Content Knowledge (PCK), which entails integrating appropriate pedagogy with content; Technological Content Knowledge (TCK), which involves applying suitable technology to support content; Technological Pedagogical Knowledge (TPK), which combines technology and pedagogy; and TPACK, which encompasses the use of technology with fitting pedagogy to aid content instruction (Koehler et al., 2013). The TPACK Framework offers HEIs and FDs a structured approach to aid FMs in acquiring the necessary skills and knowledge for technology-infused teaching, having been extensively applied in guiding technology-related professional development and research (Anthony & Noel, 2021; Hamilton et al., 2016; Jaipal-Jamani et al., 2018; Koh, 2020).

Figure 2.1. TPACK Framework

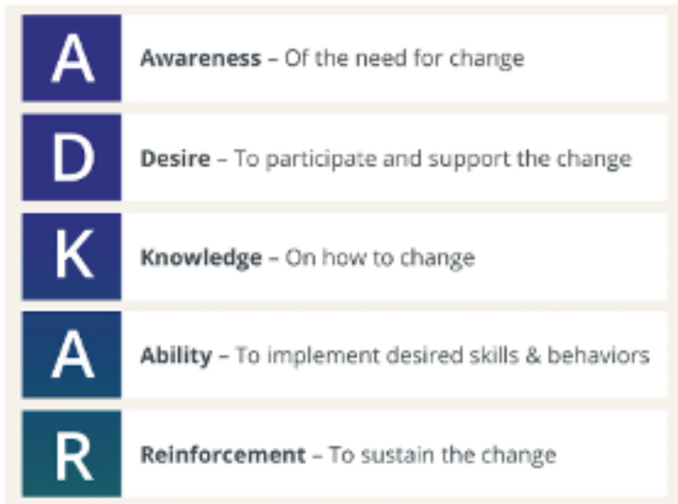


Note: The components of the TPACK Framework and their interactions. Used with the permission of the publisher, © 2012 by tpack.org. Source: http://tpack.org

The ADKAR Change Management Model

The ADKAR Change Management Model provides a theoretical lens through which this study can capture the experiences of FDs in supporting FMs' adoption of technology in teaching while navigating technology-induced changes at an individual level. The ADKAR Change Management Model, devised by Hiatt (2006) and disseminated by the consulting firm Prosci, offers a structured approach that institutions have employed to facilitate successful change. The model delineates five key phases or objectives essential for guiding individuals through successful change (Hiatt, 2006). These objectives are: (a) increasing awareness of the need for change, (b) fostering a desire to participate and support the change, (c) imparting the knowledge required to change, (d) enhancing the ability to implement new skills and behaviors, and (e) instilling reinforcement to sustain the change (Hiatt, 2006). These objectives are integral to supporting individuals in embracing and implementing change.

Figure 2.2. The ADKAR Change Management Model



Note: Source: Prosci: https://www.prosci.com/methodolgy/adkar

Applying the ADKAR Change Management Model enables HEIs and FDs to prepare and guide FMs through the successful implementation of instructional changes, including the adoption of novel technologies and pedagogical approaches in their teaching. Renowned as a results-oriented framework (Malhotra, 2019; Tang & Tang, 2019), the ADKAR Change Management Model enjoys widespread global application. Prosci (n.d.) defines change management as "the application of a structured process and set of tools for leading the people side of change to achieve a desired business outcome; it is both a process and a competency" (para. 5). Aligning with Prosci's definition, numerous scholars (Ali et al., 2021; Galli, 2018; Kaminski, 2022) have emphasized the ADKAR Change Management Model's concentration on the individual experience during change. Hiatt (2006) encapsulates this sentiment, asserting, "Successful change, at its core, is rooted in something much simpler: How to facilitate change with one person" (p. 1). Consider training as "a planned and systematic effort to modify or develop knowledge, skills, and attitudes through learning experiences, to achieve effective performance in an activity or a range of activities" (Garavan, 1997, p. 40). Consequently, for successful outcomes, HEIs and FDs must adeptly assist FMs in navigating through the five change phases to teach using technology proficiently.

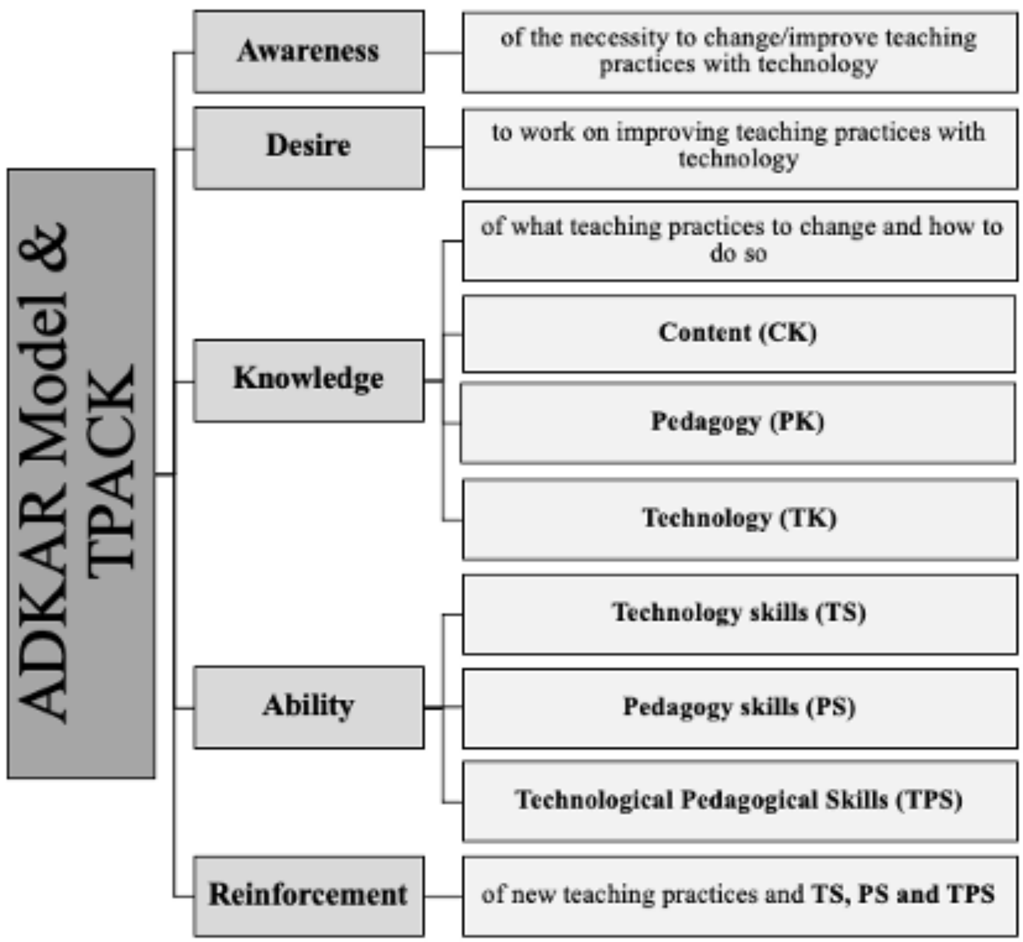
Given the emphasis that the ADKAR Change Management Model places on the individual aspects of change management, it aligns well with the objective of this study, which seeks to delve into the experiences of FDs as they aid FMs in the adoption of technology for teaching purposes. Facilitating the use of technology by FMs necessitates the management of alterations in teaching methodologies at an individual level. Top et al. (2021) elucidate that the promotion of technology within teaching realms entails a series of multifaceted procedures, necessitating modifications in educational decisions and pedagogical practices. Faculty development is considered a "key lever for ensuring institutional quality and supporting institutional change" (Sorcinelli et al., 2005, p. xi). In simpler terms, the willingness of stakeholders to adapt to change plays a crucial role in both faculty development and the integration of technology (Reid, 2017).

Integration of the ADKAR Change Management Model and TPACK Framework

Employing both the TPACK Framework and the ADKAR Change Management Model proved pertinent for this study. The TPACK Framework delineates crucial elements and factors that HEIs and FDs should contemplate in the course of preparing FMs for technology-enhanced teaching. Specifically, it is imperative for FMs to receive support in cultivating their CK, TK, and PK to teach utilizing technological tools proficiently. Additionally, change constitutes an indispensable aspect of faculty development (Bates & Sangra, 2011; Polly et al., 2021;

Sasseville, 2004). The ADKAR Change Management Model stipulates a quintet of objectives and phases pertinent to change management, aligning with the responsibilities of FDs. In turn, FDs are tasked with guiding FMs through these five stages: (a) awareness, (b) desire, (c) knowledge, (d) ability, and (e) reinforcement, facilitating their development of TK and PK for technology-augmented teaching.

Figure 2.3. Integration of TPACK and ADKAR



Chapter Summary

This chapter reviewed the literature in the field and discussed the study's conceptual framework. Two theoretical frameworks, TPACK and ADKAR, guided the implementation of this study. The literature addressing faculty technology training and technology integration in higher education has witnessed significant expansion in recent decades. Despite the substantial growth in literature, previous studies exhibit limitations, revealing gaps and tensions in various domains concerning faculty technology integration. Most of these studies often suffer from limitations in duration, sample size, methodology, and the nature of their findings. Many have yielded inconsistent and inconclusive outcomes.

Moreover, various critical stakeholders play pivotal roles in equipping FMs with the necessary skills to employ technology in their teaching. However, a point of significant concern is the neglect by researchers of some stakeholders' input and experiences in technology integration and educational technology research. FDs, in particular, have been crucial in enhancing teaching and learning in higher education, aiding FMs in technology integration. Yet, there is a scarcity of research exploring their experiences. Consequently, it is imperative to initiate new research endeavors to uncover various facets of how HEIs facilitate FMs in utilizing technology for teaching purposes. Future studies should, therefore, encompassed a wider array of stakeholders, including administrators and FDs.

Bearing this context in mind, the current study scrutinized the experiences of four Faculty Developers (FDs) throughout their involvement in aiding FMs in using technology for teaching and learning within two research intensive universities. Acknowledging the pivotal role FDs have historically played in fostering teaching and learning and considering the pervasive impact of technology on the academic landscape, an investigation into FDs' experiences in assisting FMs with technology adoption emerged as a subject meriting thorough examination.

Chapter 3 - Methodology

Chapter Overview

This multiple-case study investigated the experiences of four faculty developers (FD) in assisting faculty members (FMs) with using technology to teach within the context of two research-intensive universities. This study investigated two cases in depth, and each case captured the experiences of two FDs at one R1 university from the lenses of the Technological Pedagogical Content Knowledge (TPACK) Framework (Koehler et al., 2013) and the Awareness, Desire, Knowledge, Ability, Reinforcement (ADKAR) Change Management Model (Hiatt, 2006).

This chapter elucidates and justifies the selected research design, methodology, and methods. Specifically, it delves into data collection, analysis, and presentation techniques while also highlighting ethical considerations. Overall, this chapter presents a comprehensive and meticulous blueprint—informed by the study's theoretical lens— that I adhered to throughout the investigative process.

Research Questions

This study investigated four FDs' experiences in helping FMs teach with technology by addressing the following questions:

1. What are FDs' experiences in the process of assisting FMs in using technology for teaching and learning?
2. How do FDs perceive their roles in the process of assisting FMs in using technology for teaching and learning?
3. What factors facilitate or hinder the process of assisting FMs in using technology for teaching and learning?

Qualitative Research Inquiry

Qualitative Research Paradigm

This study adopted a qualitative research approach. The qualitative research paradigm involves studying phenomena within the real-life contexts in which they occur by collecting rich, meaningful data (Merriam, 1998). Qualitative researchers study reality in context because they assume individuals construct their reality and associate different meanings and interpretations with their experiences (Bhattacharya, 2017). As Bhattacharya (2017) further argues, qualitative researchers apply multiple interpretive methods and nonlinear processes to investigate how subjects experience and interact with their world. Relatedly, examining the experiences of FDs fits well into the qualitative research paradigm because FDs' experiences of helping FMs use teaching technology are complex and context-based and impacted by factors that cannot be studied using hypotheses and deductive methods. Instead, FDs' experiences can be captured using an inductive investigation mode that involves gathering meaningful data and contextualized interpretations.

An Interpretive Approach

I took an interpretive approach in this qualitative study. Such an approach assumes that individual understanding comes from the interpretation of one's experiences and interactions within their milieu (Chowdhury, 2014). As Weber (1981) argues, there is no objective knowledge and reality, and researchers should pursue deep understandings of the social world and participants' experiences. Therefore, researchers cannot study the social world objectively because people's experiences and knowledge are complex, socially constructed, and influenced by their beliefs, values, interactions, and contextual factors (Dilthey, 1989; Weber, 1981). Social researchers should, therefore, focus on individual and group experiences and seek to understand how they make sense of their experiences and interactions. Similarly, Dilthey (1989) asserts that "All science, all philosophy is experiential. All experience derives its coherence and its corresponding validity from the context of the human consciousness" (p. 7). In other words, individuals' interpretations of their experiences vary with their social environments and contexts. Precisely, different individuals may assign different meanings to similar experiences (Bhattacharya, 2017).

Using an interpretive approach to qualitative research allowed me to evaluate FDs' subjective knowledge, experiences, and beliefs, capture the meanings and interpretations FDs associate with these experiences, and develop a deep understanding of FDs' experiences and the factors that influence them. To that end, this study examined FD's experiences in their natural work setting, which required me to work closely with the participants during the investigation. Working in proximity with FDs will facilitate the collection of authentic data that reflects the FDs' perceptions, emotions, feelings, and views of their world. Moreover, FDs' experiences include interactions with complex procedures and processes that should be captured using a suitable research methodology that offers the researcher enough flexibility to collect various types of rich data to answer the research questions. With that in mind, multiple case study was a suitable methodology for this study because it enabled me to triangulate the methods and data sources to gather rich data in two R1 universities to produce a detailed description of FDs' experiences.

Researcher Positionality

I brought personal values, beliefs, and educational experiences, and professional background into my research implementation. Therefore, for the sake of transparency, it is necessary that I disclose and discuss my position as a researcher. First, my passion for teaching and student learning, coupled with my experiences as a former training specialist and instructional coach, has parked my interest in faculty development in higher education. Similarly, my past studies in learning design and technology at Purdue University have given me a special appreciation for the integration of technology into teaching and learning. Simply put, my experiences and education influenced my choice of research topic. Moreover, I want to conduct research on faculty development and technology integration because I believe they are a worthy line of research that can positively impact teaching and students' success in higher education.

I made extra efforts to monitor and reflect on my interactions with participants to keep my beliefs and biases in check. I ensured my experience as an instructional designer and instructional coach did not overly influence how I approached my research and interactions with FDs. My tenure as an instructional coach and training specialist equips me with an insider's perspective, which facilitated a personal and professional rapport and understanding with FDs. Freeman et al. (2007) argued that "Because the strength of qualitative research is the close contact and connection that qualitative researchers have with research participants, this contact has played a central role in shaping the principles and quality standards that guide them" (p. 30). However, I reflected and managed my insider view and familiarity with the field to avoid influencing participants' perceptions of our interactions. Doing so enabled me to avoid giving the impression of judging participants' work or being overly sympathetic with their ideas.

Lastly, I avoided presenting myself as a researcher in a position of academic authority, as this could prevent me from having authentic and meaningful interactions with the FDs. I explained the purpose and benefits of my research to all participants. I also acted as a curious learner interested in learning about and understanding participants' experiences from their personal perspectives. In addition, through regular journaling and introspection, I maintained a balanced perspective, ensuring my personal experiences and assumptions do not overshadow my investigation.

Multiple Case Study

This study employed a qualitative multiple case study methodology to explore FDs' experiences of aiding FMs in the application of technology for instruction and learning. Case study is a popular methodology in education and technology integration research. It is apt for use in this inquiry because, as Merriam (2002) and Creswell (2014) note, such a design permits researchers to explore single or multiple delimited cases in-depth. Case studies consist of a mode of inquiry, methods, cases, and units of inquiry (Yin, 2018). The case study methodology is a robust research approach suitable for investigating contemporary phenomena within real-world contexts (Yin, 2018). According to Yin (2018), a case is often the unit of inquiry; however, the unit of analysis can also be a person, entity, or program that a researcher seeks to investigate. In this investigation, the parameters of the cases were FDs' experiences within the context of two research-intensive universities. The cases were the two R1 universities, and the FDs represented the unit of analysis. Simply put, four FDs' experiences were scrutinized within the context of their routine tasks at two different R1 universities.

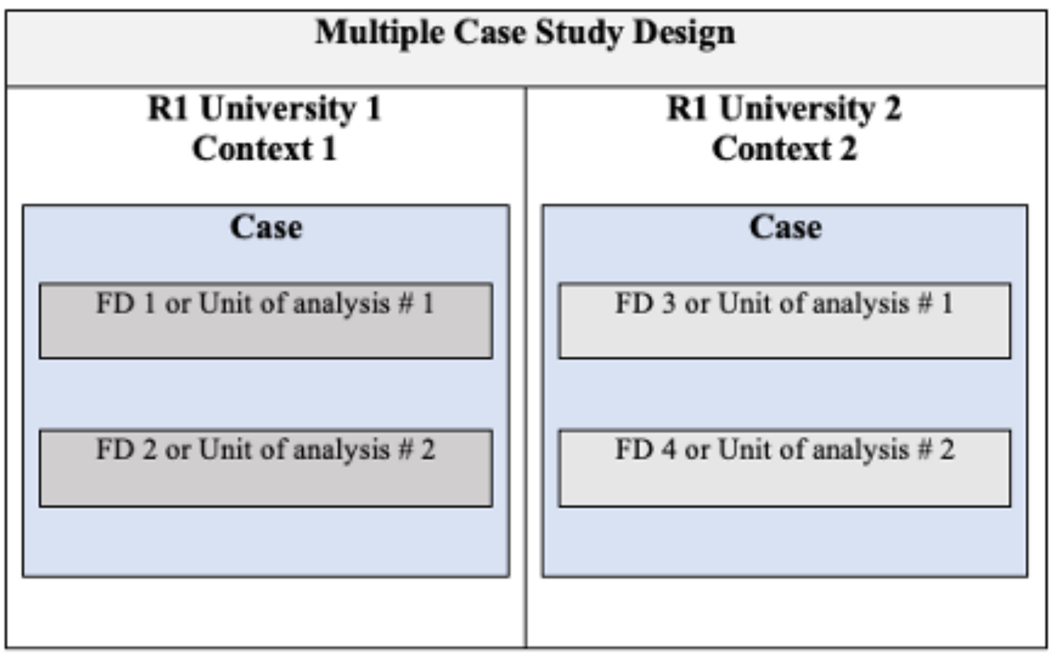
Multiple case study was a suitable methodology for examining FDs' experiences at two distinct R1 universities in the United States. Analyzing FDs' experiences of assisting FMs to integrate technology into their teaching work involved intricate elements, complex processes, and sequences best suited for examination via a multiple case study approach. As Yin (2018) states, "The distinctive need for case studies arises out of the desire to understand complex social phenomena" (p. 5). Case study research empowers researchers to amass diverse data types from various sources to scrutinize their cases (Priya, 2021; Yin, 2018). In addition, Stake (2017) describes qualitative case study as a methodology designed to investigate the firsthand experiences of actual cases in their natural settings. Therefore, this approach aided me in acquiring genuine data from four FDs within their habitual professional setting. Furthermore, the use of case study methodology enabled me to investigate *how*, *what*, and *why* questions in R1 university contexts where I could not manipulate the participants' behaviors and views. More importantly, the multiple case study methodology enabled this study to gather authentic data from two different R1 universities to capture four FDs' complex experiences.

A multiple case study methodology was selected for use in this study because it provides me with guidelines to systematically plan and investigate several cases concurrently instead of a singular one, enabling me to develop a thorough understanding of the phenomenon being investigated. A multiple case study can investigate less than four or more than 15 cases as long as the researchers have a valid reason to do so (Stake, 2017). Stake (2017) further explains, "In multi-case study research, the single case is of interest because it belongs to a particular collection of cases. The individual cases share a common characteristic or condition" (p. 5). In other words, in a multiple case study, the cases are connected and often belong to the same group or category (Stake, 2017). Moreover, Stake (2017) argued that "A multi-case study project as a whole will have its plan and organization, and so will the study of each individual case" (p. 1). Simply put, conducting a multiple case study also requires systematic planning and execution. In addition, in a multiple case study, "a field researcher or data gatherer will concentrate on each single case almost as if it is the only one" (Stake, 2017, p. 1). Yin (2003) asserts that researchers can utilize multiple case studies for replication purposes to predict similar or contrasting findings. As a result, researchers should carefully select similar cases to ensure they align with their study's purpose and theoretical frameworks (Stake, 2017) and appropriately represent the issue being investigated (Yin, 2003). This study purposefully selected two cases at two R1 universities, and each one consisted of two units of analysis.

This study examined four FDs' experiences in two R1 university contexts, two FDs from each of the two R1 universities. Therefore, multiple case study was an appropriate methodology for addressing contextual variations and achieving the academic rigor this investigation required. The teaching and learning context at R1 universities varies from one institution to the next. Likewise, FDs' experiences vary from one institution to the next. Unlike a single case study methodology that focuses on one context, multiple case study methodologies offer diversity across research sites and settings (Stake, 2017). Multiple case study research is "generally considered more compelling and robust, and worthy of undertaking. This is because a multiple case study design has a greater chance of weeding out data collection errors and prejudices and produces a more acceptable end result" (Yin, 2014, p. 60). Being intentional in the selection of cases to meet the study's purpose and theoretical lens offers diversity across research contexts (Stake, 2017).

Considering the need to leverage the diversity of contexts to collect rich data, this multiple case study purposely chose two cases at two R1 universities. Each case included two units or FDs. In other words, this study investigated the experiences of four FDs. The utilization of two units or FDs at each research site enabled me to examine multiple instances within a common context. This approach allowed for the identification of patterns, discrepancies, and connections among different units (Stake, 2017), promoting a thorough comprehension of the cases and research contexts. Moreover, exploring cases from two institutions granted access to data from differing research locales and contexts. This facilitated both within- and cross-case analyses (Stake, 2017) with "some emphasis on the binding concept or idea" (Stake, 2017, p. 8), yielding persuasive responses to the research queries. To be specific, by following the abovementioned methodology, this study examined FDs' experiences "in terms of their situational issues, interprets patterns within each case, and then analyses cross-case findings to make assertions about the" (Stake, 2017, p. 10) concepts or ideas related to FDs experiences. The use of such a strategy enabled me to discern patterns in and disparities between the cases, leading to more definitive conclusions.

Figure 3.1. Multiple Case Study Design



Pilot Study

In anticipation of this dissertation research, I undertook a pilot study in the fall of 2022. The execution and outcomes of the pilot study provided invaluable insights that have shaped this study's participant recruitment, design, and methodology. Firstly, FDs are busy professionals and recruiting eligible and dedicated participants necessitates extended durations. Hence, it was imperative that I used social media and leveraged my affiliations with relevant professional associations to connect with a vast pool of potential participants. Secondly, I must delineate precise eligibility and inclusion criteria to expedite the recruitment process and ensure the selection of suitable participants. Transparent criteria and expectations assisted potential participants in their decision to either accept or decline participation in the research. Thirdly, FDs and TLCs engage in numerous projects within their campuses and generate a significant volume of data. It was, therefore, paramount that I concentrated on data that resonated with the theoretical framework underpinning this study. Utilizing pre-interview questionnaires was advantageous, as they procured job and context-specific preliminary data, which subsequently helped in affirming eligibility and streamlining the interviews and document collection process. Lastly, as indicated by Merriam (1998), pilot interviews can serve to hone interview questions.

The insights I gained from my pilot study enabled me to make several improvements to my dissertation research implementation. I assessed and refined several interview questions and created conversational types of questions that were added to my study's interview protocol. The pilot also enabled me to practice interviewing research participants and analyzing data in NVivo, which improved my skills in conducting both activities. I improved my participant eligibility and selection criteria to include years of experience and participants' willingness to share relevant artifacts. Lastly, I leveraged my personal connection with colleagues at the POD network by asking them to share my research invitation with potential participants and to introduce me to other FDs in their networks.

Protection of Human Subjects

I took preventive actions and followed ethical guidelines to protect the study participants. For example, I submitted an institutional review board (IRB) application form to the Kansas

State University's IRB board. The IRB application described the study implementation and included protocols and forms used for data collection and analysis. The study started after the investigator received approval from the IRB board. I reviewed the inform consent form with each participant to ensure I answered their questions and addressed their concerns, letting them know that they could withdraw from the study activities at any time without any negative consequences.

Additionally, I used pseudonyms to protect the participants identify and avoid revealing the name of the research sites. The final report includes no identifiable information and no institutional documents that can lead to the identification of the participants or their university.

Population and Research Setting

The population for this study was FDs. The main population this research was interested in was professionals who provide dedicated support to help FMs leverage technology for teaching in R1 universities. Their job titles may include those of instructional designer, technology trainers, academic developers, educational developers, and technology mentors or coaches. I distributed the research invitation (see 0) in the Professional and Organizational Development (POD) network, which is large association of FDs with approximatively 1,800 members. I recruited one participant through the POD who shared a list of FDs on her campus, which allowed me to recruit another FD at her R1 university. I also received multiple suggestions from POD members that enabled me recruit two FDs at another R1 university.

This study selected four participants or FDs through purposeful sampling (Schoch, 2020) from two distinct R1 universities within the United States. Purposeful sampling involves researchers deliberately choosing participants who align with the study's objectives (Punch, 2005), its conceptual framework, and data collection requirements (Miles & Huberman, 1994).

Specifically, I communicated with several potential participants via email, asking them to confirm they had read, understood, and met the eligibility requirements (see 0). Based on their responses, I narrowed my participant pool to four FDs at two R1 universities. I emailed these four potential participants the informed consent form and pre-interview questionnaire. I then asked them to complete and submit the pre-interview questionnaire before the first interview took place to confirm their participation. Simply put, I used the questionnaire as a screening tool because it includes questions about experiences and employers that help collect information to confirm the participants' eligibility. I, therefore, reviewed the questionnaires to ensure the participants met the selection criteria before conducting the first interview.

As a result, I recruited four experienced FDs from two research-intensive or R1 universities. Both universities are located in the United States and are classified as R1 or research-intensive universities by the Carnegie Classification of Institutions of Higher Education. Pseudonyms are used to describe and refer to participants to protect their identities. The universities are also referred to as R1 University A (Case 1) and R1 University B (Case 2) to avoid revealing the names of the institutions. Each participant had at least five years of experience and had been working for at their R1 university for at least a year. Using these criteria ensured that participants were experienced practitioners, thereby enriching the data gathered through interviews, questionnaires, and documents.

Case 1 consisted of Susan and Oscar's experiences in assisting FMs in teaching with technology at R1 University A. To be precise, they work in the same context or setting. Simply put, the participants work for the same faculty development center, which provides campus-wide support and guidance for the implementation of educational technology. This center manages multiple technology platforms, software, and other technologies. It supports FMs through training, consultations, and drop-in sessions during peak periods, such as the start and end of semesters. This support focuses on preparing courses and finalizing gradebooks in the LMS, as well as addressing other technical issues. The FD center also offers campus-wide training and webinars that cover various technologies, topics, and effective practices.

Susan has over 25 years of experience as an FD, holds a graduate degree, and has worked for R1 University A for approximately 10 years. She is the Director of a faculty development center that focuses on instructional technology within an IT department. She reports to a supervisor in the IT department. In other words, she does not work for a Teaching and Learning Center (TLC) and does not report to an academic staff member.

Oscar has 6 years of experience as an FD, possesses a graduate degree, and has worked for R1 University A for about 4 years. He holds an Instructional Design position. Oscar does not work at a TLC either. He works with Susan in the FD Center within the IT department. Specifically, Susan is Oscar's direct supervisor.

Case 2 consisted of Kelly and Anne's experiences in assisting FMs to teach with technology at R1 University B, but they work in two different contexts. The participants work in two different academic units or FD centers, each located in separate college. Specifically, Kelly works for an academic unit or center that leads new faculty orientation and provides technology training several times a year for new FMs that address information related to LMS and other technologies at her college. Kelly's unit hosts teaching seminars multiple times a year. It also offers one-on-one consultations to help FMs learn and use educational technologies in depth. Conversely, Anne works on a team of FDs in an academic unit that provides course design services, educational technology training, and ongoing support to FMs at her college. Precisely, the FD team offers a workshop series that addresses various teaching and learning topics. Anne's unit leads new faculty orientation and provides help desk support for online course design and development at her college.

Kelly has 6 years of experience as an FD, possesses a graduate degree, and has worked for 13 years at R1 University B in various FD units. She holds an Assistant Director position in an academic unit at a college at R1 university B. Kelly does not work within an IT department or a campus-wide TLC.

Anne has 16 years of experience as an FD, owns a graduate degree, and has worked in various colleges at R1 University B for approximately the same length of time. She holds an instructional designer position in an academic unit, but she does not work with Kelly. She does not work for a campus-wide TLC either. Anne used to work as an FD within an IT department at R1 University A for about two years before joining her current FD team in an academic unit.

Table 3.1. Participants, Services, and Research Contexts

	Case 1 (R1 University A)	Case 2 (R1 University B)
Participants	Susan has 25 years of experience and has worked for R1 University A for 10 years. Oscar has 6 years of experience and has worked for R1 University A for 4 years.	Anne has 16 years of experience and has worked for R1 University B for 16 years. Kelly has 6 years of experience and has worked for R1 University B for 13 years.
Location on Campus	IT Department	College of Business (Anne) College of Technology (Kelly)
FDs' Scope of Work	Serve R1 University A Campus	Each participant serves their immediate college
FD Services	Campus-wide training, webinars, consultations, course design, interdisciplinary training	College-based and discipline-specific training, webinars, consultations, course design

Data Collection

This multiple case study explored the experiences of four FDs as they assisted FMs in integrating technology into their teaching and learning practices within two distinct R1 universities. This investigation collected data in several stages. To gain comprehensive insights into the FDs' experiences, I employed data triangulation, using diverse data types from the results of semi-structured interviews, document, archival record, and digital asset analysis, and open-ended questionnaires (Merriam, 1998; Storey, 2015; Yin, 2018). This multiple case study adopted an exhaustive approach to data collection, leveraging numerous methods (Cooley & Bickel, 1986; Johnson & Christensen, 2019). In essence, only data that aligned with this study's objectives, scope, and theoretical underpinnings were collected.

Questionnaires

Initially, the study used pre-interview questionnaires (see 0) crafted in congruence with its conceptual framework. Questionnaires served as effective tools for garnering participant-specific information (Priya, 2021). Participants completed and submitted their questionnaires prior to the first interview. These pre-interview tools were instrumental in amassing contextual and role-specific details, including positive and negative factors, challenges, information about documents, digital materials, and archival records, setting the stage for subsequent interviews and document accumulation.

Semi-Structured Interviews

This study collected data through semi-structured interviews by interviewing four participants. Interviews stand as pivotal sources of qualitative information (Merriam, 1998; Yin, 2018). Thus, each FD participated in three 60-minute semi-structured interviews conducted via Zoom. I interviewed two participants from each R1 University and collected 116 pages of interview data, comprising 56 pages from Case 1 and 60 pages from Case 2. These interviews were archived in the Google Drive Cloud. Adhering to the semi-structured format, the interviews contained a blend of structured and open-ended queries, enabling participants to freely articulate their experiences (Merriam, 1998).

Furthermore, the interview protocol encompassed a variety of questioning techniques, such as ideal position, hypothetical, interpretive, and devil's advocate (Merriam, 1998). The participants and I discussed artifacts and work samples (e.g., agendas, syllabi, templates, and guides) during the interviews. Ensuring thorough analysis, each interview took place at least a week apart, facilitating the transcription and examination of responses and artifacts to craft pertinent follow-up questions.

Documents

I gathered relevant documents from each participant and case (see Appendix D - IRB Informed Consent Form). In qualitative research, documents stand as invaluable data reservoirs (Merriam, 1998; Storey, 2015; Yin, 2018). Defined as any "written, visual, and physical material relevant to the study at hand" (Merriam, 1998, p. 112), documents serve to corroborate the authenticity of data obtained through alternative channels (Yin, 2018). A diverse array of documents (See Appendices E and F) ranging from training agendas, templates, guides, and evaluation forms to marketing collateral, grant details, TLC strategic blueprints, technology governance outlines, service bulletins, and descriptions was collected for each specific case and research location. These documents were also analyzed through the lens of the study's conceptual framework to create follow-up interview questions.

Digital Assets

This investigation compiled digital materials (see Appendix E - List of Documents, Digital Assets and Archival Materials (Case 1) and Appendix F - List of Documents, Digital Assets and Archival Materials (Case 2)), such as video recordings, video tutorials, information from the TLC website, program descriptions, and additional digital products, to corroborate the data obtained from documents, interviews, and questionnaires for each case. Digital materials stand as valid sources of evidence or data that researchers can employ in their inquiries, as noted by Merriam (1998) and Yin (2018).

Archival Materials

Subsequently, this study gathered and used archival data for each case and research site (see Appendix E - List of Documents, Digital Assets and Archival Materials (Case 1) and Appendix F - List of Documents, Digital Assets and Archival Materials (Case 2)). Such materials, encompassing annual reports, survey data, program evaluations, and other pertinent publications, can serve as valuable data sources in a systematic exploration, as highlighted by Schoch (2020) and Yin (2018). Reviewing this type of data enabled the researcher to develop probing questions for guiding the interview process.

Furthermore, I adhered to the use of best practices for data collection and management. In line with Yin's (2018) guidelines, the researcher established a case study database on Google Drive Cloud to centralize the storage and management of data. This endeavor also aimed to "establish a chain of evidence" (Schoch, 2020, p. 251), creating a direct linkage between the research findings, conclusions, and pertinent datasets or evidence. Additionally, the use of a case study database facilitated the data analysis and reporting processes.

I was flexible in addressing participants' concerns and questions, ensuring their seamless participation in the study. Interview scheduling was tailored to align with participants' work commitments and preferences, and semi-structured interviews were conducted via Zoom to mitigate logistical challenges for participants. For example, three interviews were rescheduled to work around participants' needs and work priorities. To navigate around confidentiality risks and restrictions, the study preferentially collected and analyzed publicly accessible documents and archival data from participants.

Table 3.2. Research Questions, Data, and Methods

Research Questions	Data	Data Collection Methods
What are FDs' experiences in the process of assisting FMs in using technology for teaching and learning?	Interview conversations and transcripts focusing on: • FDs' interpretation of their experiences • FDs' interpretation of their collaboration with other stakeholders • FDs' daily activities • FDs' strategies and tools	Participants' Interviews
What and *Why* Questions	Documents including FDs' work samples, training agendas, templates, guides, evaluation forms, marketing materials, grant details, TLC strategic blueprints, technology governance outlines, service bulletins and descriptions (see Appendix D - IRB Informed Consent Form)	Documents
How do FDs perceive their roles in the process of assisting FMs in using technology for teaching and learning?	Interview conversations focusing on: • FDs' perception of their roles • FDs' interpretation of how others view their roles • FDs' understanding of interactions with others • FDs' views of strategies and tools	Participants' Interviews
How and *Why* Questions	Digital materials including program videos, video tutorials, information from the TLC website, and other digital products (see Appendix D - IRB Informed Consent Form)	Digital materials
What factors facilitate or hinder the process of assisting FMs in using technology for teaching and learning?	Questionnaire responses including: • Contextual and role-specific details • FDs' challenges and opportunities • FDs' view of ideal work setting and situation	Open-ended Questionnaires
What Questions	Archival records including annual reports, survey data, program evaluations (see Appendix D - IRB Informed Consent Form)	Archival records

Data Storage and Management

The study was committed to upholding data privacy and confidentiality best practices to protect participants. First, I used pseudonyms to protect the participants' identities and avoid revealing the name of the research sites. Second, data storage was facilitated through a password-protected Google Drive Cloud. The data is only accessible to me, my major professor, and IRB members upon request. Access to the data requires two-factor authentication. Similarly, I used a password-protected account in NVivo for data analysis and visualization. Third, I redacted data (i.e., files, digital materials, transcripts) to remove personal and institutional information. Moreover, upon the completion of the dissertation project, all raw data, including interview audio files, transcripts, documents, digital asset, and archival records, will be expunged in alignment with Kansas State University's data retention policy. Lastly, the final report and any related academic publications will not include participants' personal information or institutional affiliations.

Data Analysis

In this multiple case study, I conducted data analysis using a two-pronged approach consisting of within-case and cross-case analysis. The data analysis process was iterative and interactive and guided by the study's conceptual framework, facilitating the interpretation and comprehension of the amassed data (Merriam, 1998). The interviews were transcribed on Zoom first and reviewed and improved by a paid service provider to ensure the accuracy of the data. I listened to each interview and read the transcript three times to ensure accuracy and to familiarize myself with the data. I also review documents, archival records and digital assets twice to familiarize myself with their content. Afterwards, I coded the data, analyzed the categories and themes that emerged from the data through the lens of the five phases of ADKAR

Change Management Model and the constructs of the TPACK Framework to maintain a strategic alignment between the research objective, questions, and methodological approach. To systematically document my assumptions and observations, I composed reflective and analytic memos throughout the analysis process. The within-case data analysis for each case and unit of analysis consisted of several cycles of coding.

Data Analysis Stage One: Within-Case Analysis

Informed by the six phases of ADKAR and the constructs of TPACK, the data analysis for each case consisted of multiple cycles of stages. The process was inductive and iterative in nature and encompassed preliminary data analysis followed by multiple cycles of coding of questionnaires and interview transcripts utilizing NVivo software and MS Word documents. All documents, digital assets, and archival records data were coded and analyzed manually following an inductive approach. Inductive coding requires approaching the data without a pre-established set of codes, allowing for the emergence of codes directly from the data corpus (Merriam, 1998; Saldaña, 2021). Saldaña (2021) articulates that "coding is a cyclical act" (p. 12) and delineates a code as "a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data" (p. 5). The implementation of several coding cycles enabled me to explore the data thoroughly and generate a deep understanding of FDs' experiences.

I conducted preliminary data analysis simultaneously with the onset of interviews and artifacts (documents, digital assets, and archival records) collection from each participant. This approach aligns with Merriam's (1988) proposition that "A qualitative design is emergent. The researcher… does not know ahead of time every person who might be interviewed, all questions that might be asked, or where to look next unless data are analyzed as they are being collected"

(p. 123). Relatedly, I manually analyzed the available data, comprising interviews, documents, archival records, and digital materials gathered from the four participants or FDs, in preparation for generating follow-up questions for subsequent interviews.

Artifacts: I received, reviewed, and analyzed 43 artifacts for case 1 (see Appendix E - List of Documents, Digital Assets and Archival Materials (Case 1)) and 44 for (see Appendix F - List of Documents, Digital Assets and Archival Materials (Case 2)). These artifacts include documents, digital assets, and archival records that the FDs used in their work contexts. I specifically analyzed each artifact to assess and identify activities, patterns, and evidence that help explain how FDs navigate the phases of change and to highlight events and approaches that assist FMs in developing their technological and pedagogical knowledge and skills. Simply put, I analyzed the artifacts through the lens of the study's conceptual framework to identify patterns and approaches aligned with the constructs of the ADKAR Change Management Model and the TPACK Framework. The analysis of the artifacts corroborated the authenticity of data obtained through alternative channels (Yin, 2018), including questionnaires and interview data. It also showed how the artifacts support or align with the constructs of the conceptual framework (see Appendix G).

Questionnaires and Interview Transcripts*:* I conducted the initial coding cycle of questionnaire and interview transcripts for each case and unit of analysis in NVivo, which consisted of line-by-line coding using both descriptive and in-vivo coding strategies. Descriptive coding was utilized to identify and summarize distinct segments of data using words or short phrases while in-vivo coding allowed for the extraction and verbatim reporting of participants' words and phrases (Saldaña, 2021). Upon multiple readings of the data and the completion of the initial coding cycle, I reviewed all codes and composed analytic memos, setting the stage for the second coding cycle.

During the second coding cycle I meticulously reviewed and synthesized the codes that emerged during the initial cycle in in NVivo. I identified and documented patterns, initiating the process of data consolidation into cohesive units or segments (Yin, 2018). Saldaña (2021) elucidates that "a pattern is repetitive, regular, or consistent occurrences of actions/data that appear more than twice" (p. 9). Furthermore, these units and segments underwent systematic organization into categories (Saldaña, 2021). During this second cycle, I employed pattern coding and thematic analysis, techniques that were pivotal in categorizing the data.

I conducted a third coding cycle in NVivo to review and evaluate the categories and patterns (Yin, 2018) and grouped them into initial themes that resonate with the study's scope, research questions, the six phases of ADKAR, and the constructs of TPACK. Specifically, this cycle enabled me to amalgamate categories from each unit, coalescing them into overarching themes and concepts (Saldaña, 2021) to create an overview of each case and its research setting.

The last coding cycle consisted of exporting the files from NVivo into two master MS Word documents, one for each case, to manually review the themes, rearranged them under the appropriate research questions. I also reviewed analytics memos which were helpful in organizing the themes and selecting important quotes from each unit of analysis to include in in each case report verbatim. The master Word documents were also used during the cross-case analysis.

Table 3.3. Themes and Codes from NVivo

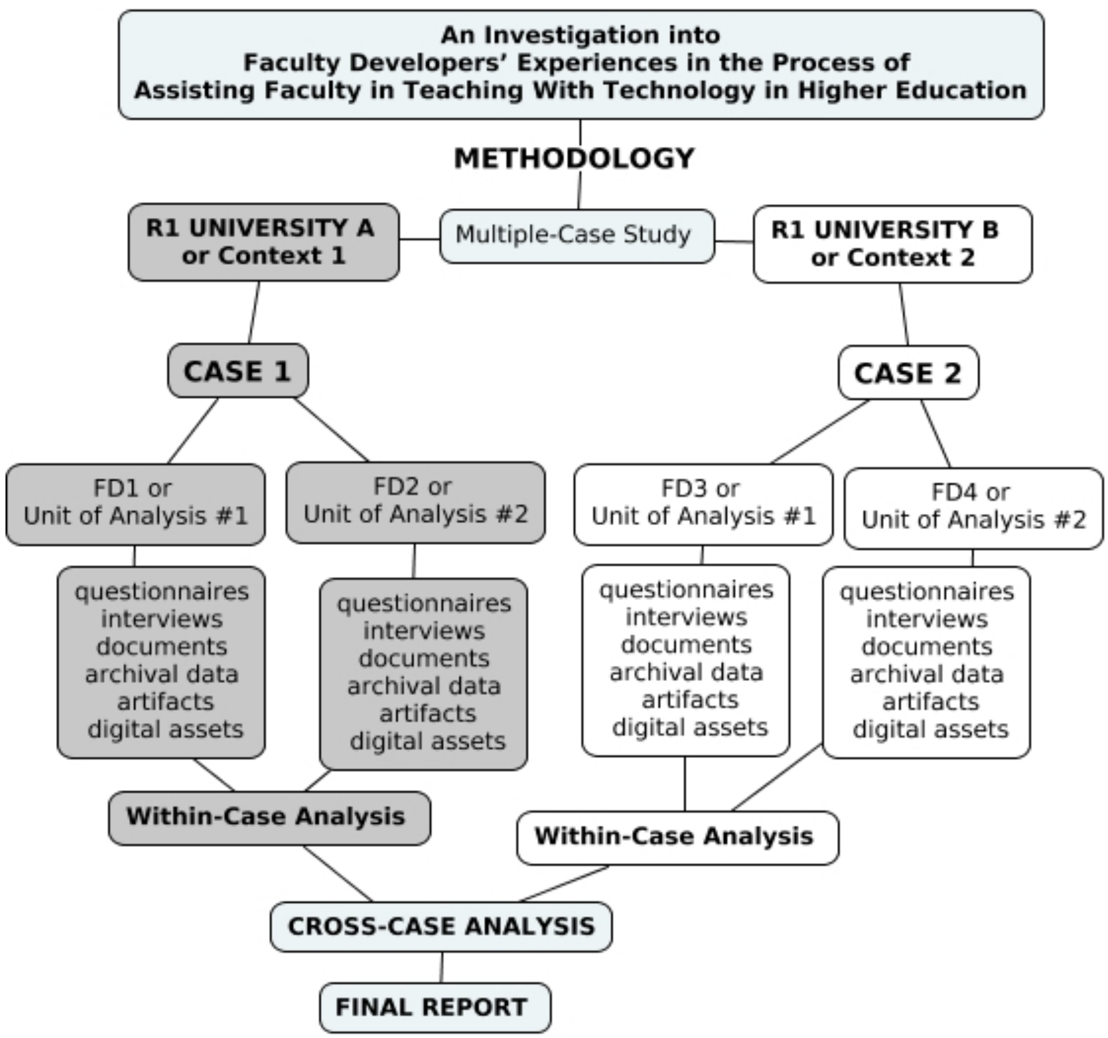
Themes	Sources	References
Factors that Hinder or Facilitate FD Work	8	356
FDs' Experiences in Assisting FMs	9	1005
Change Inherent Part of Helping FM Develop TPACK	5	97
FD Multifaceted Experiences in the Process	8	228
Guide FMs Through Phases of Change to Develop TPACK	9	680
Dealing and Managing Constant Changes	7	91
Develop TPACK Knowledge and Ability	8	223
FDs' Perceptions of Their Roles	5	200
Misconceptions About FD Roles And Work	5	43

Data Analysis Stage Two: Cross-Case Analysis

The subsequent stage of data analysis encompassed a cross-case analysis. In this stage, informed, once again, by the six phases of ADKAR and the constructs of TPACK, I consolidated data from all cases to perform a thorough analysis, aiming to uncover new patterns, categories, and themes spanning across the cases (Merriam, 1998). I compared data from the two Master Word documents to compare both cases, identifying and summarizing similarities, differences, and instances of contradicting evidence. Finally, I systematically consolidated these similarities and differences, categorizing them under new themes to craft comprehensive findings (Merriam, 1998) and formulate conclusions in alignment with the study's theoretical frameworks, ADKAR and TPACK. I arranged the themes under the appropriate research questions to ensure consistency and alignment with the research's conceptual framework. I also wrote reflective and analytic memos to documents to document and assess my views and processes. Doing so allowed to think more deeply about the aspects the data that I might have overlooked or overemphasized in my analysis. This enabled me to review themes and quotes to make necessary adjustments.

Lastly, the themes identified in the within-case analysis and cross-case analysis enabled me to write a final report or narrative that encapsulates the findings related to the four FDs' experiences in assisting FMs to incorporate technology into their teaching and learning practices within higher education settings. This final report presents a detailed account of the individual cases, a brief summary of each unit, and the cross-case analysis, its themes, and sections steered by the conceptual frameworks underpinning this study. It is imperative to underscore that the final report maintains participant confidentiality by excluding any information that could potentially reveal the identities of the four participants or their respective employers.

Figure 3.2. Research Methodology and Methods



Strategies for Achieving Academic Rigor and Trustworthiness

This study followed qualitative research guidelines and high-quality criteria to ensure the implementation of a rigorous, credible, and trustworthy investigation. I followed the criteria for excellence in qualitative research proposed by Tracy (2010). These criteria include: "(a) worthy topic, (b) rich rigor, (c) sincerity, (d) credibility, (e) resonance, (f) significant contribution, (g) ethics, and (h) meaningful coherence" (Tracy, 2010, p. 837). First, this study was built on previous research recommendations to address a worthy topic and relevant questions that present new perspectives into FDs' experiences in supporting faculty technology integration in their teaching. Moreover, this research, informed by the constructs of two relevant theoretical frameworks (TPACK and ADAKAR), applied a rigorous and systematic approach to investigate multiple cases in two R1 university contexts. I applied a well-established multiple case study methodology, coupled with various methods, to dedicate adequate time and resources to the collection of rich data from four participants from two research sites. I also used purposeful sampling to recruit participants that fit the study's purpose and objectives.

Second, I took appropriate actions to show sincerity in my research approach and execution. For example, I disclosed and discussed my positionality and subjectivity. More importantly, I employed a transparent process in documenting, reflecting on and addressing my biases and assumptions during the investigation. Precisely, I used self-reflectivity to document and discuss the rationale behind my choices, actions, and interpretations. Following such a practice was helpful because, as Tracy (2010) stated, self-reflectivity is "considered to be honesty and authenticity with one's self, one's research, and one's audience" (p. 140). To be specific, I generated analytic memos after each interview, following the analysis of every transcript and upon evaluating each document or digital asset. Crafting such memos facilitates the accurate capturing of observations made by researchers as they gather and scrutinize data (Yin, 2018).

Third, this study used adequate practices and processes to reach an appropriate level of credibility and resonance. Tracy (2010) explained that credibility refers to the dependability of the findings, while resonance consists of the study's relevance and value for the readers and practitioners in various contexts. To establish the credibility of my results, I gathered various types of data and conducted within- and cross-case analysis to compare contradicting explanations and produced a thick description of the phenomenon under investigation. For the sake of transparency, I maintained a reflective journal and engaged in member checking (Tracy, 2010). One participant from Case 1 and two from Case 2 responded to my member check message. As a result, one quote was adjusted, and another was removed based on a participant's feedback. Oscar from Case 1 at R1 university responded and stated, "I read the interview and the case analysis and think you have accurately represented my experiences and those of the team." Furthermore, because there is a lack of research on FDs' experiences in supporting FMs to teach with technology, I gathered authentic data to produce a final report that tells a story that resonates with readers in multiple contexts and that offers insights into FDs' complex experiences in higher education.

Fourth, the research abided by ethical guidelines and made significant contributions to the literature on faculty development and technology integration in higher education. This research generated insights that can be used to improve FDs' practices, help amplify the voices of FDs in the literature and offer recommendations for future research on the topic. In addition, this investigation examined FDs' experiences through the lenses of the constructs of TPACK and ADKAR. The use of a combined or hybrid framework is an innovative approach that helped capture FDs’ experiences of helping FMs navigate the phases of change (ADKAR) at the individual level to develop their technological, pedagogical, and content knowledge in higher education. I applied ethical procedures and precautions to reduce privacy and confidentiality risks to the human subjects. IRB approval was secured from Kansas State University before the start of the study. The study's benefits and risks were described to volunteer participants before they signed an informed consent form.

Lastly, the I conducted a meaningful and coherent investigation using a well-established research design and methodology. Coherent investigations, as Tracy (2010) explained: "(a) achieve their stated purpose; (b) accomplish what they espouse to be about; (c) use methods and representation practices that partner well with espoused theories and paradigms; and (d) attentively interconnect literature reviewed with research foci, methods, and findings "(p. 848). With that in mind, this qualitative multiple case study built on previous scholars' recommendations and informed by the ADAKAR and TPACK frameworks, achieved its research objectives through the use of well-established and rigorous data collection and analysis methods.

Chapter Summary

This research employed a qualitative methodology, specifically leveraging a qualitative multiple case study approach to examine the experiences of four FDs as they aid FMs in harnessing technology for pedagogical purposes within higher education. The study investigated two distinct cases at two separate research-intensive or R1 universities. The participants for this study are four FDs who provide dedicated support to help FMs use technology for teaching in R1 universities. The data collection for this study was executed in several distinct stages. I employed data triangulation on the data from semi-structured interviews, documents, archival records, digital assets, and open-ended questionnaires. Data analysis was conducted in two phases: the within-case phase which included unit analysis and cross-case examinations, culminating in a comprehensive report or narrative consistent with the constructs of the conceptual frameworks steering this inquiry, TPACK and ADKAR.

Chapter 4 - Findings

Introduction

The purpose of this multiple-case study was to investigate the experiences of four faculty developers (FD) in assisting faculty members (FM) to teach with technology within the context of two research-intensive universities. This study investigated two cases in depth, and each case captured the experiences of two FDs at one R1 university from the lenses of the Technological Pedagogical Content Knowledge (TPACK) Framework (Koehler et al., 2013) and the Awareness, Desire, Knowledge, Ability, Reinforcement (ADKAR) Change Management Model (Hiatt, 2006). Both universities are located in the United States and are classified as R1 or research-intensive universities by the Carnegie Classification of Institutions of Higher Education. Pseudonyms are used to describe and refer to participants to protect their identities. The universities are also referred to as R1 University A (Case 1) and R1 University B (Case 2) to avoid revealing the names of the institutions.

Overview

Employing both the TPACK Framework and the ADKAR Change Management Model as theoretical lenses, this qualitative multiple-case study investigated the experiences of four FDs as they supported FMs in teaching with technology in the context of two research-intensive universities. Precisely, this investigation addressed the following questions:

1. What are FDs' experiences in the process of assisting FMs in using technology for teaching and learning?
2. How do FDs perceive their roles in the process of assisting faculty in using technology for teaching and learning?

3. What factors facilitate or hinder the process of assisting FM in using technology for teaching and learning?

Findings from interviews, questionnaires, document, digital assets and archival record data analysis revealed five major themes that capture FDs' experiences and perceptions of their work and roles. Precisely, this study revealed that: (a) change was a fundamental aspect of the FDs' work and role, (b) FDs' work assisting FMs to teach with technology was a complex, multifaceted process of navigating change to develop faculty's technological and pedagogical knowledge and skills, (c) FDs' experiences were multifaceted, defined by professional opportunities and institutional challenges, (d) FDs worked to overcome role ambiguity and misconceptions to justify their value as academic partners and collaborators, and (e) various factors, including organizational structure, leadership support, and FD unit location on campus influenced FDs' work. Themes 1, 2 cand 3 answer question 1. Theme 4 answers question 2, and Theme 5 answers question 3. This chapter describes the research sites and participants for each case, presents the results for each case (within-case analysis) first, before sharing a comparison of the findings from both cases (cross-case analysis).

Case 1 Findings

The Case 1 report presents the FDs' experiences in the process of assisting FMs to develop technology and pedagogy knowledge and skills to teach with educational technology at R1 university A.

Change: A Fundamental Aspect of FDs' Work at R1 University A

Data analysis in Case 1 indicated that change was a fundamental aspect of FDs' work and roles in helping FMs to teach with technology at R1 University A. This theme highlights the frequency and types of changes FDs in R1 University A faced on the job. These changes included addressing technology updates, upgrades, and replacements, as well as FMs' assumptions about teaching and learning.

Technological Changes

At R1 University A, changes were inherent features of educational technologies, as they require constant updates and upgrades until they reach the end of their life cycle. Additionally, R1 University A often replaced old technologies with new ones, which required users to learn to use the new tools. For this reason, FDs at R1 University A often dealt with technology changes to assist FMs in teaching with technology. For example, Susan described a few reasons why her FD Center often changed, updated, or replaced technologies and how she addressed those changes. She shared the following explanation about technology usage:

> If over a three-year period we see, … it's starting to go down like this, plateauing, and then going down to barely anything, then we have to start having a conversation about whether we want to keep this tool. Another influencing factor is the vendor. Is the vendor still developing for the tool? Is it becoming outdated? If that happens, then that will also influence a transition plan to something else, or a retirement plan, we're not going to use this tool anymore.

Susan further highlighted that replacing technologies was a frequent occurrence at R1 University A. She specifically explained that creating flexible and reusable content was necessary in addressing recurring LMS updates.

Similarly, Oscar reported that the technologies the FD team used at R1 University A often changed. He shared an experience where he provided guidance to someone who refused to use an approved technology because it was different from the unlicensed one that the person was comfortable using. Oscar highlighted that the experience was a common occurrence due to recurring technology changes. He reported:

> We often encounter this … the issue is people are used to using something. They're used to some doing something a certain way … or they're used to using a certain technology or a way of doing something. That way might become no longer viable for various reasons...especially in instructional technology, things change; … We often are asking people to make those changes and that can be a disorienting thing to have to … make, even what seems like maybe to you or me, like a minor thing is for some folks who are pretty used to doing something a certain way. It can be very like a big deal to make that change. We have to anticipate that and try to support them; try to make it seems … not so bad.

Susan and Oscar reported experiencing various technological changes at R1 University A for several reasons. The changes were often related to updating, upgrading, or replacing technology tools.

Instructional Change

Both Susan and Oscar indicated some FMs at R1 University A often held assumptions or beliefs about teaching and learning that may impact how they learn and use technology in their teaching. Those assumptions, therefore, should be addressed if FMs were to develop skills to leverage technology to improve their teaching. Oscar described his experiences helping FMs at R1 University A to teach with technology and shared his thoughts on FMs' assumptions about teaching and learning. He explained:

> What I find very interesting about this work, … my work now as a faculty developer is thinking about the centrality of the knowledge and belief systems that are in the minds of

> every instructor and how sometimes firm and sometimes stubborn those belief systems can be when … it comes to their thinking about like what they want to do as an instructor, what's important to do as an instructor … I use the word stubborn, I'm not referring to someone's attitude as being stubborn, like they're resistant to learn … I meant that the knowledge and belief systems about teaching and learning that exist inside faculty's heads are pretty set … Sometimes they're pretty set for a really long time.

Oscar further explained that his work as an FD addressed FMs' assumptions by proposing new ways of viewing teaching and learning. So, he argued, sometimes in the FD role "we're trying to also do other things that are bigger to invite other ways of thinking about teaching maybe, or other.. alternative perspectives on teaching and learning that might be outside of their sort of set framework." Likewise, Susan mentioned that her team offered various training to FMs, where she leveraged peer connections to motivate FMs to explore new perspectives by learning from their peers' experiences.

Summary

The FDs at R1 University A faced various technological and instructional changes. They acknowledged that they needed to address these changes effectively to support FMs in using technology to teach. Both participants described the need to engage in change management activities to enable FMs to learn and teach with technology. Simply put, promoting educational technology in teaching involves addressing changes in technology and in teaching assumptions and methods.

Navigating Phases of Change to Develop Faculty's Technological and Pedagogical Knowledge and Ability at R1 University A

This theme describes FDs' experiences in: (a) raising FMs' awareness, (b) motivating FMs, (c) promoting technology and pedagogy knowledge and skills, and (d) reinforcing technology and pedagogy implementation at R1 university A.

Raising Faculty's Awareness at R1 University A

Case 1 data analysis revealed that various events and strategies contributed to raising FMs' awareness of the need for change and of available PD services and educational technologies at R1 University A. Precisely, the FDs used new FMs' orientation, online platforms, LMS notifications, email announcements, and word of mouth or in-person networking to inform and raise awareness among FMs. The new FMs' orientation introduced new FMs to the campus technology and systems. Notifications were used to alert FMs of the deployment of new tools or updates in the LMS. FDs disseminated information about training events via emails and the university portal, and Susan attended multiple committee meetings to connect with stakeholders and discuss FDs' projects and programming. As Susan discussed her thoughts on outreach and communication, she noted, "I firmly believe in effective communication and outreach, lots of consistent communication. We have a campus portal. We post articles there in a journalistic tone, generally … software updates, pedagogical recommendations, new features. Any important things like course retirement." She also mentioned that FDs kept FMs aware of new tools added to their courses within the LMS to avoid panic.

Likewise, Oscar explained how the FD team proactively prepared for a campus-wide LMS transition by reaching out to and working with various stakeholders. For example, his team communicated with department chairs, updated them on the change process, and established a timeline tailored to their departments' needs. The FD team invited stakeholders, including FMs, to collaborate on FD's initiatives and committees. As Oscar reported, "We do a lot of reaching out in that regard … when it's useful to try to include a diverse group that includes folks from multiple departments."

In brief, Oscar and Susan leveraged both formal and informal outreach events and approaches to raise FM's awareness, and they also collaborated with various stakeholders in their outreach efforts. However, the FDs did not have control over how FMs responded to outreach messages and materials.

Motivating Faculty at R1 University A

This case's data analysis revealed that fostering FMs' desire to support and participate in change initiatives was a challenging task at R1 University A. However, various events and strategies contributed to increasing some FMs' desire to support and participate in change initiatives to improve their teaching. The FDs at R1 University A described what motivated FMs' participation in adopting new tools and instructional strategies and reported some challenges. Oscar argued that participating in training was not FMs' top priority because, as he stated, "most of our programs are optional, so it is challenging to incentivize more individuals to participate in and attend our programming." He also used the word “treacherous” to describe the faculty role and argued that FMs managed multiple priorities and a complex schedule. Likewise, Susan reported a similar observation. She remarked, "We know about the three strands in higher ed, right? You've got teaching, service and research, and in R1 research is often heavily emphasized." She expressed her frustration with her not being able to connect with those research-driven FMs. As she stated, "The faculty who are research driven tend not to attend training." While Oscar presented the FMs' schedule and workload as challenges that caused FMs to skip PDs, Susan highlighted that research-driven FMs lacked interest in PD programming due to their research activities and priorities.

Despite the challenges, the FDs at R1 University A applied various strategies to motivate FMs to participate in change initiatives. These strategies included seeking FMs' input and prioritizing their needs; offering flexible PD options to increase participation in FD programming; leveraging demonstrations to show the value and benefits of the new technologies and teaching ideas; and promoting peer-learning and success stories to advertise new technology and instructional strategies. For example, Susan expressed her desire to provide positive experiences for FMs during training that would convince them to adopt new technologies. She explained, "I want the experience to be positive for them in just the actual session. Then when they come out of it thinking, 'oh, yes, I'm going to keep doing this and applying it'". Similarly, Oscar discussed the importance of showing the value of learning and using technologies to motivate FMs. He argued:

> What I think about is an opportunity where…faculty themselves perceive some big value in learning this and trying to integrate it. There's some like big advantage that they are committed to and understand, at least initially in theory of why to...try to do this or work on it. That can be very helpful, motivating.

In other words, Oscar argued that demonstrating to FMs how educational technologies can facilitate their work or teaching may motivate them to try new educational technologies and alter their teaching methods.

The FDs at R1 University A also navigated FMs' resistance to change, thereby increasing some FMs' desire to support and participate in change initiatives. While heavy workload and lack of time prevented some FMs from learning technologies and participating in change initiatives, there was another group of FMs who refused to engage in any FD activities and change initiatives, because they did not want to change or use new technologies. Therefore, FDs applied appropriate strategies to address the resistance to change and encourage those FMs to try new educational technologies and instructional ideas.

The FDs at R1 University A proactively leveraged technology demonstrations and connections with FMs, while maintaining a good attitude, to address resistance to change and convince some FMs to support and join change initiatives. Oscar shared that he used vivid demonstrations to sell FMs on the benefits of technologies, convincing them to apply these tools in their teaching. Likewise, Susan described that she relied on her connections, persistence, and positive attitude to break FMs' resistance. She shared the following reflection:

> We start to make those connections and relationships. Then it's just plain old persistence. I always say, it's a good attitude, a good demeanor when you're interacting with people, even in the face of anger and resistance and just like frustration, as long as you are maintaining that level of professionalism and positive response in that moment, can be a breaker of that tension.

This statement highlights Susan's belief that building connections and creating a positive experience for FMs was crucial in addressing resistance to change.

Promoting Technology and Pedagogy Knowledge and Skills at R1 University A

This section presents FDs' experiences in assisting FMs in developing: (a) technology knowledge and skills, (b) pedagogy knowledge and skills, and (c) skills in combining technology and pedagogy to make instructional decisions to support students' learning. It will also address other observations about how FMs develop FMs' technology and pedagogy knowledge and skills.

Technology Training and Application at R1 University A

Various events and approaches contributed to the development of FMs' technology knowledge and skills in the context of R1 University A. They consisted of training, webinars, and ongoing support with consultations. Susan shared her approach and belief about using training to empower FMs. She explained:

> I should say, I believe in empowering faculty to become self-sufficient with the tools. In the beginning, sometimes they need a little more handholding and a little more guidance. It's not just about what we would call the "buttonology", the how-to of using the tool. It's often the effective practice or the tips for certain settings that they may not realize are there in the system to make the quality-of-life improvements in their courses that would make it more effective. Especially if they're teaching a certain way or they've got a certain size course, they want to look at the settings to make it work well for them. Often, what we will do is first training.

Similarly, Oscar described the services his FD team offered to assist FMs in integrating technology into their teaching. He wrote, "We provide ticket support and individual consultations for questions related to all university instructional technology applications. We also run regular webinars on effective uses of instructional technology applications." This excerpt describes how the FDs utilized training and consultations to develop the FMs' technology knowledge.

Furthermore, in the context of R1 University A, the FDs used demonstrations and consultations to enable FMs to apply technology in their teaching. Susan described her experiences using demonstrations and consultations to assist FMs. Reflecting on her experiences guiding the FM in developing the ability to use technology, Susan argued, "That ability for them to do it themselves has a longer-term impact because, they're the ones taking ownership of practicing the tool, learning it, and repeating it as they apply it in their courses." Similarly, Oscar described how he assisted FMs to use videos in their teaching and how he focused on skill-building. He explained how he addressed FMs' questions and requests for assistance. He shared:

> I'll sort of work with them on helping them learn the requisite skills to develop the capacity for them to ... fix it, but also now do things on their own. We do a lot of skill building and capacity building based on the … tickets that come in.

This section describes how Susan and Oscar went beyond technology knowledge to develop FMs' ability to apply technology in their teaching.

Pedagogy Training and Application at R1 University A

The participants employed various events and approaches to assist FMs in developing pedagogy knowledge and skills within the context of R1 University A. For example, the FDs provided guidance on technology selection, assessment, and test development. They also modeled effective pedagogical decisions to set an example for FMs. Oscar described the importance of pedagogy in teaching with technology. He argued that pedagogy principles "have to do with making choices or, knowing about what the choices are and then making choices about what to use and how to use it in order to achieve specific instructional goals." Oscar also participated in group conversations with FMs to explore and discuss teaching and learning issues, including assessment practices and test creation. Susan similarly used workshops to help FMs develop pedagogy knowledge to implement changes related to teaching technology. She modeled setting objectives and measurable learning goals by using Bloom's Taxonomy framework.

Moreover, Susan and Oscar described their experiences using various approaches to help FMs develop the ability to make and use sound pedagogical decisions in their teaching at R1 University A. Susan utilized consultations and brainstorming sessions to demonstrate to FMs how to apply pedagogy. She also provided FMs with appropriate templates and recommendations. Similarly, Oscar guided FMs to make decisions about how to use technology and made pedagogical decisions. Oscar described an example where he guided an FM to apply pedagogy to engage students in the learning process. He explained:

> For example, I was working with this one faculty who was using [a tool] and … I was encouraging him to think about maybe not just using it as a way of having students answer questions correctly or incorrectly, but to also use it to get information from students, like reflective information about their own learning or insights from students or comments from students that they might like bring forward that then might help sort of shape the discussion or offer up some things for the discussion.

This excerpt highlights how Oscar influenced one FM to make teaching decisions that went beyond simply promoting question-and-answer activities to increase student engagement.

Combining Technology and Pedagogy at R1 University A

Various events and approaches contributed to the development of FMs' ability to combine technology and pedagogy to make decisions that supported instructional changes at R1 University A. For instance, Susan and Oscar described their experiences assisting FMs in combining pedagogy with technology to improve their courses. Susan explained that she and her team provided both technology and pedagogy training. She also mentioned she found it effective when she connected technology with teaching using her own experiences. After discussing technology training, she shared this example about addressing pedagogical principles:

> Now, the other side is that pedagogical. That's where we might say you're building an online class. Now it's a little bit less about the tool and more about the effective practice of course design, but we also want to build in the effective practice of teaching online.

Oscar also described how he and his colleagues promoted the use of technology and pedagogy. He stated,"… our team focuses on a lot more, … let's say instructional technology related pedagogical application. We do a lot of the teaching and learning mixed in with the instructional technology, but our team is definitely more …technology focused..." This statement highlights how Oscar's team offered both technological and pedagogical guidance to FMs.

The FDs used multiple events and approaches to support FMs in developing technology and pedagogy knowledge and skills to incorporate technology into their teaching. These events varied based on the FMs' needs. These PD options also demonstrate that the FDs had an established plan and structure in place to equip FMs for teaching with educational technology.

Reinforcing Technology and Pedagogy Implementation at R1 University A

Multiple events and approaches enabled FMs to reinforce changes related to using technology to teach at R1 University A. However, the FDs at the university faced challenges and limitations in measuring the effectiveness of their services and the progress of FMs. While Susan and Oscar reported using anecdotal evidence to gauge FMs' progress and success, they noted that evaluating success was a challenging task. As Oscar explained:

> The question of like how we know if the change is being successful in terms of student learning is not always the question that we get direct access to be able to answer, though we know that's the ultimate question.

Likewise, Susan stated:

> We're a large analytics campus. One thing we could potentially do is look at courses pre and post training to see whether the usage of certain tools has changed. That's one option we could do. We haven't done that yet.

This comment suggests that Susan was aware of effective evaluation strategies that the FD team could utilize to gather evaluation data. However, the team has not implemented these strategies. In other words, the FDs faced limitations in evaluating the effectiveness and success of their programming and services.

Despite the limitations, multiple events and practices enabled the FDs at R1 University A to assist the FMs in improving and reinforcing technology and pedagogy implementation in their teaching. Those activities included recurring training, peer learning, and ongoing support with course design and teaching resources. For instance, Oscar and Susan noted that the FD Center offered recurring PD opportunities. As Oscar stated, "We spend a lot of time, I would say … designing … for faculty development programming that can sit at different levels, both like synchronous like webinar style events, that might … be more conversational or interactive." Additionally, Susan and Oscar argued that their team promoted peer and community learning that enabled FMs to improve their technology and teaching skills. Susan also shared her experiences using FMs' experiences and stories when guiding FMs to create online courses. Describing her approach, Susan explained:

> Now we want to incorporate things like getting other faculty who've done this can talk to their testimonial about their experiences doing course reviews, teaching large classes online, teaching different types of classes, just lots of different opportunities to connect faculty to each other.

These comments highlight how Susan leveraged peer connections and learning to help FMs improve their course design and implementation.

The FDs at R1 University A reported using teaching and online resources and individual consultations that enabled FMs to improve their technology knowledge and skills to reinforce changes in their teaching. Susan explained how she promoted online resources and used the term "documentation" to describe them. She explained:

> We have a knowledge base, and we provide documentation to our users. If there are the same questions coming up again, we create an article, so that way we can give it to the user, and they can follow the steps or watch a video.

Similarly, Oscar reported handling tickets related to ongoing individual consultations and course design support. He explained:

> A lot of our tickets aren't just fixing things quickly, although we do. The more time-consuming things involve, like the things that evolve into frequently consultations with faculty, that are frequently will mean a, at least one or maybe sometimes multiple conversations and follow-up related to some larger question they have or issue they're trying to solve, or something they're trying to develop for their class, let's say for an upcoming semester.

This comment further clarifies how the FD Center provided ongoing support to enable FMs to reinforce technological and instructional changes and practices.

Summary

The FDs at R1 University A navigated change and implemented various events and approaches to raise FMs' awareness, motivate FMs to join change initiatives, and equip them with knowledge and skills to work with technology. The FDs also provided ongoing support to help FMs reinforce their instructional practices. FDs, however, exercised less control over the processes of raising awareness, increasing FMs' desire to participate in change initiatives, and reinforcing instructional changes because these phases presented challenges that were beyond FMs' control. However, the data showed that FDs showed more control over the events and approaches that helped FMs develop technology and pedagogy knowledge and skills, as the FDs possessed the experience and expertise to plan and execute their PD programming and services.

Multifaceted Experiences: Successes, Structural Issues, and Relational Tensions at R1 University A

The FDs at R1 University A reported multifaceted and complex experiences navigating change to assist FMs in developing knowledge and skills to teach with technology. They described experiencing job flexibility, embracing work challenges, having productive teamwork experiences, and supporting and celebrating the achievements of FMs. They also experienced various organizational and structural issues inherent to their R1 university context. This theme presents how FDs described the above-mentioned experiences.

Job Flexibility: Leverage Professional Expertise and Interest

The FDs at R1 University A reported that their FD job offered flexibility, allowing them to leverage their area of expertise and interest to help FMs develop knowledge and skills to teach with technology. Susan reported that she enjoyed several aspects of the job. As she stated:

> I love to work with faculty and independently develop courses,… I love to deconstruct a syllabus and an existing face-to-face course and try and translate that into an effective online version that still meets the goals of the course, engages the students, … the students come out satisfied and happy, the instructor feels engaged as well. That's something I really enjoy doing.

Similarly, Oscar shared that the FD team assigned projects based on individual members' expertise and interests. He noted that planning "works very efficiently for us because it allows us to … self-pick, in other words, I've so choose, self-choose is sort of the way it works depending on what we perceive as different people's areas of expertise." Oscar added, "We kinda lean towards certain types of questions and issues … depending on our own … own focus or background ..." The comments mentioned above indicate that the job enabled the FDs to focus on activities aligned with their professional expertise and interests, while equipping the FMs to teach with technology.

Embrace Change and Challenges

The FDs at R1 University A shared that they embraced change and the challenging aspect of equipping FMs to teach with technology. For instance, discussing her background and how she became interested in FD work, Susan noted that she liked solving problems. As she put it, "I like puzzles, and I like to solve problems. When someone said, I can't do this, I said, hmm, let me see if I can figure it out with what we have available." Susan also enjoyed working at her current R1 university. Referring to the job, she stated, "I saw it as a challenge to push my skills and then now to apply the same things I've learned in the past to, different groups of faculty and students."

Likewise, Oscar reported that the job was interesting and challenging. He argued that most FMs planned their courses in private. He elaborated about what he found interesting:

> What's interesting about the work of being a faculty developer is that you're trying to extract from the private tacit into explicit conversation and explicit reflection, that decision-making, all of those things that are going on that are private. Sometimes that

> extraction, if you want to think of it, if you want to use the metaphor of like a surgical sort of thing, could be a messy unpacking of lots of different things that you find in there.

Oscar went on to add, "What makes it interesting for me really fundamentally is … this isn't just ... technical work in terms of just … learning how to do stuff or … methods of doing such and such." Instead, he argued that "there is a strong intellectual component to ... the decision making that goes behind … what technologies to use and how to use them." This quote underlines Oscar's interest in the intellectual and challenging aspect of his FD work.

Teamwork and Collaboration

The FDs at R1 University A described enjoying working and being part of their FD team, as they supported FMs in developing knowledge and skills to teach with technology. Oscar used the term "enriching" to describe his experience with his teammates. He excitedly shared that, "I'm situated within the instructional technology team … other people on the team with whom I find it really enriching to work would include like the assessment and data specialist ... I work a lot with that person." Susan also mentioned she enjoyed working with her team. Discussing the type of support her team received from IT leadership, Susan commented, "We've got a great team." And she elaborated on how her team collaborated and noted:

> Depending on the type of training, if it's a webinar approach, we will often pair up with teammates. I really like it when the team works with each other … there's a lot of trading around because it's really important for that dynamic, both with personalities and content expertise, that you could have someone leading the training or trading off on the training, that interaction.

This excerpt describes how the FD team collaborated, leveraging each member's expertise to facilitate PD sessions that equipped FMs to use technology in their teaching.

Support and Celebrate Faculty's Success and Achievements

The FDs at R1 University A supported and celebrated FMs' successes and achievements as these FMs developed knowledge and skills to teach with technology. As Susan noted, while discussing the rewarding aspects of the job, "It's rewarding to share knowledge, help faculty improve their skills, and see evidence of this growth in their course planning. I am delighted when faculty talk about things they've learned or discovered through the process of applying effective practices." Similarly, Oscar discussed how he experienced the achievements of FMs. As he said, "I do find it quite gratifying when there's some little success or big, hopefully big, but even just a little successful thing that I helped someone do or accomplish. That's very gratifying."

Additionally, Oscar shared an example of faculty's achievement where some FMs completed a process to have their courses certified. He explained, "When they have their course approved … they get recognized. We know, we've heard … they're really gratified, like thrilled by having that sort of public recognition. If I'm associated with that process, … I feel really gratified by that." This comment indicates that Oscar supported FM's success and felt gratified by their achievements.

Institutional and Systemic Challenges at R1 University A

The FDs faced some institutional and systemic challenges in helping FMs develop the knowledge and skills necessary to use technology in their teaching. They experienced low FMs' participation in FD services, low consideration for teaching and training, FMs' heavy workload and time constraints, FDs' complex workload, FD Center location issues, a lack of recognition and credit for their work, as well as limited leadership support. The following sections describe how the FDs experienced those challenges.

Low Faculty Participation in PD

The FDs reported they experienced low FMs participation in PD programming and services at R1 University A. They argued that this challenge was connected to structural and several organizational issues. For example, Oscar noted that FD programming and services were optional. As he mentioned, "Most of our programs are optional, so it is challenging to incentivize more individuals to participate in and attend our programming." Likewise, Susan described her team's effort to reach out to FMs and the challenges they faced. She noted, "Attendance can be a challenge." She argued that some FMs, especially those who are researchers, lack interest in attending training. Susan used the term "chasm" to describe the gap that exists between FMs and FDs as it relates to FMs' willingness to participate in technology changes and PD programming. She illustrated:

> There is a big chasm … think about us on one side of the bridge and they're on the other side of the bridge and they're not willing to cross and we're waiting for them to come over. I'm not giving you a very specific one because it's a recurring one … I am reaching out. I am directly communicating with them. I am available. I'm talking to them.

This quote underlines the FDs' efforts and struggles to motivate FMs in their R1 context to participate in PD programming, developing knowledge and skills to teach with technology.

Limited Emphasis on Teaching and Training

Based on the FDs' experiences, they reported that R1 University A prioritized research over teaching and learning. For instance, Oscar compared his former university, which was classified as a teaching university, to R1 University A in terms of what is expected of FMs. He explained that his former university:

> Was more teaching oriented than a research one. Meaning, the implications of that from faculty expectations, … there was there a lot more … weighting of the teaching … There scholarship was not more heavily weighted in faculty evaluation than teaching, which is definitely the case at research one institutions … most certainly the case every research one institution I've ever worked at, that's the case, including [his current R1].

Oscar added that at his former university, FMs were expected to attend training to develop their teaching skills, but that was not the case at R1 University A.

Likewise, Susan shared a similar observation. She categorized the FM population at R1 University A into three groups and argued that most FM researchers did not attend training. She explained:

> We know about the three strands in higher ed … You've got teaching, service and research, and in R1 research is often heavily emphasized. The faculty who are research-driven tend not to attend training; they may have a lot of TA support.

Susan added that those research-driven FMs "tend to be on the late side of adoption" of technology. Oscar and Susan's comments highlight that research activities were more valued than teaching and training initiatives that equip FMs with knowledge and skills to teach with technology at R1 University A.

Faculty's Heavy Workload and Time Constraints

The FDs experienced challenges related to the FMs' workload and time constraints at R1 University A. They argued that FM's busyness and time constraints prevented them from participating in training and FD services, which are necessary to develop the knowledge and skills required to teach with technology. Oscar described some challenges he faced on the job and noted, "It's challenging to deal with the limited time and availability faculty sometimes have to devote to learning instructional technology." Susan shared a similar experience when discussing some outreach challenges. She noted, "when you're trying to reach out to everyone, the researchers will be like, well ..my head's down; I'm working in research." She further shared her thoughts on the reasons why research-driven FMs do not attend training. She explained, "we're still not able to connect with the faculty they don't want to or they are so busy that they're not seeing that we're here for them." This comment highlights the impact of FMs' busy schedule and workload on their availability to join PD sessions that could enable them to use technology effectively in their teaching at R1 University A.

Faculty Developers' Complex and Varied Workload

The FDs at R1 University A also managed a complex workload that included various projects, which varied based on the time of the semester when FMs, particularly, tended to need more support. Susan explained, "In terms of my work, my workload, it varies." She mentioned that her workload varied at the beginning and start of the semester. She further explained that, referring to the nature of her work, "Some of it can be monotonous and some of it can be really creative and engaging to do. It really depends on a day-to-day, week-to-week." Conversely, Oscar also described his workload using the terms "heavy," "multifaceted," and "interesting". He mentioned that he contributed to various projects but enjoyed a level of autonomy. For example, he remarked, "I would say the workload is heavy, but interesting because it's multifaceted." Moreover, Oscar argued that her workload prevented him from building long-term connections with colleagues. He explained:

> Sometimes it feels like it's hard to cultivate a more long-term … ongoing professional relationship with … colleagues. When the projects come fast and furious and you're launched into different priorities at different times, it makes it sometimes feel a little

uncertain, in terms of just the continuation, the assurance of continuing what might be a really like good, like thorough professional relationship that I might be developing with someone.

This excerpt further explains how Oscar's workload did not allow him enough time to focus on building long-term work relationships with FMs.

FD Center Location and Educational Technology Work

The FDs worked on the same team within the same IT department at R1 University A and had experiences inherent to their location in the IT department. Oscar argued that FDs that support FMs in using educational technology often face some challenges and misconceptions due to their educational technologist titles and the nature of their work. For example, he explained, "We're often involved in larger conversations about … not just the technical pieces of the assessment platform…but just about good practice in assessment generally." However, he observed that some stakeholders seemed to assume "that our team is like only for very technical matters and doesn't really address … isn't fully capable of addressing … the misconception might be that we don't ever talk about like sort of pedagogical and theoretical issues." Oscar also shared an example where some stakeholders failed to give his team credit for helping to implement a successful program on campus.

Likewise, Susan argued that being in the IT department at R1 University A prevented the FD Center from venturing into academic projects. Based on Susan's experiences working with the IT department leadership, she reported, "They're less willing to cross the bridge to academic because I think that … IT is often seen as that auxiliary unit … You can get your hands slapped if you're not careful in how you approach the academic side." This comment further explains that the FD team faced limitations due to their location within R1 University A, which hindered their ability to implement academic initiatives that help FMs develop the knowledge and skills necessary to leverage educational technology in their teaching.

Lack of Recognition and Credits

The FDs shared experiences where they were not recognized or received credit for their work at R1 University A. Oscar did not describe personal experiences related to a lack of recognition. Instead, he shared a story about the FD team that received no credit for helping launch a successful program on campus. Oscar used the terms "chagrined" and "mad" to describe how the team felt about the situation. He noted that "a lot of folks in our team were really chagrined and mad about that." He concluded that there was clear evidence his group did the work, but his team "even within their own institution, didn't really seem to get much recognition." Susan also reported several examples where she did not receive credit for her work and contributions, which also saddened her.

Leadership Structure and Support

Oscar did not discuss leadership support, but Susan shared her experience of limited leadership support in implementing some FD initiatives at R1 University A. She shared a story where her team created a plan to prepare FMs for online teaching during inclement weather even before the COVID-19 pandemic. However, IT leadership did not approve the implementation of the plan. As she reported, "We had prepared a website that talked about all the things you could do for academic continuity, for engagement, for assessment …We were ready to launch … and leadership said, slow down. I don't think we need that." Susan also shared her feelings about not having the leadership's support to start workshops on AI to promote innovations. She stated:

> That can be very frustrating that when we are like, and AI is another thing. We were thinking about it back in March of last year. Here we are now in March of this year, and

we're still trying to launch our workshop. Leadership is saying, slow down. We're not quite there yet. There's a couple of examples of us trying to be innovative and productive, but sometimes the leadership isn't quite with us.

This quote highlights that the FD Center depended on IT leadership support and approval to lead programming to equip FMs to teach with technology and that a lack of support prevented the FD team from launching new PD programming on campus.

Additionally, the FDs R1 at university A reported experiencing a leadership and organizational hierarchy. While Oscar only reported being conscious of the structure, Susan argued that it was a challenge that influenced her work. She noted that she faced challenges connecting with some leaders. As she put it:

> I can make better connections with chairs, program coordinators, and chairs. They're … the middle managers … Connecting to deans and provosts historically, at least where I currently am, can be a bit challenging because, at least in the IT division, they prefer that like roles connect to like roles.

Susan expressed her view on the hierarchical leadership structure. She commented that "I don't necessarily agree with that because I think it's important for you to be able to connect to leaders when it's appropriate for the conversation or the project." This statement explains how the hierarchical structure prevented Susan from bringing her concerns or questions to the university's deans and provost.

Summary

The FDs at R1 university described multifaceted and complex experiences in dealing with changes to assist FMs to develop knowledge and skills to teach with technology. They experienced a mixture of opportunities and challenges. They leveraged team collaboration, their expertise, and passion for FD work to equip FMs with technological and pedagogical knowledge and skills. They also celebrated the achievements of FMs in utilizing technology in their courses and teaching. However, they faced various challenges. Most of the issues were inherent to the R1 University A organizational structure and the FD Center's location within an IT department. Unlike Susan, Oscar did not discuss his view on leadership support and the FD center location in the IT department. Instead, Oscar emphasized that his workload was heavy and multifaceted.

Perceptions: Overcoming Role Ambiguity and Misconceptions to Justify FDs' Work Value at R1 University A

Case 1 data revealed that the FDs perceived their roles in helping FMs teach with technology in various ways, depending on their PD programs and projects at R1 University A. They argued playing various roles in different contexts and affirmed that their roles were valuable to their R1 university community. The FDs argued that their job was complex and fluid, as their projects extended beyond basic technology support; their work was valuable because they served as academic partners and consultants, supporting FMs in improving their teaching and contributing to institutional advancement. However, the FDs also reported that some stakeholders did not value their roles and contributions. This section presents how both FDs described their perceptions of their work and roles in supporting FMs.

Complex and Flexible Roles

The participants perceived that their FD roles at R1university A were complex, agile, and fluid, and varied based on their projects and contexts. For example, discussing what R1 University Administrators should know about FDs' roles and contributions, Susan stated, "We do more than just answer tickets … we can do more. We can be very important and critical partners to support the institution … we are uniquely qualified to straddle a bridge between IT and academics." Likewise, Oscar shared that he perceived his role as being interesting and complex and that he supported various initiatives. He explained:

> My perception is that it involves a complex sort of juggling of different types of tasks and different, like involving like different types of stakeholders. … one of the things that definitely makes it interesting to manage the load such as it … is the fact that it's varied and multifaceted in terms of the … personnel that I might intersect with and the different types of tasks that are involved, some of which are very independent … others are much more collaborative. It sorts of flows between like individual work and collaborative work. In many cases, now more and more flowing more between like online work and like face-to-face work, although it's principally online.

This excerpt further explains Oscar's perception of his FD role as complex, noting that he was involved in both individual and collaborative projects on campus at R1 University A.

Academic Partner, Facilitator, and Consultant

The FDs at R1 University A perceived their roles as academic partners, facilitators, and consultants who supported FMs in developing the knowledge and skills necessary to teach with technology, as described in Theme Two. Susan argued that in her position, she equipped FMs to teach with technology. As she said, "I believe in empowering faculty to do for themselves." She also argued she was an academic partner. She explained: "They don't see us as an academic partner, which is what we really are; as instructional technologists … we are partners in what they do in hybrid online and even in the classroom." Likewise, Oscar described his role as a "facilitator" and "consultant" who guided FMs on course design and technology implementation. He explained, "I view my role as essentially a facilitator … I'm not in a position of evaluating those faculty with whom I'm consulting about their courses. Therefore, my role is very nicely and explicitly facilitative and consultant oriented." This quote further describes how Oscar viewed his role in facilitating FMs' teaching with technology without evaluating their performance.

More than Technical Support

The FDs also perceived that their roles at R1 University A involved more than just providing technology support to FMs. They provided pedagogical guidance on teaching and learning and supported various projects. For instance, Oscar considered himself a facilitator who guided FMs to improve their courses and teaching. He, therefore, argued that his role addressed issues bigger than just teaching with technology. He argued that his work involved influencing how FMs think about teaching and learning. For example, he stated:

> In our role in this role, there's like bigger issues going on, and then just learning a new technology. Sometimes … we're trying to … invite other ways of thinking about teaching … or other alternative perspectives on teaching and learning that might be outside of their sort of set framework. Everyone has a, some like a pattern of thing, ways that they go about teaching.

Oscar also added that his work at R1 University A consisted of strong intellectual elements related to making decisions about selecting and using technologies. Likewise, Susan perceived her role as an "academic partner" who did more than process tickets at R1 university. She commented:

> we believe that there's a lot more than just pushing buttons. We can also tell you about the effective practices of using those tools and we can tell you how the tools have an impact on engagement and assessment and instruct all these components around education.

This quote highlights Susan's qualifications and ability to do more than just provide technology support, arguing that she addressed pedagogical issues related to student engagement and assessment.

Helpful and Valuable Work

The FDs argued that their work was helpful and valuable to R1 University A, based on their expertise and contributions to developing FMs' knowledge and skills, which in turn fostered students' learning, as explained in theme two. Susan argued that she empowered and equipped FMs with technology and pedagogy skills to foster students' learning. She mentioned that some stakeholders at R1 University A also found their PD work valuable. As she noted, "Some people say we're the jewel in the crown, you're secret, a very hidden secret. People should know more about you. Those are the ones I want I'd really love to talk more about us." Oscar also discussed the value and contribution of his work to R1 University A. He noted that "I would say in the aggregate, our perception is that people perceive us as helpful and valuable and an integral part of the teaching and learning enterprise." The comments above indicate that FDs held a positive view of the importance of their roles for their R1 university.

Misunderstanding of FDs' Work and Roles

The FDs reported experiencing misunderstandings and misconceptions about their work and roles at R1 University A. Susan reported that some stakeholders treated the FD team as if they were IT support, implying they were not capable of engaging in pedagogical and academic projects. Susan commented that "because … we're associated with IT and not academics, I think a lot of faculty see us as an auxiliary unit, a support unit strictly. They don't see us as an academic partner, which is what we really are." She used the term "stigma" to further describe the misconceptions associated with FD Centers located in IT. She argued that generally, FD

Centers located on the academic side were more accepted by the faculty community on campus. She explained:

> That's one of the challenges for offices like us when we are centered in IT. When you're centered more on the academic side, there's less of a stigma attached to a staff role because now you are not quite … one of us as faculty, but you are around us, so it's a little more accepted.

Similarly, Oscar mentioned that some stakeholders at R1 University A seemed to believe that the FD team could only provide technical support and that it was not capable of providing academic and pedagogical guidance to FMs.

Summary

This theme highlights that FDs perceived that they played multiple roles and performed valuable work at R1 University A. The FDs argued their work went beyond technical support to offer pedagogical guidance to FMs. They also contributed to multiple projects that support the institutional mission. However, the FDs also noted that some stakeholders did not value their work and contributions on campus. Notably, they mentioned facing misconceptions due to their FD Center's location in an IT department, which led some stakeholders to believe their Center could only provide technical support to FMs.

Organizational, Leadership, and Situational Factors Impacting FDs' Work at R1 University A

The data analysis in Case 1 revealed that multiple factors influenced how FDs at R1 University A assisted FMs in using technology to teach. This theme presents how participants described the factors that hindered or facilitated their efforts to support FMs in developing the knowledge and skills necessary to leverage technological and pedagogical change and improve their teaching.

What Hindered FDs' Work at R1 University A

Several factors hindered FDs' ability to assist FMs in using technology to teach and foster students' learning at R1 University A. These factors included low FM attendance and participation in PD programming, FMs' workload and time constraints, limited leadership or administrative support, and FMs' technology proficiency.

FMs' Low Participation in Professional Development

Low attendance and participation in PD programming hindered FDs' work in developing FMs' knowledge and skills to teach with technology. Susan argued it was important for FMs to attend and participate in training. She explained:

> Attendance can be a challenge … if faculty don't attend training, they might miss important information. It may be provided in documentation, so if they don't review those resources and they don't attend training, faculty can get very frustrated about some aspect of technology they assume is missing or doesn't work.

Likewise, Oscar reported attendance as an issue. He argued that, unlike teaching universities that expected FMs to attend training to improve their teaching, R1 University A did not. This suggests that although FDs offered programs that could equip FMs to teach with technology, FMs were not required to utilize these services.

FMs' Workload and Time Constraints

Based on the data analysis in Case 1, FMs' workload and time constraints were also factors that hindered their participation in change initiatives and technology training at R1 University A. Susan noted that research-driven individuals rarely participated in training because they were busy conducting research. Oscar shared a similar observation about FMs' workload and busy schedule. He argued that most FMs want to succeed in multiple areas and therefore juggled various responsibilities. Referring to FM's responsibilities and time management practices, Oscar added:

> It's really tricky to do. In every institution, there's pretty much the expectation in some proportion, I'm speaking about faculty responsibilities of succeeding in teaching excellence, scholarly and research excellence, and then … service, or let's say service work, which can include a whole myriad of different things. So you know, what happens is when people are in that role, it's understandably very treacherous in terms of just trying to cover all your bases. It's … really busy trying to make sure that like everything, that you're like sort of succeeding on all three counts. That's why when you're faculty, managing your time .. can be very complex because you have different types of things that you have to make sure get done, including research, which is a very … that can be very independent thing where you have your own timelines. You really have to be like, autonomous and self-directed.

This excerpt further explains Oscar's understanding of how FMs at R1 University A faced challenges in finding and dedicating time to learning, using technology, and conducting research simultaneously.

Limited Leadership or Administrative Support

Limited leadership support in the IT department at R1 University A was a factor that hindered the FD Center's ability to engage in more academic projects, supporting FMs in developing knowledge and skills to leverage technology in their teaching. Oscar did not share his experiences working with IT leadership; however, Susan described a complex relationship with her leadership in multiple instances, where support varied depending on the projects at hand. She noted that limited leadership support negatively impacted the FD team's work. She sadly added that "I just think it's so sad to say, but I think that instructional technology is not as valued by IT as other areas like security like data and analytics … I just think that it's not as a strategic priority." Susan argued that the FD Center received some support from IT leadership in terms of staffing and budget. As she stated, "Our relationship with leadership is, we're supported. we're clearly supported. We get the funding; we've got a robust set of tools. We've got a great team … there is support." However, she noted the support was limited. She clarified what she meant by lack of leadership support in these terms:

> There is support, but when it comes to things like strategic planning. Getting advocate support for what we do outside of our area. Leadership tends to step back. They're less willing to cross the bridge to academic because I think that, like I said earlier, IT is often seen as that auxiliary unit.… You can get your hands slapped. If you're not careful in how you approach the academic side.

This quote highlights IT leadership's reluctance to support the FD team's desire to undertake academic and change initiatives that could further equip FMs with knowledge and skills to teach with technology.

FMs' Technology Proficiency

The faculty's technology proficiency and pedagogical knowledge were also factors that impacted FDs' work in helping FMs to use educational technology at R1 University A. Case 1's data analysis revealed that the approaches and events the FDs used to assist FMs in developing technology and pedagogy knowledge and skills varied depending on FMs' technology proficiency and pedagogy knowledge. Precisely, users with low proficiency tended to struggle in the process, while advanced users sometimes learned new technology independently. Susan shared her experiences leading workshops for FMs with various levels of skills. She explained, "We had a five-day workshop for online course development. In that scenario, we would have people from all different disciplines, all different skill levels in the room together." Similarly, Oscar argued that FMs' expertise and proficiency in technology and pedagogy varied. He maintained, "People can be highly expert in one thing, but not another and confident in one area, but not another. It's sort of like all over the map when it comes to expertise in these areas." Additionally, Susan reported that some advanced users were often motivated to do more with technology. As she said, "They'll attend training, they'll teach themselves. Some of them are really invested ...". Simply put, while advanced users learn technologies independently, beginner users require extra support and guidance from the FDs at R1 university A.

What Facilitated FDs' Work at R1 University A

Multiple factors facilitated FDs' work in assisting FMs to teach with technology at R1 University A. They consisted of offering FMs flexible PD options, having good systems and online teaching resources, using simple approaches when guiding FMs, leveraging peer-learning and network, and leveraging collaboration with FMs and other stakeholders. Additional factors, such as the impact of the COVID-19 pandemic and the FDs' work context, also influenced how FDs guided FMs in teaching with technology.

Flexible Professional Development Options

The FDs argued that offering flexible PD options and ongoing support facilitated FMs' participation in PD programming at R1 University A. Susan discussed what facilitated her work and argued, "Two key factors include ongoing training and outreach." She elaborated on the options that her FD Center offered to FMs:

> We offer a wide range of topics that focus on the "button-ology" (e.g., how to use) of technology and the effective practices. Pre-pandemic, we offered training primarily in person with some virtual. During the pandemic, we switched to webinar format, like many institutions, and we've kept this format as it's more flexible for faculty schedules, enables us to record, share, and reuse content. … Our staff will offer consulting appointments and drop-in support during peak periods (start of semester, end of semester) and focus on topics on key themes (e.g., getting a course ready or finalizing a [LMS] gradebook) when we know demand is higher.

Oscar shared a similar observation and argued that FMs were everywhere, and that the FD team scheduled training at an appropriate time using flexible modality and formats to reach as many FMs as possible at R1 University A.

Robust Systems and Online Teaching Resources

The FDs reported that having access to good teaching resources, robust systems, and vendor support facilitated their work of FDs at R1 University A. Oscar argued that having good systems and vendor support was crucial. He explained:

> We've always seen the … real importance, preeminence of making sure we always have a good set of … websites, good set of online resources that folks, who can't come to our sessions or don't have time to listen to, or have limited time for their own professional development can just go and … find the resources that are most helpful. We do spend a lot of time designing online resources.

Likewise, Susan used the terms "documentation" and "knowledge-based" to describe online resources and systems that the FD Center used at R1 University A. She argued that they were crucial in supporting FMs to develop the knowledge and skills necessary to teach with technology.

Simple and Personalized approaches

The FDs explained that using a personalized approach facilitated their assistance to FMs in teaching with technology at R1 University A. Oscar emphasized the importance of adopting a straightforward approach when facilitating training. As he said, "It can be helpful to start training in very simple and straightforward ways that don't overload new users." Likewise, Susan explained that she personalized her approach and broke her training modules and objectives to make them accessible to FMs. She shared an example of how she personalized her approach by noting:

> I'm teaching myself, so I can say, 'when I teach with my students, this is how I do it, or my students tell me this,' because it really helps with that personal connection between the technology, the practice of teaching, and then your own experience.

This quote describes how Susan used her personal teaching experience to guide FMs in connecting technology with classroom practices.

Peer-Learning and Networking

The FDs explained that leveraging peer learning and FMs' networking facilitated their assistance in helping FMs develop knowledge and skills to teach with technology at R1 University A. For instance, Oscar described the importance of using FMs' stories during training. He explained, “It's helpful to utilize faculty examples and showcase their innovations as part of training. That can develop a greater sense of buy-in when faculty see each other successfully innovating with new instructional technology approaches.” Likewise, Susan shared her thoughts on the importance of peer-learning and influence for FMs' growth. She remarked:

> What I found in the past and what I continue to find is that peer network of faculty and that faculty development is really a critical component of their growth in the teaching arena and also in their continued, I always say this, engagement in faculty development; that the more they connect to each other, the more open they are to exploring new topics related to teaching and learning.

This excerpt highlights that Susan found using peer learning and networking to promote instructional change was an effective practice in working with FMs.

Collaboration with Faculty and Stakeholders

The FDs shared that collaboration with stakeholders, especially FMs, facilitated their work in equipping FMs to teach with technology at R1 University A. The FDs reported they collaborated with various committees and committee members to raise awareness, build connections, and plan PD activities. Oscar, for example, shared that he collaborated with various committees and stakeholders. He explained that sometimes the FD Team had "intentional meetings or committees or groups or reasons to meet as an integrated cluster that includes both the faculty development folks and perhaps the administration and some faculty in some sort of project that necessarily involves all those folks." He further agued, "We do a fair amount of like involving faculty in our strategic planning, committee work, design work, when we can."

Additionally, the FDs relied on collaboration with FMs, who were considered early adopters of technology and change, in training and promoting the integration of new technology, to motivate other FMs to join change initiatives. As Susan explained, "We rely on our connections with faculty over the years. We have ambassadors where once we connect with someone who has expertise, we tag them as an ambassador." This statement indicates that collaboration with early adopters helped FDs reach more FMs in promoting the use of educational technology.

The COVID-19 Pandemic Impact

The FDs mentioned that the COVID-19 pandemic's impact on R1 University A and its faculty influenced the FDs' work in several ways. Due to the pandemic, the FD team adopted mainly a hybrid and online PD format to facilitate FMs' access to PD sessions. Based on survey data that Susan collected, she reported that "pre-pandemic, faculty would tell us in person was preferred; post-pandemic, they much prefer the online format." Additionally, Oscar argued that the COVID-19 pandemic brought more recognition to the FD position at his R1 University A. He commented:

> I would say in the aggregate our perception is that people perceive us as helpful and valuable and an integral part of the teaching and learning enterprise. I think that recognition has honestly become increasingly more profound with I have to say COVID and the pandemic … I think there's that sort of elevation of the role of faculty development at large and instructional designers more specifically in the work of faculty that sort of like recognition of the value of that.

Relatedly, the FDs also noted that some FMs increased their use of technology and participation in course design and training after the pandemic.

Teaching Context and FD Center Location

Case 2 data analysis revealed that the work context or setting of FDs influenced how they assisted FMs in developing knowledge and skills to teach with technology at R1 University A. While some aspects of the context helped FDs, others impeded their work. For example, two factors that impacted FDs' work were the FD Center's location in the IT department and FMs' appreciation of educational technology. Oscar argued that FMs' perception of the value of technologies was an important contextual factor. He shared this observation:

> There are other things related to sort of the context. I would just say, it isn't just about the technical pieces, but I think what facilitates it is what I think about is an opportunity … where faculty themselves perceive some big value in learning this and trying to integrate it. There's some like big advantage that they are committed to and understand, at least initially in theory of why to …work, try to do this or work on it. That can be very helpful, motivating, I would say.

Simply put, Oscar argued that FMs may try new technologies if they perceive that the tools could facilitate their work and teaching.

On the other hand, Susan reported that it was challenging to perform the FDs' work within the context of the IT department. Simply put, the location was a key factor that influenced the Center's work. When asked what would make the FD job ideal for her, Susan responded, "It would be ideal for us to be co-located with Academic Affairs … while we manage certain technologies and provide support, much of what we do also falls under an academic perspective for teaching and learning." She went on to argue:

> Reporting to the provost or a supporting academic unit would also help us expand our outreach as official messengers of the institutions. Currently, as an IT unit and as staff, we are often perceived as a secondary support unit, only necessary when there's a problem.

This quote further explains how the Center location in the IT department influenced how some stakeholders perceived the FDs as tech support, which limited the FDs' ability to spearhead academic and change initiatives to enable FMs to leverage education technology in their teaching at R1 University A.

Summary

This theme shows that multiple factors influenced FDs' in assisting FMs to develop knowledge and skills to teach with technology at R1 University A. While some factors hindered FDs' work, others facilitated it. The data show that FDs could influence factors related to the planning and implementation of PD programming. However, the FDs had limited control over factors that influenced FMs to participate in the PD program to implement technology and instructional changes. Particularly, FDs had limited influence over the factors that hindered their work, as most of them were inherent to the organizational structure of their R1 university. While Oscar identified FMs' workload and time constraints as a major impediment, Susan emphasized the Center's location in the IT department as a significant roadblock.

Case 1 Summary

The data analysis in Case 1 revealed that FDs had multifaceted experiences at R1 University A as they navigated phases of change to enable FMs to develop technological and pedagogical knowledge and the ability to teach effectively with technology. First, the FDs experienced technological and instructional changes as a constant element of their job. Therefore, they used various flexible events and approaches to raise FMs' awareness, motivate them to participate in change initiatives and develop technology and pedagogy knowledge and skills. The FDs also helped FMs to reinforce technological and instructional changes in their teaching.

Second, FDs experienced opportunities and challenges in guiding FMs at R1 University A. They enjoyed leveraging their expertise and focusing on their area of interest while guiding

FMs in their technology and change implementation efforts. However, they struggled with low FMs participants and limited leadership and administrative support. They also encountered challenges that were beyond their control when trying to increase FMs' desire for change and reinforce new instructional practices. On the other hand, the FDs demonstrated control over the planning and implementation of PD programs that fostered FMs' knowledge and skills, as they possess the expertise and experience to manage this process. Additionally, the FDs struggled to measure the effectiveness of their services and, for the most part, relied on anecdotal evidence to gauge their successes.

Third, the FDs perceived they played various important roles and made worthy contributions to R1 University A. They performed more than tech support work; their work contributed to developing FMs' pedagogical knowledge and skills, as well as supporting the institutional mission. However, while FDs played valuable roles in supporting FMs, they also faced a lack of recognition and credit for their work. Some stakeholders did not value their work and contributions. They also addressed misconceptions, primarily from stakeholders unfamiliar with their work, and due to their location within the IT department at 1 University A, where faculty development was not a primary priority. The FDs struggled with the idea that research was highly prized, while FMs' training and PD programming remained optional in their teaching context.

Fourth, various factors influenced the work of FDs at R1 University A. While FDs may influence the factors that facilitated their work at R1 university, they have limited influence on those that hindered how they assisted FMs. Those hindrances included limited leadership support, low participation by FMs in PD programming, FMs' technology proficiency, and FMs' workload and time constraints. Those factors were inherent to R1 University A, a structure and culture where research was highly valued over teaching. FDs wanted to contribute more, but their leadership limited the scope of their work.

Lastly, Oscar and Susan work in the same FD Center and context at R1 University A. They reported similar experiences related to the change aspect of FDs' work, FMs' participation in training, FD programming and services, and FDs' perceptions of their work. However, they also differed in several areas. Susan reported limited leadership support and the FD Center location as major obstacles. However, Oscar highlighted FMs' workload and time constraints, FMs' beliefs about teaching and learning, and the lack of recognition as major issues. Susan focused more on planning and conducting training, while Oscar emphasized his work on course design and development.

Case 2 Findings

This Case 2 report presents the FDs' experiences in assisting FMs in developing technology and pedagogy knowledge and skills to integrate education technology into their teaching at R1 university B.

Change: A Fundamental Aspect of FDs' Work at R1 University B

Data analysis in Case 2 showed that change represented a fundamental element of the FDs' work and experiences in assisting FMs to teach with technology at R1 University B. The FDs dealt with various technological and instructional changes, which, for the most part, included addressing technology updates, upgrades, or system changes and addressing FMs' assumptions about teaching and learning. This theme presents how FDs described the changes they faced in assisting FMs.

Technology Change

The participants at R1 University B indicated that they often faced and dealt with technological changes in their work, supporting FMs to teach with technology at R1 University B. These changes included technology updates, upgrades, and the implementation of new technologies. For example, Kelly described experiences dealing with some changes on the job. As she said, "Most of the time we're changing something because nothing stays static, right? … we learn new stuff all the time." She also shared an example of how artificial intelligence (AI) brought changes to her work. She explained:

> Artificial intelligence has changed everything in the past year and a half. Particularly regarding academic integrity stuff and also thinking about how faculty approach it in the classroom to try to prepare students for the workplace. We have we do an academic integrity session three times a year. … This has been ever evolving. Our academic … session has changed multiple times in the past year as we've kept up with what the university is saying, the policies they're putting out, what our…administration is saying, what our faculty are telling us about what they're doing in the classroom. That's been constantly changing. I think we'll continue to constantly change over the course of who knows how long until things level out again.

Then, Kelly concluded, "For the time being, we're still in that static or the rise time. That means a lot of changes every time we do one of those sessions." This quote highlights how AI-driven change has influenced the university's policies and Kelly's unit's professional development programming.

Similarly, Anne described how she supported technological change in her work at R1 University B. She used the term "disruption" to describe recurring change. She explained, "There's disruption all the time just because of the types of technologies that we're using. There's disruption because teaching is dynamic, right? Teaching is dynamic. Just because there's …a dynamic, we're working with people, it's going to change." Anne also described how she planned and ran PD sessions that addressed technology implementation and updates. She shared:

> We just do a half day, and I would … present some new technology or I would present on something about [the LMS]. … there's always new updates with [the LMS]. We just rolled out the [assessment] tool for accessibility. So last year I did a whole session on: what it looks like, what it means, why do we have it? How to see your scores? how to remediate a few things that I just went into it very briefly?

These PD activities highlight how Anne faced and dealt with various technological changes in her work at R1 University B.

Instructional Change

Kelly and Anne also described their experiences promoting new ideas and strategies in teaching and learning to influence FM's teaching methods at R1 University B. Kelly described her experiences supporting FMs who were reluctant to adopt new teaching approaches during the COVID-19 pandemic. She shared this illustration:

> I would be trying to get them to adjust their teaching so that it wasn't lecture for 50 or 75 minutes and trying to include activities to get students engaged. A lot of times faculty who were used to straight lecture teaching did not want to include activities. That was not a thing that they did. I would just start smaller. I would be like, okay, well, 'could you incorporate a question every five minutes that students need to answer in the chat?'

Kelly's example shows how she attempted to influence the way FMs teach with technology.

Similarly, Anne described how changes or disruptions occurred in higher education because FMs want to maintain their default way of teaching. In other words, she argued that FMs find their traditional teaching methods comfortable. So, she argued that changes brought tensions and disruption. Relatedly, Anne illustrated how AI created tensions for FMs at R1 University B:

> For my job, … I think the disruption is the fact that, we're working with faculty who are teaching the way they learned how to teach, that it's a default mode, right? You go right back to what's comfortable, it's less energy. We've seen a lot of change, of course, over the last 15 years, but at the same time, there's always that tension. Yes, there is disruption. Now the biggest tension, of course, is the AI component to it. I'm experiencing that in my own teaching, … you can tell the students are using it.

Anne's comment shows she faced instructional changes that often created tensions for FMs. She also cited AI as the newest technology to disrupt classroom teaching in her context.

Summary

This theme describes that FDs faced both technological and instructional changes in their work of assisting FMs in teaching with technology at R1 University B. The FDs highlighted the dynamic aspect of teaching and how things, including technology, are always changing. For instance, both participants cited AI as the latest trend in technology that brought changes to teaching in their context. AI requires FMs to adjust their teaching methods and compels FDs to provide training to prepare FMs to face the challenges. Lastly, the data showed that change represents a constant element of FDs' work at R1 University B.

Navigating Phases of Change to Develop Faculty's Technological and Pedagogical Knowledge and Ability at R1 University B

This theme describes how FDs at R1 University B raised FMs’ awareness, fostered their desire to engage in technology implementation, developed FMs technology and pedagogy knowledge and skills, and helped FMs’ reinforce technology implementation in their teaching.

Raising Faculty's Awareness at R1 University B

Data analysis in Case 2 highlighted various activities that helped raise FMs' awareness of the need for technological and instructional changes at R1 University B. More precisely, the FDs used multiple outreach events and activities, including new FMs orientation, online platforms and LMS notifications, email announcements, teaching resources, and word of mouth, to disseminate information and raise FMs' awareness of the need for change and available resources and support on the R1 University B campus. For instance, Kelly shared how she used the new faculty orientation and email announcements to tell new FMs about technologies and online resources. She explained:

> In our initial meeting with those new FMs, we actually have like, not a script, but like an outline of things that we cover. One of the things we do is walk them through this website to show them what resources are available to them as part of the teaching site. So that happens pretty early on when they first get here within probably a couple of weeks before they start teaching.

Kelly also received the support of her leadership, especially that of the Associate Dean, to share recurring emails with links to website resources, keeping all FMs informed.

Similarly, Anne leveraged email announcements, new faculty orientation, and in-person networking or word-of-mouth efforts to raise FMs' awareness. She shared her observation of FMs' lack of awareness and how she closed the awareness gap. She explained:

> The university has so much information in so many different little pockets that sometimes faculty aren't aware of supports that are available to them; that was one of the things that I really that was a gap that I really tried to fill in making it a little more visible… when I would see that there was this or that or the other thing from a variety of different locations around the university, then I would try to pull that together and inform the faculty… that we have this available. Because a lot of times people would say to me well, I didn't know this I didn't even know that we had it.

Additionally, Anne used email outreach and in-person interactions to disseminate information to FMs. She mentioned, "…I would send emails…I went to all faculty senate meetings. I would give information at faculty senate meetings. I would target specific faculty…who I thought might benefit from the information and I would have a conversation with them." Anne also used flyers to distribute information. As she put it, "… I would put flyers out in the faculty office."

The comments highlighted above show that Kelly and Anne used similar activities and approaches to raise FMs' awareness at R1 University B. However, they also used different strategies. While Kelly received leadership support to disseminate email announcements, Anne leveraged committee meetings to connect with stakeholders and used word of mouth and flyers to close awareness gaps among FMs in her work context.

Motivating Faculty at R1 University B

Data analysis in Case 2 revealed that motivating FMs at R1 University B to participate in technological and pedagogical change initiatives was challenging because PD programming and services were optional, and FMs managed a busy workload and other conflicting priorities. Moreover, some FMs refused to engage in any change process due to resistance to change or a lack of desire to incorporate technology into their teaching. Anne, for example, shared that she sometimes faced resistance from FMs who did not want to participate in training to implement educational technology in their teaching. Likewise, Kelly argued that some FMs had no desire to participate in FD initiatives. She illustrated her point with an insider joke. In her previous FD position, she mentioned:

> We used to joke about this at my last job, that there's like the 20% of your faculty that want to do things, want to learn things, want to, come to everything. They show up to everything. Then you have the 60% of faculty in the middle that will occasionally show up for things. If it sounds interesting, they'll show up for a thing and you'll see them maybe once or twice a year. Then there's the 20% that will never show up to anything.

This excerpt highlights that while a small group of FMs was motivated to attend all PD sessions, another group at R1 University B did not want to engage in any PD programming.

Despite the challenges the FDs encountered, they used several events and approaches to increase some FMs' motivation to support and participate in change initiatives. Precisely, FDs sought FMs' input and focused on meeting their needs. The FDs leveraged peer learning and success stories to promote technology-driven instructional changes and strategies. Administrative support and endorsement also contributed to motivating FMs. Lastly, Anne shared her experiences using course evaluation and teaching awards to motivate FMs to engage in changes that support teaching and learning.

Additionally, Kelly reported collecting inputs from FMs to plan and meet their needs during PDs. As she said, "..a lot of times faculty will be more interested in learning something on their own if they can see the value of it, in a practical way." Anne also mentioned she gathered FMs' input to plan and implement PD sessions.

The FDs used peer learning and success stories to motivate FMs to support and participate in changes related to teaching at R1 University B. For example, Anne shared how she used FM's experiences to motivate other FMs. She noted, "Faculty that were open-minded to explore were usually the ones I started with, right? Then I was able to leverage their uses and get them talking to other FMs. That was a…big leverage." Describing her workload, Kelly shared that she was involved in peer-learning activities. She and her colleagues facilitated several events to promote peer-learning. As she stated, "We have new faculty conversations, and then we have the teaching community seminars." The comments above highlight that the FDs used FMs' experiences as a strategy that to motivate other FMs to join change initiatives.

The FDs also leveraged administrative programming and support to motivate FMs to participate in change initiatives related to teaching with technology. For instance, Kelly described using FM's annual evaluation requirements in email announcements to motivate FMs to participate in training. Similarly, Anne reported using administrative support and programming to motivate FMs to support and participate in technological and instructional changes. She argued the use of provost-endorsed PD programs was a motivating factor. She elaborated on using teaching award programs and stated:

> I looked for and I really utilized the various initiatives from the university…I have to say, those were probably the biggest tools that I was able to use because, there was a little bit of recognition that came…with those kinds of awards, because ..you do have to put a proposal in, you don't always get accepted.

This quote explains that Anne used teaching awards as an incentive to stimulate FMs' interest in PD programming that supported technological and instructional changes in teaching.

Lastly, the FDs leveraged various approaches to address FMs' resistance. Both FDs used peer learning and influence as strategies. Additionally, Kelly reported that using a simple approach when guiding FMs on technology use was effective. Likewise, Anne mentioned using faculty course evaluation and focusing on what was most important to FMs were effective strategies in addressing FMs' resistance.

Promoting Technology and Pedagogy Knowledge and Skills at R1 University B

Case 2 data analysis revealed that FDs at R1 University B used multiple events and approaches that contributed to developing FMs': (a) technology knowledge and skills, (b) pedagogy knowledge and skills, and (c) skills in combining technology and pedagogy to make instructional decisions to support students' learning. Those events and approaches included training and workshops, webinars, community activities, one-on-one consultations, course design, and online teaching resources.

Technology Training and Application at R1 University B

The FDs used training and consultations to support FM in developing technology knowledge and skills within the context of R1 University B. For example, Anne discussed how her team used consultations with FMs. She wrote, "Individual faculty consultation and exploration for use of technology in courses" and she added, "We are currently testing the new tool to understand the pitfalls so we can appropriately inform our faculty." Kelly also described some technology sessions that her team offered to FMs. She noted, the technology session that "…we do is the tech tools training, which is an overview of the tools that we have available... it's a high level, these are tools you might want to use at some point that you have access to." She elaborated on how she used consultations to help FMs gain a deeper understanding of technology. She shared," I will both do, one-on-one consultations with faculty later, if they want to learn more about those tools a little bit more in depth." This quote highlights that Kelly used training and consultations to introduce FMs to educational technologies and develop their knowledge and skills in her teaching context.

Multiple events and approaches enabled FMs to apply technology in the context of R1 University B. Precisely, Kelly shared how she enjoyed guiding FMs to choose and use appropriate technology. She used the term "puzzle" to describe the process of helping FMs. She noted that the process was both challenging and fun. Then, Kelly described her approach and shared an example of how she focused on the application of technology. As she explained, the process is:

> Usually just step-by-step. I just break it down a little bit, use lots of examples of things that I've gathered over my own teaching.., or from other faculty who have shared their courses with me or things like that. Sometimes I will just say, hey, let's back it up and try less. Let's try something that's a little simpler for a little while until you get like accustomed to it or acclimated to it.

Similarly, Anne described how her FD team in her current FD role used consultations to assist FMs in integrating technology into course delivery. She wrote, "One of our designers works with an FM who uses [a tool] discussions extensively in his courses. The designer led the exploration of using the tool, consulted with the faculty on how to use the tool effectively." This statement indicates that Anne and her team used course design to guide FMs in applying technology in their teaching. On the other hand, Kelly used examples from her personal teaching experiences to illustrate the same point. Both FDs went beyond basic technological knowledge to enable FMs to apply technology in their teaching at R1 University B.

Pedagogy Training and Application at R1 University B

Several events and approaches enabled FMs to develop pedagogy knowledge and skills in the context of R1 University B. Anne shared her experiences supporting FMs to develop their pedagogical knowledge in various work contexts at R1 University B. She described a training and course design program at a prior college. She explained, "We created a faculty training course and that was when we talked about … Hyflex Learning." Her team invited an expert in Hyflex learning to lead training for FMs. In the same wavelength, Kelly described her experiences with events that focused on developing pedagogical knowledge. In her view, "The pedagogy always comes first, right? … in instructional design worlds, that's what we talk about all the time. It's pedagogy before technology. The technology aids the pedagogy, that's the whole point." Kelly added, "… I think sometimes teaching with technology is like the fun, shiny thing. I think occasionally faculty forget that they need to focus on the good teaching first." She also reported that her team offered technology training and support to help FMs set up courses in their LMS. The FD team addressed setting up course modules, grading, and assessment rubrics. In other words, Kelly's team used various training and tools to promote pedagogy knowledge. On the other hand, Anne used both in-house training and an external expert to achieve the same PF objective.

The FD Center team at R1 University B employed various events and approaches that enabled FMs to apply pedagogy in their teaching. Kelly shared a few examples of how she guided FMs to apply pedagogy in their teaching. One example involved an FM who asked for her assistance in integrating technology into his class. Kelly responded, "Are you trying to solve a problem in the classroom?" After discussing the question, Kelly found out that the FM needed students to take note during class. She provided some guidance and assisted the FM in using technology to encourage and enhance note-taking. As Kelly explained:

> We instituted a collaborative notes document in Google Drive … he created a document that was shared with the whole class and the whole class would take notes together. … He could see who had taken notes where. Everyone was required to contribute to the notes doc. But like I said, when he came to me originally … he just was just like, I want to incorporate technology into my classes. The whole conversation was like, okay, what is the technology meant to help accomplish?

This quote illustrates Kelly's focus on applying technology to support pedagogical decisions aimed at solving a teaching problem. Anne also described how her team used Hyflex training and syllabus review to allow FMs to apply pedagogical skills during practice teaching sessions.

Combining Technology and Pedagogy at R1 University B

In Case 2, the data analysis revealed that FDs employed multiple events and approaches to enable FMs to combine technology and pedagogy to make effective instructional decisions to enhance their teaching. Kelly shared her experience and thoughts on how technology should be integrated with pedagogy. She explained:

> For me, … what I stress with faculty is … technology is a tool. It's not how we learn, it's a tool that helps us learn. It's a tool that helps us be better teachers, or can, it isn't always,

> but it can. If we're just using technology because we think it's fun, which granted, sometimes I want to use technology because I think they're fun, but if it's not helping, if it's not getting students closer to the learning objectives of the course, then why are you using it?

And she emphasized, "For me, … everything should stem from what are the learning objectives of the course and what technologies could we use to get students to those more easily?" Likewise, Anne argued that she often questioned what FMs want to accomplish with new technologies to ensure they applied the tools to support specific pedagogical decisions and teaching objectives. Both FDs emphasized that technology is a tool that should be used to support pedagogical decisions and teaching strategies.

Reinforcing Technology and Pedagogy Implementation at R1 University B

Multiple events and approaches contributed to helping FMs reinforce technology and pedagogy implementation in their teaching at R1 University B. However, the FDs faced challenges related to measuring the progress and success of their interventions and services before reinforcing instructional changes. Anne reported some challenges related to measuring the effectiveness of her work. She, therefore, argued that she turned to scholarly research. As she stated:

> That took me down that kept me in the research rabbit hole. Yes, that was what got me in the research rabbit hole because again…so we're using these different technologies but how do [we know] that they're working? … the only way that you're going to know we can get lots of anecdotal information; but unless you really look at the student data, you're not going to know. You're not going know. so, yes…that's what got me started with, … kept me doing research.

Likewise, Kelly reported facing challenges in measuring the effectiveness of her services and interventions. She explained:

> A lot of times I have no idea if I've been successful, right? You work with enough FMs that you give them tools and you share information and research and good pedagogy with them, and you hope they go out and use it. And sometimes you find out that they did, but sometimes you never hear from them again.

This quote highlights the difficulty of measuring the FDs' progress and successes and that FDs did not always have accurate data on their program performance.

Despite the challenges of measuring progress, the FDs used certain events and strategies to provide FMs with opportunities to reinforce technology integration in their teaching. Those events and approaches included training, one-on-one consultations, course design, teaching resources, course evaluation, and class observation. For instance, Kelly mentioned that her team promoted a learning community to provide ongoing support to FMs, reinforcing their teaching skills. Specifically, she reported using monthly FMs group conversations and facilitated a faculty teaching community. She also shared how she used class observations and feedback sessions with some FMs. She reflected on the importance of the observation and feedback sessions and noted:

> It really is partially to give them [faculty] an overview because most faculty don't have a great understanding of how they break down their own material, like how long they lecture at a time before asking a question or how many seconds they wait between asking a question and moving on to the next thing.

Likewise, Anne described offering ongoing training, consultations, and workshops that enabled FMs to improve their knowledge and skills in technology and pedagogy at R1 University B. She described her programming by stating:

> We have a … program for faculty with one session per month. They will cover a variety of teaching and learning topics for faculty … design workshop series to look at AI and determine now, next year and future direction in exploring AI.

Anne also reported using online teaching resources to offer guidance on course design. She pointed out, "We maintain the content pages and documents for online courses, the support tickets for those specific courses come directly to our team." Then, she elaborated on her current course design activities by adding, "I'm working on course development, I'm working on course refresh, doing the back-end work to get the courses up and running." This comment explains that Anne provided ongoing support that enabled FMs to reinforce their instructional practices.

Summary

The FDs at R1 University B navigated multiple phases of change, leveraging various events and approaches to raise FMs' awareness, motivate them to participate in technological and instructional change initiatives, develop their knowledge and ability to implement the changes, and assist them in reinforcing changes related to teaching with technology. Those events and approaches varied with the FDs' work context. Both FDs promoted technology as a tool that should support pedagogical decisions in course implementation. However, while the FDs controlled the process of developing FMs' knowledge and skills, they had limited control over the process of raising awareness, motivating FMs, and reinforcing and sustaining changes in FMs' teaching. Lastly, while Kelly capitalized on her teaching experiences to support FMs, Anne leveraged her interest in academic research to connect and collaborate with some FMs.

Multifaceted Experiences: Successes, Structural Issues, and Relational Tensions at R1 University B

The FDs described multifaceted and complex experiences in assisting FMs to develop technology and pedagogy knowledge and skills to teach with technology in the context of R1 University B. They experienced job flexibility, embraced change and challenges, supported and celebrated FMs' achievements, and navigated the complexity of teaching. They also experienced organizational and structural issues inherent to the R1 University B context. This theme presents how FDs in Case 2 described the above-mentioned experiences.

Job Flexibility: Leverage Professional Expertise and Interests

The FDs shared that their FD jobs offered them the flexibility to focus on their areas of expertise and interests at R1 University B. For example, Anne described her work and FD services at her prior job, noting that she was able to focus on her area of interest while helping FMs integrate technology in their teaching. She stated, "I think that I was able to carve a niche for myself over the years through my interest in research." Due to her experiences collaborating with FMs on research, she noted that she received more opportunities to work and conduct research with various FMs. She stated, "I had been tasked to work with other faculty, find opportunities to work with other faculty in ways I had done previously through research." Likewise, Kelly described what she liked about the job and highlighted, "I love working with faculty. I really do. I think that mostly has to do with the fact that I love pedagogy." She also added, "I love ed tech stuff. Technology tools in the classroom are one of my favorite things." Then, Kelly went on to express her gratitude for her job as an FD, her team, and her college. With a smile on her face, she added:

> I love my job. I'm really fortunate. I like what I do, which not everyone can say. I work with amazing people, which again, not everyone can say. It's, I love the college where I'm at. I love the faculty where I'm at. I love the college where I work.

This excerpt shows that Kelly enjoys the flexibility and opportunity to perform work that aligns with her area of interest. Anne also enjoys the flexibility of conducting research with some FMs while helping them develop the knowledge and skills necessary to integrate technology into their teaching.

Embrace Change and Challenges

The FDs in Case 2 reported that they embraced the changes and challenges that came with their position at R1 University B. Anne discussed her observation of changes and innovations in higher education. She shared how these changes influenced her choice to become an FD. She argued, "There's disruption all the time just because of the types of technologies that we're using. There's disruption because this teaching is dynamic, right?...we're working with people, it's going to change." Then she added, "I think that's probably why this field attracted me so much because there's always something new." Moreover, Anne enjoys her job and the challenges that come with various projects in supporting faculty development. Discussing her work, Anne excitedly noted, "It fits the strengths that I have too. I challenged the things that were more the desired difficulty. It's because of those desired difficulties that has kept me hooked in." Similarly, Kelly shared that she enjoys her work and the challenges and puzzles that come with it. As she stated:

> I think that mostly has to do with the fact that I love pedagogy. I see it as a puzzle. Puzzle is not the right word, a challenge maybe. Because every teacher is different, and every class of students is different and … every content area is different. … even if you have

> three different instructors teaching the same exact class, not everything that I suggest will work for the same, for all three of those instructors, right?

Kelly also expressed that dealing with this type of situation "is a fun puzzle to solve in every single instance" because she enjoys this type of challenges. Like Kelly, Anne also enjoys facing situations that challenge her skills on the job.

Support and Celebrate Faculty's Success and Achievement

The FDs described their experiences supporting and celebrating FMs' successes and achievements at R1 University B. Anne shared how her FD services gained popularity after helping an FM deal with some challenges related to technology integration. She described what she did for the faculty:

> Now, granted, she's an excellent teacher, but I did a lot of work with her in terms of using new technologies…she was struggling with students not being prepared for exam. So, we take a look at … what do students need for studying? I helped her and I think because I helped her in her teaching and the problems she had with her teaching, word spreads.

Likewise, Kelly discussed how she supported FMs and responded to their successes. She used the terms "excited" and "enthusiastic" to describe her feelings about FMs' successes or attempts to apply technology. As she noted:

> I get excited when I hear faculty that tell me they tried a new thing and it worked really well, or even that they tried a thing, and it didn't work well. Then I get enthusiastic about what's the next thing, right? I think enthusiasm in this role can get you really far. I think also, I would look for evidence of success informal ways.

This quote highlights Kelly's excitement and interest in supporting and celebrating FMs' achievements in using educational technology for teaching.

Teaching Complexity

The FDs at R1 University B reported that helping FMs to use technology in their teaching was a complex process for FMs. For example, Anne argued that the process consisted of change, disruptions, and tensions. She noted that asking FMs to change their default way of teaching was challenging, and pushing FMs out of their comfort zone could lead to tensions. Kelly also described teaching with technology as a complex process, especially for new FMs. She shared this reflection:

> Yes, there's a lot that goes into teaching, right? Teaching is complicated by itself without technology. Being a good teacher is hard. There are so many amazing tech tools that can help make our jobs easier and make our students learning go better. But if you're a new teacher, if you're not just new to our college, if you're new to teaching, if you're a, I am, right out of grad school. This is my 1st job, and I am just learning how to teach; now learning how to be a good teacher while also implementing an incredibly complicated technology, that's too much. You need to be a good teacher before you can teach well with technology.

This excerpt illustrates the complexity of teaching with technology, particularly for new FMs who must learn technology and develop their teaching skills simultaneously. Both FDs also described their awareness of how complex learning and teaching with educational technology can be for FMs.

Institutional and Systemic Challenges at R1 University B

The FDs also experienced some organizational and systemic challenges in developing FMs' technological and pedagogical knowledge and ability to teach with technology at R1

University B. These issues included low FMs' participation in FDs' programming, a lack of emphasis on teaching and training, limited leadership support, and a funding or budget crisis.

Low FMs' Participation in Professional Development

The FDs in Case 2 described experiencing low FMs' participation in PD programming services that could help them develop their knowledge and skills in using educational technology. They argued that FMs did not participate in training because FD services were optional. Kelly shared her experience and view on the low participation issue. Referring to her college and FD Center, she noted, "Even here, where I do think that good teaching is valued, none of our faculty development is required." Likewise, Anne described a course design program for FMs, and she added that FMs were not required to work with FDs. She mentioned, "I'm stuck in I'm in between because here faculty have either signed up or they've been assigned .. to teach an online course, they've been told they're teaching an online course. They're being compensated for creating an online course," but Anne added, "I was there, but there was no requirement to work with me." Anne concluded that she used various strategies to initiate collaboration and invite FMs to work with her in the course design program because in her context, "..there was no requirement for faculty to work with us as instructional designers." The comments reported above show that the FDs faced low FMs participation in their services because FMs were not required to participate in PD programming. Anne and Kelly work in two different colleges or contexts, but both experience low FM participation as a challenge.

Lack of Emphasis on Teaching and Training

The FDs reported that R1 University B did not prioritize teaching and FM training enough, which influenced FMs' participation in change processes related to teaching with technology. Anne described facing low FMs' participation because there were no requirements for FMs to participate in training or to work with her. Likewise, Kelly argued that FD work and services are important in promoting good teaching; however, she noted that some stakeholders did not prioritize teaching and training. She explained that the issue "has to do with prioritization and being at an R1 where research is incredibly prized … Most people are valued for the amount of research money they can bring in. Teaching does sometimes take a backseat to that …" Kelly further argued that the lack of emphasis on training was a structural and complex issue in higher education. She shared this reflection:

> Again, it's hard … it's a very complex issue, right? Because in higher education, we don't have the structures built in the same way that our K through 12 systems do. For things like peer review of teaching or standards of teaching that are like across the board or things like that. Because that's not how it works here. We hire people because they are good at what they research or because they have some background knowledge that is valuable…They get hired because we feel like they have something that they can share with students. But again, like you can come in here with no teaching experience and just all of a sudden be in a classroom in front of students and have to figure it out. I think that gets frustrating a little bit. ...it's not prioritized from like from the top down.

Kelly's reflection clarifies that the issue of insufficient emphasis on teaching and training was beyond FDs' control because it is inherent to the higher education teaching enterprise.

Kelly reported that prioritizing research over teaching was a challenge; however, Anne noted that she leveraged research as a strategy for connecting and collaborating with FMs. Discussing her work, Anne stated, "I think that I was able to carve a niche for myself over the years through my interest in research." She noted she had the opportunity to collaborate on research with various FMs. As she reported, "I had been tasked to work with other faculty, find opportunities to work with other faculty in ways I had done previously through research." This comment highlights how Anne, unlike Kelly, enjoyed using research as a tool to build connections with some FMs.

Limited Leadership and Administrative Support

The FDs at R1 university B argued that although the university or college funded their FD Unit, the FDs did not receive sufficient leadership support to promote FD programming, which would help develop FMs' knowledge and skills to teach with technology. And when they did, the support varied depending on the leaders' views of FD work and contributions. Anne shared a story about her supervisor leaving and being replaced by a less supportive one. She reported that "I was put into a new role with a new Director. … but that person's leadership style is not collaborative and that was really difficult for me." She noted that the new Director had "a very authoritarian … leadership style. … She rubbed a lot of people the wrong way when she first came. I think it's somewhat changed. But not to have that collaboration, it was very different." Anne also shared a story about another supervisor who refused to let her attend training. She mentioned that "I really had to fight at one point. I really had to fight even just to go to the [university] things. He didn't want me going. I'm like, are you kidding me?" Anne's comments further explain that some leaders were less supportive of FDs and their work.

Kelly also shared her thoughts on how her university leaders invested in research compared to how they allocated funding for teaching and training. She pointed out that the university allocated funding in a way that prioritized some types of work over others. She added in the "larger context of the university where they put funding and what they put emphasis on…like where resources are allocated. It's not usually to the people who do my type of work. That can get a little frustrating sometimes." This comment indicates that the budget allocated for

FDs' work and training was less than that dedicated to other groups and research projects. Kelly viewed this type of funding distribution as a lack of support for and emphasis on teaching.

Budget Crisis and Tensions

The FDs also reported facing a budget crisis or shortfall at R1 University B at the time of this research. Kelly mentioned that there was a lack of teaching awards and incentives to motivate FMs to attend training. She explained, "Incentive wise, it used to be easier because we used to have more money. We're in a budget crunch still and hoping that lets up at some point." Anne also mentioned the budget issues several times. She used the terms "shortfall" and "tension" to describe the budget situation. She shared an example of a group of FMs who resisted participating in a course design program at a previous college due to some budget issues. She pointed out that there were tensions among the administration and FMs and that "a lot of tensions had to do with budget."

Unlike at her previous college, where Anne had experienced a lack of leadership support, at her current one, there was leadership support that helped with the budget challenge. She explained:

> I do have to say the academic officer now is very faculty centric; he really advocates for the faculty and so the tensions are not quite as strong. In fact, with the with the current budget crisis, there's really a coming together and it's a positive transparency from the administration, where in the past there wasn't transparency about budget decisions.

This excerpt illustrates that a lack of funding can make FDs' work more difficult due to a lack of incentives to motivate FMs to participate in PD programming, which aims to develop FMs' knowledge and skills to leverage technology in their teaching.

Summary

The FDs at R1 University B described multifaceted and complex experiences in navigating phases of change to help FMs develop technology and pedagogy knowledge, as well as the ability to teach with technology. While they leveraged their expertise and professional interests to support FMs in teaching with educational technology, FDs experienced multiple challenges that were beyond their control. Especially, Anne faced difficulties due to her experiences working within an IT department for a couple of years, where FDs' work was not a primary priority. Simply put, the FDs enjoyed their job and the challenges that came with it, but they encountered organizational and systemic challenges that prevented them from recruiting more FMs to participate in PD programming and change initiatives. The FDs' experiences also varied based on the college where they were situated.

Perceptions: Overcoming Role Ambiguity and Misconceptions to Justify FDs' Work Value at R1 University B

Based on interview data, the FDs shared a complex and positive view of their role as FDs at R1 University B. They argued that they played multiple valuable roles in different contexts at R1 University B. These roles involved serving as an academic support and collaborator or partner to empower and equip FMs with technological and pedagogical knowledge and skills, enabling them to teach with technology and foster students' learning. The FDs also held the perception that some stakeholders viewed their roles as less important and valuable on campus.

Equip FMs to Foster Students' Learning

The FDs argued that their positions equipped FMs with the knowledge and skills to use technology to facilitate students' learning and success at R1 University B. Summarizing the focus of her work at R1 University B, Kelly noted that:

> Yes, my goal is to help faculty be better teachers. That's really what it comes down to. if I was going to expand on that a little bit, it would be about centering student success in our teaching, I think is probably how I would talk about how we do it, in my role, at least.

Kelly also expressed her love for students and how she worked with FMs to support students' learning and success. She noted that her FDs' work consisted of her "desire for them to succeed in the classroom because they can't be successful without really phenomenal faculty who are devoted to their engagement and their learning and their success." Likewise, Anne argued that her role equipped FMs to use technology and pedagogy to foster students' learning. Describing her approach, she stated:

> The experience that I had was finding opportunities for working with faculty and then bringing them along, developing their ability to work with the technologies, their ability to work with different teaching strategies in ways that they hadn't been used to before.

This quote highlights how Anne used her role to equip FMs with the knowledge and skills necessary to implement educational technology in their teaching.

Academic Support, Collaborator, and Partner

The FDs described playing various roles in preparing FMs to teach with technology at R1 University B. Kelly used the phrase "academic support" to describe her role. As she noted, "as part of the greater university community, I fall in.. the support side of things, like academic support. I guess that's probably where I live the most if I was going to categorize it." She highlighted the focus of her work and noted, "A lot of my work that I do revolves around inclusion and belonging and engagement in the classroom. That's most of the faculty development work that I do falls into those categories." Similarly, Anne used the terms "collaborator" and "partner" to describe her role. She shared this reflection about her role:

> I think I view it more as definitely a collaborator and more of a partner … It's more collaborative than it is hierarchical. It's interesting because at least among instructional designers, Sometimes I could get a little preachy. Well, this is the way you're supposed to do it. And while that's true, faculty do not respond to preaching.

This excerpt explains that Anne viewed herself as a collaborator and partner who helped FMs but could not dictate to them what to do. Moreover, the comments presented above indicate that both Kelly and Anne perceived that they played important roles in providing academic support to FMs.

Helpful and Valuable Work

The FDs at R1 University B also perceived that their roles were valuable and that they contributed to the development of FMs and students' learning. Anne reported that some FMs appreciated her work, and her current academic department valued FD work. She stated that, "I feel that my work makes a different for students. I love to be part of another person's growth and journey." Referring to her collaboration with FMs, she noted that "The faculty are very appreciative, they're very collaborative with me. Yes, they see the value in the work that I've done." Likewise, Kelly argued that her colleagues and leaders valued her FDs' work and cared about good teaching. She shared this reflection on FD work and contribution to R1 University B:

> The vast majority of the money that a university brings in comes from their students. The job of faculty developers is to improve classroom teaching for both faculty, but mostly for students, right? Our ultimate goal is student learning and student success. Students who are successful in the classroom create an environment where more students want to come …and ultimately that's the thing that brings money into the university, which is ultimately the thing that most administrators care the most about, or not necessarily care

> the most about, but are forced to worry about the most. … the thing that is the most present constant issue for an administrator is the budget … Ultimately, when we're talking about things that will impact the university as a whole, it really is bringing in students that bring in those tuition dollars that can then be used to fund the university as a whole, yes, I think just the connection between student success, between faculty development, student success, and student recruitment and retention.

Through this reflection, Kelly established a connection between FDs' work and the impact of effective teaching on student success and retention at R1 University B. Relatedly, Anne also argued that her work made a difference for students.

Less Valuable Work and Lack of Appreciation

The FDs reported that some stakeholders in their university context did not value or appreciate their FD work at R1 University B. Anne said she faced a negative perception when she worked in the IT department for about two years, where FD work was not a main priority. She noted, "I don't know how to explain it. Faculty appreciated my work, but administration didn't..." She also shared her thoughts on her experiences in the IT department and explained:

> The work that I was doing was not valued because IT is more compliant. Again, it's the compliance. … The work that I did wasn't valued because it wasn't the value of that particular enterprise within the organization. Whereas prior, it was valued to a certain extent.

Kelly also argued that some stakeholders viewed her FD role and work on campus as not valuable and that the negative perception was a structural issue on campus. Referring to her work, she noted, "I see what I do is incredibly important. Not everyone at the university does. Some of it has to do with prioritization and being at an R1 where research is incredibly prized."

Kelly shared that FD services and programming were neither required nor highly encouraged by her college leadership. She also noted the university valued research over teaching. She added, "From that perspective, sometimes I perceive my role as being seen by others as lesser within the context of what the university cares about. That's not my favorite thing." This quote emphasizes that Kelly perceived the R1 University B value researcher roles as more valuable than FD positions. Anne also noted that some leaders, especially those in the IT department at her previous college, did not appreciate her FD work.

Misunderstanding of FDs' Work and Roles

In the FDs' perception, they experienced misunderstandings and misconceptions because some stakeholders did not know much about or understand the FDs' work at R1 University B. Kelly highlighted some FMs' misconceptions about educational technology and the FDs' services. She noted that FMs who have a strong background in technology seemed to think that using educational technologies is easy. However, they became frustrated when things turned out to be more difficult than they had anticipated. Additionally, she mentioned that many FMs' lack of knowledge or awareness of FD services was a challenge. She explained:

> I don't know that there's so much misunderstanding as like, there's plenty of people who just don't know enough about what we do. That's just not the world that they care about because they don't engage with us, they don't know what it is that we do or what we're there to help with … There's some faculty who just see faculty development as another thing they have to do. They don't see it as super valuable.

Likewise, Anne, who had experience working in an IT department, reported various misconceptions about FD work. She shared that some stakeholders thought that her work was basic IT and secretarial support. She recounted her encounter with several leaders who led her to believe her work was IT support. As she commented, "In my last position, [a leader] … I'm not exactly sure what her experience was in working with faculty developers … Her opinion of the work that I did was really basically IT. I was an IT support position." She also mentioned that that another university leader thought she was supposed to play the role of a secretary or clerical staff member. The comments mentioned above show that some leaders did not fully understand Anne's role and responsibilities as an FD.

Summary

The FDs perceived that they played valuable roles in assisting FMs to develop the knowledge and skills necessary to teach with technology at R1 University B. They also argued that their work makes a difference in supporting students' learning. Although they argued that their roles were valuable for the university, they perceived that some stakeholders did not understand and value their work. Precisely, stakeholders who were unfamiliar with FDs' work and services often held misconceptions about the roles of FDs on campus. Particularly, some stakeholders located in IT did not appreciate Anne's contribution as an FD.

Organizational, Leadership, and Situational Factors Impacting FDs' Work at R1 University B

The data analysis in Case 2 revealed that multiple factors influenced how FDs assisted FMs in developing technology and pedagogy knowledge and skills and the ability to teach with technology at R1 University B. This theme presents how the FDs described factors that hindered or facilitated their work in supporting FMs' teaching.

What Hindered FDs' Work at R1 University B

The FDs at R1 University B described multiple factors that hindered their ability to assist FMs in using technology to teach. These factors included low FMs' participation in PD programming, FMs' workload and time constraints, limited leadership or administrative support, FMs' technology proficiency, and context and FD Unit location on campus.

Low FMs' Participation in Professional Development

The FDs discussed low FMs' participation in PD programming as a factor that hindered their ability to assist FMs to develop knowledge and skills necessary to implement educational technology at R1 University B. Kelly reported that at her college, a small percentage of FMs participated in training. She shared a joke to illustrate her point:

> We used to joke about this at my last job, that there's like the 20% of your faculty that want to do things, want to learn things, want to come to everything. They show up to everything. Then you have the 60% of faculty in the middle that will occasionally show up for things. If it sounds interesting, they'll show up for a thing and you'll see them maybe once or twice a year. Then there's the 20% that will never show up to anything. They're going to teach the way they're going to teach and ..they're not going to show up for anything ever.

Kelly added that another factor that hinders FDs' work was "when faculty are apathetic about effective teaching methods." Anne also reported low FMs' participation in PD services as an obstacle. As she said, "We had a faculty that participated, and we had faculty that didn't participate and that was just the way it was. We couldn't you can't fight city hall sometimes." This comment indicates that the low FMs' participation challenge was beyond Anne's control. Kelly also described the attendance issue as being beyond her control.

FMs' Complex Workload and Time Constraint

Anne did not discuss FMs' workload as a challenge at R1 University B. However, Kelly, in several examples, explained that FMs' workload and busy schedules were factors that hindered their participation in training to use educational technology for teaching. Kelly shared her thoughts on FM's workload and schedule. She stated:

> We have a really good faculty base, but they all do too much. They're all asked to do too much. They're in charge of not just their classes and sometimes course loads that are five classes a semester. Especially our teaching faculty are in charge of curriculum development. They're in charge of curriculum sequencing. They're in charge of curriculum assessment. They're in charge of managing entire programs. A lot of times asking them to incorporate one more thing into their teaching is just way too much. There's just no way. Sometimes we will focus more on really small things they could change rather than try this whole new technology that is amazing…The thing that hampers it the most is busyness. If we could actually hire the number of faculty we need to make our faculty not crazy people, I have a feeling we would get a lot more interest in like pedagogical innovation and use of new technologies and things like that.

This excerpt further clarifies how FMs' workload and schedule prevented their participation in PD programming that could help them implement educational technology.

Limited Leadership Support

Anne reported that the lack of leadership support, especially in her previous position at the IT department, was a hindrance to her work at R1 University B. She explained her job was put under the IT department, "With a new boss who said, ‘well faculty development isn't my problem’.." She reported that, although FMs liked her work, her administrator did not. She pointed out, "Faculty appreciated my work, but administration didn't…It was also I think…the fact that my reporting line became IT. The work that I was doing was not valued because IT is more compliant. Again, it's the compliance." Anne further argued that her FD work was not supported in IT because it was not a priority for the IT department. Although Kelly received some leadership support to reach FMs, she also mentioned that her college leadership support for FD work and training was limited. For example, she reported that all PD programming at her college remained optional.

FMs' Technology Proficiency Levels

The FDs reported that users' technology proficiency was a factor that influenced how they learned and used technology to teach at R1 University B. Discussing how she provided guidance to FMs with various technology proficiencies, Kelly stated, "It really depends on the faculty. I don't know that I have a consistent way that I do it necessarily because it really will depend on the level of comfortability they have with the technology coming into it." She shared an example of what advanced users tend to need minimal guidance. Anne shared a similar experience with working with advanced technology users. As she put it, "The advanced users…well, we have the users that they don't need any help because they can do it all themselves. But even when they can do it all themselves, there's things that they don't know." However, FMs with low technology skills needed more guidance. Kelly explained, "Then you have faculty who are a little less tech savvy, who are like, I'm interested in [what] you talked about. I'll use [this tool] … I don't know … anything about [this] … as a tool." In this situation, Kelly mentioned that she applied a simple approach to guide those FMs. Both FDs reported that FMs with low technology proficiency skills required more guidance, which also influenced the type of technology they could implement in their teaching.

Teaching Context and FD Unit Location

The FDs at R1 University B argued that their work context influenced their FD work in supporting FMs in multiple ways. Some of these contextual factors included differences among colleges, disciplinary norms, and the location of the FD Unit on campus. For Instance, Kelly discussed some contextual differences among colleges and pointed out, "I would say in this college, there's more people who are more comfortable with tech tools than a lot of the other places I've worked, probably because they work with technology for a living, most of them." Kelly also noted that different colleges may have varying policies regarding teaching and learning, due to their unique faculty populations and programs or disciplines. Lastly, Kelly remarked that things varied across disciplines and topics, as well as based on the needs of FMs. As she stated, "Obviously, the disciplinary norms stuff is contextual, discipline by discipline. They use different technologies." Referring to technology recommendations for FMs, Kelly argued, "Again, I think it's really context dependent. It's dependent on the faculty's needs. It's dependent on the needs of the course and the students."

Likewise, Anne argued that some contextual factors impacted her work. She often repeated that working as an FD in an IT department was challenging because IT focused more on processing tickets and compliance issues. The comments above show that Kelly and Anne experienced different contextual factors. Anne identified her previous location in an IT department as a major challenge, while Kelly highlighted disciplinary norms and college-based polices as key factors that may influence FDs' work.

What Facilitated FDs Work at R1 University B

Multiple factors facilitated FDs' work in assisting FMs to develop technological and pedagogical knowledge and skills to implement technology in their teaching at R1 University B. These factors included administrators' support, FMs' desire to learn, simple and personalized approaches, FMs' problems and needs in the classroom, collaboration with stakeholders, and the COVID-19 pandemic’s impact on HEIs.

Administrative and Leadership Support

The FDs argued that administrative support facilitated their work in assisting FMs to develop knowledge and skills necessary to teach with technology at R1 University B. Administrative support took the form of leadership endorsement, teaching awards and incentives, and the promotion of FD's services. Anne shared her experiences where administrative support and endorsement reinforced her team's outreach and added value to FD programming. She explained that FDs could do some work without administrative support, but "I think your administrator can make a big difference." She added that "I have had a number of campus leaders who promoted my work and others who did not value our work. In my current role, the dean of the college is [the FD Team's] champion." Anne further argued that leadership endorsement added some level of prestige to faculty training. Additionally, she noted that teaching awards and incentive programs facilitated her work. As she explained:

> I always looked for those kinds of things, I looked for and I really utilized the various initiatives from the university. Those … were probably the biggest tools that I was able to use because there was a little bit of recognition that came … with those kinds of awards, because you do have to put a proposal in, you don't always get accepted. So, those tools helped me a lot.

This quote highlights that using awards and incentives was an important and effective factor in Anne's work, as she used them to motivate FMs to join PD initiatives.

On the other hand, Kelly did not report using awards and incentives due to a budget crisis that her college has faced. However, she argued that leadership and administrative changes impacted her work. As she stated:

> I've been in my role for about two and a half years, and we've had a bunch of leadership changes … administratively in the college. I have definitely seen that the different administration that we've had have had an impact on faculty development in the sense that some of them are more interested in sharing our stuff with faculty than others.

Kelly also reported using the faculty's annual evaluation report and requirements as a reminder, in outreach messages, to motivate FMs to attend training. The comments presented above show that Kelly and Anne use different forms of administrative support in their respective colleges. Anne leveraged incentive and award programs, while Kelly used faculty evaluation reports and requirements information in her PD announcements.

Faculty's Desire to Learn

The FDs reported that FMs' desire to learn technology to improve their teaching was a factor that motivated them to participate in PD programming at R1 University B. Anne discussed the resistance she faced from an FM who refused to participate in PD programming and shared that reluctant FMs sometimes need to have a reason to attend training. She explained, "there's sometimes where you just have to say it's not going to happen. And then there's other times where…with those really resistant FMs, it had to be because they wanted to do it for some reason, whatever it was, it was because they wanted to do it themselves." Likewise, Kelly argued that FMs' desire to learn was important. As she said, "Honestly, the most important factor is a desire to learn and grow as a teacher." Then, to illustrate her point, Kelly shared an example of an FM who exemplified a good attitude toward learning and becoming a better instructor. She said the faculty:

> Comes to every single thing that we do because she's like, 'I have so many things to share with these students and I want to share all of them with them and I don't know how to do

> it. Teach me how to be a teacher' because she had never taught before. When we get faculty like that, it's amazing and it's wonderful. I think I just wish there was more of that type of attitude. If you're here and your job is to teach, I feel like everybody should want to be a better teacher all the time.

These FDs' comments highlight FMs' desire to learn as an important factor that facilitated their learning and use of technology to foster students' learning.

Simple and Personalized Approaches

The FDs discussed the importance of using simple, personalized, and straightforward approaches with FMs to motivate them to develop knowledge and skills to teach with technology at R1 University B. Anne shared the story of how she assisted an FM with low proficiency in technology by keeping things simple. Anne reported her conversation with that FM and shared her thoughts on the interaction. Referring to a previous story she shared about the same faculty, Anne reported, "she was the one that she said, 'You didn't make me feel like I was a duck,' like she felt like she couldn't do it. She said, 'you made me feel like I could do it.'" Kelly also reported that using a simple approach was effective. Based on her experiences, she shared an observation on using simple approaches to make learning and using technology easier for FMs. She reported:

> Sometimes it's just being able to read a FM's expressions when possible to see like, if they're not feeling this, maybe you need to suggest something that's a little less complicated or, a little less out of their comfort zone is probably the best way to say it. You usually got a pretty good, got pretty good results that way. They would at least try something at least I hope a lot of them did.

This comment further explains how Kelly leveraged a simple approach to help and influence some FMs to try new technology and teaching methods.

Faculty's Problems and Needs in the Classrooms

The participants argued that leveraging FMs' needs and problems in the classrooms facilitated their work, assisting them in teaching with technology at R1 University B. Kelly noted that FMs' issues motivated them to seek assistance from FDs. She explained:

> I think a lot of times our work is facilitated by problems in the classroom, like a FM will identify something that they're struggling with. Usually that's when they come to us and be like, this is a thing. How can you help? What should I do?

She also noted that recurring tickets were an indicator that FMs needed assistance with an issue. Therefore, the FD team planned training sessions to address the needs. Likewise, Anne argued that focusing on FMs' needs allowed her to build good relationships and trust with them at her previous college. She reported that FMs were sad to see her leave for another job because, as she reported, "I knew what I was talking about; so, if they had a problem I was able to make sure that it was taken care of." In other words, this statement shows that identifying and addressing FMs' needs was an effective way to advertise and promote FD programming and work to FMs.

Collaboration with Stakeholders

The FDs described leveraging collaboration with various stakeholders to conduct outreach and guide FMs in developing knowledge and skills to teach with technology at R1 University B. Kelly described her PD activities, where FMs discussed relevant topics. She explained, "we then offer new faculty conversations once a month … that are just quick 45-minute conversations over lunch that we invite faculty to talk about things that might be relevant at that point in the semester." Anne also collaborated with FMs to facilitate training. She shared an example where her team rolled out a new technology tool and how she collaborated with FMs. She explained:

> I worked with the faculty, but then after that the next semester, I had a FM who used [the tool] talk about how he used [it]. And then any technical questions I was right there; but I would use FMs to share about how they were doing stuff; and I found that was really very effective.

Additionally, Anne mentioned her team was involved in various committees. Their participation in those committees enabled the FD team to gather information from various stakeholders, supporting FMs with technology changes and updates.

The COVID-19 Pandemic Impact

The FDs reported that the COVID-19 pandemic's influence on HEIs impacted their FD work with FMs in multiple ways at R1 University B. Due to the pandemic, they saw an increase in usage of some technologies, especially the LMS. Additionally, FMs demonstrated a greater willingness to try new technologies to support their teaching following the pandemic. Kelly observed an increase in technology use following the pandemic. She explained that before the pandemic, some colleges required the use of the LMS while others did not, but that has changed after the pandemic. She stated:

> This changed a bit post-COVID because everyone was forced to put things online, even the faculty who had been using pen and paper exams for decades. It's a little easier now than it was before because everyone's at least done it once. I don't know that we get as much pushback as we used to, but then again, it's different.

Anne discussed a similar experience. She noted that after the pandemic, the LMS was widely used.

The FDs also reported that FMs at R1 University B were more willing to try new technologies after the pandemic. Kelly argued that FMs showed more willingness because they were forced to learn technology during the pandemic. In others, FMs have become more familiar with trying new technologies in their teaching. As Kelly concluded, "way more people are willing to try that stuff than they used to, which I think has been really amazing." Likewise, Anne shared that even more senior FMs stopped being reluctant to try new technologies after the pandemic. She noted, "Some of our older FMs tend to be a little more standoffish with it, but COVID did make a big change, COVID did change that." This statement highlights that after the pandemic, some FMs have become more open to trying new technology.

Summary

Various factors influenced the FDs' work in navigating phases of change to assist FMs to develop technology and pedagogy knowledge and skills and skills to teach with technology at R1 University B. The FDs were able to influence some factors that facilitated their work. For example, they control their PD planning and implementation approaches, as well as leveraging collaboration with stakeholders to reach more FMs. They also used FMs' input to select topics and plan PD programming. However, the FDs had less control over the factors that hindered their work, as most of those hindrances were inherent to the structure and culture of R1 University B, where training and teaching were less prioritized than research. Both FDs faced structural challenges, but Anne, who had worked in an IT department for two years, experienced more departmental challenges, including FMs' resistance and a lack of leadership support.

Case 2 Summary

Case 2 explored and described two FDs, Kelly and Anne, with complex experiences in navigating multiple phases of change to help FMs develop technology and pedagogy knowledge and skills and the ability to teach with technology to foster students' learning at R1 University B. First, the data revealed that technological and instructional changes were constant features of the FDs' work at R1 University B. Both FDs cited AI as a new technology trend that impacted how FMs taught their classes in their context. They also argued that FMs needed to possess both technological and pedagogical skills, enabling them to teach effectively with technology. In fact, both FDs promoted technology as a tool that should support sound teaching practices. As a result, the FDs employed multiple events and approaches to raise FMs' awareness, motivate them to engage in technological and instructional changes, equip FMs with the knowledge and skills to implement these changes in their teaching, and support FMs in reinforcing the changes they had implemented in their teaching. The FDs worked in two different colleges, but they applied similar events and approaches to equipping FMs for technology integration in their teaching. They also share similar beliefs and assumptions regarding professional development and the integration of technology.

Second, the FDs had complex and multifaceted experiences in their work to assist FMs to teach with technology at R1 University B. They enjoyed the opportunity to use their professional expertise and interest while supporting FMs' teaching with educational technology. They were interested in FMs' success and celebrated their achievements in applying technology for improving instruction. Moreover, they enjoyed the challenging and unpredictable aspects of their jobs as FDs, as this aspect kept them engaged and challenged them to learn new things. However, the FDs also experienced various challenges and roadblocks. FMs' participation in their services was low, as teaching and training were not emphasized and prioritized enough at their colleges. Limited funding created tensions among FMs and administrators. Most of the challenges were based on the R1 University B institutional structure, meaning the FDs were unable to fully influence them. While the FDs struggled with raising FMs, motivating them to participate in change initiatives, and measuring PD programming to help FMs reinforce instructional changes, they exercised more control over how they planned and executed their PD programs, as they had the expertise and experience to lead these processes.

Third, the FDs played various roles at R1 University B, teaching with technology, and perceived their roles and work as valuable in helping FMs develop knowledge and skills to teach with technology. One of the FDs also connected her work with effective teaching, which had a positive impact on students' success and retention. However, the FDs also experienced misconceptions about the value of their work. Some stakeholders, including college leaders, did not understand and value their roles and contributions. Anne especially experienced more misconceptions when she worked in an IT department for a couple of years, where faculty development was not a key priority.

Fourth, multiple factors influenced FDs' work with FMs. Factors that negatively impacted the work included low participation from FMs, FMs' heavy workload and limited time, FMs' technology proficiency, and the location of the FD unit within IT. The FDs did not influence these factors as they were structural in nature. However, several other factors, such as PD approaches, collaboration with FMs, and FMs' needs, facilitated FDs' work to support FMs. The FDs had some influence over these factors and leveraged them to help FMs incorporate educational technology into their teaching.

Lastly, Kelly and Anne work for two different colleges at R1 University B, and while their experiences share several similarities, they also differ in multiple ways. Both FDs engaged in navigating pedagogical and instructional changes to develop FMs' knowledge and skills to teach with technology. The FDs viewed teaching with technology as a complex process that includes layers of challenges. Both FDs employed similar events and approaches, but faced a lack of FMs' participation and limited administrative support. However, they also had different experiences in terms of the challenges they faced and the strategies they applied to navigate them. While Kelly viewed the overemphasis on research as an impediment, Anne leveraged research to connect and collaborate with FMs. Kelly ran PD sessions and promoted inclusive teaching, while Anne focused more on course design, refresh, and research to support FMs at her current position. Kelly had no access to incentives to motivate FMs, and Anne has leveraged teaching award programs to engage FMs in a change initiative related to teaching with technology. Anne experienced a lack of leadership support while working in an IT department setting. Kelly enjoyed some leadership support that reinforced her outreach efforts to recruit and motivate more FMs to engage in technological and instructional changes to improve their teaching.

Overall Findings

This multiple-case study examined the experiences of four FDs in assisting FMs with teaching with technology at two distinct R1 universities. The cross-case data findings revealed that: (a) change was a fundamental element of FDs' work, but FDs they dealt with different scope of change, (b) the FDs navigated phases of change to develop FMs' technology and pedagogy knowledge and skills, but their approaches were different, (c) the FDs had multifaceted experiences that varied with their immediate work setting, (d) FDs' perceptions of their work depended on their Units' location at their R1 university, and (e) the FDs' experienced structural obstacles that seemed similar on the surface but varied across institutions. This section presents a comparison of the findings from both cases by developing the above-mentioned themes.

Scope of Change

Data analysis in both Case 1 and Case 2 indicated that change was a fundamental aspect of FDs' work in helping FMs to integrate technology into their teaching. FDs often dealt with technological and instructional changes (see Figure 4.1), and so did FMs. Simply put, the FDs described a reality and work context where technology updates and replacements were common events, creating challenges for FMs who were accustomed to doing things a certain way. Both cases identified AI as the newest technology trend that caused FMs to adjust their teaching approaches and strategies. Furthermore, in both cases, FDs faced the challenge of addressing FMs' assumptions and beliefs about teaching and learning, which often default to traditional and comfortable teaching methods.

However, FDs from both cases addressed a different scope of change, helping FMs develop the knowledge and skills to teach with technology. In Case 1, Oscar and Susan often led campus-wide technological changes, which consisted of system changes or LM transitions at R1 University A, affecting a broader audience. They were also responsible for tracking the usage of educational technology campus-wide to assess the relevance of technology tools to FMs, which could lead to the replacement of some technology and platforms. In addition, they collaborated with vendors to obtain assistance and training resources. Additionally, they assisted FMs in connecting with vendors as needed to address their concerns and answer questions about technological changes.

On the other hand, Oscar and Susan supported some academic projects at R1 University A and provided pedagogical guidance to help FMs develop pedagogical knowledge and ability. They helped FMs with course design and various educational tools to promote student engagement. However, they reported struggling to obtain approval to lead academic projects and collaborate with academic units on campus. Their leadership has been reluctant to support such projects, which has limited the FDs' scope of work in the academic arena.

Unlike the FDs at R1 University A, Kelly and Anne work at two separate colleges. They did not lead major campus-wide systems change. Instead, their work focused on helping individual FMs or groups of FMs at their respective college learn and use technology tools and platforms to make pedagogical decisions addressing teaching issues in their classrooms at R1 University B. They worked with FMs on using various tools within their college LMS that supported grading, note-taking, and assessment. Moreover, the FDs at R1 University B were involved in multiple academic initiatives. Kelly focused her work on inclusive teaching, and Anne engaged in research initiatives to connect and motivate FMs to use technology in their teaching. Simply put, while Anne and Kelly had the flexibility to engage in various academic projects, Susan and Oscar did not. This difference was mainly due to the location of Susan and Oscar's FD Center at R1 University A.

Overall, both cases presented change as a constant feature of FDs' work, but the scope of their change management activities differed. While FDs at R1 University B change management activities were more college-based and academic in nature, FDs at R1 University A change initiatives focused more on campus-wide technological change, and their leadership was reluctant to help them venture into the academic arena on campus.

Figure 4.1. Constant Change in Faculty Developers' Work and Data Sources

Change Management and Faculty Development Approaches

Both Case 1 and Case 2 data analyses revealed that FDs employed similar events and approaches to navigate change in developing FMs' technology and pedagogy knowledge and skills (see Figure **4.2**.); however, their approaches varied according to their university setting. Both cases demonstrated that FDs applied a systematic approach to raise FMs' awareness of the need for change, motivate FMs to support and engage in technology implementation, develop FMs' knowledge and skills, and reinforce instructional improvement and best practices. FDs in both cases used similar events and methods, including workshops, webinars, one-on-one consultations, online teaching resources, and technology demonstrations to assist FMs. More interestingly, the FDs viewed technology as a tool that should be used to support pedagogical decisions and help reach teaching objectives. In other words, at both R1 universities, FDs did not promote technology integration for its own sake. Moreover, in both cases, FDs faced significant challenges raising awareness and motivating FMs, as all the PD activities were optional on both campuses. Instead, the FDs showed more control over how they planned and executed their PD programming. They also struggled with measuring the effectiveness of their services and the progress of FMs due to a lack of access to relevant data.

Conversely, FDs from both cases used different approaches to connect with FMs and develop their technological and pedagogical knowledge and skills for implementing educational technology in their teaching. In Case 1, the work of the FDs at R1 University A covered the entire campus, and Susan was involved in strategic planning due to her position as Center Director. She leveraged her position to engage with various stakeholders and remained informed about their needs regarding technology implementation. Oscar and Susan emphasized their team collaboration in leading workshops and webinars, and Oscar often highlighted his course design and video production activities through individual consultations. Susan and Oscar also competed with other FD Centers on campus for FMs' time and attention, which made PD participation a challenge. Simply put, they planned and implemented campus-wide training and webinars for all FMs regardless of their disciplines, which Susan leveraged to promote interdisciplinary collaboration and networking. Lastly, the FDs in Case 1 resolved ticket issues from all FMs at R1 University A and provided technology training to all FMs to promote the implementation of educational technology.

On the other hand, in Case 2, Anne and Kelly's work in developing FMs' knowledge and skills to teach with technology was more college-based and discipline-specific at R1 University B. They provided training and individual consultations on technology, pedagogy, and other relevant topics to FMs at the respective college. For example, Kelly emphasized inclusive teaching in her work and collaborated with her team to run a new FM orientation at her college. She often leveraged her teaching experiences in developing FMs' knowledge and skills. Similarly, Anne supported new FMs' orientation and technology training at her previous college. At the time of this research interview, Anne mentioned that her work focused more on course design and refresh to help FMs improve their teaching. She also did academic research with various FMs while them helping develop knowledge and skills to teach with technology. Anne also had access to administrative incentives, such as teaching awards, to encourage FMs' participation, a tool not mentioned in Case 1.

In summary, both Case 1 and Case 2 data analyses revealed that FDs employed similar events to navigate change in developing FMs' technology and pedagogy knowledge and skills; however, their approaches varied according to their university setting. While Oscar and Susan's PD program targeted FMs campus-wide from various disciplines, Kelly and Anne's services were more college-based and discipline-specific.

Figure 4.2. Guiding Faculty to Develop TPACK and Data Sources

Context-Based Multifaceted Experiences

The cross-case data analysis revealed that FDs in both cases had multifaceted and complex experiences in dealing with change, which helped FMs develop technology and pedagogy knowledge and skills to implement educational technology in their teaching. However, most of their experiences varied depending on their university and the location of their FD Unit on campus. The FDs enjoyed challenges and problem-solving, which is a feature of their job. They also experienced the flexibility to use their professional expertise and interests when providing support to FMs. They often worked in a team to support FMs' teaching and success. Additionally, they experienced institutional challenges, including low FM participation, limited leadership support, FMs' unavailability, and a lack of emphasis on FM training and teaching.

However, the FDs also had different experiences based on their university environment and structure. In Case 1 at R1 University A, Susan and Oscar reported multiple experiences that differed from those described by participants in Case 2. Oscar emphasized that his complex workload limited his ability to build long-term relationships with colleagues. Susan argued that her FD Unit's location in the IT Department prevented the FD team from engaging in more academic projects. She also noted facing a rigid leadership hierarchy that impeded her connections with some university leaders. Both FDs reported productive teamwork experiences in helping FMs, but mentioned experiencing a lack of recognition and credit from other stakeholders. This issue was related to their location in the IT department, where Susan experienced limited support for academic work from her leaders.

Conversely, the FDs in Case 2 at R1 University B, Anne and Kelly, described several experiences that differed from those of the participants in Case 1. They both experienced a lack of funding, which impacted the incentives program for FMs' training, course design, and technology integration. Moreover, Anne faced resistance to change from some FMs at her previous college, and Kelly highlighted the complexity of teaching with technology for FMs, particularly for new ones.

In summary, FDs from both cases described similar and distinct experiences. However, most of their experiences were influenced by their university structure, leaders, colleges, or the department where their FD Unit was based on campus.

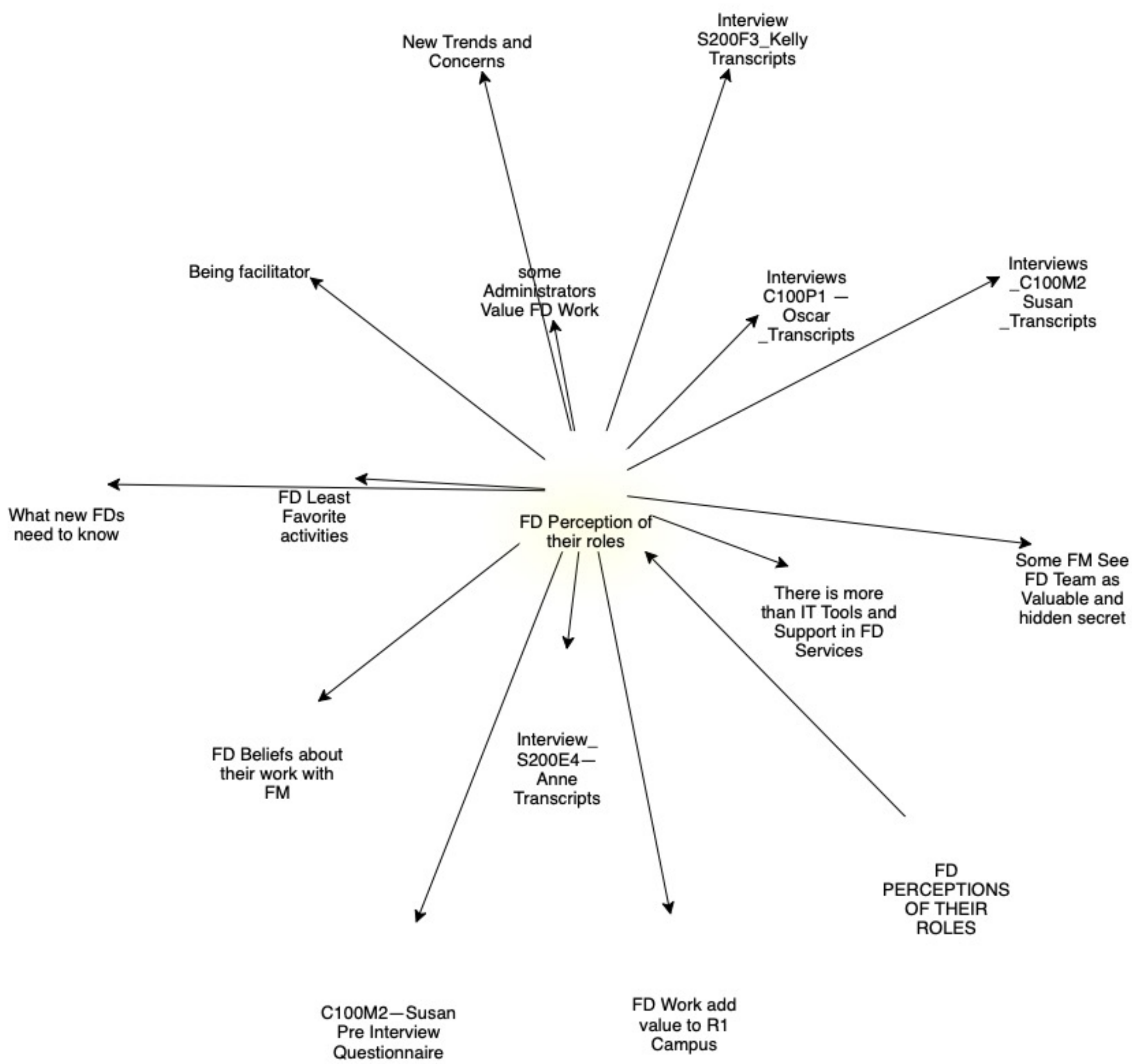
Context-Based Perceptions

This cross-case analysis revealed that FDs from both cases held a positive view of their roles in helping FMs teach with technology (see Figure 4.3). However, their views and descriptions of their roles also varied based on their responsibilities and work settings. The FDs from both cases perceived their work and roles as valuable and argued they made valuable contributions to institutional performance and to equipping FMs to foster students' learning. However, they also encountered misconceptions from stakeholders who were unfamiliar with their work. These stakeholders did not value the FDs' work and contributions on campus. They often consider FDs who work within an IT department as IT support, which Susan labels as a stigma associated with the FD position in IT.

Despite the similarities described above, the FDs described their roles differently based on their work setting. For example, in Case 1 at R1 University A, Oscar described his job as complex, fluid, and agile because he was involved in various projects. Susan argued she was an academic partner who empowered FMs to teach with technology. Conversely, in Case 2 at R1 University B, Anne argued she played the role of a facilitator, while Kelly argued she saw herself in an academic support role. Unlike her counterpart, Kelly linked the FD's role and contributions to the success of institutions and students. She argued her role contributed to institutional performance by developing FMs' skills to improve their teaching, which also impacted students' enrollment and retention.

Overall, all the FDs perceived their roles as valuable; however, they also faced misconceptions from stakeholders who did not value their work, primarily due to these stakeholders' limited awareness of the FDs' work. The data also revealed that FDs described their roles differently depending on their work setting and responsibilities. However, FDs who work in an IT department seem to experience more misconceptions due to their unit's location on campus.

Figure 4.3. Faculty Developers' Perceptions and Data Sources



Structural and Systemic Factors

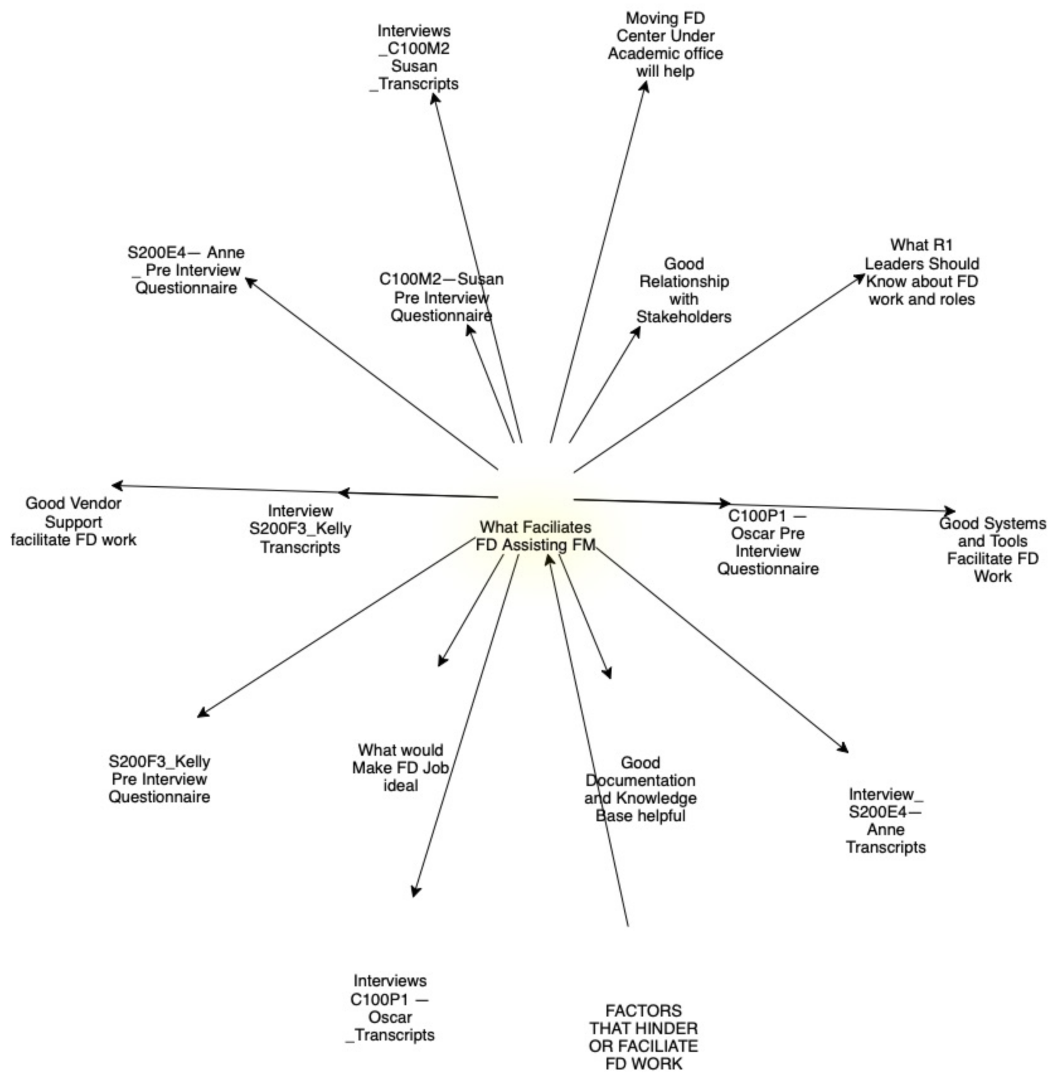
Findings from the cross-case analysis revealed that FDs from both cases experienced similar factors in navigating the phases of change, which helped FMs develop technology and pedagogy knowledge and skills to teach with technology (see Figure 4.4). Some factors hindered FDs' work while others facilitated it. However, some of these factors took varied forms depending on the FDs' university. Among the hindrances were low FMs' participation, limited leadership support, lack of emphasis on teaching and training, and FMs' technology proficiency. Conversely, the factors that facilitated the FDs' included applying simple approaches, collaboration with stakeholders, and the influence of the COVID-19 pandemic on FMs.

Some structural factors meant different things or took different forms in different university settings. The FDs argued that the work context was a factor. For FDs in Case 1 at R1 University A, the context referred to the FD unit location in the IT department, and it also included how FMs viewed the usefulness of educational technology. However, in Case 2, the work context as a factor consisted of college policies and disciplinary norms. Similarly, leadership support in Case 2 at R1 University A consisted of getting help for outreach and access to incentives and teaching awards, and prioritizing PD. In contrast, Susan and Oscar in Case 1 viewed leadership support as approval to lead academic projects and collaborate with other academic departments.

Additionally, FDs, in Case 1, reported they provided flexible PD options as an important factor that helped FMs engage in training at R1 University A, whereas those in Case 2 argued that FMs' desire to learn and needs in the classroom were important factors that facilitated FDs' work at R1 University B.

Multiple structural factors hindered or facilitated FDs' work in assisting FMs to develop technological and pedagogical knowledge and skills to teach with technology. However, these factors mean different things or take different forms in different university contexts.

Figure 4.4. Data Sources: Factors that Facilitate FDs' Work



Overall Summary

This cross-case analysis revealed that the experiences of the participants or FDs in Case 1 and Case 2 are more similar than different. The FDs share a commitment to navigating changes and challenges, assisting FMs in developing technology and pedagogy knowledge and skills, so they can implement changes related to teaching with educational technology. First, both cases presented change as a fundamental element of FD's work, but the scope of their change management initiatives differed. While FDs at R1 University B change management activities were more college-based and academic in nature, FDs at R1 University A change initiatives focused more on campus-wide technological change and integration.

Second, the data analysis of both cases revealed that FDs employed similar events to navigate change in developing FMs' technology and pedagogy knowledge and skills; however, their approaches varied according to their university setting and location on campus. While Oscar and Susan's PD programs targeted FMs campus-wide from various disciplines, Kelly and Anne's services were more college-based and discipline-specific. This meant that the scope of FDs' change management initiatives and PD sessions varied with their university settings and FD Unit location on campus.

Third, FDs from both cases described similar and distinct experiences. Most of their experiences were influenced by their university structure, leaders, colleges, or the department where their FD Unit was based on campus. The data shows that FDs who work in the same FD unit on the same campus sometimes reported different experiences in supporting FMs. This means the FD's experience is personal and context dependent.

Fourth, all the FDs perceived their roles as valuable; however, they also faced misconceptions from stakeholders who did not value their work, primarily due to these stakeholders' limited awareness of the FDs' work. The data also revealed that FDs described their roles differently depending on their work setting and responsibilities.

Lastly, multiple structural factors hindered or facilitated FDs' work in assisting FMs to develop technology and pedagogy knowledge and skills to teach with technology. However, these factors meant different things or took different forms in different university contexts. In other words, leadership support for FDs at R1 University A differed from what FDs at R1 University B expected from their leaders and administrators.

Chapter 5 - Discussion

Introduction

"While the literature is replete with program descriptions and program evaluations, the roles and experiences of faculty developers, the people who plan and deliver these activities, largely have been overlooked" (Baker et al., 2018, p. 265). This qualitative multiple-case study investigated the experiences of four faculty developers (FDs) in assisting faculty members (FMs) to teach with technology in two separate research-intensive universities (R1s). The findings revealed that: (a) change was a fundamental aspect of the FDs' work and role, (b) FDs' work assisting FMs to develop knowledge and skills to teach with technology was a complex change process, (c) FDs' experiences were multifaceted, defined by both professional opportunities and systemic challenges, (d) FDs worked to overcome role ambiguity and misconceptions on campus, and (e) various contextual and organizational factors influenced FDs' work. This chapter discusses how the conceptual framework influenced the investigation and how the findings fit into and extend the existing literature. It also discusses the limitations of the findings and their implications, and concludes with recommendations for future research.

Application of the Conceptual Framework

This study, which occurred at the intersection of faculty development, technology integration, and change management, combined and applied the Technological Pedagogical Content Knowledge (TPACK) Framework (Koehler et al., 2013) and the Awareness, Desire, Knowledge, Ability, Reinforcement (ADKAR) Change Management Model (Hiatt, 2006) as a theoretical lens to collect and analyze data. According to the ADKAR Change Management Model (Hiatt, 2006), leading change at the individual level requires guiding change participants through five phases: (a) awareness, (b) desire, (c) knowledge, (d) ability, and (e) reinforcement.

Similarly, the TPACK Framework (Koehler et al., 2013) posits that teaching with technology requires that instructors possess both technology and pedagogy knowledge and skills. From the data analysis, various themes emerged that align with the constructs of these frameworks.

To be specific, the data explain how the FDs navigated the five phases of change (ADKAR) to assist FMs in the process of teaching with educational technology. Additionally, the data describe PD events and approaches the FDs used to equip FMs with technological and pedagogical knowledge and skills (TPACK) in phase 3 (Knowledge) and phase 4 (Ability) of the change management process. The findings and themes address various technology integration and change management constructs related to ADKAR and TPACK.

While theme 1 described change as a constant element of FDs' wholes, theme 2 describes activities and strategies that FDs used to navigate the phases of change (awareness, desire, knowledge, ability, and reinforcement) to help FMs develop technological and pedagogical knowledge and skills (TPACK) to teach with educational technology and reinforce instructional change. Put simply, the data indicate that the FDs employed various outreach methods to raise FMs' awareness in Phase 1 (Awareness) and motivate them to support and participate in programming related to technological and instructional change in Phase 2 (Desire). Phases 3 (Knowledge) and 4 (Ability) are combined, and this is where ADKAR and TPACK intersect or overlap in the change management process. The data describe and explain what FDs did in these phases to help FMs develop technological and pedagogical knowledge, as well as the ability to implement changes in their teaching. In phase 5, the data show that the FDs helped FMs reinforce technological and instructional change (Reinforcement) by providing ongoing support, including training and consultations.

The FDs appeared to exert varying levels of control over the phases of change management (awareness, desire, knowledge, ability, and reinforcement). While they fully controlled phases 3 and 4, which included helping FMs develop knowledge and skills to implement change, they struggled in phases 1, 2, and 5. They were unable to fully influence how FMs responded to the information and events the FD center offered, which aimed to raise FMs' awareness, increase motivation, and reinforce instructional change. This suggests that FDs need more administrative support to raise awareness and motivate FMs to participate in PD programming and change initiatives.

Theme 3 describes how FDs in both cases had multifaceted and complex experiences in dealing with change and challenges in helping FMs develop technological and pedagogical knowledge and skills, or TPACK, to implement educational technology in their teaching. The FDs shared their experiences working in teams, leveraging their expertise and skills to equip FMs to teach with technology. They also support and celebrate FMs' achievements in using educational technology to improve their teaching.

Theme 4 describes how FDs from both cases held a positive view of their roles in navigating change (ADKAR) to assist FMs develop knowledge and skills, or TPACK, to teach with technology. The FDs perceived their work and roles as valuable. They argued that they made significant contributions to developing FMs' technological and pedagogical knowledge and skills, enabling the implementation of instructional changes that foster students' learning. However, the FDs reported that some stakeholders did not value their work and contribution to the university community.

Theme 5 discusses factors that influenced FDs' work in navigating phases of change (ADKAR) to promote technology integration while assisting FMs to develop technological and pedagogical knowledge and ability, or TPACK. Some factors hindered FDs' work while others facilitated it. However, some of these factors took various forms depending on the university setting of the FDs.

Moreover, the findings of this study are consistent with past work (Cano, 2021) that has found that HEIs used various events and approaches to develop FMs' TPACK, and that applying the TPACK framework in PD enabled FMs to use technology effectively in their teaching. Precisely, Cano (2021) argued that FDs' technological and pedagogical guidance and support were indispensable in facilitating the transition to remote teaching during the pandemic.

However, the literature does not explain how FDs have utilized the ADKAR Change Management Model to navigate change processes, thereby assisting FMs in developing their teaching and educational technology skills. This study has contributed to closing the literature gap by offering some insights into the application of the ADKAR Model in technology integration and faculty development research. On the other hand, a popular change theory management used in previous research is Rogers' (2003) diffusion of innovation. However, it is more concerned with why and how fast technology or ideas spread. In contrast, this study presents a novel approach to understanding faculty development from a change management perspective. It offers insights into what FDs do to promote pedagogical and instructional change. A possible explanation for the lack of application of ADKAR in faculty development research could be that stakeholders, including researchers, overlooked the change aspect of helping FMs to teach with technology. Overlooking the change management element might limit the effectiveness of programming and approaches that higher education institutions (HEI) and FDs implement to prepare FMs to teach with educational technology to foster students' learning.

Alignment with Existing Literature

While this study's findings align with those of various past studies, they also differ from some of the outcomes of multiple previous investigations. This study also reports insights from the perspectives of FDs that have been overlooked in the literature. The following section will discuss how the findings align or differ from existing literature.

Change: A Fundamental Aspect of FDs' Work

While this study's findings align with prior research on change management in technology integration, they also offer new perspectives that have been missing from the literature. This section discusses similarities and differences between this study and the existing literature regarding change management.

Technology Change

This study revealed that change was a fundamental aspect of the FDs' work and role, aligning with previous works by Sorcinelli et al. (2005), Garavan (1997), and Koehler et al. (2013). Sorcinelli et al. (2005) reported that faculty development serves as a "key lever for ensuring institutional quality and supporting institutional change" (p. xi). This study also found that FDs played a key role in implementing regular technology updates, as well as LMS changes or transitions. This finding is consistent with previous research (Brooks et al., 2020; Dillu & Nandwani, 2021), which has demonstrated that FDs played a crucial role in facilitating FMs' transition to online teaching during the COVID-19 pandemic. This transition was a major unplanned change process where FDs in various HEI contexts intervened to save the day by ensuring the continuity of instruction. This process required FDs to manage both major technological and instructional changes concurrently. However, while previous investigations cited above discussed FDs' participation in general institutional change, many overlooked the constant and recurring changes that made their work complex and multifaceted. Overlooking recurring changes in faculty development is akin to ignoring the essence of the work, as FDs' programs and training are designed to promote individual-level changes, including changes in technology, teaching methods, and approaches.

Additionally, this study's findings are consistent with prior work that argued that FMs should "continually adapt to changes in information technology" (Koehler et al., 2013, p.14), technology tools necessitate frequent updates (Polly et al., 2021), and promoting technology utilization in education entails multifaceted processes, necessitating modifications in educational decisions and practices (Top et al., 2021). This study reported that helping FMs deal with change was a consistent and recurring task and responsibility for FDs. However, unlike Koehler et al. (2013) and Polly et al. (2021), who primarily focused on technological changes, this study highlighted that FMs also experienced instructional and pedagogical changes. This nuance is important in understanding the complexity of FDs' work, which also involves influencing FMs' beliefs and views on teaching by questioning their knowledge and teaching methods.

Moreover, the scope of change that FDs managed varied based on their responsibilities and location on campus. While participants in Case 1, who were located in an IT department, led a major university-wide learning management system (LMS) transition and systems replacement, those in Case 2 dealt more with the launch and updates of teaching, engagement, and assessment tools. Either way, the FDs were always involved in managing some types of change to enable FMs to teach with technology. According to this study, FDs located in IT departments seem to manage major technological changes due to their proximity to IT leaders. In contrast, those situated in academic units tended to lead more academic projects that promote pedagogical or instructional changes supported by educational technologies.

Instructional Change and Faculty's Beliefs

The findings align with Garavan's (1997) view that training is "a planned and systematic effort to modify or develop knowledge, skills, and attitudes through learning experiences, to achieve effective performance in an activity or a range of activities” (p. 40). Likewise, this study's FDs' technology training also sought to alter FMs' assumptions and beliefs about teaching and technology. The training process involved learning how to utilize technology and apply it effectively in teaching, guided by sound research-based principles. Changing FMs' assumptions was an ongoing effort that added more complexity to FDs' work. However, doing so is crucial to ensure that FMs apply educational technology for a clear purpose, based on sound pedagogical guidance, to facilitate students' learning. Simply put, assisting FMs in teaching with technology was a change management process that required careful planning and implementation.

Additionally, FDs' work influencing FMs' beliefs about teaching is a complex, time-consuming, and challenging process that requires FDs to ask FMs to leave their comfort zone and their traditional methods to try new teaching ideas. Relatedly, this study's findings support previous work by Sinclair and Aho (2018) which stated, "Staff beliefs and affective barriers to adoption are more complex and nuanced than existing models or training provision encompasses” (p. 23). Addressing these personal and affective barriers comprehensively proves to be a daunting task for FDs who want to protect their working relationship with FMs. Additionally, this may require time and dedication from FMs who are already managing multiple priorities. Additionally, tracking and measuring the effectiveness of this process can be challenging, as assessing FMs' change in beliefs might require more than survey feedback and anecdotal evidence. This suggests that FDs should strategically find ways and tools to measure the impact of their services and interventions.

Technology Innovation

This study's findings challenge the assumptions made by Dillu and Nandwani (2021) that the rapid evolution of technology hardware and applications presents a prevalent barrier to the use of instructional technology. While this assertion might sound accurate from FMs' perspective, this study's FDs viewed technology change as an opportunity to push themselves. They welcomed technological innovations as an opportunity to learn and explore new tools. In fact, Anne reported being drawn to the FD field because of the ever-changing nature of educational technology and the constant challenges and opportunities for learning that come with the job. This suggests that FDs and FMs may not perceive technology evolution and changes in the same way, nor do they share the same appreciation for technological innovations.

Overall, FDs faced and led a pedagogical and technological change process to equip FMs to teach with technology. Unlike other stakeholders, the FDs in this study welcome change and innovations. These change processes vary in intensity and complexity depending on the location of the FD units. Changes were a constant component of the FD's professional development (PD) services. Therefore, FDs needed to possess the appropriate competencies to apply effective change management approaches, equipping FMs to teach with technology. On the other hand, most previous research has overlooked how recurring technological change has influenced FDs' work in supporting technology integration in higher education.

Navigating Phases of Change to Develop Faculty's Technological and Pedagogical Knowledge and Ability

While this study’s findings are consistent with previous investigations that address how HEIs equip FMs with technological and pedagogical knowledge and skills to teach with educational technology, they challenge assumptions made by various scholars. Additionally, this study gathered data from FDs' perspectives to present new insights into how participants managed recurring technological and instructional changes in the process of assisting FMs with their technology integration efforts.

Events and Approaches that Equip Faculty to Teach with Technology

This study found that FDs' work in assisting FMs to teach with technology was a complex, multifaceted process of navigating phases of change, as described in the ADKAR Model, to help FMs develop technological and pedagogical knowledge and ability, as recommended by the TPACK Framework, for teaching with technology. In both cases, FDs used and experienced similar events and strategies to raise awareness, motivate FMs, and prepare FMs to teach with technology.

This study's findings are consistent with multiple studies that described events and strategies that HEIs offered to prepare FMs to teach with technology. Similar to this investigation, several past studies reported that FMs engaged in peer collaborations across varied teaching contexts (Belt & Lowenthal, 2020; Davis et al., 2015; Teräs, 2016; Wu et al., 2016), participated in meetings and informal interactions (Shagrir, 2017), attended trainer-led training sessions (Georgina & Hosford, 2009; Zhoa & Cziko, 2001), participated in formal technology training programs (Holmes & Kozlowski, 2015; Kenney et al., 2010), engaged in course design (Becuwe et al., 2017), leveraged informative webinars and seminars and the use of resource-rich websites including wikis and blogs (Ivala, 2016) to develop FMs’ skills to teach with technology.

However, most of these past studies collected data from the FMs' perspectives, whereas this study gathered data from four FDs. The majority of the past studies were also conducted before the COVID-19 pandemic, whereas this investigation took place after the pandemic. The similarity in events and strategies used to prepare FMs to teach with technology suggests that PD programming and offerings have not changed significantly after the pandemic. While FDs from both cases have strategically shifted to online and hybrid formats to facilitate FMs' access to PD, the types of events and programs, such as webinars, workshops, formal training, course design, and consultations, have remained the same.

Managing Change and Developing Faculty's TPACK

Unlike most past studies mentioned above, which focused mainly on FMs' experiences with technology issues, access, training, and barriers to technology integration, this investigation moves the conversation forward by going beyond merely describing the types of training events and strategies that developed FMs' knowledge and skills. This study, informed by the ADKAR Change Management Model (Hiatt, 2006), shed light on how FDs navigated the phases of change to prepare FMs to use technology. The finding also reported how the FDs helped FMs reinforce technological and instructional change despite facing challenges in measuring the effectiveness of their interventions. Simply put, using a change management lens, this study generated data that opens a window into FDs' approaches to motivate FMs to participate in change and reinforce instructional approaches. As discussed in the previous section, assisting FMs to teach with technology is a change management process. Therefore, the change management aspect of faculty development should not be overlooked. It is crucial that stakeholders involved in faculty development understand the nuances, approaches, and strategies that lead FMs to support and participate in change initiatives to improve instruction in their teaching context.

This study also revealed aspects of faculty development that have been overlooked in previous investigations. It differs from previous studies in that it found FDs exercised more control over the implementation of their PD programming, as they possessed the experience and expertise to plan and lead these events without hesitation. However, although FDs employed various approaches to raise awareness and motivate FMs, they lacked the power and authority to fully control these processes. Therefore, they showed less control over raising FMs' awareness, encouraging them, and reinforcing their learning changes. Simply put, this was a challenge because those factors were beyond the influence and expertise of the FDs. This suggests that FDs need institutional and leadership support the most with those phases.

This study's findings challenge the assumption made by various scholars (Belt & Lowenthal, 2020; Singh & Hardaker, 2017) that many HEIs neglect to seek FMs' input before procuring instructional technology tools, thereby rendering FMs devoid of agency in choosing the technologies they must incorporate into their courses. In contrast, this study found that FDs leveraged FMs' input and collaboration with FMs to raise awareness, reach other FMs, and motivate FMs to support and participate in change initiatives related to teaching with technology. The divergence in findings may be attributed to the differing perspectives of the research population. While the previous investigations mentioned above collected data from FMs, this study gathered data from four FDs. It is possible that FDs conducted surveys and discussions to collect data from FMs; however, some FMs did not participate in these activities for various reasons. Therefore, FMs who do not participate in FDs' activities might not have their input about technology selection taken into consideration.

Multifaceted Experiences: Successes, Structural Issues, and Relational Tensions

This study found that the FDs' experiences were multifaceted, defined by both professional fulfillment and systemic challenges. The FDs' experiences in both cases were a mix of opportunities, flexibility, problem-solving, and celebration of achievement, as well as challenges, institutional structure, lack of recognition, and low participation from FMs. The data showed that while these FDs experienced professional opportunities and flexibility in their work, they were constantly navigating systemic issues that were often beyond their control.

Complex Experiences

These findings are consistent with previous work by Top et al. (2021), who reported that promoting technology utilization in education entails multifaceted processes that require modifications in educational decisions and practices. However, unlike Top et al. (2021), who collected data from various stakeholders, this study emphasized the voices and perspectives of FDs to offer insights into the layers of complexity embedded in the process of helping FMs teach with technology. It is possible that FMs and FDs do not share a similar view of complexity and challenges. While FMs may view technology updates, upgrades, and difficulties as complexity, FDs in this study interpret complexity as challenges related to navigating change, thereby developing FMs' technological and pedagogical knowledge and abilities while dealing with misconceptions and limited leadership support. This is the case particularly for FDs who work within IT departments. This suggests that FDs who work in the IT department may need extra administrative support in promoting their services to better motivate and support FMs in their efforts to teach with educational technology.

Low Emphasis on Training

The findings of this study support previous work by Galanek and Gierdowski (2019), who found that certain FMs do not perceive training as necessary, while others remain oblivious to the professional development opportunities and support services available on their campus. This research also reported that the optional nature of educational development services for FMs was a challenge. While some FDs may perceive FMs' lack of participation in training as a sign of a lack of interest and motivation to participate in change related to teaching with technology, others understand it as a time and workload management strategy or a way FMs prioritize what matters most for their career advancement. Since most R1 universities heavily prioritize research and other scholarly projects over teaching, it makes sense that FMs focus on scholarly work that is more likely to help them succeed in the R1 environment. Put differently, FMs skipping training seems a calculated decision. Therefore, it is difficult to determine whether FMs do not participate in training due to a lack of motivation or because they are too busy with other projects. Relatedly, it can be said that the cause of the low participation issue is not mainly with the FMs. Rather, the cause of the problem lies in the R1 systems or structure, which makes it harder for some FMs to focus on conducting research and improving their teaching proficiency at the same time.

However, from the PDs' perspectives, university leaders have a responsibility to promote teaching excellence to meet students' needs and maximize retention rates. Therefore, there is a need to strike a balance between promoting research and teaching, as both are indispensable in meeting the mission of an R1 university. In other words, something must be done within the system to facilitate FMs to lead their research projects while still having time to participate in PD programming to sharpen their teaching skills. Helping FMs to balance both priorities might enable R1 universities to remove barriers that impede the promotion of teaching excellence across their campuses.

Stakeholders' Collaboration and Authority

The study's findings are consistent with previous work by Lidolf and Pasco (2020) and Zheng et al. (2018), which found that various stakeholders are involved in preparing FMs to teach with technology and that they have varied levels of authority. Those studies reported that multiple HEI stakeholders, FDs, FMs, IT staff, administrators, and executive teams have been instrumental in preparing FMs for the integration of technology. While these stakeholders played an important role in helping FMs teach with technology, each has its own interest in the process. For instance, IT leaders focus on compliance and cybersecurity; FMs care about academic success; and university administrators and leaders focus on budget and enrollment issues. However, FDs' priority is to prepare FMs to teach with technology, thereby fostering students' learning. This divergence in interest often leads to a misalignment between technology planning and implementation, which should be addressed in HEIs that want to maximize how they plan and promote technology integration.

Relatedly, this study's findings align with previous studies that highlighted a lack of consensus among stakeholders regarding optimal strategies for planning and integrating technology into teaching (Belt & Lowenthal, 2020; Georgina & Hosford, 2009). Oftentimes, stakeholders may not support activities and change processes that do not align with their interests. For example, the IT department may only approve educational technology that is secure and meets their network's requirements. As reported in this study, even FD centers on the same campus may not be on the same page, as they often compete for academic projects and for the attention of FMs. However, it is worth noting that this study, as well as previous studies, also report productive stakeholder collaboration. For example, Beile et al. (2020) and Lach et al. (2021) found that certain FDs experienced successful partnerships with other stakeholder groups. The success of the partnership and collaboration may depend on the nature of the projects at hand and how stakeholders' interests intersect in meeting the projects' goals. This suggests that HEI leaders should be intentional in addressing divergent interests and ideas when acquiring and deploying new educational technology to facilitate FDs' work in supporting FMs' efforts to leverage these tools for fostering students' learning.

Additionally, this study's findings support previous work by Belt and Lowenthal (2020), who argues that stakeholders possess varying levels of authority and influence over the selection and application of technology. Clearly, FDs do not have the authority to dictate to FMs what to do in their courses or to give them orders regarding PD participation and completion. Based on the consultative nature of the FD position in guiding FMs to improve their teaching, it seems that this lack of authority over FMs is intentional. The R1 university structure appears to avoid placing FDs and FMs in a supervisor-supervisee relationship, thereby facilitating a collegial collaboration and working relationship among them. Moreover, while FDs participated in discussions about selecting technologies, they do not have the authority to make the final selection or approve the technology that their universities deploy into their environment. Rather, the university leaders, financial office, and IT department seem to have that level of authority because they oversee budgets, technology issues, and policies. Therefore, it is crucial for FDs to rely on their influence, change management, and leadership skills to lead change processes in the R1 environment, where they lack decision-making authority.

FDs' Willingness to Contribute More

This finding supports previous work by Beach et al. (2016), which revealed that TLC leaders at research-intensive universities expressed a desire to expand and improve certain services, address key issues, and focus on specific faculty development approaches. Indeed, all the participants in this study expressed the desire to expand their services to do more for their university. However, they faced limitations. While some faced low FM participation, others did not have approval to lead, initiate, or collaborate on major academic projects. This issue can be associated with the view university leaders have of their FD team.

Additionally, it is worth noting that other centers that prepare FMs to teach with technology also exist at individual colleges and IT departments. They are known by various names based on their college or location. This means that Leaching and Learning Centers (TLCs) do not necessarily encompass all the FD units and the FD teams that provide support and training to help FMs integrate technology into their teaching.

New Perspectives: Job Flexibility, Teamwork, and Lack of Recognition

Unlike previous studies (Bates & Sangra, 2011; Galanek & Gierdowski, 2019; Georgina & Hosford, 2009), which investigated and reported FMs' experiences and challenges with using technology, this study highlighted several aspects of FDs' experiences that have been overlooked in the literature. It was precisely found that FDs enjoyed job flexibility, where they focused on their area of interest and supported projects aligned with their expertise. Additionally, the FDs work as a team and enjoy productive team planning and collaboration. However, they often experienced a lack of recognition and credit for their work, received limited administrative and leadership support, and navigated a rigid leadership hierarchy where one participant was not allowed to have a direct connection with some university leaders.

Given the challenges FDs face, one can argue that whatever success the FDs experienced in helping FMs teach with technology was due to their resilience and leadership skills. They managed to build personal connections and worked on committees, developing partnerships to promote their services and demonstrate the value and benefits of educational technology to FMs, convincing them to participate in change initiatives related to teaching. Considering FDs' success in the R1 enterprise, it is safe to say they could achieve and contribute more to advancing students' learning and their university's mission if they were given appropriate administrative and leadership support to reach and motivate FMs to participate in PD initiatives to improve their teaching.

Perceptions: Overcoming Role Ambiguity and Misconceptions to Justify FDs' Contributions and Value

FDs worked to overcome role ambiguity and misconceptions to justify their value as academic partners and collaborators. Both cases highlighted that the FDs struggled to have their roles fully understood and valued. FDs played various roles and saw themselves as indispensable, crucial partners in the academic and collaborative process, managing changes to enable FMs to develop the knowledge and skills necessary to utilize technology in teaching. However, this positive self-perception is consistently undermined by stakeholders' misconceptions and misunderstandings—whether they stem from the "IT support stigma," lack of awareness of FDs' work, or lack of leadership support and appreciation.

FDs' Valuable Work and Contributions

The findings of this study align with those of Cano (2021), Carroll (2019), and Beach et al. (2016), who also found that FDs play an important role in helping FMs teach with technology. Carroll (2019) reported that FMs relied on the university's Education Technology Center as a primary source of help regarding the use of new technology software. Cano (2021) found that FDs' technological and pedagogical guidance and support were indispensable in the transition to remote teaching during the pandemic. Other researchers also argued that FDs play a pivotal role in assisting FMs with integrating instructional technology into teaching, thereby facilitating technology adoption in higher education (Reid, 2017; Reiser & Dempsey, 2012; Sorcinelli & Austin, 2010). This means that without having FDs to guide FMs, HEIs risk buying and deploying expensive technology and systems that their teaching teams cannot use. Moreover, the FDs offered guidance that went beyond technology usage. They equipped FMs with the skills to apply technology to support sound pedagogical decisions, promoting teaching excellence and fostering student learning and retention.

This study's findings are also consistent with previous studies that reported FDs play various roles and are instrumental in removing some technology integration barriers. For example, they align with work by Sorcinelli and Austin (2010), who argued that FDs are found in various roles and hold diverse job titles across universities and colleges, with their invaluable contributions to the academic success of HEIs widely recognized. This study’s findings are consistent with Kirkwood and Price's (2013) argument that FDs have harnessed the potential of technology and other resources to deliver high-quality instruction in higher education. Moreover, this study reported findings similar to those reported in an investigation by Reid (2017). The researcher found that FDs played a pivotal role in eliminating barriers to technology implementation. However, this study also found that various stakeholders in the R1 context did not value FDs' work and contribution, especially the work of those FDs who work within an IT department, who feel they are not accepted in the faculty teaching community as those who work within an academic department. Stakeholders who are unfamiliar with FDs' work or who do not interact with them are more likely to underestimate their work and contributions. This suggests that despite FDs' contributions to their campus, the lack of awareness of their work seems to influence how stakeholders perceive their work and contributions.

This investigation also supports works by Sorcinelli et al. (2005) and Chism (1998) that address FDs’ roles in higher education. Sorcinelli et al.'s (2005) argument that faculty development serves as a "key lever for ensuring institutional quality and supporting institutional change" (p. xi). Additionally, the findings align with Chism (1998), who also found that FDs 1) act as catalysts, encouraging FMs' participation in communities of practice, and 2) facilitate program evaluation, assessment, and data collection to improve decision-making processes (Chism, 1998). FDs have played a key role in some major institutional change processes. Their contributions to help HEIs transition to remote teaching during the COVID-19 pandemic were a concrete example of their competencies and importance for HEIs. This suggests that, with the right leadership support, FDs have the knowledge and skills necessary to lead the university into technology and teaching innovation. And appropriate administrative and leadership support may enable FDs to expand their reach, potentially increasing their contributions to institutional performance and success.

Misunderstanding and Misconceptions

Unlike past studies that have focused mainly on FMs' experiences and perceptions, this investigation captured FDs' experiences and perceptions, which have been overlooked in the current literature. This study found that although FDs perceived their work as valuable, they experienced misconceptions. Some stakeholders viewed them as IT support that belongs to an auxiliary unit on campus. Additionally, some colleagues believed that FDs who assist FMs in teaching with educational technology were not capable of engaging in academic projects that address pedagogical issues. However, FDs in this study did more than provide technical support. They led various projects and provided strategic guidance to leaders, especially in times of crisis. Again, the misconceptions were due to many stakeholders on the R1 campus being unaware of FDs' work or lacking awareness of their contributions to the university community.

Overall, while this study's findings align with previous studies, they differ in that they open a window into FDs' experiences and perceptions of their work and roles in equipping FMs to teach with technology. FDs argued they played valuable roles and made important contributions to their R1 university. However, other stakeholders, especially those unfamiliar with FDs' work, did not value their work. This suggests the lack of awareness of FDs' work is, again, an impediment that must be addressed to increase the appreciation for faculty development programming at R1 universities.

Organizational, Leadership, and Situational Factors Impacting FDs' Work

FDs' work from both cases was influenced by various contextual factors, including organizational factors, leadership support, and FD Unit location, which can either hinder or facilitate their efforts. FDs in both cases faced common challenges, including low participation among FMs, FMs' heavy workloads and time constraints, limited leadership support, and FMs' varied proficiency in technology. Conversely, FDs' work in both cases was facilitated by the COVID-19 pandemic's influence on FMs, which reduced resistance to technology adoption, by the use of a simple personalized approach, the implementation of flexible PD options, the promotion of peer-to-peer learning, and the access to robust systems and online resources.

Structural Barriers

According to this investigation, FMs' workload and limited time were significant barriers to their participation in training that supports teaching with technology and this finding is consistent with Reid's (2017) categorization of barriers to technology adoption, which included individual, organizational, and technology-related issues. This study's findings that low FMs' attendance, a heavy workload, a lack of leadership and administrative support, and FMs' low proficiency hinder technology integration align with Reid's (2017) classification of barriers.

Indeed, lack of administrative and leadership support has emerged as a significant barrier, especially for FDs who work within an IT department. Additionally, the level of leadership and administrative support varied depending on the location of the FD center on campus. This means FDs in this study found themselves in situations where they led technological and instructional changes without adequate support, relying on their connections and collaboration with various stakeholders to promote and advance their faculty development programming.

Likewise, this study's findings support previous works by Dillu and Nandwani (2021) and Gregory and Lodge (2015), which found that the most commonly cited institutional and contextual barriers to implementing technology are the lack of time and heavy workloads faced by FMs. These scholars argued that the increasing academic work responsibilities of FMs have led them to deprioritize teaching with technology (Dillu & Nandwani, 2021; Gregory & Lodge, 2015). Similar patterns were observed by Polly et al. (2021), who found that the majority of FMs often lack sufficient time to learn, plan, and apply technology. This study found that heavy workloads and time constraints were significant roadblocks that impacted the work of FDs, and they were also beyond the control of FDs.

Moreover, this study supports previous works that found that hindrances to technology adoption include a lack of incentives (Polly et al., 2021), insufficient institutional support (Keengwe et al., 2009), and the presence of siloed departmental structures (Bates & Sangra, 2011). These challenges are structural obstacles, as administrations and leaders often control decisions related to budget allocation for initiatives. Moreover, a lack of institutional support may manifest itself as a budget shortage and a lack of approval to launch certain academic programs. According to this study, leaders of R1 universities who value FM training seem more likely to allocate funding to support FD units, incentive programs, and PD programming.

Faculty's Lack of Technology Proficiency

This study's findings are consistent with previous investigations that have found the proficiency of instructors in applying technology varies significantly (Govindarajan & Srivastava, 2020) and that educators frequently lack the requisite skills to instruct effectively using technology tools (Polly et al., 2021). They also support previous work by Fernández-Batanero et al. (2021), who argued that educators' lack of proficiency in technology results in the underutilization of technology in courses. A lack of proficiency may be related to the low participation of FMs in training, as PD sessions offer FMs the opportunity to develop their technology and teaching skills. However, when FMs fail to attend training because it is optional, they also miss the opportunity to improve their teaching with technology. The lack of FMs' participation appears to be influenced by the R1 university culture, which places a low emphasis on teaching and training.

Lack of Technology and Technology Training

Findings from this investigation challenge the argument that barriers to technology adoption include the absence of technology-equipped classrooms (Johnson et al., 2012) and inadequate technology training (Lammers et al., 2017). In contrast, this study found that FMs have access to a wide range of technology and that HEIs provide various PD opportunities to develop FMs' skills in teaching with technology. One explanation for these past findings is that the studies took place before the COVID-19 pandemic and collected data from FMs who may not have been aware of the PD programming and technologies available to them. Studies that took place before the pandemic mentioned a lack of training as an impediment; however, the pandemic forced HEIs to invest more in technology and training for FMs. In other words, this study's findings did not report a lack of training as an impediment to faculty technology integration in the post-pandemic period.

Change Management, Leadership Skills, and Challenges

While this study's outcomes support previous findings by Bates and Sangra (2011), they also challenge several of the researchers' assumptions about FDs' change management and leadership skills. This study's outcome is consistent with Bates and Sangra's (2011) argument that the structures and cultures of most universities and colleges act as barriers to leveraging technology to enhance course facilitation, delivery, and student learning. Relatedly, the researchers argued that FMs' preferences and academic status hinder technological innovation in higher education. In other words, this study is consistent with Bates and Sangra's (2011) argument that the R1 culture prioritizes research over teaching. This finding has implications for FMs who want to succeed in the R1 university context. FMs often have to choose between focusing on research, which is valuable to the R1 enterprise, or participating in PD activities to improve their teaching. Therefore, the culture of R1 universities is a significant factor that influences FMs' decisions to engage in the change process related to teaching with technology.

This study's findings align with prior investigations by Bates and Sangra (2011), who found that the connection between departments responsible for IT services and centers housing FDs or instructional technologists is ambiguous, with roles and services frequently overlapping, and these entities typically report to different supervisory personnel, depending on the situation. This issue appears to be a common trend, given the presence of various FD centers on campus. This study highlighted that FD centers located in IT departments faced significant challenges collaborating with other Centers, which impeded their participation in and implementation of academic projects. One possible reason is that FDs located in IT departments report to IT leaders who do not prioritize faculty development initiatives.

However, the findings of this investigation differ from those of Bates and Sangra (2011), who reported that FDs frequently lack the necessary leadership skills to oversee change management processes effectively. In contrast, this investigation argues that, while this might be accurate in some contexts, its participants reported some success in navigating change to enable FMs to teach with technology in their university environment. Additionally, this study found that FDs succeeded in leading major change processes when they received adequate leadership support. For example, FDs' contributions to the transition to online teaching during the COVID-19 pandemic demonstrated that they could do more under the right circumstances. Simply put, it is challenging to determine whether FDs lack leadership and change-management skills when they work in an environment that does not prioritize their work. Conversely, FDs should be celebrated and thanked for leading from behind the scenes to influence FMs to accomplish so much with limited administrative support. FDs' work during the COVID-19 pandemic demonstrated their ability to lead change when HEI leaders provided adequate support.

Another related issue is that FDs often fail to measure their work and interventions in assisting FMs to teach with educational technology. FDs in both cases, except Anne, who engaged in continuous research projects, often rely on anecdotal evidence to track their progress. Our understanding of FDs' successes and impact on technology integration and institutional performance seems limited. Therefore, FDs need to do more in this area to evaluate the impact of their interventions. In other words, FDs bear the responsibility of finding ways to systematically measure the effectiveness and impact of their work if they want to increase their visibility and recognition and continue to elevate the field. Otherwise, they risk continuing to lead behind the scenes and facing misconceptions from stakeholders in their R1 university context.

COVID-19 Influence on HEIs and Some Stakeholders

This study's findings are consistent with previous investigations that report that the COVID-19 pandemic has influenced technology integration in higher education. For example, this study supports previous works that have found an expansion in the adoption of hybrid learning models in HEIs (Núñez-Canal et al., 2022) and an increasing prominence of Communities of Practice (CoPs) (Brooks et al., 2020) due to the COVID-19 pandemic. It also aligns with Portillo et al. (2020), who found that as FMs assimilated basic applications and found them straightforward to implement, this mastery mitigated their resistance to adopting technology. After the pandemic, FMs appear to be more familiar with educational technology, making them more open to trying new technologies in their teaching. Perhaps peer pressure has played a role in motivating FMs to use technology to avoid being left behind in the post-pandemic era.

Furthermore, the pandemic has impacted technology integration in higher education by forcing HEIs to invest more in providing PD options to equip FMs to teach with technology. This suggests that findings and insights from some pre-COVID-19 investigations in faculty development and technology integration may not be applicable to the post-pandemic era due to an increase in access to educational technology and technology training. Therefore, there is a need for new research to compare pre- and post-pandemic studies and shed light on emerging trends in technology integration.

This study also aligns with previous work by O'Toole et al. (2022), who, in an auto-ethnographic reflection, argue that prior to the COVID-19 pandemic, FDs in higher education were often an obscured group with ambiguous roles and job responsibilities. The participants in this study also reported that the pandemic elevated the status of FDs and the field. The FDs had the opportunity to apply their competencies to support the continuity of HEIs' operations during the pandemic. However, this study shows that the FDs still faced challenges after the pandemic and have a long way to go in their quest to secure a valuable seat at the stakeholder table in the R1 context. This means that FDs must continue to evaluate their work to produce evidence that highlights their contributions and increases their visibility in their R1 university setting.

FDs' Perspective on Factors that Facilitate Technology Integration

The findings of this study also highlight several factors that facilitated FDs' work in equipping FMs to teach with technology. FDs argued that offering flexible PD options was important in facilitating access to training for a distributed FMs population. Having robust systems and online teaching resources was critical. The FDs provided FMs with better experiences and offered access to just-in-time learning, including review guides, video tutorials, and digital assets, to help them develop their knowledge and skills. The FDs also found that leveraging simple, personalized approaches was an effective strategy, as it helped FDs build trust and promote incremental changes that FMs could more easily digest and implement in their teaching.

In summary, the FDs often engaged in a complex change process to support FMs in teaching with technology, and their experience included a mix of opportunities and challenges. This study revealed that the central problem the FDs face in their experiences is that many stakeholders, including university leaders, do not understand their work and contributions, which prevents these stakeholders from valuing and supporting FDs' work and recognizing them as academic partners and collaborators. More importantly, most of the barriers FDs faced were structural and beyond their control. This means that a single stakeholder cannot address most of the obstacles that faculty development and technology integration face. Therefore, R1 universities' leaders must use comprehensive, systemic solutions and approaches in supporting faculty development and FDs' work, which should include strategic planning, stakeholders' education, PD requirements for FMs, FD program evaluation, FMs' workload management, and access to adequate funding. Doing so may enable FDs to maximize their potential and contributions, helping their institutions navigate technological advancements to promote excellence in teaching and meet students' needs.

Implications for Practice

This study has several implications for practice, including educational programs that train FDs, HEI administrators and leaders who hire FDs and oversee FD units, and FDs who want to continue demonstrating the value of their work to elevate the field. Additionally, it has implications for researchers who investigate how HEIs prepare FMs to teach with technology.

First, educational programs that train FDs—such as instructional designers, course developers, and technology trainers, as well as instructional technologists—should include and address change management and leadership competencies in their curriculum. These competencies are indispensable for FDs' success in the R1 university context, where FDs must lead behind the scenes because they lack decision-making authority and have limited administrative support. Moreover, with the fast-changing pace of technology and the explosion of artificial intelligence, HEIs need FDs' expertise and experiences more than ever before to assist FMs in navigating instructional changes and challenges imposed by technological innovation on the higher education sector. Therefore, FDs must be well-trained and equipped to meet these challenges and guide FMs in leveraging technological advancements to foster students' learning and success.

Second, HEI administrators and leaders who hire FDs and oversee FD units that support FMs in teaching with technology must enhance their knowledge and understanding of FDs' work and contributions. These leaders should intentionally create space and opportunities for other stakeholders, particularly FMs, to increase their awareness and understanding of FDs' roles and contributions to the university community. Doing so may reduce FDs' burden of advertising, recruiting FMs, and implementing their programs simultaneously without adequate institutional support. Administrative support may also increase the value of PD programming by enhancing FMs' participation, as FMs may value what is popular and what their leaders value on campus. Additionally, HEI leaders should strategically select the location of their FD Units or TLCs, as this may impact the success and performance of FDs on campus. Again, HEIs must protect the FD roles, as they will continue to be essential to the world of academia as HEIs venture into more technological innovation and artificial intelligence, which will continue to have a significant impact on how FMs plan and teach and on how students learn and complete their academic assignments.

Third, FDs who want to continue to show the value of their work on campus and elevate the field must engage in systematic evaluation of their programs and services by collecting more than anecdotal evidence. Using systematic evaluation should enable FDs to gather evidence demonstrating their contribution to institutional success and performance, including the success of FMs, student retention, and learning outcomes. If FDs do not engage in measuring their work to create evidence that supports their existence on campus, no other stakeholders will do it. Unless FDs continue to prove their worth on campus, they risk being seen and considered as a dependable unit or stakeholders.

Lastly, researchers who study how HEIs prepare FMs to teach with technology should not overlook FDs' roles and perspectives in their investigations. Data gathered from the FMs' perspective alone are insufficient to help R1 university leaders make sound decisions to promote innovation in teaching with educational technology. Understanding FDs' work, their support to FMs, and the impact of their contributions – the return on investment—makes good business and strategic sense for R1 universities that want to invest in cutting-edge technologies and systems to maximize research, student learning, and institutional performance at the same time.

Recommendations for Future Research

This multiple case study offers new insights into FDs' experiences and how HEIs prepare FMs to teach with technology. It extends the literature by generating new perspectives on faculty development and by offering a new conceptual framework for future investigations. This research was limited to two R1 universities and four FDs, which allowed for the collection of rich data for an in-depth investigation of the phenomenon. Observation data were not collected. Considering these limitations, I recommend that:

1. Future studies should apply the conceptual framework in other R1 contexts to investigate the experiences of FMs and FDs.
2. Future studies should collect observations to corroborate the data presented in this study.
3. Future research should use the new conceptual framework to conduct comparative studies between R1 and teaching universities.
4. Investigators should apply the conceptual framework to design and develop evaluation studies to examine the impact of FDs' work and programs on students' learning and institutional performance.

Conclusion

This qualitative multiple-case study, employing both the TPACK Framework and the ADKAR Change Management Model as theoretical lenses, investigated four FDs' experiences within the contexts of two R1 universities. The current understanding of FDs' experiences and how HEIs prepare FMs to teach with educational technology is limited. The findings of this study expand the literature by providing novel insights into the experiences of FDs and how HEIs equip FMs to teach with educational technology. This study also offers and applies a hybrid conceptual framework that can be used in future research to investigate similar phenomena in faculty development.

More importantly, this study revealed that the central issue in FDs' experiences is that too many stakeholders, including university leaders, lack awareness of the essence of FDs' work and contributions to the R1 university community. This lack of awareness seems to lead to a lack of emphasis on motivating FMs to participate in faculty development initiatives to develop their teaching skills, which is necessary in meeting R1 universities' teaching and learning responsibilities. This study emphasizes the importance of HEIs and their FDs adopting a change management approach to faculty development and educational technology implementation. Using this perspective and approach may increase the effectiveness of educational technology applications in R1 universities.

Additionally, this study offers a new perspective on understanding the complex experiences of FDs, from their own viewpoints, which extends beyond anecdotal evidence and stories as they navigate phases of change to develop FMs' technological and pedagogical knowledge and skills. Lastly, the findings have practical implications for educational programs that train FDs, HEI administrations that hire FDs, and researchers in the field. R1 universities must provide adequate institutional support to FDs so they can maximize their work and contributions in promoting excellence in teaching. Otherwise, underutilizing FD's expertise and experiences may lead R1 universities to miss out on driving teaching innovation and excellence with educational technology. This study also provides recommendations for future research that can enhance the understanding of FDs' experiences and their contributions to institutional performance and success in various higher education settings.

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Appendix A - Pre-Interview Questionnaire

Please provide the information below to help the researcher confirm your eligibility for participation in the study and to prepare for interviews.

1. How many years of experience do you have in faculty development?
2. Where do you work (college/university)?
3. Is your employer a research-intensive or R1 institution?
4. What is your position title?
5. How long have you been with your current university?
6. Do you work in a TLC? If yes, what is your webpage?
7. How many faculty members do you (or your team) serve?
8. What are the commonly used technologies (software, applications, platforms) on your campus? please list them.
9. What technology training, support, or services do you (or your team) provide to faculty members? Please list them.
10. Which of the items below are you able to share with the researcher?
    Please write **YES** or **NO** next to each item.
    - Training/professional development recording ______
    - Video tutorials
    - Websites or online resources
    - Training agendas
    - Webinar/Seminar information
    - Annual calendar
    - Faculty Development Institute or Course Development Institute Information
    - Course templates/outlines
    - Technology guides
    - Marketing materials
    - Evaluation forms
    - Technology governance
    - Relevant publications
    - Archival data (reports, survey data, program evaluations)
    - Other relevant faculty development materials or information

Please answer the following open-ended questions:

11- What are the most rewarding things about your work?
12- What are the most challenging things about your work?

13- What factors facilitate the process of assisting faculty members in using technology for teaching and learning?

14- What factors hinder the process of assisting faculty members in using technology for teaching and learning?

15- What would make your job as an FD ideal? What would it take to do this? What would you need to have?

Appendix B - Interview Protocol

First Interview

1- Tell me about how you become a faculty developer.

2- How do you describe your work to someone with no background in higher education?
- Tell me about your work context.
- Describe a typical day on the job, from beginning to end.
- Tell me about the FMs you help.

3- Walk me through the process of assisting a FM in the use of an instructional technology.

4- Walk me through the process of planning and executing a technology training or professional development vent.

5- Give an example of a FM that you have been helping. What happened, and how are things now?

6- Describe an example of how you worked with a FM with no or low levels of technology and pedagogy knowledge and skills. What happened?

7- Describe an example of how you worked with a FM with advanced technology and pedagogy knowledge and skills. What happened?

8- Give me an example of a time when you were involved in training a FM to use new technologies. What happened?

9- What do most people misunderstand about your job?

10- Overall, how do you like your job?
- What are your favorite things to do on the job?
- What are your least favorite things to do on the job?

Second Interview

11- Tell me about a time when you felt the most successful on the job. What happened?
- When do you know you have succeeded?
- What does success look like?

12- How do you perceive your role in assisting FMs in the use of technology for teaching?
- Tell me about your relationship with the stakeholders you work with.
- How do you think other stakeholders view your work?
- What are your thoughts about how FMs receive your FD support and services?

13- Describe a time when you felt your role was misunderstood or misinterpreted. What happened?

14- Describe a time when you felt your services or help were not well received. What happened?

15- Described a time when the technologies you helped FMs use in their teaching changed. What happened?

- Tell me about how you deal with changes.
- How would you help FMs deal with new technologies and teaching practices?

16- Described a time when the technologies you helped FMs learn to use failed. What did you do?

Third Interview

17- Describe a time when you struggled to help a FM. What happened?

18- Describe a time when you felt you had the resources you needed to do the job. What did you do?

19- Describe a time when you felt you did not the resources you needed to do the job. What did you do?

20- Tell me about your go-to approaches or strategies.

21- Tell me about your most used tools.

22- What would you want R1 universities' administrators to know about your job?

- What advice/recommendations do you have for them?
- What advice do you have for fellow FDs?

Appendix C - Call for Participants

Multiple Case Study Research
Dear _______________

My name is Teddy Edouard, and I am currently a student in the Adult Learning and Leadership Ph.D. program at Kansas State University. My research interests include faculty development, online and hybrid learning, technology training, and technology mentoring/coaching for faculty members in higher education.

I am currently working on a multiple case study for my dissertation. I will investigate faculty developers' (FDs) experiences in the process of assisting faculty members in teaching with technology in higher education.

This study will unveil insights that bear significance for college and university administrators responsible for recruiting and overseeing FDs. By highlighting the experiences of FDs in aiding faculty members, the results will pave the way for future investigative endeavors. Lastly, the results will include crucial factors that should guide HEI administrators in the design and execution of faculty technology training and support initiatives.

I want to invite you to participate if you meet the following eligibility criteria:

1. Have at least five years of experience in helping faculty members incorporate technology into their teaching methodologies within higher education.
2. Currently occupy a faculty developer role (such as technology trainer, instructional designer, technology mentor, technology coordinator, or academic developer) at an R1 university.
3. Have been with your current university for at least one year.
4. Are willing to participate in a minimum of three one-hour interviews, complete a pre-interview questionnaire, and furnish archival records, documents, and digital materials.

If you are interested in participating, then please contact me at teddye@ksu.edu.

Thanks in advance for your support and collaboration.

Teddy Edouard

Appendix D - IRB Informed Consent Form

Informed Consent Form

Thank you for considering participating in this research. Please read and sign this Informed Consent Form before proceeding as it contains important information regarding the research.

PROJECT TITLE:

An Investigation into Faculty Developers' Experiences in the Process of Assisting Faculty in Teaching With Technology in Higher Education: A Multiple Case Study

PROJECT APPROVAL DATE:	01/10/2024	**PROJECT EXPIRATION DATE:**	12/31/2026	**LENGTH OF STUDY:**	90 days

PRINCIPAL INVESTIGATOR: Haijun Kang, Ph.D.

CO-INVESTIGATOR(S): Gusman (Teddy) Edouard

CONTACT DETAILS FOR PROBLEMS/QUESTIONS: hjkang@ksu.edu or 785 -532- 2027

IRB CHAIR CONTACT INFORMATION: Dr. Lisa Rubin, (785) 532-3224 or rubin@ksu.edu

PROJECT SPONSOR: N/A

PURPOSE OF THE RESEARCH:

Research Purpose

This study will investigate faculty developers' (FDs) experiences in the process of assisting faculty members in using technology for teaching and learning in higher education.

Research Questions

This study will investigate faculty developers' (FDs) experiences by addressing the following questions:

1. What are FDs' experiences in the process of assisting faculty members in using technology for teaching and learning?
2. How do FDs perceive their roles in the process of assisting faculty in using technology for teaching and learning?
3. What factors facilitate or hinder the process of assisting faculty members in using technology for teaching and learning?

ELIGIBILITY CRITERIA:

You are eligible to participate in this study if you:

- Possess at least five years of experience in assisting faculty members in using technology for teaching and learning in higher education.
- Occupy a faculty developer (FD) role (such as technology trainer, instructional designer, technology mentor, technology coordinator, or academic developer) at an R1 university that entails direct collaboration with faculty members, offering technological support via course design, workshops, or consultations.
- Have had your current FD position and affiliation with your R1 university for at least one year.

PROCEDURES OR METHODS TO BE USED:

Data Collection

This multiple-case study will incorporating diverse data types—semi-structured interviews, documents, archival records, digital assets, and open-ended questionnaires.

Open-ended Questionnaire. Participants will complete a pre-interview questionnaire before the first interview takes place.

Interviews. Participants will participate in at least three 60-minute semi-structured interviews and be invited to share artifacts during the interviews. Each interview will be scheduled at least a week apart, facilitating the transcription and examination of responses and artifacts to craft pertinent follow-up questions.

Documents. The research will gather various documents—ranging from training agendas, templates, guides, and evaluation forms to marketing collateral, grant details, TLC strategic blueprints, technology governance outlines, service bulletins, and service descriptions.

Digital materials: This study will gather digital materials such as video recording, video tutorials, social media posts, information from the TLC and university websites.

Archival data: This study will collect archival data for each case and research site. Such materials include annual reports, survey data, program evaluations, and other pertinent publications.

RISKS OR DISCOMFORTS ANTICIPATED:

My data analysis and reporting will not reveal the participants' personal information or institutional affiliation. To further protect their identity, I will offer participants the option to select a pseudonym or allow me to choose any pseudonym. Both the de-identified and processed data will be kept in a secure location. I will store data in a password-protected online folder accessible only to myself, the researcher, my major professor, and IRB members upon request. Moreover, I will delete raw data — interview audio, video files, and transcripts—upon project completion.

BENEFITS ANTICIPATED:

This study seeks to expand upon existing findings and recommendations, offering several contributions to the current body of literature. Firstly, it will enrich our understanding of technology integration by delving into the experiences of FDs. Secondly, the study will unveil insights that bear significance for HEI administrators responsible for recruiting and overseeing FDs at R1 universities. Thirdly, by highlighting the challenges faced by FDs in aiding faculty members, this research will pave the way for future investigative endeavors. Lastly, the study will pinpoint crucial factors that should guide R1 university administrators in the design and execution of faculty technology training and support initiatives.

Terms of participation: I understand this project is research, and that my participation is voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or loss of benefits, or academic standing to which I may otherwise be entitled.

Identifiers might be removed from the identifiable private information or data collected from this research and these de-identified and processed data could be used for future research studies or distributed to other investigators for future research studies without additional informed consent.

By completing and signing this Consent Form, I indicate that I have read and understand this consent form, and willingly agree to participate in this study under the terms described.

Participant Name:

Participant Signature: **Date:**

Appendix E - List of Documents, Digital Assets and Archival Materials (Case 1)

DOCUMENTS

1. Faculty Feedback Survey- FD Services
2. Faculty Handbook
3. Faculty Senate Role Description
4. Role Description
5. Tech Training Needs Assessment Survey
6. Course List For Faulty
7. Strategic Plan and Approach: Digital Strategy
8. AI course Design Workshop Description
9. Course Design Workshop Outlines
10. Course Event Calendar
11. Course Training List and Schedule
12. Event Training invitation
13. Best practices document (student engagement success, UDL)
14. Course Planning Checklist
15. Guidelines: Tools and References
16. Course Development guides and templates
17. Self-directed Online courses for Faculty
18. Instructor-Led Online Courses for Faculty
19. Course evaluation Feedback—FD services
20. IT governance documents
21. Calendar List of Webinar
22. PD Program and Workshop Syllabus
23. PD Program Workshop Training Schedule
24. List of FD Services
25. PD Program Proposal Document
26. Strategic Plan: Teaching and Learning with Tech
27. Student Tech Survey and Assessment
28. List of Tech tools
29. Quality Standards Rubrics—course Design

DIGITAL ASSETS

1. Wiki Q&A Platform Topis
2. Presentations slides (various topics, UDL)
3. Website Outreach information services
4. Blog Post -group Instructional Tech
5. Website: Teaching Resources
6. LMS Training Modules/Summary
7. Self-pace Course: Teaching with Technology
8. PD Video Transcripts
9. Website: Faculty development Service Description

ARCHIVAL MATERIALS

1. Student Attendance Data Summary
2. Event Recording List email
3. Publications on using AI in Course
4. Video Tutorials
5. Articles /online Publications

Appendix F - List of Documents, Digital Assets and Archival Materials (Case 2)

DOCUMENTS	
1. Course Syllabus Template	9. Teaching tools and techniques (Pedagogy)
2. Grading Rubrics	10. Strategic Plan and Approach
3. Faculty Teaching Manual	11. Guidelines Assessment Hybrid Learning
4. Teaching guidelines on Pedagogy	12. Best Practices: Course Delivery
5. Course for new Faculty-Outlines/Syllabus and modules	13. LMS tools and features
6. Course Development guide and template	14. Course Observation Checklist—Peer-Observation
7. Guide: Create Exam and Quizzes	15. Course Design Checklist
8. Guide: Create assessment Rubrics	16. Course Evaluation Survey
1. Guide on Using AI	17. SoFTL Opportunity
2. Presentations/ PPT slides (student engagement, Student success, UDL)	18. CoP Opportunity
3. Instructor-Led Online Courses for Faculty	19. Teaching Self-Assessment Survey
4. Tech Guide (Step by Step Instructions)	20. Marketing and Announcement
5. Course on Blended Learning	21. Faculty Orientation Agenda
6. Guide on Blended Learning	22. Sample Rubrics
7. Job Description for TA	23. List of technology Tools
8. Video Tutorials	24. Training Events Calendar
	25. Guide: Increasing and using student feedback

DIGITAL ASSETS	
1. Course Syllabus/ Hybrid course	6. Website: Faculty development Service Description
2. LMS Training Modules/Summary	7. Website: Teaching Resources
3. Ebook/online teaching Guide (course outline, tech tools, LMS features, research/evidence-based strategies, quizzes, testing, OER resources)	8. Blog posts (Teaching and Learning, Instructional Technology)
4. Course Modules in LMS	9. Teaching Inventory Resources
5. Self-directed Online courses for Faculty	10. Teaching Toolkit

ARCHIVAL MATERIALS	
1. Digital frameworks	6. PD Videos Transcripts
2. Reports on AI usage	7. Event and Recording List
3. Publications on using AI in Course	8. User Satisfaction Survey and Report
4. Faculty Senate Policy and Guidance (Course Development)	9. Services Catalog_ FD and tools.
5. Publications/articles	

Appendix G - Supporting Artifacts and Constructs of ADKAR and TPACK

<table>
<tr><th>Phases of Change</th><th colspan="2">Case 1: Supporting Artifacts</th><th colspan="2">Case 2: Supporting Artifacts</th></tr>
<tr><td>Awareness</td><td colspan="2">• Course Event Calendar
• Course Training List and Schedule
• Event Training invitation
• List of Tech tools
• Website Outreach information services
• Website: FD Service Description
• Calendar List of Webinars</td><td colspan="2">• CoP Opportunity
• Marketing and Announcement
• Faculty Orientation Agenda
• Training Events Calendar
• Faculty Senate Policy and Guidance (Course Development)
• Services Catalog and FD tools.</td></tr>
<tr><td>Desire</td><td colspan="2">• Tech Training Needs Assessment Survey
• List of FD Services
• Website Outreach information services
• Event Training invitation
• Calendar List of Webinar
• Student Tech Survey and Assessment</td><td colspan="2">• CoP Opportunity
• Marketing and Announcement
• Faculty Orientation Agenda
• Website: Faculty development Service Description
• Faculty Senate Policy and Guidance (Course Development)
• Services Catalog_ FD and tools.</td></tr>
<tr><th></th><th>TK</th><th>PK</th><th>TK</th><th>PK</th></tr>
<tr><td>Knowledge</td><td>• Course List For Faulty
• AI course Design Workshop Description
• Self-pace Course: Teaching with Technology
• PD Video Transcripts
• Instructor-Led Online Courses for Faculty
• PD Program and Workshop Syllabus</td><td>• Course List for Faulty
• Course Design Workshop Outlines
• Presentations slides (various topics, UDL)
• PD Video Transcripts
• Instructor-Led Online Courses for Faculty
• Teaching Toolkit
• Instructor-Led Online Courses for Faculty</td><td>• Course for new Faculty-Outlines/Syllabus and modules
• Instructor-Led Online Courses for Faculty
• Tech Guide (Step by Step Instructions)
• Video Tutorials
• LMS tools and features
• Sample Rubrics
• List of technology Tools
• Ebook/online teaching Guide (course outline, tech tools, LMS features, research/evidence-based strategies, quizzes, testing, OER resources)
• LMS Training Modules/Summary
• Digital frameworks
• Reports on AI usage</td><td>• Presentations/ PPT slides (student engagement, Student success, UDL)
• Teaching guidelines on Pedagogy
• Course Development guide and template
• Guide: Create Exam and Quizzes
• Course on Blended Learning
• Guide on Blended Learning
• Teaching tools and techniques (Pedagogy)
• Strategic Plan and Approach
• Video Tutorials</td></tr>
</table>

	TA	PA	TA	PA
Ability	• Course Design Workshop Outlines • Course Development guides and templates • Self-directed Online courses for Faculty • Quality Standards Rubrics—course Design • LMS Training Modules/Summary • Self-directed Online courses for Faculty • Quality Standards Rubrics—course Design	• Course Design Workshop Outlines • Best practices document (student engagement success, UDL) • Course Planning Checklist • Course Development guides and templates • Instructor-Led Online Courses for Faculty • Quality Standards Rubrics—course Design	• Course for new Faculty-Outlines/Syllabus and modules • Guide: Create assessment Rubrics • Guide on Using AI • Guidelines Assessment Hybrid Learning • Best Practices: Course Delivery • LMS tools and features • Guide: Increasing and using student feedback • Course Syllabus/ Hybrid course • Course Modules in LMS • Self-directed Online courses for Faculty • PD Videos Transcripts	• Course Syllabus Template • Grading Rubrics • Course Development guide and template • Guide: Create Exam and Quizzes • Guide: Create assessment Rubrics • Guide on Using AI • Course Observation Checklist—Peer-Observation • Course Design Checklist • Guide: Increasing and using student feedback
Reinforcement	• Guidelines: Tools and References • Quality Standards Rubrics—course Design • Wiki Q&A Platform Topis • Blog Post -group Instructional Tech • Website: Teaching Resources • PD Video Transcripts • Student Tech Survey and Assessment • Event Recording List email		• Tech Guide (Step by Step Instructions) • Video Tutorials • Course Observation Checklist—Peer-Observation • Course Design Checklist • Course Evaluation Survey • Blog posts (Teaching and Learning, Instructional Technology) • Teaching Inventory Resources • List of recordings • User Satisfaction Survey and Report	