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Instructional Designer Perspectives of the Usefulness of an Instructional Design Process When Designing E-Learning

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This is to certify that the doctoral study by

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Walden University
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Abstract

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EdS, Northcentral University

MA, Framingham State College

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Though the number of instructional design models has increased, the usefulness of an instructional design process (linear or iterative) when making design decisions for e-learning solutions remains uncertain. This basic qualitative study was used to explore the perspectives of corporate instructional designers who were mandated to move from a linear to an iterative instructional design process for developing e-learning. The research questions address their perspectives of the usefulness of an instructional design process when making design decisions for e-learning solutions. Data were collected using semistructured interviews with nine instructional designers. Data were analyzed inductively using in vivo and pattern coding to develop themes related to the conceptual framework of the technological pedagogical content knowledge model. The findings indicated the instructional designers use a linear instructional design process for making e-learning designs decision when time is allotted to conduct an analysis and get buy-in from stakeholders, when the opportunity to work independently exists, and when the content is known and less likely to change. Additionally, the instructional designers use an iterative instructional design process for making e-learning design decision when time is allotted for prototyping and getting buy-in from stakeholders as well as when the content is unknown and more likely to change, and they use this iterative process for approving e-learning design decisions about content, presentation, and technology when there are multiple decision-makers. Positive social change might occur if educational leaders and instructional designers leverage the findings to gain insight into the practical application of instructional design processes when designing e-learning solutions.

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Dedication

This dissertation is dedicated to Helen Cecilia Lenane, my mother, Paul James Lenane, my father, and Paula Ann Lenane, my sister, all of whom inspired me to take this journey. This dissertation is dedicated to the memory of Peter Lenane, my grandfather, who passed away before celebrating the accomplishments of his children, grandchildren, and great-grandchildren.

Acknowledgments

I want to thank the committee chair, Dr. Carol Watson, who guided me through the capstone process. I attended one of her classes, submitted a request for her to be my committee chair, and was thrilled when the decision was approved. Dr. Mary Howe, the methodologist on the committee, shared her expertise about the criteria for a basic qualitative study. I am thankful to have learned about data collection, coding, and analysis from her. I want to thank the university research reviewers, Dr. Karen Hunt and Dr. Matthew Basham, and the form and style editor, Angie Drennen, for their valuable feedback. My many thanks extend to my professors and the staff members of Walden University, including the Student Success Advising Team, Walden Library, Center for Research Quality, and Writing Center. A thank you goes to Chue Vang, student success advisor, who continually motivated me through each milestone. I want to thank Dr. Marydee Spillett, Dr. Morris Bidjerano, and the IRB facilitators for creating a welcoming environment in which students learned from them and each other, no question was too small or too big. I was fortunate to have had the support of family and friends. Notably, I want to express heartfelt thanks to the participants who on their personal time shared valuable experiences and insights, which made this study possible. My journey started with a warm welcome from a Walden enrollment specialist and a conversation with Dr. MaryFriend Sheppard about which online doctoral degree program aligned with my future plans. Now, my journey continues.

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Chapter 1: Introduction to the Study

Instructional designers employ instructional design processes to meet the needs of learners within the context of academic or business settings (Allen, 2016). Research has shown the selection of instructional design processes (linear or iterative) and the use of technology to develop learning solutions vary (Chang & Jang, 2016; Foulger et al., 2017; iNACOL, 2011; Koehler & Mishra, 2005; Rozitis, 2017). Instructional design competencies include understanding uses for technology and defining instructional strategies for presenting or interacting with content (Rozitis, 2017). However, little is known about instructional designer perspectives on the usefulness of an instructional design process. Therefore, exploring the perspectives of instructional designers might reveal insights for organizational leaders when considering the usefulness of an instructional design process when deciding to use technology in e-learning solutions.

Background

The number of instructional design processes has evolved. Some instructional design processes are linear. For example, the analysis, design, development, implementation, and evaluation (ADDIE) model is a linear, multi-step, phased model (Czeropski & Pembrook, 2017). Similar ADDIE models, such as the Dick and Carey model and Robert Gagné's model, were introduced and included ordered steps and actions (Asghari & Fatemi, 2016), in which instructional designers complete one phase before continuing to the next phase. Alternatively, some instructional design processes are iterative. For example, instructional designers using the successive approximation model (SAM; Allen, 2012) or lot like agile management approach (LLAMA; Czeropski

& Pembrook, 2017; Torrance, 2014a, 2014b) work iteratively, reducing the number of steps and leveraging collaborative components. Nevertheless, when instructional designers have had an opportunity to select from the various instructional design processes, some instructional designers continued to choose traditional instructional design processes (Allen, 2016; Handshaw, 2014). However, there is a disconnect between the choices of instructional design processes (linear and iterative) when making design decisions for e-learning solutions.

The selection of an instructional design process or method also varies. Even with advanced technologies, instructional designers demonstrate varied selections of instructional design processes. Some instructional designers have used ADDIE for digital learning (Salas, 2018), such as the integration of virtual-reality technologies for situational learning of native languages (Chiu, 2017). But as an alternative to ADDIE, some instructional designers chose the iterative SAM for use with technology in instruction (Allen, 2016; Hutanu et al., 2015; Mercadal, 2015; Roth et al., 2016). For example, Carlson and Gagnon (2016) used SAM to develop augmented-reality solutions. In another case, Vallance et al. (2017) chose SAM to design learning solutions with the Oculus Rift 3D Head Mounted Display. A definite gap exists in the understanding of the perspectives of instructional designers using instructional design processes.

Further, some instructional designers do not follow any instructional design processes and opt for theoretical models for creating e-learning (Chandrasekera & Yoon, 2018; Gogineni et al., 2019; Pillai & Sivathanu, 2018). The purpose of this study was to explore the perspectives of instructional designers on the usefulness of an instructional

design process (linear and iterative) when making design decisions for e-learning solutions, though other approaches were revealed during the interview process.

Problem Statement

There is a need to understand the perspectives of instructional designers on the usefulness of an instructional design process (linear and iterative) when making design decisions for e-learning solutions. There is minimal information about instructional designers' decisions to use either a linear or iterative instructional model in instruction (Battle, 2019). Furthermore, there is nominal information about the awareness of the different types of instructional design processes used in workplaces (Lorimer, 2019).

The choices for instructional design processes differ when integrating technology in e-learning, and the consequences of instructional designers selecting poor instructional design processes are numerous (Allen, 2016). By not adhering to an effective instructional design process, instructional designers miss opportunities for improving productivity (Galagan, 2013). In some situations, instructional designers miss deadlines when following an inefficient process (Gardner et al., 2017; Roth et al., 2016). In another situation, the learning outcomes by instructional designers did not meet the criteria defined by business leaders (Allen, 2012). In terms of inconstant learning outcomes, some researchers have indicated instructional designers who did not adhere to the ADDIE instructional design process developed instruction with inconsistent levels of quality (Gökkaya & Güner, 2014), whereas others have explained even when instructional designers relied on their understanding of an instructional design process, they experienced inconsistent outcomes (van Rooij, 2010). Other factors need to be considered

for repeatable success. Further investigation is needed to uncover instructional designers' perspectives of the usefulness of an instructional design process when making design decisions about e-learning solutions.

The competencies and experiences of instructional designers also vary before participating in onboarding activities when securing a position in a learning organization (Rabel & Stefaniak, 2018). Instructional designers evaluate their instructional design standards to leverage technologies effectively (Debattista, 2018). Similarly, some instructional designers omitted a compelling blend of technologies (Sokolik, 2018). Instructional designers have many choices of technology with which to develop instruction. Instructional designers use processes to define the use of technology and pedagogy (Schreurs, 2006). Thus, I used the technological pedagogical content knowledge (TPACK) model to explore perspectives of instructional designers on the usefulness of instructional design processes (linear and iterative) when deciding to integrate technology in e-learning solutions, which might address the disconnect and uncertainty of how and when to use an instructional design process. Additionally, in this study, I uncovered a deeper understanding of instructional designer perspectives on the usefulness of an instructional design process when making decisions about the presentation of a subject and inclusion of relevant content.

Purpose of the Study

The purpose of this study was to explore the perspectives of experienced corporate instructional designers on the usefulness of an instructional design process (linear and iterative) when making design decisions for e-learning solutions. The

instructional designers in this study switched from using a multi-step and linear instructional design model to a shortened, iterative process for designing instruction. Examining the perspectives of instructional designers on the usefulness of an instructional design process (linear versus iterative) led to a deeper understanding of how instructional designers draw on technology integration knowledge of publishing tools, instructional methods, and subjects to develop e-learning solutions.

Research Questions

The following research questions (RQs) guided this study.

RQ 1:What are instructional designers' perspectives of the usefulness of a linear instructional design process when making design decisions for e-learning solutions?

RQ 2: What are instructional designers' perspectives of the usefulness of an iterative instructional design process when making design decisions for e-learning solutions?

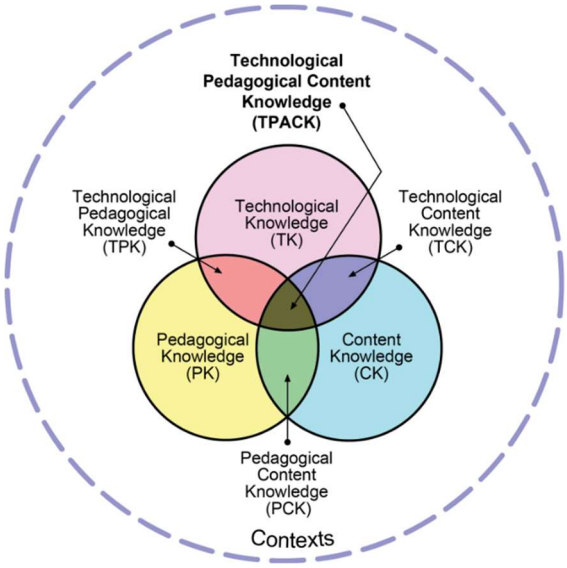
Conceptual Framework

The TPACK model (Koehler & Mishra, 2005) formed the conceptual framework for this study. Historically, Koehler and Mishra (2005) integrated a technological knowledge domain into an existing PCK model as defined by Shulman (1986, as cited in Angeli et al., 2016). The TPACK model includes constructs that frame the integration of technology with instructional design (Angeli et al., 2016). Regarding technology, it is important to consider the implications of content learning and pedagogical approaches in integrating technology into learning (Harris et al., 2009). Exploring instructional designer perspectives within the guidelines of the TPACK model might reveal information about

the instructional design perspectives on the usefulness of instructional design processes (linear or iterative) when making design decisions to use technology in instruction. The TPACK model is shown in Figure 1. Table 1 lists the descriptions of the constructs for the TPACK model.

Figure 1

TPACK Model



Note. From "Using the TPACK Image" (https://matt-koehler.com/tpack2/using-the-tpack-image/). Copyright 2012 by TPACK.org. Reprinted with permission. (see Appendix B)

Table 1

Constructs for TPACK Model

Knowledge Domain	For Instructional Designers This Means
Content Knowledge (CK)	CK is a single knowledge domain and relates to the subject.
Pedagogical Knowledge (PK)	PK is a single knowledge domain and relates to how the learner interacts with and views the content.
Technological Knowledge (TK)	TK is a single knowledge domain and relates to the publishing tools and technology used to develop and distribute the learning solution.
Pedagogical Content Knowledge (PCK)	PCK is a blend of two knowledge domains that cover presentation strategy and content choices for the subject.
Technological Content Knowledge (TCK)	TCK is a blend of two knowledge domains related to which technology is optimal for presenting the topics.
Technological Pedagogical Knowledge (TPK)	TPK is a blend of two knowledge domains and covers the ways technology supports the transfer and acquisition of knowledge and skills.
Technology Pedagogical Content Knowledge (TPACK)	TPACK is a blend of three knowledge domains and covers the breadth of knowledge and skills required for e-learning design and development.

Note. Descriptions are based on the theoretical constructs of the TPACK Model (Angeli et al., 2016).

The TPACK model was used to frame the study in two ways. First, the technology, pedagogy, and content taxonomy of the TPACK (Koehler & Mishra, 2005) was used to guide the exploration of the instructional designer perspectives when working with instructional design processes. The taxonomy aligns with tasks performed by instructional designers who (a) choose the technology to use to design and develop e-learning solutions, (b) define pedagogy for interactivity and presentation within an e-learning interface, and (c) narrow the content regarding learning objectives. Second, the constructs of the TPACK model were used to define the interview protocol about technological, pedagogical, and content knowledge for instructional design processes. Chapter 2 includes more details about the constructs for the TPACK model.

Nature of the Study

A basic qualitative study was used as the method to explore the perspectives of instructional designers on the usefulness of an instructional design process (linear and iterative) when making design decisions for e-learning solutions. The study focused on the perspectives of experienced instructional designers who use technology in a corporate setting to develop e-learning solutions for customers and employees. The study included the exploration of instructional designer perspectives on the usefulness of two instructional design processes, the linear ADDIE instructional design process and iterative SAM instructional design process. The instructional designers were asked about their perspectives on the usefulness of an instructional design process (linear and iterative) when deciding to use technology. (These instructional designers were mandated to move from a linear to an iterative instructional design process.) The study included semistructured interviews for data collection within the conceptual framework of the TPACK model (Koehler & Mishra, 2005). The interviews were recorded and transcribed. One member-checking activity was used for participant validation to ensure the accuracy of interpretations of the data (Creswell & Creswell, 2018; Ravitch & Carl, 2021). Data collection and analysis was guided by the constructs of the conceptual framework, findings in the literature, and the scope and limitations of a qualitative study within the context of an authentic business setting.

Definitions

Analysis, design, development, implementation, and evaluation (ADDIE) model: Is a recognizable instructional design process in which educators follow a set of tasks to

develop learning solutions (Mercadal, 2015). ADDIE is a generic and linear instructional design process (Hodell, 2016). However, some designers consider ADDIE as iterative and applicable for use with multimedia tools (Salas, 2018).

Content knowledge: Includes the competency of instructional designers on the purposeful inclusion and exclusion of information to meet the objectives and criteria instruction (Angeli et al., 2016).

Course: Includes learning objectives, a duration for completion, and content (Norberg et al., 2017).

Deliverable: Is an artifact, such as a multimedia, interactive module, intervention, or online job aid, which is an outcome of an instructional design process (Hodell, 2016).

E-learning. Is a platform of delivery based on educational technology (Allen, 2016; Divjak & Redep, 2015; Handshaw, 2014). Some instructional designers build e-learning solutions to improve engagement (Divjak & Redep, 2015). Some instructional designers blend of multimedia elements for learning experiences for online delivery (Divjak & Redep, 2015). The attributes of e-learning include software simulations, online navigation, streamlined content, and a blend of media (Handshaw, 2014).

Instructional design: Is a profession or field that includes a set of competencies associated with instructional design processes, learning theories, consultative communication, and needs assessment analysis. Some instructional design responsibilities include developing learning solutions and understanding the instructional systems design process for a systematic approach to analysis, design, development, delivery, and evaluation (Rothwell et al., 2016; Sharif & Cho, 2015).

Instructional design process: Is a set of tasks for planning, analyzing, designing, developing, implementing, and evaluating learning solutions (Rothwell et al., 2016). The educators perform the process steps linearly or iteratively. By applying an instructional design process, educators holistically identify gaps in the knowledge and skills of learners and analyze the attitudes of learners within the context of an organizational environment (Rothwell et al., 2016).

Instructional designers: Have a technical understanding of publishing tools. The competencies include storyboarding, using learning standards, such as the shareable content object reference model, integrating interactive practices, and incorporating diverse learning preferences (Rothwell et al., 2016). Instructional designers perform multiple tasks for developing e-learning solutions, such as design and project management (Hodell, 2016). Instructional designers use conventional online publishing tools and multimedia-rich augmented and virtual reality tools (Chandrasekera & Yoon, 2018).

Instructional systems design: Is a process that educators follow to analyze and uncover the root causes of gaps and then create a learning solution or intervention to improve quality and productivity within an organization (Mercadal, 2015). Traditionally, an instructional systems design model is a process with a set of instructional design process steps (Rothwell et al., 2016).

Pedagogical knowledge: Is the competency of instructional designers to select multimodal media to support instructional strategies for presentation and interactivity for instruction (Angeli et al., 2016).

Rapid instructional design: Is a technique to reduce the development time and give learners access to smaller sections or prototypes of the content for review (Piskurich, 2015).

Strategic decision making: Is a business technique in an educational setting in which instructional designers consider the needs of the employees and organization before and during the instructional design process for developing and delivering e-learning (Divjak & Redep, 2015).

Subject matter experts (SMEs): Are professionals who share their discipline or subject expertise to support the instructional design process (Hodell, 2016).

Successive approximation model (SAM): Is an iterative instructional design process in which educators reduce cost and time to build prototypes to uncover issues and gaps with instructional materials (Rothwell et al., 2016). The process is a streamlined set of tasks (Allen, 2016).

Summative accounts: Include a summary of the main attributes of a phenomenon and the themed perspectives of participants from a sampling of a population. The summative statements include the perspectives of instructional designers on the use of instructional design processes for e-learning development within a corporate business group.

Technological knowledge: Is one competency of instructional designers with regards to the use of technology to transform the content and pedagogy of instruction (Angeli et al., 2016).

Assumptions

For this study, two assumptions are presented. The first assumption was the instructional designers answered truthfully and accurately based on the opportunity to share their knowledge and experiences, meaningful to the instructional design discipline. The truth represents beliefs or attitudes considered factual without proof, and honesty is the core of accurate data (Lincoln & Guba, 1985). If the data are not from truthful responses by the participants, then the interpretations of emerging themes will be inaccurate. For this study, this assumption was necessary to convey the validity of the findings.

The second assumption was the participants did not have expectations about improving their position in the organization and were interested in participating in the study. According to the Walden Institutional Review Board (IRB) guidelines (Walden University, n.d.-a), researchers conducting a study in their workplace must set expectations about social desirability. For this study, to build the confidence of the participants and embolden truthful responses, I pointed out in the consent form that participation or non-participation would not change work status. The identities of the participants were confidential, and participation was voluntary. The participants could have withdrawn at any time from the study without consequences.

Scope and Delimitations

The scope of the study was on one learning development department in one business setting. This basic qualitative study was delimited to a sample size of six to eight corporate instructional designers who moved from a linear to an iterative instructional

design process. These instructional designers have experience using both linear and iterative instructional design processes when designing e-learning solutions. The instructional designers who have not transitioned from a linear to an iterative instructional design process, or who have worked with only linear or only iterative and not both, were excluded. Instructional designers who do not develop e-learning solutions and are in a supervisory role or project management role were also excluded.

Second, this basic qualitative study was delimited by a conceptual framework, namely, the TPACK model (Koehler & Mishra, 2005). The TPACK model includes the constructs that apply to the knowledge and tasks associated with instructional design (Angeli et al., 2016), which aligns with the nature of the study. Careful consideration was given to ruling out one business model and one experiential theory for the conceptual framework for this study. Although the business or work engagement job demands-resources model (Bakker, 2011; Hakanen & Roodt, 2010) includes constructs to examine resources about the usefulness of instructional design processes, a necessary technology integration component was missing. Similarly, even though the experiential learning theory (Kolb, 2015) includes principles for acquiring skills by instructional designers, the constructs did not include a technological tenet to address the RQs. The selection of the TPACK model was based on the technological, pedagogical, and content knowledge constructs that align with RQs.

By knowing details about scope and delimitations, readers can determine the applicability of the findings from a study to their contexts. For example, readers might make changes to their practices if the situation is similar to the one in the study (Merriam

& Tisdell, 2016). The transferability factor of a qualitative study is similar to generalizability in quantitative studies. In a quantitative study, the readers evaluate the research design and the significance of values reported in the findings. However, in a qualitative study, researchers must provide relevant descriptions for the readers to make informed decisions (Lincoln & Guba, 1985). To assist the readers in the transferability of the findings of this basic qualitative study to their situations, I provided detailed descriptions of the context of the study, conceptual framework, and competencies of the participants.

Limitations

A basic qualitative study was chosen to explore the perspectives of instructional designers on the usefulness of instructional design processes when designing e-learning solutions. However, there are limitations with a qualitative study (Creswell & Poth, 2018; Merriam & Tisdell, 2016; Yin, 2018) that are outside the control of the researcher, such as the findings are a subjective interpretation of the data that cannot be generalized for a population. For this study, the limitations include subjectivity, transferability, and sampling.

A basic qualitative study is limited by a subjective, interpretative account (Merriam & Tisdell, 2016; Ravitch & Carl, 2021), which means the researcher must reveal biases for the readers to determine the trustworthiness of the processes (Patton, 2015). Similarly, researchers must reveal their own experiences so that readers can evaluate researcher bias (Corbin & Strauss, 2015). Addressing researcher bias included revealing my experiences with successful learning outcomes using linear and iterative

instructional design processes. First, I remained open to discovering the emerging findings as they are revealed by analyzing the data collected in the study. Second, after each interview, I recorded reflective views using a reflexive journal. Because qualitative researchers collect and interpret the data, they must reflect and uncover personal perspectives (Patton, 2015). By doing so, I was able to examine personal thoughts and separate my views from those of the participants. Third, I used member checking in which participants reviewed the findings based on their responses and reported any discrepancies or inaccuracies (Creswell & Creswell, 2018). Taking these steps reduced my biases about using instructional design processes. A full description of the steps to address researcher bias and trustworthiness is included in Chapter 3.

This basic qualitative study is also limited by the transferability of the findings to other situations. Based on the experiences and competencies of instructional designers (Foulger et al., 2017; Gray et al., 2015; Jung et al., 2018; Rothwell et al., 2016), the sample was representative of the population for the instructional design discipline. However, the participants were from one learning development department in one business setting, and their perspectives might not represent the instructional design discipline as a whole. Additionally, this basic qualitative study was limited by a sample of nine participants. Although the sample size is small, the participants in this study have the competencies and understanding of the instructional design discipline for integrating technology, defining pedagogies, and developing content for e-learning solutions to address the RQs. By including detailed descriptions of the setting, participants, and procedures, readers are provided information with which to determine the quality of the

findings and appropriateness for their settings. For example, the participant profile (Appendix A) identifies the type of experiences of the instructional designers.

Significance

This study is significant because there are opposing views on the usefulness of instructional design processes. Instructional designers might approach the selection of instructional design processes with uncertainty. For example, Jung et al. (2018) reported the usefulness of the savvy start in the iterative instructional design process SAM. Comparatively, Asuncion (2016) found the linear instructional design process known as the ADDIE model useful for multimedia. Instructional designers select instructional design processes (linear or iterative) as a guide if the process supports innovative and creative approaches during the development of instruction (Battle, 2019). With these varying findings in mind, I explored instructional designer perspectives of the usefulness of an instructional design process (linear and iterative) when making design decisions for e-learning solutions, which revealed insight into the informed decision-making process for incorporating technology in instruction.

Additionally, some instructional designers use instructional design processes to meet criteria that might include reducing cost and time (Allen, 2016), meeting the engagement requirements of a minimum viable product (Gawlik-Kobylińska, 2018), and offering just-in-time training (Radin, 2018). But poor decisions by instructional designers have led to the loss of time on the job and disappointing e-learning experiences by employees (Allen, 2016; Piskurich, 2015). Nevertheless, few researchers have explored instructional designer perspectives on the usefulness of an instructional design process

(linear and iterative) when deciding to integrate technology in e-learning solutions. Even fewer researchers have conducted qualitative studies focusing on the SAM instructional design process (Battle, 2019; Jung et al., 2018). Understanding how and when to use an instructional design process might lead to optimal use of instructional design processes when deciding to integrate technology e-learning to meet quality just-in-time training requirements.

This study also contributes to positive social change through informed decisions guided by an instructional design process. Some educators have improved social change outcomes by using innovative ways to share practical knowledge that impacted a community (Walden University, n.d.-b, 2017). Regarding this study, learning from other instructional designers might have implications for using instructional design processes when designing, developing, and delivering learning solutions that might maximize investments in time and money for learning initiatives. Instructional designers might benefit from understanding the practices of other instructional designers who used instructional design processes in instruction.

Summary

In Chapter 1, I provided an introduction to the study and defined the nature of the study, scope and delimitations, limitations, and significance. Additionally, Chapter 1 included a description of the conceptual framework to provide the context for exploring the instructional designer perspectives of an instructional design process (linear and iterative) when making design decisions for e-learning solutions. In Chapter 2, I describe a summary of opposing uses of linear and iterative instructional design processes within

the context of the TPACK model (Koehler & Mishra, 2005). Chapter 2 will also include a description of the literature review search strategy and descriptions of instructional design processes (linear and iterative).

Chapter 2: Literature Review

Independently, or per organizational policies, many instructional designers follow instructional design processes as they integrate technology into their designs of e-learning solutions. Through their experiences, instructional designers gain valuable insight into multiple factors that can affect the outcome of their designs, one of which is the selection of an instructional design process. Furthermore, most instructional designers rely on a set of guiding principles defined by instructional design models or processes. Instructional designers associate two attributes, linearity and agility, when describing the steps in an instructional design process. Over time, there has been a gradual evolution of instructional design processes. Thus, the purpose of this basic qualitative study was to explore the perspectives of instructional designers about instructional design processes for e-learning, which provides insight into making informed decisions about the application of instructional design processes. When considering the reasons for the selection of an instructional design process, few researchers have explored the perspectives of instructional designers developing learning solutions. None of the studies reviewed included a group of corporate instructional designers within the context of a basic qualitative study as the focus.

Chapter 2 begins with an overview of the techniques used to locate sources. Chapter 2 also includes details about the TPACK model for the conceptual framework.. Finally, Chapter 2 includes a summary of the alternative views of using different types of instructional design processes when integrating educational technology in instruction.

Literature Search Strategy

The resources used for this basic qualitative study included online databases, search engines, and books. The sources included peer-reviewed, scholarly journals, dissertations, and authors of books with topics related to the conversation by researchers about instructional design and educational technology. The online databases included ABI/INFORM Collection, ACM Digital Library, Business Source Complete, CINAHL & MEDLINE, EBSCO ebooks, Education Source, Emerald Insight, ERIC, ProQuest Central, Safari Tech Books, SAGE Journals, ScienceDirect, Springer e-books, Taylor and Francis Online, and Thoreau Multi-Database. The search engines included Ask, Bing, Google, Google Scholar, and Yahoo!.

The keywords and phrases for instructional design processes and the TPACK model included *ADDIE (analysis, design, develop, implement, and evaluate), agile process, alpha test, beta test, chunking, computer-based training, course, curricula, curriculum, e-learning, educational technology, guided practice, independent practice, instructional design, instructional design process, instructional designers, instructional systems design, ISD, linear process, multimedia, on-the-job training, organizational leaders, pedagogical knowledge, prototyping, rapid instructional design, rapid prototyping, self-directed learning, self-paced instruction, stakeholder, storyboard, successive approximation model, technological knowledge, technology-based instruction, technology-based-learning, and web-based training*. The search results included numerous articles and books in which the authors identified the linear and iterative instructional design processes used for developing technology-based learning solutions.

The search results included descriptions of the constructs and practical applications in academic and business studies. The searches were conducted within the conceptual framework for the TPACK model (Koehler & Mishra, 2005; Koehler et al., 2013). Only a few search results included articles about the analysis of the perspectives of instructional designers about instructional design processes for developing e-learning solutions. The search results did not include summative accounts of the perspectives of instructional designers' use of instructional design processes.

Conceptual Framework

The conceptual framework for this study is based on the TPACK model (Koehler & Mishra, 2006). This conceptual framework provided the lens to explore the perspectives of instructional designers on the usefulness of an instructional design process when integrating technology for e-learning solutions. Notably, within the TPACK model, three knowledge types form the technological, pedagogical, and content knowledge framework (Koehler & Mishra, 2005; Koehler et al., 2013; Mishra & Koehler, 2006), which is critical for the design of e-learning solutions.

On the one hand, most instructional designers follow an instructional design process. In parallel, these instructional designers make decisions that align with the constructs of the TPACK model and demonstrate technological knowledge, pedagogical knowledge, and content knowledge. On the other hand, instructional designers might reveal TPACK model (Koehler et al., 2013) needed to leverage technology to present content and create learning activities to engage learners. In this study, I explored the perspectives of instructional designers on the usefulness of an instructional design

process for making design decisions for technology, instructional strategies, and subjects for e-learning within the framework of TPACK constructs.

TPACK

Integrating technology to convey information about a subject requires a new understanding of the experiences of an instructional designer. This understanding is a construct in the TPACK model (Mishra & Koehler, 2006). This model expands Shulman's framework, known for pedagogical and content principles, in which Koehler and Mishra added technological knowledge. Furthermore, Koehler et al. (2013) included pedagogical practice to clarify a different level of expertise. Within the TPACK framework, there are connections between technological knowledge, pedagogical knowledge, and content knowledge required by educators to define learning strategies (Harris et al., 2017). Overall, the TPACK model forms the framework for exploring the integration of technology (Angeli et al., 2016; Mishra & Koehler, 2006).

Instructional designers demonstrate a high degree of competence and multi-dimensional proficiencies when developing e-learning solutions. Competencies needed for developing e-learning solutions include identifying requirements, establishing goals, and exploring alternatives within budgeting and time constraints (Divjak & Redep, 2015). For technology integration abilities, one design competency is matching pedagogies, technologies, and subjects (U. S. Department of Education, Office of Educational Technology, 2017, as cited in Foulger et al., 2017). Instructional designers also require technical skills to work on learning management systems with educational technology, design online tutorials, and code simulations (Handshaw, 2014). These competencies

align with ways instructional designers demonstrate TPACK. The TPACK model (Koehler & Mishra, 2006) thus guided the exploration of instructional designer perspectives on the proficiency and usefulness of an instructional design process when integrating technology for designing, prototyping, and authoring e-learning solutions. Through the lens of the TPACK model, this study revealed additional understanding of the decisions instructional designers make when designing e-learning solutions. The understanding might include a realization of how an instructional design process is useful when making decisions about selecting technology, topics for content, or ways learners will interact with the content.

Technological Knowledge

Being competitive means business leaders must use effective instructional strategies to prepare their employees. Instructional designers must take ownership of technological knowledge, pedagogical knowledge, and content knowledge for developing e-learning solutions that strengthen employees' skills for a changing workforce. Most instructional designers use an instructional design process to guide their activities with the intent the efforts will lead to the optimal design of an e-learning solution. Although there are benefits of an agile design process (Dabbagh & Fake, 2016), the perspectives of instructional designers on the usefulness of an instructional design process (linear versus iterative) when aligning technologies with instructional strategies are unclear. Throughout the process, these instructional designers make design decisions that demonstrate their TPACK for the digital integration of information that makes connections to the content.

Most instructional designers evaluate technology to make informed decisions about when to utilize processes and technology (Dabbagh & Fake, 2016; Sahin, 2011). The technology might include augmented reality for authentic problem-solving tasks, gamification for strengthening skills, and social networks for shared experiences (Dabbagh & Fake, 2016). Technological knowledge includes the utilization of (a) communication tools, (c) digital devices, and (b) multimedia applications like Adobe Captivate, Articulate 360, Cisco WebEx, Audacity, and TechSmith multimedia tools and SnagIt (Sahin, 2011). For example, instructional designers might use augmented-reality applications, post blogs, embed gamification, create podcasts, host social networks, leverage virtual worlds, and develop wikis (Dabbagh & Fake, 2016). Some instructional designers use digital devices that include scanners, cameras, and augmented-reality equipment. In essence, instructional designers' choices of technology are numerous, which means gaining insight into the usefulness of instructional design processes when making design decisions can be beneficial.

Instructional designers have mixed experiences with technology (Celik et al., 2014; Kirikçilar & Yildiz, 2018; Koh & Chai, 2016). For example, Koh and Chai (2016) found differing frequencies throughout the design process. In another study, instructional designers needed to strengthen ways to blend pedagogical knowledge with technological knowledge for designing math lessons covering properties of angles in diverse shapes (Kirikçilar & Yildiz, 2018). Furthermore, the focus must shift to how often do instructional designers choose the appropriate technology based on pedagogy (Celik et al., 2014).

Instructional designers must also have technical skills to use technology efficiently (Kirikçilar & Yildiz, 2018; Koh & Chai, 2016; Önal & Alemdağ, 2018). Instructional designers gain technical expertise proficiency through professional development and job experiences. Some employers offer onboarding programs for newly hired instructional designers to fill performance or knowledge gaps that might exist from prior educational or job experiences (Rabel & Stefaniak, 2018). Educators must also have technical strengths to (a) select tools based on ease-of-use quality and (b) define the utilization of technology for pedagogical strategies (Önal & Alemdağ, 2018). Similarly, educators need technical skills to create and present activities (Kirikçilar & Yildiz, 2018). However, there has been an uneven distribution of technological knowledge, pedagogical knowledge, and content knowledge when studying the lesson plans of mathematics educators (Akyuz, 2018). Exploring the perspectives of instructional designers on the usefulness of an instructional design process (linear versus iterative) when making design decisions for e-learning might disclose how instructional designers draw on different strengths. This realization might help stakeholders define the curricula for onboarding instructional designers as new hires or preparing existing employees for project assignments.

Pedagogical Knowledge

Pedagogical knowledge relates to connecting the instructional methods with practices and implementing creative ways of teaching the subjects. Pedagogical knowledge includes understanding how to organize and teach the content (Koehler & Mishra, 2006). For instance, instructional designers must acquire pedagogical knowledge

to assess learning gaps, define ways to intervene and build e-learning prototypes through which learners interact with the content. Pedagogy creativity can be connected with innovative-driven instructional design processes that include deliberative, reflective, and project-based tasks (Shen & Lai, 2017). Additionally, some instructional designers follow instructional design processes to make design decisions about relevant content and pedagogies that addressed authentic life experiences (Hodell, 2016).

Pedagogical knowledge is a core competency of instructional design needed to define an e-learning strategy (Dalal et al., 2017; Gogineni et al., 2019; Sahin, 2011). Pedagogical knowledge includes identifying learning preferences and building e-learning interactions based on various learning theories (Sahin, 2011). Referencing Gagné's learning events model, Gogineni et al. (2019) described how learners acquired knowledge through team-based discussions and game-based reviews for the liver pharmacotherapeutics curricula. These learners recorded videos and used BlackBoard options to upload work products. In another example, Dalal et al. (2017) measured the competencies of educators responding to learning preferences to define instructional strategies. Instructional designers apply pedagogical knowledge to align technology with content for e-learning solutions within the context of a model or theoretical framework to establish an instructional design process. Exploring the preferences of instructional designers on the usefulness of an instructional design process might reveal examples of TPACK based on experiences with traditional or theoretical models.

Despite the importance of pedagogical knowledge, some instructional designers lack information about instructional design processes (Gogineni et al., 2019). Some

instructional designers adhere to theoretical principles to guide a blended e-learning design that aligned with how learners processed new knowledge (Gogineni et al., 2019). Furthermore, some instructional designers follow theoretical principles when integrating mobile-based technology with pedagogy and content (Pillai & Sivathanu, 2018). Although instructional designers might demonstrate strengths regarding technological and pedagogical competencies, their content knowledge is critical.

Content Knowledge

Instructional designers must build content knowledge in their subject areas (Celik et al., 2014; Dalal et al., 2017; Koehler & Mishra, 2005; Sahin, 2011; Salvatore, 2015). Content knowledge can be connected to understanding the subject matter (Koehler & Mishra, 2005). Instructional designers might serve as the instructional designer and expert on the subject (Salvatore, 2015). Content knowledge includes being able to identify (a) relevant topics, (b) optimal behaviors, and (c) on-the-job tools (Sahin, 2011). A direct relationship exists between the level of technological knowledge and other knowledge, including pedagogical strategies and content relevance (Celik et al., 2014). Instructional designers must acquire content knowledge before intervening to fill learning gaps appropriately. But there is a lack of information about the perspectives of instructional designers about technical, pedagogical, and content competencies with regard to the usefulness of an instructional design process for integrating technology based on the subject when designing e-learning solutions.

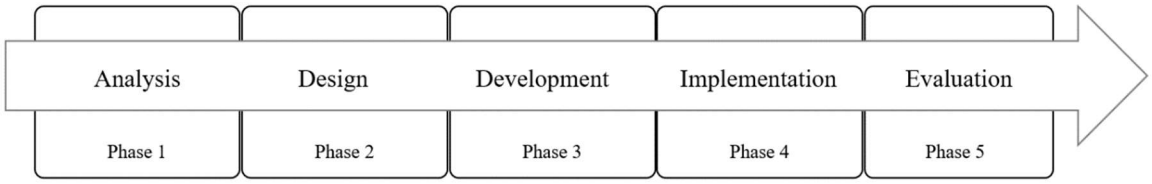
Literature Review Related to Key Concepts

Instructional Design Processes

Although there are several design models, they generally fall into two categories: linear and iterative. This study focuses on two instructional design processes. The first is the most common linear model, ADDIE (Allen, 2016; Mercadal, 2015). Figure 2 shows the phases in the ADDIE instructional design process.

Figure 2

Phases in the ADDIE Instructional Design Process

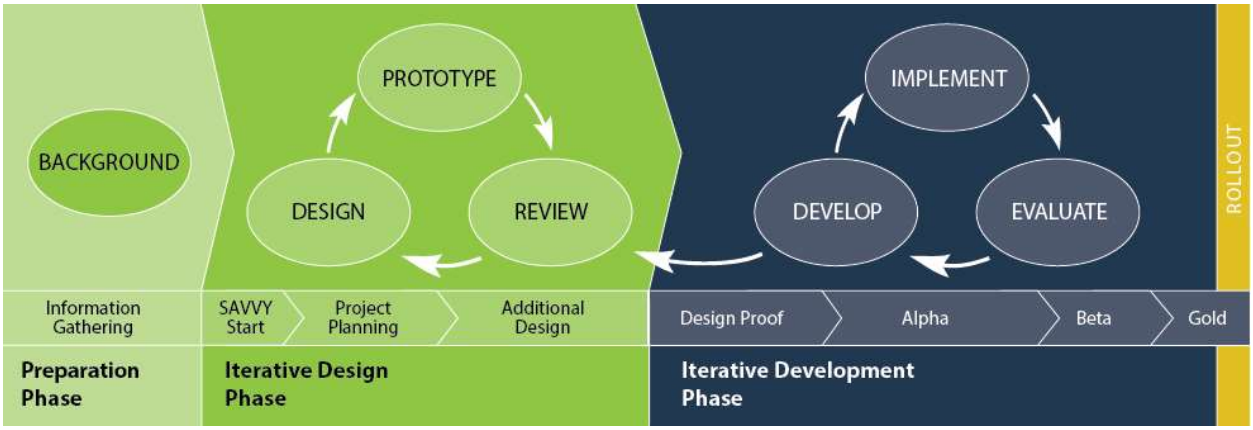


Note. Representation is based on the ADDIE model phases described by Allen (2012) and Arshavskiy (2013).

The second is the most well-known iterative model, SAM (Allen, 2016; Arshavskiy, 2013). (Note that authors frequently use the terms process and model interchangeably.). Figure 3 shows a representation of an iterative instructional design process.

Figure 3

Phases in an Iterative Instructional Design Process



Note. From "SAM: The Successive Approximations Model," by Dr. Michael Allen and Allen Interactions (Allen Interactions, n.d.) (https://www.alleninteractions.com/services/custom-learning/sam/elearning-development). Reprinted with permission (see Appendix B).

In this study, instructional design processes represent the practical applications of instructional design models. Instructional designers following an instructional design process work within the context of an organization and must consider overlapping or conflicting business processes, team inputs, and changing technology. Therefore, the examination of instructional designers' perspectives on the usefulness of an instructional design process has significance in multiple industries.

Instructional Designers Use of an Instructional Design Process

Some instructional design processes are more recognizable than other instructional design processes. In a list of instructional design processes, Arshavskiy (2013) included ADDIE as an easily recognizable linear model and SAM as a popular

iterative instructional design process. However, Arshavskiy emphasized the advantages of the models and not the perspectives of the instructional designers on the usefulness of an instructional design process (linear and iterative) when making design decisions about technology, pedagogy, and content for e-learning solutions.

About the time when Allen (2012) introduced SAM, some instructional designers were successful in using traditional instructional design processes to produce e-learning for authentic business solutions (Handshaw, 2014). Some instructional designers used conventional instructional design processes to deliver accessible, cost-effective training for learners (Gumienny, 2017), whereas other instructional designers optimized the steps to meet technology regulations. For example, Vallance et al. (2017) purposely ruled out a linear model and chose SAM when working with advanced three-dimensional (3D) applications and equipment. Tracey et al. (2014) reported some instructional designers passively followed an instructional design process assigned by organization leaders. In contrast, other instructional designers individually chose an instructional design process for designing online learning solutions.

Challenges for Using Instructional Design Processes

Although instructional designers leverage models or theories for the practice of instructional design, the research lacks an understanding of the current usefulness of instructional design processes (linear versus iterative) when drawing on TPACK for e-learning designs. From the early 1980s, instructional designers experienced a lack of support, undefined business goals, and poor instructional design processes for analyzing performance gaps (Cramer, 1983). Years later, Allen (2012) pointed out the challenges of

instructional designers included poor designs, less than optimal learning outcomes, and missed opportunities at the time of need. For instance, some instructional designers followed instructional design processes that led to ineffective design decisions and outcomes that lacked collaborative components or the appropriate integration of media to support instructional pedagogies (Sugar & Luterbach, 2016).

Additionally, Hutanu et al. (2015) concluded ADDIE and SAM instructional design processes were not a fit for use with e-learning projects. First, using the ADDIE instructional design process would require longer durations of perfecting scalable e-learning (Hutanu et al., 2015). Second, SAM prototyping was time-consuming without gains and required blending a Scrum agile management task to fill process gaps (Hutanu et al., 2015). Moreover, Hutanu et al. (2015) found the development time did not decrease with SAM instructional design process for e-learning, which contradicted Allen's (2016) experiences. These opposing views might be addressed by this study to explore the perspectives of instructional designers on the usefulness of an instructional design process (linear versus iterative) when making design decisions for e-learning solutions.

Understanding the business requirements helps instructional designers select the appropriate instructional design processes (Minaya, 2016). For instance, Arora (2016) noted instructional designers determined which instructional design process applies by cost-effective methods, work history, technological limitations, and agility. Additionally, instructional designers included experiences with instructional design processes as part of their professional competencies (Gray et al., 2015) and job responsibilities (Tracey et al.,

2014). Furthermore, multi-functional team members use instructional design processes to shape curricula and maintain learning environments (Baba, 2016). Over the years, while consultative approaches remained consistent, the instructional design processes changed (Arora, 2016).

Based on their professional knowledge, some instructional designers adjusted the instructional design processes (Gray et al., 2015). These adjustments might have to do with the design decisions that instructional designers make while working through an instructional design process. Alternatively, the adjustments might have to do with the TPACK for designing e-learning. An instructional design makes an average of 15 design decisions per hour (Gray et al., 2015). Some instructional designers infused real-world and innovative practices (Shen & Lai, 2017). What is unknown are the perspectives of the instructional designers on the usefulness of an instructional design process (linear versus iterative) while collaborating with stakeholders and making design decisions.

The ADDIE Instructional Design Process

Arshavskiy (2013) commented the ADDIE model is the forerunner of all other instructional design models. The ADDIE instructional design process included five phases (a) Analysis, (b) Design, (c) Development, (d) Implementation, and (e) Evaluation (Branson et al., 1975; Branson et al., 1977; Hodell, 2016). Each phase includes a sequence of steps that instructional designers complete before advancing (Allen, 2012). However, some instructional designers altered the linear tasks (Allen, 2012), whereas others added transformative constructs to linear steps for innovative uses of technology when redesigning curricula (Albeanu & Popentiu-Vladicescu, 2019).

In another example, Budoya et al. (2019) blended ADDIE with a unique instructional design process. For example, Budoya et al. pointed out the analysis phase of ADDIE aligned with a feature-driven approach for designing the product and establishing a use case to prioritize features. In other words, ADDIE appeared to provide the workflow but lacked creative constructs for integrating technology into the pedagogy, or further clarification was needed on alignment with product development tasks.

Historically, researchers described pedagogical decisions, such as ensuring short durations of instruction as specified by B. F. Skinner and defining criterion-based objectives as outlined by Robert Mager (Baba, 2016). Cramer (1983) reported some instructional designers applied theoretical principles when challenged with little understanding of the subject and pedagogy. Although some instructional designers were aware of iterative instructional design processes, they chose conventional linear instructional design processes for complex virtual reality-based e-learning solutions (Lababidi & Munshi, 2015).

The SAM Instructional Design Process

According to Arshavskiy (2013), Michael Allen introduced the SAM instructional design process for instructional designers to use for developing e-learning solutions. Applying SAM concepts, the instructional designers perform successive steps approximating the goal to narrow the gap between the current levels and optimal levels of knowledge and skills of the learners (Allen 2016). Lasky (2018) identified the SAM instructional design process as a traditional model. Allen explained the ADDIE linear instructional design process is limited to a sequence of tasks. Alternatively, Allen (2016)

offered the SAM instructional design process is a flexible, collaborative process enabling the refinement of iterations until meeting the needs of the intended audience.

The SAM instructional design process includes cyclical elements of analysis, design, and development (Allen, 2016). However, instructional designers perform the steps in small, iterative increments with a target of three prototypes for review (Allen, 2016). In a simple variation, the SAM instructional design process includes (a) Evaluate, (b) Design, and (c) Develop (Allen, 2012; Arshavskiy, 2013). In an extended version, the SAM instructional design process includes three phases (a) Preparation Phase, (b) Iterative Design Phase, and (c) Iterative Development Phase (Allen, 2012; Arshavskiy, 2013).

Customized Instructional Design Processes

Instructional designers altered instructional design processes while developing learning solutions in diverse work settings for different subjects (Lorimar, 2019). Some instructional designers acknowledged the challenges of designing e-learning solutions and integrated pedagogical practices with technologies to ensure the learners' engagement (Debattista, 2018). Some instructional designers recognized the gap between their familiarity with instructional design processes due to changes in technology (Lorimar, 2019). Additionally, Lorimer (2019) reported instructional designers blended linear, iterative, and agile instructional design processes with educational technologies. By exploring perspectives, insights about instructional designer perspectives on the usefulness of an instructional design process (linear versus iterative) might be revealed,

as well as information about the selection of pedagogy and development of the content, including technology integration.

Linear Instructional Design Processes

ADDIE is an acronym for different phases in the instructional design process (Allen, 2016). Using the ADDIE instructional design process, most instructional designers perform tasks linearly in each stage. However, instructional designers applied the ADDIE instructional design process in different ways. On the one hand, Torrance (2014a) noted instructional designers used the ADDIE instructional design process for project planning. On the other hand, Molenda (2015) described a blend of linear and iterative components of the ADDIE instructional design process through which instructional designers shaped their approaches. For example, Heady and Vossler (2017) and Salas (2018) noted instructional designers consider ADDIE to be both linear and iterative and applicable for digital learning experiences. In contrast, the Thiagi Group (n.d.) pointed out instructional designers performed the ADDIE steps concurrently and not as an ordered set of tasks. There appear to be alternate views of instructional designers' use of the ADDIE instructional design process. Exploring the perspectives of actual instructional designers might reveal deep insights into both instructional design processes and workflow.

Past Applications

According to Molenda (2015), the ADDIE instructional design process was developed in the 1970s by a U.S. Army educational team. Notably, examples found in the 1950s demonstrate the use of instructional design processes (Gawlik-Kobylińska, 2018;

Lasky, 2018). Few details exist about these earlier applications of the ADDIE instructional design process for e-learning (Molenda, 2015). For years, the ADDIE instructional design process did not have an official name (Molenda, 2015). Over the years, educators offered historical accounts of the ADDIE instructional design process, a linear instructional design process for developing learning solutions with multimedia. The ADDIE instructional design process has been in existence in one form or another since World War II (Allen, 2006). In the mid-1990s, Schlegel (1995) established a connection between ADDIE and information technology, such as interactive videos and performance evaluation. As precursors to ADDIE, Branson et al. (1975) and Branson et al. (1977) identified the analyze, design, develop, implement, and control phases for a model.

Historically, regarding cost-effective and timely practices, Schlegel (1995) associated a linear instructional design process with multimedia selection for self-directed, computer-based training. In the early 2000s, Peterson (2003) found the ADDIE instructional design process was a match for use with multimedia. Peterson described ADDIE as a repetitive process in which educators reshaped the instructional design of college courses using multimedia. Peterson recognized the strengths of using the ADDIE instructional design process even when instructional designers shifted to multimedia-based learning solutions as early as 2003.

Unlike Schlegel (1995), when describing the tenets of ADDIE, Peterson (2003) found some instructional designers used iterative approaches within the linear process. In one instance, instructional designers successfully applied linear instructional design

processes for multimedia deliverables (Crawford, 2004). In another example, Fanning (2008) elaborated on how the instructional designers used ADDIE to create virtual learning environments. While technology evolved, instructional designers continued to use ADDIE, a traditional model (Fanning, 2008).

In contrast, Crawford (2004) questioned the effectiveness of the ADDIE instructional design process and proposed an alternative streamlined approach. Schlegel (1995) explained some educators had to augment and supplement the ADDIE instructional design process to fit the unique needs of their learning solutions. Similarly, Molenda (2015) revealed some instructional designers altered the ADDIE instructional design process to suit their development needs. Examples exist in which instructional designers chose the ADDIE instructional design process even though some instructional designers looked for alternatives (Allen, 2006). For example, Wang and Hsu (2009) selected the traditional ADDIE instructional design process as the learning standard for the AECT (Association for Educational Communications and Technology). Additionally, Wang and Hsu found educators using Second Life, a rich, three-dimensional (3D) virtual learning application utilized the ADDIE instructional design process.

Present Applications

Many instructional designers apply the ADDIE instructional design process for developing e-learning solutions (Albeanu & Popentiu-Vladicescu, 2019; Durak & Ataizi, 2016; Güler et al., 2014; Hidayanto et al., 2017; Nadiyah & Faaizah, 2015; Patel et al., 2018). Güler et al. (2014) described a study in which ADDIE guided the efforts of developing e-learning for a comparison between integrating technology, such as desktop

computers and mobile devices, to present topics on the uses of multimedia. Similarly, Ozmen et al. (2018) explained instructional designers associated the ADDIE instructional design process with e-learning development. In one instance, using ADDIE when developing a multi-media-based deliverable, Asuncion (2016) found (a) improved usage of educational technology, (b) increased levels of collaboration, and (c) increased motivation. In another example, Tobase et al. (2018) credited the use of the ADDIE instructional design process for the integration of simulations and self-reflective activities for a basic-life support curriculum hosted on a Moodle (modular object oriented distance learning) platform.

Nadiyah and Faaizah (2015) followed the ADDIE design process to uncover the design expectations for technology integration with a collaborative pedagogy for nutrition training online. In contrast, Ozmen et al. (2018) found instructional designers added tasks to or removed tasks from an instructional design process when designing discussions and recorded sessions on foreign language skills hosted by a Moodle platform. Missing from these studies were the perspectives of instructional designers on the usefulness of an instructional design process (linear versus iterative) when altering steps while making design decisions for e-learning solutions.

Although instructional designers chose ADDIE, the subjects for e-learning differed. For example, Gavarkovs et al. (2019) pointed out flexible attributes of the ADDIE instructional design process for designing e-learning for healthcare training. For example, Gavarkos et al. also followed the ADDIE instructional design process to use scalable internet technologies to deliver procedural healthcare intervention training on a

specialized platform in which the pedagogy included present and practice through story-based videos. Furthermore, the instructional designers followed the ADDIE instructional design process for nurse practitioners studying diabetes (Hasfal, 2018). In Hasfal's study (2018), ADDIE was blended with Kolb's experiential learning constructs for the integration of audience-participation technology to interact with the presenters who were covering topics related to the management of patients with diabetes.

Similarly, Patel et al. (2018) used ADDIE to develop iterative e-learning prototypes for employees in behavioral healthcare programs. In a like manner, Lasky (2018) pointed out the ADDIE model could also be non-linear. Integrating technology, Patel et al. used authoring tools to blend audio and video components to present procedural content on individual placement treatment programs. However, the instructional designers' perspectives on the usefulness of an instructional design process were limited to descriptions of overall benefits.

In contrast, Gogineni et al. (2019) used a theoretical approach by Gagné for applying an instructional design process for media development for pharmacotherapeutic knowledge. Handshaw (2014) explained the ADDIE instructional design process lacked collaborative meetings. After exploring the SAM instructional design process and noting benefits, Lababidi and Munshi (2015) acknowledged the development team selected the ADDIE instructional design process for designing virtual-reality for integrating 3D simulations for endovascular instruction. Additionally, Lababidi and Munshi pointed out the medical curricula design team worked through the phases of the ADDIE instructional

design model to define the content, such as suturing and needle positioning, and pedagogy to include scenario-based interactions through advanced technologies.

Generally, educators expect consistent outcomes using instructional design processes (Hodell, 2016). However, some instructional designers achieved mixed-quality learning solutions by using faulty and imperfect instructional design processes (Hodell, 2016; Nadiyah & Faaizah, 2015). Moreover, O'Neill (2016) discovered a gap in the literature regarding instructional design processes. Exploring the perspectives of instructional designers might reveal less than optimal factors of the usefulness of an instructional design process (linear and iterative) when making design decisions for e-learning deliverables.

Some instructional designers who propose intervening learning solutions apply the ADDIE instructional design process. Hidayanto et al. (2017) found improved learning outcomes when educators followed the ADDIE instructional design process for a game-based learning strategy carried out with multimedia. For example, Hidayanto et al. integrated the RPG Maker VX ACE application for a game-based design for an adventure game instructional strategy to introduce basic programming concepts. Instructional designers used ADDIE for developing videos to fill a gap of non-existent online materials (Heady & Vossler, 2017). In educational settings, Asuncion (2016) accredited the use of ADDIE by instructional designers as having contributed to the successful result of a technology-rich learning solution for teacher development. Furthermore, O'Neill (2016) reported librarians used ADDIE to guide choices about the inventory in a content

management system. Moreover, instructional designers followed the ADDIE instructional design process with advanced technology.

Continual advancements in technology require an instructional design process that supports making design decisions for e-learning. An example of advanced technology includes augmented-reality applications (Gartner, 2018). Majid et al. (2015) selected the ADDIE instructional design process to (a) analyze the needs of the learners, (b) design the structure of the problem-based scenario, and (c) develop augmented-reality-based training. Following ADDIE, Majid et al. demonstrated TPACK (Koehler & Mishra, 2006) for a microprocessor curriculum that included augmented-reality solutions accessible from tablets and smart devices. Additionally, Majid et al. designed group discussions as part of the instructional strategy.

Similarly, Pantelić and Vukovac (2017) followed the ADDIE instructional design process to guide the development process for an augmented-reality application named Aurasma, also known as HP Reveal (n.d.). Pantelić and Vukovac used ADDIE to guide the design decisions for integrating augmented-reality technology with active learning through layered presentations, such as simple images, descriptive text, and videos of computer components. However, Pantelić and Vukovac modified the process by excluding the evaluation phase, which was nonapplicable.

In another example, Chiu (2017) utilized the ADDIE model to develop a virtual reality learning solution using the Google Cardboard software with UNITY 5.6 and Reallusion iClone 6.5 for improving native-language proficiency of children. Similarly, Yu et al. (2021) developed virtual reality-based condition-action instruction for coffee

brewing by following the ADDIE instructional design process. On the contrary, Chandrasekera and Yoon (2018) did not identify an instructional design process for use with augmented reality and virtual-reality tools. Instead, Chandrasekera and Yoon explained instructional designers applied Kolb's learning theory and Gardner's multiple intelligence theory when designing interfaces for e-learning interactions. Similarly, Okoh et al. (2017) pointed out the need for a tool with integrated technologies to support web-based education for biometric fingerprint recognition. However, Okoh et al. did not prescribe an instructional design process or pedagogy for learning how to use web-based technologies. Perhaps, exploring the perspectives of instructional designers on the usefulness of an instructional design process (linear versus iterative) might reveal insight into designing e-learning to support knowledge and skills acquisition for innovative ways to integrate technology.

Notable is how some authors describe ADDIE in terms of SAM attributes. The characteristics of SAM cyclical development, repetitive collaborative, and purposeful alignment with online learning development (Allen, 2012). Nadiyah and Faaizah (2015) established the ADDIE instructional design process as applicable to online projects. Some researchers described the ADDIE instructional design process as iterative (Heady & Vossler, 2017; Nadiyah & Faaizah, 2015). Specifically, Nadiyah and Faaizah (2015) expanded the evaluation with iterative user acceptance testing.

About development practices, Durak and Ataizi (2016) selected the ADDIE instructional design process to guide the design of the programming-language curricula for a distance-learning program. Within the process, team members scheduled repeated

collaborative sessions before piloting the online course. Moreover, Durak and Ataizi integrated technology to support a pedagogy that included communication through chat postings and file sharing within an Adobe Connect environment. In contrast, Czeropski and Pembrook (2017) and O'Neill (2016) acknowledged the deliberate linearity of ADDIE in which the team focused on the completion of each phase before moving to the next set of tasks.

Iterative Instructional Design Processes

Being agile occurs when instructional designers innovatively prioritize the needs of learners and rapidly develop small segments for review and use (Torrance, 2014a). Additionally, McAvoy et al. (2012) categorized being agile as working faster to meet increasing demands at high levels of quality. Accordingly, when applying agile principles, some instructional designers streamlined processes. Other instructional designers reduced development time. Still, others offered cost-effective solutions (Allen, 2016). Instructional designers might learn from other instructional designers who experienced successful outcomes through the use of instructional design processes.

Past Applications

Understanding the usefulness of an instructional design process begins with a historical account. Historically, a software committee introduced agile principles in the 2000s publication series, the "Agile Manifesto" (Birkinshaw, 2018; Dutton, 2018; Rubio, 2018). Kautz (2011) explained how software developers utilized agile practices designed innovative products and services. Responding to these new methods, some leaders revised procedures and policies to include agile principles (Meredith & Frances, 2000).

For instance, organizational leaders in non-software divisions adopted agile methods (Birkinshaw, 2018: Dutton, 2018; Rubio, 2018). In another example, an HR team followed agile process management for regulatory compliance (Rubio, 2018). Understanding the usefulness of an instructional design process (linear and iterative) might help instructional designers make informed decisions about the integration of technology in e-learning within the context of business practices.

Several iterative instructional design processes were introduced over the years. Allen (2012) pioneered SAM for e-learning solutions by leveraging agile principles to design an iterative instructional design process for developing e-learning solutions. SAM is not the only iterative instructional design process (Ulrich, 2017). One iterative instructional design process was introduced by Kranch (2008, as cited in Ulrich, 2017) before SAM. However, Allen's (2012) introduction of SAM prompted the use of agile practices and the ongoing comparisons of linear and agile models, providing a context for an exploration of perspectives of instructional designers about instructional design processes.

Regarding agility, instructional designers iteratively reveal discrepancies through manageable revisions (Allen, 2016). Additionally, Norberg et al. (2017) reported some instructional designers developed a blend of information and communication technologies for a physics curriculum through iterative development. In the proposed study, the perspectives of instructional designers of an instructional design process (linear and iterative) when making design decisions for e-learning solutions might add to the historical context of the discipline.

With SAM, instructional designers (a) had more control over development time, and (b) managed the expectations of stakeholders (Allen, 2012). Instructional designers relied on feedback for an iterative series of approximations toward an optimal learning solution (Sites & Green, 2014). Additionally, Arshavskiy (2013) reported instructional designers used SAM for rapid prototyping smaller, manageable segments to reduce development time and meet the needs of learners. By uncovering the perspectives of instructional designers might provide insight into trends regarding iterative instructional design processes for e-learning solutions.

Agile Practices—Then and Now

Some instructional designers used agile practices for developing e-learning solutions (Arshavskiy, 2013; Bai et al., 2018; Hunter, 2016; Roth et al., 2016; Sites & Green, 2014). In a historical context, researchers revealed the adoption of agile practices by non-technical groups in the early 2000s (Meredith & Frances, 2000; Crawford, 2004; Koneru, 2010). Roth et al. (2016) pointed out Michael Allen's shortened SAM as an instructional design process influenced decisions on the rollout of integrated technology for e-learning with a scavenger hunt for pedagogy and library orientation as the content. The quality tenets of the SAM instructional design process include (a) continual improvement, (b) increased productivity, (c) shortened development durations, and (d) earlier availability of prototypes (Allen, 2012).

Historically, instructional designers adhere to established, new, or combinations of instructional design processes to develop e-learning solutions. Roth et al. (2016) chose the SAM instructional design process to meet the development criteria. Similarly, Lockee

and Song (2016) selected an agile instructional design process for an AECT legacy project. Conversely, Díaz-Reales and Aguaded-Gómez (2015) pointed out the SAM instructional design process included ADDIE factors for optimal multimedia development with information and communication technologies, such as videos and rapid-prototyping. However, some instructional designers found established procedures, such as ADDIE, too rigid to meet authentic learning needs regarding e-learning design and development (Crawford, 2004; Koneru, 2010; Villachica et al., 2010).

Alternatively, agile techniques include flexible methods for (a) iteration, (b) collaboration, and (c) reduction in timelines. For example, Sugar and Luterbach (2016) stressed the importance of collaborative opportunities to avoid ineffective uses of multimedia-based materials and poor integration of technology. Additionally, Sugar and Luterbach pointed out teams not adhering to an instructional design process led to unexpected outcomes, such as a misalignment of technology. Woszczynski et al. (2021) explained instructional designers must plan ahead when using an agile instructional design process to minimize development time. Additionally, Lang (2016) demonstrated being agile meant a rapid response to reduce the time for availability. Furthermore, some instructional designers reported shorter timelines using iterative instructional design processes (Allen, 2012).

At the core of an agile instructional design process is the goal of producing a minimum viable product. According to Radin (2018), a change maker, "…should aim to iterate toward a minimum viable product ('MVP') …" (p 83) and "…solves for the original problem statement" (p. 83). The reasons for moving to agile-approaches might

depend on what employees discovered missing from commonly used traditional methods. Even though organizational leaders faced challenges when introducing agile practices, they experienced gains in process improvement, a competitive edge, and reductions in cost and labor (Meredith & Frances, 2000).

Agile practices of instructional designers include rapid prototyping. Radin (2018) stated prototyping fosters a dialog by stating "teams that embrace prototyping stimulate innovation…" (p. 85). After comparing processes, Roth et al. (2016) revealed the ADDIE instructional design process did not meet the criteria for rapid prototyping. In another example, the instructional designers revised the ADDIE instructional design process by making the phases cyclical for continuous improvement when using technology for literacy instruction (Koneru, 2010). In a similar example, Gawlik-Kobylińska (2018) described how a linear approach morphed into an agile approach with unplanned tasks, continuous collaboration, and rapid prototyping due to project requirements.

Agile methods in workflow might include repetitive tasks for refinement and continuous modifications (Bai et al., 2018). Accordingly, instructional designers chose to use agile instructional design processes for continual improvement (Hunter, 2016; Radin, 2018). Hunter (2016) pointed out some instructional designers made continuous improvements until meeting their criteria for the completion of an e-learning solution. Radin (2018) refers to this outcome as the MVP, which is significant for the availability of solutions in less time. Not all instructional designers adopted iterative methods.

Even when instructional designers adapted workflows to include repetitive steps, their approaches differed. In one example, Villachica et al. (2010) found instructional

designers using instructional software applications blended ADDIE with nonlinear, iterative processes for rapid prototyping and usability testing. Notably, some instructional designers continued to use non-iterative instructional design processes for technology-based learning solutions (Crawford, 2004). In contrast, Handshaw (2014) acknowledged some instructional designers chose alternative instructional design processes. In another instance, some instructional designers did not use any formal instructional design processes (Ertmer et al., 2008, as cited in Gray et al., 2015; Fanning, 2008).

There are considerations for implementing instructional design processes, such as altering work practices (Gawlik-Kobylińska; 2018; Lockee & Song, 2016; Torrance, 2014a). For example, based on the evaluation of an e-learning platform hosting a game-based cultural awareness online training, Gawlik-Kobylińska (2018) pointed out the collaboration and communication competencies of e-learning instructional designers might have been factors for successful learning outcomes. Additionally, Jung et al. (2018) followed the SAM instructional design process to generate e-learning alpha and beta iterations, leading to a final version for distribution. Developing e-learning to run on a computer, tablet, or smartphone, Jung et al. described how team members designed and delivered 3D printer training using short segments of video clips. Synonymous with agility is working with smaller amounts of information. Accordingly, some instructional designers published smaller segments to meet the critical requirements for a learning intervention (Torrance, 2014a). Instructional designers enhanced the learning solutions with each new iteration by incremental development of the content in small amounts.

Some instructional designers follow iterative instructional design processes that include project management tasks for the delivery of e-learning solutions. For example, Bai et al. (2018) explained overseeing agile projects includes flexible project practices to manage iterative tasks. According to Cappelli and Tavis (2018), business leaders noted a lengthy adoption of agile practices by nontechnical members of organizations who ultimately integrated agile criteria into policies and procedures for recruiting, hiring, and performance-review responsibilities.

Even with successful outcomes, managers faced resistance for implementing agile practices (Bai et al., 2018; Cappelli & Tavis, 2018). Bai et al. (2018) explained managers struggled with the adoption of agile practices and the preparation of employees who needed agile knowledge and skills to ensure success. Similarly, Cappelli and Tavis (2018) found as employees resisted change, the leaders were able to shape acceptance through a continuous feedback flow from team members to managers. Exploring the perspectives of instructional designers might reveal the criteria for following and accepting the adoption of agile, iterative instructional design techniques for the development of e-learning solutions.

Present Applications

Instructional designers employ instructional design processes when implementing learning solutions to increase knowledge, improve skills, and augment the performance of their learners (Tamez, 2016). However, there appear to be diverse uses of agile instructional design processes with technology. Some instructional designers used iterative instructional design processes for (a) technology-based instructional design, (b)

rapid prototyping, and (b) content refinement. For example, Allen (2016) explained some instructional designers used the SAM instructional design process to avoid costly rework.

Similarly, Mehran et al. (2017) revealed an e-learning project team facing short timelines followed an iterative instructional design process. Mehran et al. followed a shortened version of the SAM instructional design process to integrate Open Educational Resources, English Kickstart options, and web-based interactions to present speaking and writing activities to deliver English language curricula. Furthermore, in cases, some instructional designers using iterative methods introduced innovative ways to develop e-learning (Allen, 2016; Roth et al., 2016). However, some instructional designers found limitations with agile instructional design processes (Czeropski & Pembrook, 2017; The Thiagi Group, n.d.).

Overall, when using SAM, instructional designers (a) used rich, multimedia solutions for gamification on multiple platforms and (b) experienced shorter cycles for storyboarding and rapid prototyping cycles (Tamez, 2016). Alternatively, some instructional designers modified the SAM instructional design process with components from the ADDIE instructional design process. Whereas other instructional designers changed the ADDIE instructional design process with components from SAM instructional design process (Agudelo & Salinas, 2015; Nadiyah & Faaizah, 2015; The Thiagi Group, n.d.). For example, Czeropski and Pembrook (2017) explained some iterative instructional design processes lacked an ADDIE analysis step for rapid prototyping for e-learning. Additionally, Agudelo and Salinas (2015) reported some educators altered ADDIE steps to develop training materials on digital competencies.

Even though Nadiyah and Faaizah (2015) followed an ADDIE instructional design process, they integrated agile steps, thereby iteratively prototyping for user acceptance. Similarly, the educators of the Thiagi Group (n.d.) altered ADDIE steps to perform agile, rapid development to meet JIT requirements. Similarly, Heady and Vossler (2017) pointed out ADDIE is cyclical versus being linear.

Notably, instructional designers followed an iterative instructional design process with various technologies (Agudelo & Salinas, 2015; Arimoto et al., 2016; Carlson & Gagnon, 2016; Jung et al., 2018; Tamez, 2016). For example, Open Educational Resources (OERs) contributors adopted an iterative instructional design process to design tools (Arimoto et al., 2016). In another instance, instructional designers chose the SAM instructional design process for designing Augmented Reality Integrated Simulation Education (ARISE) scenario-based learning solutions using Augmented Reality and Interactive Storytelling (ARIS) software (Carlson & Gagnon, 2016). According to Carlson and Gagnon (2016), the selection of SAM was to ensure (a) shorter development cycles and (b) continuous feedback for quality. By exploring the perspectives of instructional designers might uncover valuable insights into the selection process of instructional design processes to use for e-learning technologies.

Agile Practices in an Organization

At the core of organizations are standard operating procedures used to drive quality. Essentially, exploring instructional design processes within operations cannot be minimized. Within some organizations, some instructional designers used agile instructional design processes (Allen, 2016). Agile methods include (a) applying

continuous improvement changes, (b) being ready to address issues, and (c) engaging in proactive problem-solving (McAvoy et al., 2012). In this study, the instructional designer perspectives on the usefulness of an instructional design process (linear and iterative) when making design decisions for e-learning solutions.

Concerning continuous improvement changes, some learning leaders integrated agile practices into business processes to meet budget and time constraints (Hunter, 2016; Rubio, 2018; Sekiguchi et al., 2017). Importantly, the leaders evaluated the understanding of employees about the changes being implemented before implementation (Maheshwari & Vohra, 2015). Furthermore, some leaders revised procedures to include collaborative approaches to achieve continuous improvement (Rubio, 2018; Sekiguchi et al., 2017). According to Sekiguchi et al. (2017), employees reshaped the perspectives of the boundaries for roles, responsibilities, and work experiences. Although some leaders experienced successful change outcomes, other leaders struggled.

Often adopting agile practices, organizational leaders faced challenges. The obstacles included (a) authorization gaps in the structure of an organization when making decisions, (b) difficulties implementing revised procedures, (c) conflicting requirements of technology (Lappi & Aaltonen, 2017). Careful consideration must be taken when adopting or revising business processes for agile practices. Most organizational leaders made investments in instructional design processes for e-learning interventions in anticipation of reduced development time, decreased costs, and improved learning satisfaction (Allen, 2016). However, when leaders overlooked the perspectives of employees, their change strategies failed (Maheshwari & Vohra, 2015).

With similar experiences, instructional designers applied agile practices for developing e-learning solutions to reduce cost, remain on a budget, and maximize work efforts (Hunter, 2016). Hunter (2016) cautioned the number of iterations should not exceed the creation of a minimal viable product. In contrast, Piskurich (2015) offered an opposing view of alignment between the use of the linear ADDIE instructional design process and the selection of authoring software as criteria for investments. As part of the preparation, organizational leaders must have the information they need to make informed decisions about the selection of an instructional design process (linear versus iterative) for e-learning development to meet time and budget constraints.

The status of organizational readiness is multifaceted. Leaders recognized a relationship between readiness and adaptability (Rusly et al., 2015). Emphasizing how organizations reach a state of agile readiness, Sharp and Lang (2018) described the usefulness of instructional design processes mirroring agile methods to design role-playing and self-directed activities that shaped employee training. According to Birkinshaw (2018), the integration of technology in business practices transformed ways management made informed decisions and how employees in agile organizations acquired new skills for prototyping.

Organizational leaders must provide employee training to support the shift from longer linear approaches to shorter collaborative ones in which teams meet requirements of continuously changing technology and collect feedback from clients before product releases (Mendonca & Sachitanand, 2018). For example, employees must be able to respond to change requests (Birkinshaw, 2018; Dutton, 2018). Moreover, Sekiguchi et al.

(2017) identified autonomy and collaborative experience as factors in shaping the response to change. Dutton (2018) explained managers faced obstacles moving from linear to iterative methodologies in various areas of the business, which means that when organizational leaders implement changes, they must have the information needed to make informed decisions. In addition to product development, enterprise learning management might face similar obstacles when replacing linear instructional design processes with iterative ones. Exploring the perspectives of instructional designers might provide insight into the attitudes about changes when using instructional design processes as one way to ensure organizational readiness.

Concerning problem-solving, some organizational leaders promoted self-directed practices by instructional designers (Birkinshaw, 2018). Leaders recognized a relationship between work engagement and performance (Lazauskaite-Zabielske et al., 2018). As change agents, leaders must implement a plan to ensure quality assurance and methods for evaluating the attitudes of employees about the changes (Maheshwari & Vohra, 2015). Additionally, leaders must implement quality benchmarks at critical points in a process for monitoring outcomes (Varney, 2017). Through discovery, the instructional designers' perspectives on the usefulness of an instructional design process (linear versus iterative) when making design decisions for e-learning might reveal quality indicators for technology, pedagogy, and content choices.

Tailoring Instructional Design Processes

Some instructional designers found the need to alter or add steps when following a scripted instructional design process as defined by learning organizations. For example,

some instructional designers follow a *linear* instructional design process (Chiu, 2017). Allen (2006) pointed out instructional designers re-evaluated instructional design processes, such as ADDIE, to move forward with innovative approaches. In some instances, the instructional designers altered the steps of the linear instructional design processes that were inefficient (Asghari & Fatemi, 2016; Pantelić & Vukovac, 2017; van Rooij, 2010). Accordingly, the instructional designers blended tasks from multiple instructional design processes to individualize e-learning development. For instance, Asghari and Fatemi (2016) simplified a linear instructional design process by performing steps in parallel for e-learning solutions. In another example, Pantelić and Vukovac (2017) discovered that some instructional designers added an analytic component.

On the other hand, some instructional designers follow an *iterative* instructional design process similar to agile software development (Allen, 2016; Habibollah & Omid, 2016; Sites & Green, 2014; Tamez, 2016). Tamez (2016) acknowledged some instructional designers altered linear processes, such as ADDIE, by incorporating continual changes through frequent collaboration. For example, some instructional designers applied hybrids of both linear and agile instructional design processes (Asghari & Fatemi, 2016; Gawlik-Kobylińska, 2018; The Thiagi Group, n.d.). In another example, some instructional designers customized linear and iterative tasks (Habibollah & Omid, 2016). Additionally, some instructional designers supplemented processes by adding non-design responsibilities regarding project management (Gardner et al., 2017; Hodell, 2016; van Rooij, 2010). In the current research, the perspectives of instructional designers regarding deficiencies are unknown about the instructional design process.

Opposing Views of Instructional Design Processes

Instructional designers choose an instructional design process based on the intervention and context of what will be the best fit for the business or workplace culture. The experiences of instructional designers differ with the use of instructional design processes to develop e-learning solutions. Along those lines, some instructional designers experienced less than optimal outcomes using faulty instructional design processes (Allen, 2016). Through the exploration of perspectives, instructional designers might learn from the experiences of other instructional designers in similar contexts.

According to Hodell (2016), a mismatch existed between processes and inconsistent practices in some cases. For instance, Czeropski and Pembrook (2017) found mixed views about ADDIE in which some instructional designers discovered a lack of flexibility. Moreover, other instructional designers experienced similar disadvantages of linear instructional design processes (Allen, 2012; Allen, 2016; Czeropski & Pembrook, 2017; Hidayanto et al., 2017; Nadiyah & Faaizah, 2015). In some situations, instructional designers adjusted their approaches as needed (Arshavskiy, 2013; Sites & Green, 2014). In sharp contrast, Hidayanto et al. (2017) pointed out instructional designers chose ADDIE for designing technology-rich learning experiences. Alternatively, some organizational leaders selected agile processes (McAvoy et al., 2012; Roth et al., 2016). While in other organizations, leaders chose or created hybrids of instructional design processes (Asghari & Fatemi, 2016; Gawlik-Kobylińska, 2018). Asghari and Fatemi (2016) divided analyses into segments, including content, context, and technology. There appear to be differing experiences by instructional designers when adapting an

instructional design process for e-learning. Although the instructional design process might have prescribed steps, some instructional designers alter the approaches as the project demands are realized.

Based on experiences in educational contexts, some instructional designers formed perspectives about which instructional design processes to use (Allen, 2012). Some instructional designers utilized reflective practices to determine which instructional design processes to use (Tracey et al., 2014). Alternatively, Kinuthia (2014) proposed some instructional designers integrated components into instructional design processes based on their work. While some instructional designers moved to iterative instructional design processes, other instructional designers continued to use traditional, linear instructional design processes (Allen, 2016; Arshavskiy, 2013; Tracey et al., 2014). Battle (2019) reported instructional designers in academic settings did not reveal preferences between a linear and iterative instructional design process when developing online training. Instead, the instructional designers weighed the advantages of each type for the learning need before applying the instructional design process. Moreover, Battle found instructional designers realized elements of creativity and flexibility when using any instructional design process.

Summary and Conclusions

The proposed study addresses two RQs, what are instructional designers' perspectives of the usefulness of a linear instructional design process when making design decisions for e-learning solutions, and what are instructional designers' perspectives of the usefulness of an iterative instructional design process when making

design decisions for e-learning solutions. Regarding technology, pedagogy, and content knowledge, instructional designers must have technical competencies to develop e-learning solutions (Celik et al., 2014; Sahin, 2011). Chapter 2 included the conceptual framework for the exploration of instructional designer perspectives on the usefulness of an instructional design process (linear and iterative) when making design decisions for e-learning solutions. Some instructional designers experienced successful outcomes using the ADDIE instructional design process with educational technology (Asuncion, 2016; Hidayanto et al., 2017; Nadiyah & Faaizah, 2015). Whereas other instructional designers applied iterative instructional design processes to make decisions regarding the design of the delivery pace through information and communication technologies (Norberg et al., 2017). Alternatively, some researchers suggested using the SAM instructional design process (Allen, 2016; Tamez, 2016). There seem to be opposing choices on the use of instructional design processes in instruction.

Chapter 3 included details about recruitment, data collection, data analysis, and ethical procedures. I provide the rationale for using a basic qualitative study to align the methodology with the RQs. Chapter 3 includes a description of the conceptual framework and a list of the RQs. This chapter includes descriptions for obtaining approval from the Walden's IRB and seeking permission from the learning development department head to recruit participants.

Additionally, in Chapter 3, I describe the use of the interview protocol for the data collection plan. I provide the descriptions of the phases in the data analysis plan, which includes In Vivo coding to label segments in the transcriptions and pattern coding to

group similar In Vivo codes into categories to develop theme statements relevant to the RQs. Chapter 3 includes procedures to address ethical concerns for participation, researcher bias, and trustworthiness, as well as how I stored the data in my home office in a locked area accessible only by myself and use NVivo (QSR International, n.d.) for managing the electronic data. Furthermore, this chapter includes descriptions of credibility, transferability, dependability, and confirmability.

Chapter 3: Research Method

The purpose of this basic qualitative study was to explore the perspectives of experienced corporate instructional designers on the usefulness of an instructional design process (linear and iterative) when making design decisions for e-learning solutions. Exploring these perspectives revealed how instructional designers apply an instructional design process and may assist instructional designers and stakeholders in making informed decisions about design, development, and delivery experiences for instruction. Little research on the usefulness of instructional design processes has included corporate instructional designers' perspectives or has provided insight into budgeting, timing, or quality when using instructional design processes.

Chapter 3 includes explanations for using a basic qualitative methodology for conducting interviews and collecting instructional designers' perspectives to address the RQs. Additionally, Chapter 3 includes the descriptions for the participant selection process, data collection plan, and data analysis methods. I describe the interview protocol for data collection and a phased approach for data analysis. Furthermore, Chapter 3 includes the descriptions of how I safeguarded the data and obtain IRB approval (Walden University, n.d.-a) and stakeholder permission to recruit the participants. This chapter includes definitions for trustworthy factors regarding credibility, transferability, dependability, and confirmability. Finally, I describe ethical approaches that ensure the well-being of the participants regarding voluntary participation and confidentiality.

Research Design and Rationale

A basic qualitative study method was selected to explore the perspectives of instructional designers on the usefulness of an instructional design process when making design decisions for e-learning solutions. Researchers use a basic qualitative study to gain an in-depth understanding of a problem by collecting and analyzing descriptive data (Merriam & Tisdell, 2016). In a qualitative study, the intent is to collect data through interviews, inductively look for repeated patterns, and gain an understanding of the perspectives of the participants (Merriam & Tisdell, 2016). Furthermore, a qualitative study is one in which the researcher examines data that emerge from an authentic bounded phenomenon (Yin, 2018). The following RQs guided this study:

- RQ 1: What are instructional designers' perspectives of the usefulness of a linear instructional design process when making design decisions for e-learning solutions?
- RQ 2: What are instructional designers' perspectives of the usefulness of an iterative instructional design process when making design decisions for e-learning solutions?

Even though a basic qualitative study is common (Merriam & Tisdell, 2016), the choices for research design, data collection, and data analysis will ensure a rigorous approach (Ravitch & Carl, 2021). The researcher conducts a qualitative study to convey an understanding of how participants describe their perspectives in an authentic context in which the answers to the RQs might be revealed (Merriam & Tisdell, 2016). For this study, I used a basic qualitative study to inquire about and interpret the instructional

designers' perspectives relating to the usefulness of instructional design processes for the discipline of instructional design in a corporate setting.

Role of the Researcher

For this study, I was the sole researcher. As such, I was responsible for all aspects of data collection and analysis. Because the participants were colleagues in the same learning development department, I adhered to Walden University guidelines on conducting a study in one's work area (Walden University, n.d.-a). Researchers prepare for handling unexpected and non-relevant responses when interviewing acquaintances (Seidman, 2019). Although the participants were colleagues, instructional designers in the organization worked independently with different SMEs on project teams within the organization. To manage the relationships, before conducting each interview, my role shifted from that of a colleague to a researcher. I also had no supervisory responsibilities relating to their job performance and no personal relationships with participants. Additionally, I did not offer any monetary or equivalent incentive to participants for participation; participation was voluntary. However, rapport is a formal balance of ensuring respect and comfort level of the participant with collecting the data (Seidman, 2019). Accordingly, I built a researcher–participant rapport emphasizing each participant's well-being, ensuring confidentiality, and sharing the contributions from which other instructional designers and stakeholders might learn new knowledge.

As the researcher for this study, I recognized my personal biases relating to the usefulness of instructional designer processes. Throughout my career as an instructional designer, I have used various types of instructional design processes. Earlier in my role as

an instructional designer, I used the ADDIE instructional design process, which is a linear approach (Mercadal, 2015). As my experience with e-learning publishing tools increased, I continued to use ADDIE. However, since 2012, I adopted an iterative approach, the SAM (Allen, 2012) to develop diverse learning solutions, including e-learning courses. Additionally, I have used a blend of linear and iterative instructional design approaches to develop e-learning solutions. Although I have experienced successful learning outcomes using both linear and iterative instructional design processes, as well as applying theoretical models, I remained open to the findings revealed in the study. I am an advocate on the use of advanced technology, such as augmented reality, to provide just-in-time training solutions. I also continually evaluate the latest technology trends for designing and developing e-learning solutions. These experiences were independent of the use of instructional design processes and did not play a role in the study. As I progressed through the study, I recorded my thoughts in a research journal to ensure the focus remained on the participants' perspectives, beliefs, and practices, and not my experiences. A full description of the procedures to address researcher bias is in the trustworthiness section later in this chapter.

Methodology

In this section, I cover participant selection, instrumentation, recruitment, data collection, data analysis, trustworthiness, and ethical procedures. Purposeful sampling was used to select participants from a group of instructional designers who work in a learning development department. The questions in the interview protocol align with both the conceptual framework (Merriam & Tisdell, 2016) and related literature. The

interview data were analyzed inductively, which meant I looked for the themes that emerged from the data by using In Vivo and pattern coding strategies for theme development (Saldaña, 2021). Participation was voluntary and confidential, and steps were taken to ensure the accuracy of the data and safety of the participants.

Participant Selection

The participants were selected from a group of 12 corporate instructional designers who are geographically dispersed within a learning development department in a business. These instructional designers were mandated by the organization to move from a linear to an iterative instructional design process. This section includes information about sample size, sample type, and participant selection.

Sample Size

Researchers use purposeful sampling to select participants with the experiences to provide meaningful data through interviews (Ravitch & Carl, 2021). The participants in this study have the instructional design competencies to address the RQs about the usefulness of instructional design processes for developing content for e-learning solutions. For this study, nine instructional designers were selected from a population of 12 instructional designers who met the criteria in the learning development department: active instructional designers, had at least 1 year experience using ADDIE, and had at least 1 year of experience using SAM (see Appendix A). The sample size represents one half of the available population and is based sample size on information from several studies, which suggested a sample size of 3–5 or 4–5 (Daniel, 2012; Emmel, 2013; Mason, 2010; Patton, 2015; Salkind, 2010).

Although the sample size is small, the study participants have work experience in the instructional design discipline, including integrating technology, defining pedagogies, and developing content. By having this work experience, the participants provided detailed perceptual data. In qualitative studies, researchers who use a small sample are interested gaining insight into a phenomenon to uncover in-depth data needed to answer RQs (Patton, 2015).

Sampling Strategy

Purposeful, nonrandom sampling was used to select instructional designers. Researchers use purposeful sampling for a qualitative study methodology that might reveal an in-depth understanding of a research problem (Patton, 2015). The criteria for the purposeful sampling for this study included (a) each participant was an instructional design in the learning development department, (b) each participant had at least 1 year of experience working with a linear and iterative instructional design process, and (c) each participant had experience with e-learning publishing tools. Individuals not meeting the stated criteria were not asked to participate in the study. By using purposeful sampling, participants with the knowledge of and experience with instructional design processes revealed data addressing the RQs that were relevant to other instructional designers and stakeholders in learning development departments.

Instrumentation

The data collection instrument for this study was an interview protocol (Appendix A), which was sufficient for this basic qualitative study because interviews were the only data set. The researcher-developed, semistructured protocol consists of open-ended

interview questions (see Allen, 2017). A semistructured interview protocol includes a blend of pre-defined, open-ended questions and clarifying questions based on the responses of each participant (Merriam & Tisdell, 2016). For this study, the questions were carefully constructed, so they would not influence the participants' perspectives (DiCicco-Bloom & Crabtree, 2006; Wang & Yan, 2012) and promoted an unbiased exploration. Overall, the interview questions elicited responses that answered the RQs. Additionally, the questions in the interview protocol (Appendix A) were formed using the constructs of the TPACK model (Koehler & Mishra, 2005). For the construction of the researcher-developed interview protocol, I adhered to the following practices.

- Create open-ended questions: Open-ended questions are used to enable each participant to answer questions that address the RQ; however, the open-ended questions cannot be too general and without a context to be effective (Given, 2008).
- Consider the phrasing: To promote in-depth, descriptive responses, I followed the phrasing and length criteria as defined by Drew et al. (2008). For this study, the interview questions included familiar phrasing and terminology to prompt the participants' responses about the usefulness of using an instructional design process when making design decisions on e-learning solutions. Furthermore, the questions and prompts had less than 20 words for clarity (Peterson, 2000) and did not include language leading the participants' perspectives in a specific direction.

- Set the order of the questions for the inquiry: The order of the questions moved from general experiences to specific knowledge-based perspectives to build the confidence of the participants and explored general to detailed descriptions. Using the TPACK model (Koehler & Mishra, 2005), the questions moved from perspectives of technological knowledge, pedagogical knowledge, to content knowledge. This order was pertinent to the general experiences of using instructional design processes when making design decisions about e-learning solutions.

The interview questions were designed to answer the RQs, whereas follow-up questions were designed to clarify unclear responses (Seidman, 2019).

Procedures for Recruitment, Participation, and Data Collection

This section includes details about the processes for recruitment, participation, and data collection. It is recommended to directly recruit from a group in an organization to meet the criteria for a study (Collins & Gray, 2015). Although it was hoped six designers would agree to participate, nine designers did consent to participate.

Recruitment and Participation

After defining the participant selection strategy and having received the required IRB approval from Walden University, permission to contact potential participants who met the participant criteria was gained from the head of the learning development department (approval number 02-26-21-0667311). The steps in the recruitment procedure were as follows. First, I sent the letter of cooperation to the head of the learning development department for permission to invite participants from the organization to

participate in my study. In the introduction email, I described my role as a doctoral student and provided background information for the study. I stated the purpose of the study, participants' time requirements for one 60-minute interview, and one 25-minute member-checking activity, and requested to contact 12 instructional designers. The email contained two attachments, including an informed consent form and participant profile (Appendix A) for the head of the learning development department to review.

After receiving approval from the head of the learning development department, I sent an informed consent form to each of the participants. The informed consent form included the time requirements and participant criteria for one 45–60-minute interview and one 25-minute member-checking activity. Additionally, the informed consent form included safety guidelines, contact information, and an overview of the voluntary nature of the study and was signed by the participant. The informed consent form included my contact information for questions or concerns and a request to reply by email if interested in participating in the study.

After receiving a response, "I consent," from each potential participant, I sent an email that included a request to schedule a one-hour telephone interview at the participant's convenience. The researcher must collaborate with each participant on the logistics and timing of the telephone interview (Herzog, 2012). Interviewing by phone for data collection was chosen to minimize distractions due to extended interactions using video conferencing related to personal and business communications (Lee, 2020; Lockhart, 2020; McWhirter, 2020). I scheduled the interview to occur during a

nonworking time and be conducted from a home office or conference room area without distractions.

Data Collection

The primary source of data was individual 45–60 minute participant interviews. Perspectives of participants are qualitative data from which researchers gain insight and meaning from inquiries about a problem (Patton, 2015). In this study, I collected the instructional designers' perspectives of the usefulness of instructional design processes when making design decisions about e-learning solutions. The participants are geographically dispersed instructional designers with some working from home and others working in open-office settings. Each instructional designer who works from home was asked to select a comfortable location without distractions to participate in a telephone interview. Those instructional designers who work in an office were asked to reserve a conference room or use a quiet space area to maintain privacy for the telephone interview. Using a conference room instead of participating in an open office area adds a level of privacy for maintaining confidentiality regarding participants' identities and responses. After agreeing to the logistics of the telephone interviews, one 45–60-minute interview was scheduled with each participant. I conducted one interview per day and completed six to eight interviews over a period of approximately 6 weeks.

In this study, the primary tool for data collection was the interview protocol. Each interview was conducted using a cell phone, which was placed on speaker mode while communicating with the participant. Audacity was placed in record mode on my computer to create an audio file of the interview. Additionally, a separate portable-

recording device was set in record mode at the start of the interview. I used the portable-recording device to create a backup recording of each interview.

Using a conversational style, the expectations about the interview were set with the participant. First, I read a prepared statement about the voluntary nature of the study, the confidentiality of participants, and a request for permission to record the interview. I let each participant know when I started and ended the recording. Finally, I asked the participants if they had any questions and let them know they could stop the interview at any time without consequences.

During the interviews, I followed an interview protocol (Appendix A) to ensure the consistency of the data collection across the interviews. In addition to the questions listed in the protocol, I asked the participants to clarify their responses, when needed, to obtain in-depth data (Brinkmann & Kvale, 2015; Merriam & Tisdell, 2016; Seidman, 2019). Transitioning from the inquiry to closing statements was as critical as setting the expectations at the beginning of the interview (Brinkmann & Kvale, 2015). Most importantly, I let each participant know how to contact me if they had any questions. I thanked each participant for participating and set the expectations for the member-checking activity. After data collection and analysis were completed, I sent each participant an email with an attachment that contained the summary of the findings based on participants' responses. The email included instructions to check the accuracy of the findings and respond by email with any discrepancies about the interpretations.

Data Storage and Disposal

For security, electronic data, such as researcher notes, audio files, transcribed recordings, and emails between the researcher, head of the learning development department, and participants, is stored on a password-protected computer with backup flash drives. The computer is kept in my home office, which is a locked area only accessible by me. Electronic folders were named using an alphanumeric code to maintain the confidentiality of each participant. For example, P1, P2, and P3 were part of each file name (for example, p1_interview_recording for P1). The electronic transcription file was named p1_interview_transcription.

Printed data included transcriptions that are stored in a file cabinet in my home office, which is a locked area that is only accessible by me. Data is stored and managed using NVivo (QSR International, n.d.), an application that includes options for importing and storing media files generated during a study. I used the NVivo options for organizing and storing the files. All recorded audio files and electronic and printed transcriptions will be disposed of 5 years from the date of the published dissertation. Accordingly, after 5 years from the date of the published dissertation, I will remove the data files from the computer, destroy the flash drives, and shred the printed materials.

Data Analysis Plan

Using an inductive analysis process to answer the RQs, I explored the raw data, which are the instructional designers' perspectives of the usefulness of an instructional design process, without a predefined set of ideas. Inductive analysis is an open approach that researchers use to look iteratively for emergent themes that surface from categorizing

raw data into patterns and defining themes (Brinkmann & Kvale, 2015; Merriam & Tisdell, 2016; Patton, 2015; Seidman, 2019). For this study, the data analysis was completed in phases. These phases include preparing the files phase, reading the transcriptions phase, first coding phase, second coding phase, and preparing the theme statements phase. Each of these phases are described in the following sections.

Preparing the Files Phase

In this phase, the data was prepared and organized First, I transcribed the audio files word-for-word. I played back each recorded interview and use Microsoft Word (Microsoft, n.d.) to transcribe word for word. Each Microsoft Word file was named using an alphanumeric code, namely P1, P2, P3, and so on, which masked the participants' identities. Next, I imported each Microsoft Word file into NVivo (QSR International, n.d.) for storage and data management. The transcription commenced within a day or two of the completion of each interview. After the recorded interviews have been transcribed, and the files are saved, I began the next phase, reading the transcriptions.

Reading the Transcriptions Phase

In this phase, I carefully read the transcriptions multiple times. Patton (2015) reported researchers repeatedly read printed copies of the transcriptions to become familiar with data. Accordingly, I read each transcript for understanding and relevance to addressing the RQs. After familiarizing myself with what each participant is saying, I began the first coding phase.

First Coding Phase

In the first coding phase, I inductively analyzed the instructional designers' responses using the In Vivo coding technique (Saldaña, 2021). Corbin and Strauss (2015) pointed out researchers used In Vivo coding to analyze perceptual data for qualitative studies. Initially, I generated codes verbatim from the raw data that are the participants' own words. In the first coding phase, Saldaña (2021) encouraged researchers to code data of interest that emerge for further analysis. For example, after printing the transcriptions, I identified short phrases from the instructional designers' answers relevant to the RQs and the conceptual framework. Next, I assigned these codes to segments within the participants' responses. I underlined or highlighted and wrote the codes in the margins to label segments. At the end of this phase, I coded segments for further analysis in the second coding phase.

Second Coding Phase

To move from codes to categories, I inductively analyzed the In Vivo codes and group codes with similar characteristics. Using pattern coding, I grouped similar coded segments into explanatory categories that address the problem relevant to the RQs and conceptual framework (Saldaña, 2021). Corbin and Strauss (2015) suggested finding repetitive language as a way of grouping codes into categories. Accordingly, with pattern coding, I made connections between the coded segments in the first coding phase to form meaningful categories in the second coding phase (Creswell & Creswell, 2018; Lapadat, 2010a, 2010b; Merriam & Tisdell, 2016). I used Microsoft Excel (n.d.) to record the pattern codes.

Using Microsoft Excel (n.d.), I created columns with headings that included Transcription, In Vivo Code, Pattern Code, and Theme Statement. I pasted the transcribed data from each Microsoft Word (n.d.) file to a Microsoft Excel (n.d.) file. In the Transcription column, I included the interview question and the participants' responses. Each participant was identified using an alphanumeric code, such as P1, P2, and P3. In the In Vivo Code column, I entered the In Vivo codes from the Microsoft Word (n.d.) file used in the first coding phase. In the Pattern Code column, I inserted a pattern code representing shared similar attributes of the group of In Vivo codes (Guest et al., 2012a, 2012b; Merriam & Tisdell, 2016; Saldaña, 2021).

Finally, in the Theme Statement column, I inserted meaningful statements that describe what has been discovered from the analysis of the pattern codes relevant to understanding the problem. Seidman (2019) explained researchers must remain open-minded as they look for emergent patterns, themes, and ideas. A full description of the procedures used to prepare theme statements and handle outliers is described in the next section.

Preparing the Theme Statements Phase

To move from categories to themes, I analyzed the pattern codes to form theme statements that address the RQs. Saldaña (2021) explained researchers described one theme before moving to the next theme. Accordingly, I described each theme statement based on the emerging themes relevant to each of the RQs.

The anticipation is most of the data are categorized to form theme statements. However, planning was done for exceptions, such as discrepant data that contradict one

or more themes. Discrepant data are outliers and might not fit within the conceptual framework and might differ from the themes uncovered (Butler-Kisber, 2018). Seidman (2019) explained researchers must acknowledge any data that appear to be contradictory to or lacking consistency with themes. In Chapter 4, reported discrepant data that did not fit the themes that emerged so that the reader can judge the relevance of nonconformity. By doing so ensured the transparency of the decisions that I made for data analysis.

Trustworthiness

In this study, I carefully considered the ways to establish the trustworthiness of this basic qualitative study. Trustworthiness is an accounting of the decisions that the researcher makes about the research design, data collection methods, and data analysis techniques (Ravitch & Carl, 2021). Additionally, the researcher must adhere to the standards for credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). In the following sections, I describe how I ensured the trustworthiness of the study.

Credibility

The credibility factor of a qualitative study is similar to the internal validity in a quantitative study. To establish the credibility of a qualitative study, the researcher must reveal how the research design, data collection processes, and data analysis methods for answering the RQs were chosen (Ravitch & Carl, 2021). For this study, I used the member-checking strategy, in which each participant had an opportunity to confirm the accuracy of the findings. Member-checking occurs when participants confirm or revise interpretations of their data after data analysis (Creswell & Creswell, 2018; Lincoln &

Guba, 1985; Merriam & Tisdell, 2016; Ravitch & Carl, 2021). Moreover, the participants can play a key role in challenging the findings by using member-checking (Merriam & Tisdell, 2016; Ravitch & Carl, 2021). After data analysis, each participant was emailed a two-page summary of the findings and a request to member-check interpretations of their data for accuracy. Each participant had seven days to review the summary and respond by email with any discrepancies about the interpretations.

Transferability

To address transferability for this study, I included detailed descriptions about the context of the study, including the setting, the population, and the participants who provided the perspectives to address the research problem. Overall, transferability can occur if the researcher provides relevant descriptions of the environment, population, participants, and processes (Dick, 2014a, 2014b; Lincoln & Guba, 1985). For details about the setting, I included descriptions of the virtual and geographic characteristics of the learning development department. For details about the population, I described the group of instructional designers in the learning development department, from which a purposeful sample was selected. For details about experiences of the participants, I included descriptions of the experience and skill criteria needed to answer the RQs.

Furthermore, to address transferability, I provided details about processes for data collection and analysis. Ravitch and Carl (2021) explained the inclusion of thick descriptions of the context and participants provided the readers with the information to make informed decisions about the applicability of the findings, which will include theme statements that answer the RQs. Overall, by describing the context and experiences of the

participants, I provided information the readers can use to assess the relevance of the findings and applicability to their locations.

Dependability

To address the dependability of the study, I included an audit trail. The dependability factor of a qualitative study is similar to the reliability of a quantitative study. Ravitch and Carl (2021) pointed out the dependability of a study is the focus on the research processes. Lincoln and Guba (1985) explained researchers established an audit trail to be used to provide readers with detailed descriptions of the process, including procedures for recruitment, data collection, and data analysis. Accordingly, I provided an audit trail that included detailed descriptions of the research processes, data collection and analysis methods, and decisions to help the reader determine the stability and trustworthiness of the findings.

Confirmability

Confirmability includes the steps taken to ensure unbiased and accurate findings. Ravitch and Carl (2021) explained confirmability relates to how researchers remain objective when interpreting the data. In this study, I used reflexivity, a continuous reflection by a researcher, while conducting a study (Ravitch & Carl, 2021). Through reflexivity, researchers acknowledge prior experiences to manage biases and look for ways to be transparent so that the reader can evaluate the accuracy of the reported findings (Lincoln & Guba, 1985; Yin, 2018). Accordingly, using a reflective journal for recording personal reflections before and after conducting interviews ensured that I did

not bring any biases into the data analysis process. My personal reflections included differences between my personal experiences and those expressed by the participants.

Ethical Procedures

Researchers must account for ethical issues throughout a study. Patton (2015) identified ethical issues as providing clear explanations in the informed consent form about the purpose of the study, types of benefits, ways to ensure confidentiality, safeguarded data access, and institutional guidance. Furthermore, Creswell and Poth (2018) explained the researchers should reveal how they ethically obtain and report the findings. Ethical decisions begin with gaining IRB and local approvals and continue through conducting interviews, analyzing the data, and presenting the findings (Creswell & Poth, 2018). For this study, the following ethical procedures were adopted:

- Obtain IRB approval. I followed the guidelines defined by Walden University to obtain an IRB approval number. The process steps included submitting a form that the Walden's IRB reviewed to ensure that the ethical and research integrity criteria are met before data collection. The Walden IRB committee reviewed the form, as well as the letter that was sent to the head of the learning department. After receiving Walden's IRB approval, I sent an email to the head of the learning development department with a request to recruit participants. Additionally, I followed the guidance of the Research Ethics Support Specialist at Walden University (n.d.-a) and dissertation committee members throughout the study.

- Ensure doing no harm. As part of the Walden University requirements for doctoral students, I completed the mandatory human-subjects protection training module (Walden University, n.d.-a). This training outlined ways to ensure that no potential risks exist and reviewed ways to safeguard the participants. Simons (2009) described the fundamental principle of doing no harm in terms of interacting respectfully and with dignity. Throughout this study, I applied the principle of doing no harm as I implemented the processes and interacted with participants. For example, I adhered to the durations of the interview and member-checking procedure as outlined in the consent form. I ensured confidentiality and trustworthiness as defined in the Trustworthiness section.
- Adhere to guidelines for conducting a study in one's workplace. I adhered to the Walden University guidelines for conducting a study in one's workplace (Walden University, n.d.-a). The purposeful sampling of the population is to identify the participants who might provide answers to the RQs and address the problem. My workplace included potential participants who have specific work experiences with linear and iterative instructional design processes. I had a nonsupervisory role with potential participants who were coworkers that had responsibilities as individual contributors and worked independently on projects.
- Obtain local permissions. Researchers must obtain local permissions (Ravitch & Carl, 2021). Accordingly, I gained approval from the head of the learning

development department to invite participants, which is detailed in the previous section for obtaining IRB approval.

- Obtain each participant's consent. The researcher must obtain consent from the participants before data collection commences (Ravitch & Carl, 2021). An invitation email sent to each participant will include an informed consent form . Ethically, the researcher must adhere to the guidelines outlined in the informed consent form (Ravitch & Carl, 2021), such as time commitments, keeping identities confidential, and participants' voluntary withdrawal without consequences. In this study, the consent form includes the purpose and benefits of participation, an explanation about voluntary withdrawal with no consequences, and details about time commitments. From the date of the invitation email, the participant has seven days to respond by email with the text, "I consent." After receiving an email with the participant's consent, I saved the email in a folder named Px_informed_consent, where "Px" was the alphanumeric identifier used to maintain confidentiality.
- Protect the data. All data and electronic files were stored on a password-protected computer in a locked office in my home and will be destroyed after 5 years upon completion of my study as defined by Walden University (n.d.-a). NVivo (QSR International, n.d.) was used to store and manage data. Only the dissertation committee and I had access to the raw and coded data. Unique identifiers, such as P1, P2, and P3, were used to keep the identities of the participants confidential.

- Identify conflicts of interest. No conflicts of interest exist because I was not affiliated with any of the authors of studies cited in this study or performing the research on behalf of any business or educational institution. My involvement in this study did not advance employment opportunities or secure my position.
- Identify possible power differentials. No power differentials existed because I worked as an individual contributor with no direct or indirect reports in the corporation.

Summary

Chapter 3 included details about recruitment, data collection, data analysis, and ethical procedures. In this chapter, I provided the rationale for using a basic qualitative study to align the methodology with the RQs. Perceptual data were needed to answer the RQs within the conceptual framework. Chapter 3 included a description of the conceptual framework and a list of the RQs. This chapter also included descriptions for obtaining approval from the Walden's IRB and seeking permission from the learning development department head to recruit participants. The participants included nine instructional designers who shared similar experiences, competencies, and responsibilities and were bound by a geographically dispersed education organization. Using purposeful sampling ensured that the participants met the defined criteria relevant to the RQs, problem statement, and purpose of the study.

Also in Chapter 3, I described the use of the interview protocol that was used during data collection. The data was collected during separate interviews with each

participant. Additionally, I included the descriptions of the phases in the data analysis plan, including preparing the files, reading the transcriptions, coding, and preparing theme statements. In the first coding phase, I used In Vivo coding to label segments in the transcriptions during data analysis. In the second coding phase, I used pattern coding to group similar In Vivo codes into categories for data analysis. In a subsequent phase, I analyzed the categories to define theme statements that addressed the RQs.

Chapter 3 included procedures for addressing ethical concerns for participation, researcher bias, and trustworthiness. Importantly, I described the ethical factors ensuring the well-being and confidentiality of the participants' voluntary participation. I listed the steps that were taken to safeguard and maintain the integrity of the data. NVivo (QSR International, n.d.) was used to store and manage the data. The data was stored in my home office in a locked area available only to myself. Furthermore, this chapter included descriptions of credibility, transferability, dependability, and confirmability. In Chapter 4, I reported the findings of the study including an analysis of each of the themes that emerged from the data within the conceptual framework, problem statement, and RQs.

Chapter 4: Results

The purpose of this basic qualitative study was to explore the perspectives of experienced corporate instructional designers on the usefulness of an instructional design process (linear and iterative) when making design decisions for e-learning solutions. This study included two RQs to understand the perspectives of instructional designers on the usefulness of an instructional design process (linear and iterative) when making design decisions for e-learning solutions. Exploring instructional designer perspectives on the usefulness of an instructional design process addressed the disconnect and uncertainty of how and when to use an instructional design process. The data analysis revealed six themes based on the participants' responses. Chapter 4 includes a description of the participants, methods for data collection, and coding strategies for data analysis. The chapter begins with a description of the setting, continues with the demographic data about the participants' instructional design experiences, and concludes with a summary of the results arranged by RQ.

Setting

The setting for the study was a learning development department constrained by virtual and physical organization boundaries within a business setting. Depending on their work assignments, some participants worked on-site in open-office corporate areas. Other participants worked remotely from their home offices or from a blend of both networked and physical locations.

Data Collection

The primary sources of data for this basic qualitative study were semistructured interviews. The participants were instructional designers who had moved from a linear instructional design process to an iterative instructional design process based on the needs of the business. Nine corporate instructional designers consented to be interviewed for the study. Having met the instructional designer profile, each participant had acquired the experience to provide insight into the usefulness of instructional design processes (linear and iterative) when making decisions about technology, pedagogy, and content for e-learning solutions. The number of participants exceeded the estimate of six to eight instructional designers, more than half of the population of designers in any one team within the organization. Each instructional designer was assigned an alphanumeric code, such as P1, P2, and P3. Table 2 lists the years of instructional design experience and indicators for familiarity with the instructional design processes, ADDIE and SAM.

Table 2

Years of Design Experience with Instructional Design Process

ID #	Years of Instructional Design Experience	Has Experience with ADDIE?	Has Experience with SAM?
P1	8 – 15	Yes	Yes
P2	8 – 15	Yes	Yes
P3	16+	Yes	Yes
P4	8 – 15	Yes	Yes
P5	16+	Yes	Yes
P6	8 – 15	Yes	Yes
P7	16+	Yes	Yes
P8	16+	Yes	Yes
P9	0 – 7	Yes	Yes

The primary tool for data collection was the interview protocol (Appendix A). After receiving approval from the Walden University IRB, permission from the head of the learning development department, and informed consent from each participant, I conducted one-on-one, 45- to 60-minute interviews. Each interview was scheduled outside of business hours at the convenience of the participant. Each participant was interviewed by phone in a secured and quiet location that was free from interruptions.

After gaining approval from each participant to record an interview, I placed the telephone in speaker mode. Each interview was recorded using the Audacity application running on a computer. Additionally, for backup, I placed a digital portable recording device in record mode. Primary and backup recordings were successfully created for all interviews. Next, the Audacity recordings were saved using alphanumeric codes to safeguard the identities of the participants. Specifically, the Audacity audio files were saved as project and .mp3 files in separate folders.

Furthermore, the audio files from the potable recording device were downloaded and saved to separate folders. After each interview, I listened to the recordings to ensure that the audio files were complete and ready to be manually transcribed by me. Each transcription was saved to a separate folder using alphanumeric codes to continue to safeguard the identities. To ensure accuracy, each transcription was matched against the audio recording. Additionally, each participant reviewed the transcription.

Each participant was interviewed one time. Over 6 weeks, I completed the nine interviews. For consistency, I asked each participant the same questions. When asking clarifying questions to obtain more detail or examples, I followed the suggestions by

Merriam and Tisdell (2016), which included anticipating the preparation for further inquiry. Furthermore, the prompts adhered to the criteria defined by Drew et al. (2008) by using familiar terminology and phrases with approximately 20 words, which did not lead the participants in a specific direction. Each interview included opening statements, responding to participants' questions before starting the recordings, and closing statements (Appendix A). The questions were sequenced from general inquiries relating to instructional design experiences. Transition statements were used to move between the questions that addressed RQs relating to specific instructional design process inquiries, first linear and then iterative.

All participants responded to all the questions in the interview protocol (Appendix A). A few participants asked for clarification about the nature of a question. For example, I asked, "when you were using that linear instructional design process, how did that determine the interactivity or the ways that the learners used the e-learning interface?" P1 responded, "how did it determine the [instructional] strategy ... can you [give] me a little bit more to help me figure out exactly what you're looking for?" In another interview, I asked, "how did it determine the instructional strategy that you chose?" P3 responded, "can you clarify a little bit more ... Can you give me an example of the type of thing that you're looking for?" In response to one question about technology, I asked, "how did using an iterative instructional design process determine the technology that you might have chosen?" P4 stated, "if I am understanding correctly, you're talking about maybe building [a] piece here, a piece there ... is that ... what we're talking about?" In a separate interview, P8 asked, "technology ... so as far as the tools that we used?" Based on only

these few clarifications, the interview questions were not modified. However, I adjusted the transitions between questions and the follow-up inquiries based on the participants' responses.

The electronic data included researcher notes, audio files, and transcribed recordings. These files were saved on a password-protected computer with backup flash drives in separate folders created specifically for the study. All transcribed audio files were saved in NVivo, which was used for importing, organizing, and storing files. Additionally, emails exchanged between me, head of the learning development department, and participants were saved. The computer was in my home office, which is a locked location accessible only by me. The folders were created using an alphanumeric naming convention to maintain the confidentiality of the participants. Each folder and file name included P1, P2, and P3 with the type of file. For example, p1, p1_interview_transcription, p1_audacity_recording, and p1_portable_device_recording.

Printed copies of the transcriptions were stored in a file cabinet in my home office, only accessible by me. All files will be disposed of 5 years from the date of the published dissertation. After 5 years from the date of the published dissertation, all digital and printed files will be removed from the computer, the flash drives will be destroyed, and the printed materials will be shredded.

Data Analysis

After repeatedly listening to the recorded interviews, I entered the data analysis phase of the basic qualitative study. The data analysis included first-cycle coding, second-cycle coding, and looking for meanings when interpreting patterns (Saldaña,

2021). Additionally, I reread the transcriptions to familiarize myself with the data and noted items for further investigation. I continually identified words and phrases that addressed the RQs within the framework of the TPACK model (Koehler & Mishra, 2006). For consistency across each transcription, I completed the following steps:

Conducted First-cycle Coding

In the first coding cycle, in vivo coding was used to assign labels to the participants' own words and phrases. Table 1 shows examples of in vivo codes assigned to excerpts. After studying each transcription, I inserted in vivo codes into each Word file using the Comment function. Researchers use in vivo coding to represent the participant's voice and the authentic words used to convey perspectives within a setting (Saldaña, 2021). Additionally, in vivo coding is useful when working with transcribed recordings. Keeping these attributes in mind, I highlighted each of the participants' own words and phrases about the usefulness of instructional design processes and assigned in vivo codes (Table 3). Iteratively, I collapsed the in vivo codes into groups based on what information and insights were shared by the participants as being important within each transcript, and then looked for similarities across the transcripts.

Table 3

Initial In Vivo Codes Grouping for an Iterative Instructional Design Process

ID #	In vivo code	Code
P1	It [collaboration] happens more frequently	Working together and collaborating
P2	I think you have a little bit more of a … collaborative …feeling	
P3	collaboration is more consistent over time	
P4	who we're going to have the ability to collaborate with	
P5	where they can collaborate on a document	
P6	I really rely on my team members during those prototype phases	
P7	For the iterative, it was a little more collaborative	
P8	make sure that there is collaboration	
P9	It's a continuous process … communicating with them from the very beginning throughout the process	

While analyzing the in vivo codes, I noted the similarities and differences (Saldaña, 2021). Iteratively, I sorted and grouped data in the first-cycle coding. When sorting the in vivo codes into groups, I kept the RQs and the conceptual framework in mind. Patterns are based on how often codes appear, how much alike or different the codes are, and how relevant the codes are regarding the descriptions (Saldaña, 2021). I noted each participant's language in describing the usefulness of instructional design processes (linear and iterative). To support my data analysis process, I recorded entries for further investigation in my research journal. Through investigative analysis, I identified meaningful patterns. Table 4 includes examples of the in vivo codes with sample research journal entries.

Table 4

In Vivo Codes and Annotations

ID #	In vivo code	Research journal entry
P1	Where you spend time	Investigate where instructional designers spend time
P2	If it's something where it's full baked	Investigate the meaning of baked versus unbaked
P3	Basing it on less information	Investigate making decisions sooner with less information
P4	We're building bits and pieces	Investigate when instructional designers are finding out the topics
P5	Often … my project[s] start with analysis	Investigate what tasks are performed during analysis
P6	I will not use a high-fidelity simulation	Investigate when instructional designers select complex technology
P7	Always brainstorming and talking to my team members … having those brainstorming meetings	Investigate perspectives about brainstorming during a larger project
P8	Just because of time constraints	Investigate perspectives about time constraints, what are they
P9	Make those adjustments based off of the subject	Investigate how the subject drives the tools and abut other drivers

Conducted Second Cycle Coding

In the second coding cycle, using pattern coding (Saldaña, 2021), I moved from sorting and grouping to categorizing, which was my approach for seeking meanings and relevant themes that addressed the RQs. Continual refinement of the second-cycle coding led to the formation of theme statements and meaningful insights about the perspectives of instructional designers about the usefulness of instructional design processes when making design decisions about e-learning solutions. Table 5 shows how I moved from pattern codes to theme statements and illustrates examples of an emerging pattern and theme statement.

Table 5

Categorizing In Vivo Codes for Theme Statements

In vivo code (Excerpt)	Emerging pattern code and category	Emerging theme statement
Meeting expectations	Role expectations for making design decisions for e-learning	The instructional designers used an iterative instructional design process for approving e-learning design decisions about the technology when there were multiple decision-makers. The instructional designers used a linear instructional designer for making e-learning design decisions when little or no collaboration is expected from the subject matter experts.
Biggest obstacle is expectations		
instructional designers [are] expected to do everything		
what is expected at certain points		
give them the guidelines and their expectations		
expecting from them		
from the very beginning, umm, what is to be expected		
Understand what the expectations are		

Continuing the analysis, I used Excel to extract verbatim excerpts sorted by linear and iterative instructional design processes. Researchers examine the patterns and themes to find the meaning (Lincoln & Guba, 1985), and the interpretations can be based on insights and reveal connections to the RQs, conceptual framework, or the literature review (Creswell & Poth, 2018; Lincoln & Guba, 1985). Within the framework of the TPACK model, further detailed analysis was conducted. Table 6 shows an example of subcategories for a linear instructional design process. Table 7 shows an example of subcategories for an iterative instructional design process. For more details about the in vivo and pattern codes, send a request to basicqualitativestudy@gmail.com for a copy of the codebook used for this qualitative study.

Table 6

Categorizing by Subcategories for the Linear Instructional Design Process

In Vivo Codes	Subcategory
Determine … what's going to be in the training	Working linearly
Going through … all the objectives	
Presenting them with … the outline of what's going to be in the training	
I do miss that formality even though it does take a little bit longer to do	
Determining … what the modality is going to be	
Determining … how critical those steps are	
How complex the training is	
We could really get that buy-in	

Table 7

Categorizing by Subcategories for an Iterative Instructional Design Process

In Vivo Codes	Subcategory
Because it doesn't have to be so fleshed out [defined]	Working iteratively
Get to that initial … high-level … look a little bit faster	
Get to the high-level look … like that prototype … what it looks like before, sooner in the process	
You just get that high-level prototype faster	
Showing them exactly [what] we're [going] to be doing	
We're working really closely with the business	
What you're going to add and what you're going to do earlier in the process	
You don't go down this road … that might not be correct	

Results

The following paragraphs describe the results, which are arranged first by RQ, and then by theme. For RQ 1, three themes were identified:

- Theme 1: The instructional designers use a linear instructional design process for making e-learning designs decision when time is allotted to conduct an analysis and get buy-in from stakeholders.

- Theme 2: The instructional designers use a linear instructional design process for making e-learning design decisions when the opportunity to work independently exists.
- Theme 3: The instructional designers use a linear instructional design process for making e-learning design decisions when the content is known and less likely to change.

For RQ 2, three themes were identified. These themes are:

- Theme 4: The instructional designers use an iterative instructional design process for making e-learning design decision when time is allotted for prototyping and getting buy-in from stakeholders.
- Theme 5: The instructional designers use an iterative instructional design process for approving e-learning design decisions about content, presentation, and technology when there are multiple decision-makers.
- Theme 6: The instructional designers use an iterative instructional design process for making e-learning design decisions when the content is unknown and more likely to change.

RQ 1: What Are Instructional Designers' Perspectives of the Usefulness of a Linear Instructional Design Process When Making Design Decisions for E-Learning Solutions?

The ADDIE instructional design process has five phases: analysis, design, development, implementation, and evaluation (Hodell, 2016; Mercadal, 2015). Many instructional designers follow the ADDIE instructional design process for developing e-

learning solutions (Albeanu & Popentiu-Vladicescu, 2019; Durak & Ataizi, 2016; Güler et al., 2014; Hidayanto et al., 2017; Nadiyah & Faaizah, 2015; Patel et al., 2018). Even though the ADDIE instructional design process has five distinct phases, the participants frequently and similarly emphasized the usefulness of the analysis phase. In the first phase, instructional designers conduct an analysis in which they ask questions and set expectations.

Theme 1

Three themes were discovered that addressed RQ1. Underlying the first theme, the participants expressed the usefulness of the analysis phase, during which they closely examined the needs of the organization and learners. Regarding the allocation of time, P9 pointed out, "whether you have more time in the very beginning for analyzing the project" was a factor for choosing to work through the analysis phase. P9 differentiated between the considerations for a linear versus an iterative instructional design process. P9 stated, "there are pros and cons [for] both" and "it's very helpful to know the differences when it comes to designing in the very beginning." The instructional designers used the information about the audience, learning objectives, topics, and interactivity collected during the analysis phase of a linear instructional design process.

Describing the analysis phase, P8 stated, "where you're asking the questions…and you're doing the analysis." P1 stated, "once you're through with your analysis, you should have a very … good idea about what that design is going to look like." Battle (2019) reported that instructional designers used an instructional design process as a guide. Additionally, P3 stated, "that upfront analysis is what I used to then

drive everything going forward." Table 8 details examples of excerpts used for in vivo codes that resulted in the pattern code.

Table 8

In Vivo Codes and Pattern Code for Theme 1

Participant	Excerpts	Pattern Code
P1	Once you're through with your analysis you should have a very … good idea about what that design is going to look like	When time is allotted to conduct an analysis
P2	What I end up using … will have to do with … that rapid upfront analysis	
P3	that upfront analysis is what I used to then drive everything going forward	
P4	then from that analysis knowing wat the overall project may look like	
P5	Often my project start[s] with … analysis	
P6	I spend a good amount of time in the analysis phase	
P7	during the analysis, during that stage of going through all the steps and … determining what the needs are	
P8	where you're asking the questions … and you're doing the analysis	
P9	whether you have more time in the very beginning for analyzing the project	

The participants in this study provided insights into the usefulness of the analysis phase when uncovering answers about the needs of the organization and learners. For example, P4 shared the linear instructional design process "will lead me to a question that will help me develop the next topic." P5 stated after completing an analysis and "by the time we came to a prototype, the topics and learning outcomes were clearly defined." Similarly, P6 stated, "that linear model … gives me the opportunity to [really] understand the full context before I begin making those design decisions." P1 stated, "[the analysis phase] is where you learn what delivery method works best," and "learning about … your learners," and "what are the constraints in this environment." P3 stated, "I feel like all of

the needs identified in the analysis phase help drive and determine what e-learning tool [that] I'm going to use."

There were contrasting views about the usefulness of a linear instructional design process. Interestingly, P8 pointed out, "whether you're using ADDIE, or SAM, or agile … you still start out asking the same questions that then determines the tool that you use." The instructional designers asked similar questions during the analysis phase, in which the answers were found useful in moving to design and development strategies.

Even though the instructional designers described the analysis phase as beneficial, their reasons were diverse. P8 described analysis occurs at "the beginning of almost any process where you're meeting with the people who need [the] training." P8 explained when interacting with SMEs, project sponsors or stakeholders, "you're asking the questions," such as "what do you need" and "getting all the details, which training, which process, and so on and so forth." How and when the instructional designers collaborated with team members and stakeholders demonstrated the types of resources needed to answer the questions during analysis.

P3 described analysis as "holistic" for "deep diving into all the needs." Relating to working with others, P1 stated, "I think collaborations [are] a huge piece of it [when] you have to do ... a proper analysis." Alternatively, in certain situations, P2 conveyed a straight-line approach "with ... little SME feedback ... or involvement ... until the end or [during] smaller periods of time." P6 shared the outcome of the analysis phase to gain continuous buy-in from the stakeholders. Accordingly, P6 worked through the analysis phase of the instructional design process to obtain "a clear understanding of what my

audience or what my stakeholder needs [are].” The importance of the analysis phase was conveyed through the holistic, deep-dive approach to obtain approval before moving to the next phase. However, the buy-in occurred at the end of the analysis phase, at which time the instructional designer tended to work independently on tasks through the remaining phases.

Additionally, P1 explained, “working through the linear aspects of the model helped drive ... ultimately your good content.” Most important, P1 expressed, “during [the] analysis phase ... is where you will learn ... what that development is going to look like” Similarly, P1 elaborated that during the analysis phases, the instructional designer determines “what are the constraints, “what tasks are the learners already doing,” and “what’s the scope.” P5 used the analysis phase to identify the topic structure and learning outcomes in which “the content and the subject ... [are] clearly defined before moving into the next phase.” During the analysis phase, the instructional designer found the activities useful for defining the scope and criteria for content that met the business leaders’ expectations.

Associating analysis with the linear instructional design process, P4 stated, “the linear approach might help me ... in the beginning with the analysis.” P4 continued, “from that analysis, knowing what the overall project may look like” when describing the linear approach through the phases. In terms of advantages, P7 stated, “I do still think ADDIE has a lot of benefits.” P7 continued, “I think the analysis is definitely the most important phase” in which to determine the course will be e-learning and “what’s going to be in the training to get their sign-off” and “we could really get that buy-in.”

Throughout the responses by the participants, there was an emphasis on the analysis phase, even though this phase was the first of five phases in the linear instructional design process.

In summary, the first theme for RQ1 is instructional designers use a linear instructional design process for making e-learning designs decision when time is allotted to conduct an analysis and secure buy-in from stakeholders. The instructional designers use a linear instructional design process to make e-learning design decisions when time is allotted at the beginning of a project for in-depth analysis. Through the detailed analysis, the instructional designers sought answers to questions about the learners' needs and understood the project constraints.

Theme 2

A second theme emerged for RQ1. The participants differed in their descriptions about how and when they collaborated with stakeholders, SMEs, and learners when following a linear instructional design process. Depending on the participants' understanding of the scope of the project, they found a linear instructional design process was useful when they were more likely to make informed decisions about the e-learning design. P6 found the linear instructional design process useful in terms of shortened timelines dates when there was "a very limited window of time" and "more compressed timelines." When time constraints existed, the instructional designers expressed working independently on tasks helped meet the timeline.

According to Patton (2015), researchers must include enough descriptive text to build the context for the interpretations and represent the participants' perspectives. The

participants offered differing perceptions about how and when project teams collaborated. The participants shared insights about whether the collaboration occurred continuously, at predefined points along a timeline, or intermittently. For example, P9 described the collaboration for an iterative instructional design process as "a continuous process." P3 stated, "being front heavy and back heavy." This intermittent collaboration, as P3 stated, occurred at the very beginning and towards the end. When working with the linear instructional design process, the instructional designers determined when to schedule specific times for collaboration.

Instructional designers found the linear instructional design process useful when they worked independently. P7 stated, "I have more control of what we're doing." Additionally, P7 shared, "in the linear process … I felt like I had more control. I have more control of what we're doing." P2 stated, "I may use more of the linear module because it's going to be a fast in and out … little involvement from the SMEs." Battle (2019) found instructional designers described ADDIE in terms of being an organized set of steps.

Similarly, while working through the phases of the linear instructional design process, P3 described the collaboration by stating, "heavily involved with SMEs up front…you're able to … taper that … when you get into a little further into the development." Collaboration takes time and mutual decision-making. P1 expressed the usefulness of a linear instructional design process when it is "something that I know is not going to have that many iterations or changes." Fewer iterations meant more control and increased usefulness of a linear instructional design process.

When there was collaboration, P2 described the need to “have involvement of the SMEs ... and have answers to do a lot of that upfront analysis.” However, P2 pointed out “their involvement is pretty involved there [in the beginning]” and in the end. In the middle of the process, P3 stated, “you’re able to taper that ... that’s more traditional ADDIE” and “then that middle section ... it tapers off [a] little bit. And, you don’t necessarily need as much involvement.” When collaborating while working linearly, instructional designers determine optimal points along the timeline for engaging others, which means working independently longer.

Relating to the instructional designer experiencing control to drive decisions about the design of the learning solution, P8 stated, “it was just mostly setting up stages or times ... when I am done with this piece, I’m going to share it with you.” As described by P8, this phase occurs “at the beginning ... [to] make sure I understand what you need.” In the workflow, P8 determined how and when to collaborate. For example, P8 differentiated between working in an office by stating, “you could walk up to someone and say ... this is what I need, can you help me with it” versus working remotely on the job in which “I have to be a little more creative” through instant messages and email.

Interestingly, P1 defined moving forward when collaboration was unknown, stating, “when I start the process, you have to collaborate with your learners when you can, subject matter experts when you can.” Similarly, P4 stated, “let’s say I was fortunate enough to have that ... mixture of people ... I would have to ask those questions.” Given these perspectives, there was a sense of control and independence if the collaboration

varied or did not exist. Table 9 includes excerpts used for In Vivo codes to determine a pattern code.

Table 9

In Vivo Codes and Pattern Code for Theme 2

Participant	Useful for Making Design Decisions for E-Learning Solutions	Pattern Code
P1	something that I know is not going to have that many iterations or changes	When able to work independently
P2	I may use more of the linear module because it's going to be a fast in and out … little involvement from the SMEs	
P3	heavily involved with SMEs up front … you're able to … taper that … when you get into a little further into the development	
P6	a very limited window of time … the more compressed timelines	
P7	I have more control of what we're doing	

P9 described working linearly as "a matter of gathering all the information ... which makes it a little bit of a longer process," and begins "with a bunch of conversations and meetings" and "maybe a quick brainstorm [session]." P9 pointed out, "you don't circle back as much as compared to other models ... it's a one-and-done type deal." P5 stated, "we would establish a team of clearly defined roles" to describe responsibilities and collaboration. However, P5 talked about projects in which the instructional design would follow a linear instructional design process when "you have an instructional designer [that]is expected to be ... doing the analysis, design, and development, and being the artist, and being a SME sometimes, too." With all these roles, the instructional designer is working somewhat independently. The size of the project team impacted the sense of being independent. When the project size included only one instructional designer, the linear instructional design process was useful.

In summary, the second theme for RQ1 is instructional designers use a linear instructional design process for making e-learning design decisions when the opportunity to work independently exists. The instructional designers working independently on the project depended on the need for and availability of the subject matter experts and stakeholders, the timeline for the deliverables, and the level of understanding about the overall subject and training needs. Working independently on tasks meant less time was needed for collaboration with the SMEs. In using a linear instructional design process, the instructional designers had more control to move the design and development forward.

Theme 3

Finally, a third theme emerged for RQ1: what are instructional designers' perspectives of the usefulness of a linear instructional design process when making design decisions for e-learning solutions? The third theme is instructional designers use a linear instructional design process for making e-learning design decisions when the content is known and less likely to change. The instructional designers found the linear instructional design process useful when understanding the curriculum, such as concepts and tasks that needed to be included in the learning solution. For example, P6 stated, "when I use a linear model … it's primarily … in the times when I have a clear understanding of what my audience or what my stakeholder needs." Similarly, P4 stated, "you know what kind of tasks or processes that you're facing" to describe when the linear instructional design process was useful. Interestingly, P1 stated, "[the linear process] allows you to transition to the design phase more easily and not have to stop and go

back." When the content is known, instructional designers find the linear instructional design process useful. Having insight into the content and delivery of a learning solution at the onset of a project aligned with the usefulness of a linear instructional design process. Table 10 lists the in vivo codes, excerpts, and pattern codes.

Table 10

In Vivo Codes and Pattern Code with Known Content for Theme 3

Participant	Excerpts	Pattern Code
P1	Allows you to transition to the design phase more easily and not have to stop and go back	When the content is known
P2	If it's something that I know is not going to have that many iterations or changes more fully baked [defined]…the linear is an approach that would work … because it's … just straightforward	
P4	you know what kind of tasks or processes that you're facing	
P6	When I use a linear model … it's primarily … in the times when I have a clear understanding of what my audience or what my stakeholder needs	

According to Merriam and Tisdell (2016), researchers pointed out underlying considerations for understanding the interpretations. For example, instructional designers found the linear instructional design process useful when the development progressed from one stage to another in sequential steps. During a project, instructional designers manage the project and product changes. With a linear workplan, P4 stated, "we can't jump all over the place." Additionally, P6 expressed, "sometimes they want us to just 'get it done the first time' like we would do in a linear model."

Moreover, P2 stated, "if it's something that I know is not going to have that many iterations or changes [are] more fully baked [defined] … the linear [process] is an approach that would work … because it's … just straightforward." Similarly, P9 stated,

"if there is something in the product that wouldn't change." Few changes and a more linear workflow fit well with using a linear instructional design process. Table 11 includes excerpts used for in vivo codes for a pattern code.

Table 11

In Vivo Codes and Pattern Code with Product Changes for Theme 3

Participant	Excerpts	Pattern Code
P2	If it's something that I know is not going to have that many iterations or changes	When there are less project and/or product changes
P4	We can't jump all over the place	
P6	Sometimes they want us to just get it done the first time like we would do in a linear model	
P9	If there is something in the product that wouldn't change	

When the instructional designers worked with complex subjects, they found the linear instructional design process useful. However, the size of the project might influence the usefulness of the instructional design process. P5 stated, "more complicated, I think the topic is or subject … it requires a little bit more of a … linear approach." However, regarding the size and complexity of the project, P5 pointed out the linear instructional design process "works really well if you have small … projects … and maybe not super complex." In terms of understanding the details of the subject, P2 described the usefulness of a linear instructional design process when there is a "very little grey area … for the learners to stray from … going in that straight approach."

Along with fewer changes and a linear workflow, the complexity of the topics influenced the usefulness of a linear instructional design process. Less complexity and number of changes fit well with the use of a linear instructional design process. Table 12 includes excerpts used for In Vivo codes for a pattern code.

Table 12

In Vivo Codes and Pattern Code with Complex Subject for Theme 3

Participant	Excerpts	Pattern Code
P1		When the subject is more complex
P2	Very little grey area … for the learners to stray from…going in that straight approach	
P5	more complicated, I think the topic is, or subject…it requires a little bit more of a … linear approach works really well if you have small … projects … and maybe not super complex	

In summary, the third theme for RQ1 is instructional designers use a linear instructional design process for making e-learning design decisions when the content is known and less likely to change. Having most or all the information at the start of an e-learning project, the instructional designers moved easily from the analysis phase to the design and development phases. During analysis, there was collaboration. However, the collaboration lessened during the subsequent phases, which meant fewer changes due to revisions. Before embracing a linear instructional design process, the instructional designers assessed what was known and not subject to change.

RQ 2: What Are Instructional Designers' Perspectives of the Usefulness of an Iterative Instructional Design Process When Making Design Decisions for E-Learning Solutions?

The SAM is an iterative instructional design process that includes a preparation phase, iterative-design phase, iterative-development phase (Allen, 2012, 2016; Arshavskiy, 2013; Jung et al., 2018; Vallance et al., 2017). Even though the SAM instructional design process has distinct design and development phases, the participants

focused on rapid prototyping and chunking content to convey an iterative approach. For example, these findings provide insight into limitations with agile instructional design processes (Czeropski & Pembrook, 2017; The Thiagi Group, n.d.).

Theme 1

Three themes emerged that addressed RQ2. The first theme is instructional designers use an iterative instructional design process for making e-learning designs decision when time is allotted for prototyping and getting buy-in from stakeholders. When designing a learning solution, P6 stated, "SAM [successive approximation model] allows us to … prototype … and pilot it and get some … feedback." The importance of prototyping is expressed by P5 who stated, "we relied heavily on prototypes to drive the solution." P5 continued, "the iterative … goes more into the design and development … the focus is on that and doing the prototype." Where the time can be allotted on prototyping iterations of a learning solution, the instructional designers found the design and development phases of an iterative instructional design process useful.

According to Merriam and Tisdell (2016), researchers must identify a focus for interpreting the data. Alternatively, Jung et al. (2018) pointed out the usefulness of the preparation phase in the SAM instructional design process. Few researchers conducted qualitative studies focusing on the SAM instructional design process (Battle, 2019; Jung et al., 2018). The participants provided some insight during the initial phases known as the savvy start (Allen, 2012) and preparation phase of the iterative instructional design process. P1 acknowledged an awareness of the iterative steps by stating, "the preparation phase, it's like the analysis phase in the ADDIE model." Then, P1 pointed out the

iteration begins with subsequent phases by stating, “it’s there in that second phase that … you … respond to changes more quickly.” P2 stated, “the topics are often done in the beginning through the preparation and analysis.” However, P3 stated, “I have never … been part of … [the] savvy start, where there’s this big preparation phase.” Although the iterative instructional design process has a preparation or analysis phase, most instructional designers focus on the flexibility of refining iterations through prototyping.

Overall, the instructional designers described strong connections between an iterative instructional design process and prototyping learning solutions. For example, when describing the connection, P1 stated that an iterative instructional design process “lends itself just to that prototype in [the] review process.” When there was a need for prototyping, P1 described the process in terms of “putting together [a] quick prototype.” Additionally, P2 stated, “providing those prototypes a little bit more often before I get to the end.” Furthermore, P2 described the development time for “the solution being rapid needing to have it out really quick.” Even though prototyping iterations of the learning solution took time, instructional designers provided rapid prototypes with ongoing feedback from the reviewers. Table 13 includes excerpts used for in vivo codes for a pattern code.

Table 13

In Vivo Codes and Pattern Code for Prototyping for Theme 1

Participant	Excerpts	Pattern Code
P1	lends itself just to that prototype in review process putting together quick prototype	When time is allotted for prototyping
P2	providing those prototypes, a little bit more often before I get to the end … the solution being rapid needing to have it out really quick	
P5	we relied heavily on prototypes to drive the solution the iterative … goes more into the design and development … the focus is on that and doing the prototype	
P6	SAM [successive approximation model] allows us to … prototype … and pilot it and get some … feedback	

Prototypes are central to minimizing the rework of publishing an e-learning solution after distribution. P1 described the iterative approach as one that "that lends itself just to that prototype in [the] review process." P1 stated, "putting together [a] quick prototype [and] having that reviewed." P5 pointed out, with the iterative approach, "the focus is on [design and development] and … doing the prototype." P6 stated, "I really rely on my partners during those prototype phases."

Additionally, P6 shared, "I love hearing that learner feedback in those prototype sessions to inform my designs." However, time must be allocated for reviewing numerous iterations of prototypes. The usefulness of a prototype is realized by reducing the time to start over or rework an e-learning solution.

The benefits of prototyping include minimizing the number of revisions in the final stages, addressing issues in a timely way, and exploring advanced technology uses. For minimizing the amount of rework, P7 considered when to do a prototype depending on "the time commitment ... that can hinder it." For example, P7 stated, "if the SMEs

have time," which is "the biggest issue that I find with it, is trying to get ... the SMEs' time ... throughout the whole process" and avoiding "going down a road that we shouldn't ... and have to start over [if] it's not what the business wanted." Following an iterative approach, the instructional designers kept the project on track to meet the learning objectives.

For addressing issues in a timely way, P2 stated, "[when] there's a lot more detail involved that I have to do more around an approximation model ... I'm providing those prototypes a little bit more often before I get to the end." Although P6 experienced "frustration from the [group] at times [when] you present multiple prototypes," the iterative approach "has been the way ... to solve most challenges that came up." Throughout the e-learning project, instructional designers face issues about the environment, lack of information, and product changes. However, with an iterative approach, instructional designers may resolve issues. Central to that approach is building and revising prototypes for continuous reviews.

For exploring uses of advanced technology, P7 explained the team members following an iterative instructional design process collaborated on a prototype to "get to the high-level look [what the learner sees without all the details] ... what it looks like ... sooner in the process." Noteworthy, P6 pointed out, "[the SAM model] allows me to prototype and try out new things. I had the opportunity to explore the avenue available and see what resonates with the business." P9 explained, "an agile model [iterative instructional design process] will take a little bit more time." Innovation is achieved through trial and error. Experimenting with new ways of building prototypes to

demonstrate the instructional strategy is a useful factor associated with the iterative instructional design process.

In summary, the first theme for RQ2 is instructional designers use an iterative instructional design process for making e-learning design decisions when time is allotted for prototyping and getting buy-in from stakeholders. The instructional designers found the iterative approach of reviewing and incorporating feedback was based on the frequency of the rapid prototyping. Although the iterative instructional design process included a preparation phase, the emphasis was on the iterative-design and iterative-development phases, which shaped the deliverable.

Theme 2

This second theme is the instructional designers found an iterative instructional design process useful when multiple decision-makers review content, presentation, and technology. P2 stated when "there's a mix of people" and "those involved in the team, the designers, product managers … are discussing any changes that are happening" that they find an iterative instructional design process useful. P6 stated, "they don't really know what they want but they have some outcomes they'd like to reach" when "they have a little more say" and when "it was a little more collaborative." The instructional designers following an iterative instructional design process have an awareness of the need for continual collaboration. Collaboration is key to obtaining approvals from the stakeholders. The instructional designers describe project teams with multiple reviewers, all of which collectively made decisions.

Prototyping is multi-faceted in terms of technology, instructional strategy, and subject. Using an iterative instructional design process, P4 found that instructional designers "got a lot of buy-in [from the stakeholders] because … they see what you are doing." Following an iterative instructional design process, P5 stated, "it's just being flexible [with] how to work with people." Regarding the interactions, P3 stated, "collaboration is more consistent over time." Collaboration occurs throughout an iterative instructional design process. For example, P7 stated, "we collaborate more on what the prototype is going to look like … with all the stages." One way of obtaining approvals from multiple team members was through the review of prototypes. Table 14 details examples of excerpts used for in vivo codes used to find the pattern code.

Table 14

In Vivo Codes and Pattern Code with Decision Makers for Theme 2

Participant	Excerpts	Pattern Code
P2	Those involved in the team, the designers, product managers … are discussing any changes that are happening There's a mix of people	When there are multiple decision-makers
P3	collaboration is more consistent over time	
P4	got a lot of buy-in because when they see what you're doing	
P5	it's just being flexible how to work with people	
P6	they don't really know what they want but they have some outcomes they'd like to reach	
P7	we collaborate more on what the prototype is going to look like … with all the stages they have a little more say it was a little more collaborative	

When multiple reviewers were required to make design decisions about e-learning learning solutions, the instructional designers expressed the usefulness of an iterative

instructive design process. The workflow for an iterative approach includes getting continuous feedback through repetitive reviews. P1 described the iterative approach as "prototyping, reviewing, prototyping, reviewing." Similarly, P2 described the reviews as "constant feedback." Furthermore, P2 stated, "a small group of people to make changes works well with an iterative ... model." P4 stated, "I think that really got a lot of buy-in because ... they see what you're doing." The prototypes represented a blend of technology, pedagogy, and content knowledge (Koehler & Mishra, 2006), which means multiple team members made decisions about which publishing tools to use, how the subject would be presented, and which topics would be covered. These elements were integrated. The instructional designers pointed to the usefulness of an iterative instructional design process to drive the collaboration needed to make informed decisions.

Several additional considerations exist when working with multiple reviewers. One is how the instructional designer works with the reviewers. P7 stated, "for the iterative, it was a little more collaborative" P7 described the workflow in terms of "we're working really closely with the business" and "I feel like now they have a little more say" Even though SMEs might have more say, P1 described "fast prototyping" by stating, "I could share those topics with my subject matter experts, get approval, and move on pretty quickly ... the model ... expedited the process [for] landing on what those topics were." For an optimal collaborative experience, P5 stated, "it's just being flexible [about] how to work with people" and "being respectful of their time." P5 explained, "you definitely have to be very attuned to people's preferences in communication styles." The

instructional designers shared awareness of the importance of ways to communicate to obtain buy-in from the stakeholders. The communication needed to be timely for rapid prototyping.

In summary, the second theme for RQ2 is instructional designers use an iterative instructional design process for approving e-learning design decisions about content, presentation, and technology when there are multiple decision makers. Working iteratively, the instructional designers found that there were multiple inputs from separate roles (for example, other instructional designers, media designers, project manager, SMEs, and stakeholders). With the iterative approach, the instructional designers worked less independently and more collaboratively to obtain buy-in from stakeholders. By applying the iterative instructional design process, the instructional designer found ways to communicate and work toward the end. Multiple roles reviewed the prototypes in which represented the integration of technology, subject, and presentation.

Theme 3

Finally, a third theme was found for RQ2: what are instructional designers' perspectives of the usefulness of an iterative instructional design process when making design decisions for e-learning solutions. The third theme is instructional designers use an iterative instructional design process for making e-learning design decisions when the content is unknown and more likely to change. P1 pointed out, "[you can] easily … make that change before you … move into that final phase." The instructional designers found an iterative instructional design process was useful when changes to the project and product were frequent and unplanned. For example, P2 stated, "if it's a solution that's in

flight when there's constant changes … you can go back and make changes." The changes represented unknown content that the instructional designers would eventually uncover through iterations. Knowing at the beginning of the project that there would be frequent changes, the instructional designers found the iterative process a better fit.

The instructional designers found the iterative instructional design process useful when the content is unknown. P4 used an iterative instructional design process when "we don't know all the topics yet." P3 shared an iterative instructional design process is useful for "quick iterations and having the contact and collaboration [being] more consistent over time" when "you have a partial picture when you're starting." By working collaboratively, the instructional designers identified which content was missing and addressed the uncertainty about the overall project requirements.

The instructional designers found the iterative instructional design process flexible when addressing uncertainty about the nature of the project. P9 described an iterative instructional design process, "where you'll keep coming back and make changes later on." Using an iterative instructional design process, P8 found they "could step ahead a little bit then come back again provide you have what you need to move forward." P5 explained when using an iterative instructional design process, "you're not making all the design decisions … right up front." Having the flexibility to discover details about the technology and subject, the instructional designers described working iteratively on the deliverable as useful. Table 15 includes excerpts of in vivo codes for a pattern code.

Table 15

In Vivo Codes and Pattern Code with Unplanned Changes for Theme 3

Participant	Excerpts	Pattern Code
P1	easily…make that change before you…move into that final phase could adjust based on the feedback very quickly lends itself to being able to address what those obstacles are a little more quickly	When changes are unplanned
P2	it's a solution that's in flight when there's constant changes you can go back and make changes	
P3	maybe you have a partial picture when you're starting quick iterations and having the contact and collaboration is more consistent over time	
P4	we don't know all the topics yet	
P5	you're not making all the decision[s] … right up front	
P8	could step ahead a little bit then come back again provided you have what you need to move forward	
P9	where you'll keep coming back and make changes later on	

When developing e-learning, instructional designers change learning strategies, product enhancements, and project updates. P2 stated, "if it's a solution that's in flight when there's constant changes" and "it's not a fully-baked [defined] solution," and "you're making changes that you know in time will change rapidly ... that would be more of the approximation model." Relating to obstacles, P6 described one challenge is "not having all the information up front or before you begin development." P3 stated, "I don't think the end topics changed but I think when they came to light and when they were addressed is different." The instructional designers discovered unknown topics while working iteratively and out of sequence, which meant they had to manage missing information. Even having missing information, the instructional designers expressed the usefulness of starting without having all the information.

Some changes might require the instructional designer to revise existing content or add content. P3 explained, “you’re going to be more receptive ... likely to uncover new topics as they arise” P3 pointed out, “having those consistent touch bases and drawing out ... iteratively ... grasp that change” and “reflect changes that happened during the design and development [phases].” Similarly, P9 expressed, “knowing that we can come back and maintain it we have a little bit more flexibility.” P2 pointed out, “constant feedback and opportunities for change along the way.” P2 stated, “I’m able to go back to the drawing board.” Some instructional designers welcomed the continuous feedback that shaped their learning solutions by expressing the benefits of having that opportunity to refine deliverables.

Additionally, there might be issues that need to be resolved. When the appropriate time is allotted for prototyping, instructional designers uncover the information needed to address changes and issues quickly. Using an agile approach, P1 found, “you are able to adapt to that more quickly and more easily to make that change.” P9 described the workflow for an iterative instructional design process as “coming back to make those adjustments and changes.” Furthermore, P1 stated, “in that second phase ... you can ... respond to changes more quickly.” Having the sense of immediacy to address issues in a timely way was a useful factor revealed by the instructional designers. Working together with multiple reviewers through a flexible, iterative instructional design process was useful.

In summary, the third theme for RQ2 is instructional designers use an iterative instructional design process for making e-learning design decisions when the content is

unknown and more likely to change. Then instructional designers found that changes occurred to the content, subject, and technology. Managing these changes was a challenge. However, the instructional designers expressed that when the content was evolving, using an iterative instructional design process did not hinder moving forward with developing the content. Even with limited information, the instructional designers found working iteratively on assigned tasks was beneficial. Additionally, knowing that they could go back and revise, the instructional designers realized that not all the design decisions had to be made at the start of the project.

Discrepant Data

The instructional designers revealed some data that did not fit any particular pattern. I noted these data as discrepant. Non-conforming data should be reported and not discarded (Miles et al., 2014). Accordingly, data that were discrepant or outliers were recorded in my research journal. These outliers included the nonuse of instructional design processes, the integration of theoretical constructs, and adherence to a project plan. These data were examined to avoid a bias toward the interpretation of the meanings of patterns. The outliers included instructional designers (a) being nonconformant toward the use of an instructional design process, (b) integrating differing principles or customizing their approach, and (c) adhering to milestones in a project workplan.

One outlier was being nonconformant in the use of an instructional design process (linear and iterative). For the limited or nonuse of instructional design processes, one instructional designer described using a streamlined approach, at times, neither linear nor iterative, that guided the collaboration about the design and development of learning

solutions. For example, a simple sketch of an intended e-learning interface could convey enough information to move forward on the project. Zeitoun (2006) explained the approach was derived from sketching only minimal items key to a design. Sharing the importance of "a rough outline in a Word document…and, in some cases, even in a text document," P8 stated, "it's a combination thereof that's just based on experience." The cocktail napkin design described by P8 differed from a storyboard. The design was meant solely for the instructional designer to guide efforts through the design and development. P8 stated, "it's pretty informal" and "it's … the outline that I'm working from." Yang (2005) recognized the "cocktail napkin" drawing approach differed from one prototype to another. Whether it was a mention of a theoretical construct or a customized instructional design process, ultimately, each instructional designer offered valuable insights into the usefulness of instructional design processes (linear and iterative) when making design decisions for e-learning solutions.

Another outlier was the uniqueness of pointing out other educational models and writing standards. For the blending of theoretical principles, instructional designers revealed integrating theoretical constructs with an instructional design process. P1 pointed out, "the assure [Analyze Learners; State Objectives; Select Methods, Media, and Materials; Utilize Media and Materials; Require Learner Participation; Evaluate and Revise] model … that's sometimes used." Adedapo and Opoola (2021) pointed out the assure model includes Gagné's nine events of development incorporating technology within the instructional strategy. Similarly, Arshavskiy (2013) explained instructional

designers applied the six-step assure model based on Gagné's nine events when designing e-learning solutions with several types of technology.

Similarly, P5 shared prior experience of additional learning models by stating, "I relied heavily on Gagné's nine events." Arshavskiy (2013) pointed out instructional designers drive the design of the learners' experience through Gagné's nine events of Instruction, which can be used to develop e-learning solutions. In addition to leveraging other instructional design models, one other set of guidelines was identified. P8 stated, "underneath a lot of it is basically info mapping." Information mapping includes a set of guidelines to organize and present topics in easily understood formats (Information Mapping, n.d.). Although several instructional designers described dividing complex topics into smaller segments, only one referenced the information mapping guidelines by name. Accordingly, this information was an outlier and did not fit the overall patterns that emerged about a linear or an iterative instructional design process.

Other discrepant data included the importance of a project plan that the instructional designers used to drive the completion of the tasks. Although most instructional designers referenced projects, the outliers focused on how the project plan was used to drive the design of e-learning solutions. For adherence to a project plan, P9 stated, "they really adhere to is the project plan" and "it was always the project plan." P6 explained, "a lot of that is done for me before I'm handed the project." P4 made decisions in which "it all depends on the project." Similarly, P2 stated, "that depends on the project." The discrepancy data did not fit patterns of usefulness of instructional design processes and revealed the uniqueness of the general attributes of a project.

Outliers can be used to differentiate between the data that conform or deviate from patterns (Miles et al., 2014). For example, I found discrepant data relating to the non-usefulness of an instructional design process (linear and iterative). On the one hand, the linear instructional design process is less flexible than an iterative design process (Czeropski & Pembrook, 2017). P2 stated that the linear instructional design process "is more restrictive" when only one instructional designer is assigned to a project. Similarly, P8 found the linear instructional design process "more restrictive because you really couldn't proceed to the next step until you finished the prior step." The discrepant data included inhibiting progress on a learning solution when using a linear instructional design process. P9 revealed at times reaching "a dead end where you don't … get to go back." P3 referred to this as the possibility of encountering "a dead stop." These examples did not fit the patterns for how and when the linear instructional design process was useful. Although the instructional designers' perspectives differed in usefulness, I recorded any discrepant data that deviated from the patterns.

In summary, the outliers included nonconformance toward using an instructional design and substituting a customized approach to work through analysis, design, and development. Interestingly, the instructional designers described unique models, such as assure (Adedapo & Opoola, 2021; Arshavskiy, 2013), Gagné's nine events (Arshavskiy, 2013), and information mapping (Information Mapping, n.d.). There was also an outlier relating to customizing the cocktail-napkin business design approach to drive optimal learning outcomes. Additionally, there were discrepant data relating to the importance of

using information about project plans to make informed decisions about the choice of technology, content, and presentation.

Evidence of Trustworthiness

To establish the credibility of the data, the participants were first asked to confirm the accuracy of the transcribed recordings. All nine participants responded by confirming the accuracy. Two participants pointed out minor changes, which I made before data analysis. Second, all nine participants were sent a summary of the findings and were asked to member-check the findings (Merriam & Tisdell, 2016; Ravitch & Carl, 2021). A summary was sent with a request to respond in one week if there were any changes. Five of the nine participants responded by confirming that there were no changes needed. I adjusted the member-checking format to include the findings across the basic qualitative study and not just the individual participant's data analysis. This approach provided more details about the findings, for which each participant would have the opportunity to provide feedback.

To address transferability for this study, I included details about the participants, such as the number of years of experience working as an instructional designer and their familiarity with linear and iterative instructional design processes. I adhered to the interview protocol (Appendix A). I met the head of the learning development department expectations for how and when to schedule each interview. Specifically, interviews were conducted during non-working hours and limited to the proposed 45-to-60-minute duration. Additionally, I recruited the instructional designers from the approved

population of 12 instructional designers who met the criteria outlined in the participant profile (Appendix A).

Nine participants consented to be interviewed. Although the participants were from a population of 12, the head of the learning development department did not know which participants were recruited and interviewed. This total of nine participants exceeded the proposed six to eight participants, which met the criteria based on several studies (Daniel, 2012; Emmel, 2013; Mason, 2010; Patton, 2015; Salkind, 2010). When sharing recordings and transcripts with the dissertation committee members, I used alphanumeric codes, such as P1, P2, and so on, to maintain the confidentiality of the participants. Additionally, all personal, product, and organization identifiers were replaced with generic names to maintain the confidentiality of the learning development department and participants within the business. To address the dependability of the study, the details for recruiting, collecting data, and analyzing data were followed as described in Chapter3.

To ensure confirmability, I used a reflective journal, and before and after conducting each interview, recorded personal reflections. I noted items that did not fit patterns revealed during the second-cycle coding. These items included those that resonated with my experiences and those that were contrary to my awareness. Additionally, I highlighted items for further investigation, which I iteratively carried out for an in-depth analysis.

Summary of Findings

The idea behind this basic qualitative study was the exploration of the perspectives of instructional designers about the usefulness of instructional design processes (linear and iterative) when making design decisions about e-learning solutions. Additionally, the study was to be conducted within the conceptual framework of the TPACK model (Koehler & Mishra, 2005). The context was a learning department within a corporate, business setting. The participants were geographically dispersed instructional designers who were instructed to change from using the linear ADDIE process (Hodell, 2016; Mercadal, 2015) to SAM (Allen, 2012, 2016; Arshavskiy, 2013). Even though the instructional designers experienced and overcame varied challenges with the processes, they offered strong indicators about the usefulness of either the linear or iterative instructional design process when choosing technology, ways to present the subject, and which topics to include.

When the time was allotted for the instructional designers to conduct their detailed learning analysis in the ADDIE process, they found that working linearly on the project was useful in collecting information and making decisions about the technology, instructional strategy, and subject for e-learning solutions. However, other considerations were factored into their decisions. These factors included the project size and scope, an understanding of the criteria for learning outcomes, and the complexity of the technology and subject. Having understood the project needs by completing an in-depth analysis, the instructional designers revealed they transitioned independently into the design and development phases.

Having a sense of being in control was another useful factor expressed by the instructional designers. When working iteratively with SMEs, the collaboration was consistent throughout the design and development phases. Independence by the instructional designers occurred when team members were assigned individual tasks that were developed in parallel. In contrast, when working linearly, the collaboration tapered in the middle of the project and then increased toward the end. The instructional designers expressed that lessening the dependency to collaborate enabled a sense of working independently. Through intermittent collaboration, the instructional designers had opportunities to make independent decisions about technology, content, and instructional strategy before seeking the final approval from the stakeholders.

When anticipating potential obstacles, the instructional designers conveyed the usefulness of an iterative instructional design process to establish ways to work around unknown or missing information. The instructional designers were not locked into completely developing one topic before developing subsequent topics. Furthermore, the instructional designers shared the iterative nature of the instructional design process provided the freedom to experiment, which promoted creativity and innovation.

Through this basic qualitative study, I gained insight into the perspectives of instructional designers about the usefulness of an instructional design process to follow when selecting publishing tools, defining instructional strategies to engage learners, and identifying the inclusion of relevant topics for e-learning solutions. The overall finding for this study is instructional designers perceived instructional design processes (linear and iterative) useful when making design decisions about technology, pedagogy, and

content for e-learning solutions. Furthermore, the usefulness included evaluating the organizational requirements, stakeholders' needs, and learners' needs to develop learning solutions that meet the criteria.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this basic qualitative study was to explore the perspectives of instructional designers about the usefulness of an instructional design process (linear and iterative) when making design decisions about e-learning solutions. Initially, I intended to inquire how and when instructional designers used design processes when choosing technology to develop and deliver an online curriculum and presenting the content through e-learning solutions. To do so, I focused on the instructional designers' practical applications of a classic, linear design process, ADDIE, and a newer, iterative design process, SAM. One of my objectives was to expand on the limited information in the literature on the opinions of instructional designers about design processes.

The findings included three themes for RQ 1:

- Theme 1: The instructional designers use a linear instructional design process for making e-learning designs decision when time is allotted to conduct an analysis and get buy-in from stakeholders.
- Theme 2: The instructional designers use a linear instructional design process for making e-learning design decisions when the opportunity to work independently exists.
- Theme 3: The instructional designers use a linear instructional design process for making e-learning design decisions when the content is known and less likely to change.

The findings also included three themes for RQ 2:

- Theme 4: The instructional designers use an iterative instructional design process for making e-learning design decisions when time is allotted for prototyping and getting buy-in from stakeholders.
- Theme 5: The instructional designers use an iterative instructional design process for approving e-learning design decisions about content, presentation, and technology when there are multiple decision-makers.
- Theme 6: The instructional designers use an iterative instructional design process for making e-learning design decisions when the content is unknown and more likely to change.

In the following sections, I discuss each theme within the conceptual framework by (a) using the participants' own words and (b) identifying the relevant studies in the literature. The findings aligned with the TPACK model used to create the interview protocol (Appendix A) and conduct the data analysis. In each discussion, verbatim text extracted from the transcribed interview recordings is used to support a theme.

Interpretation of the Findings

My interpretation of the data is based on the RQs, conceptual framework, and literature review. Instructional designers' perspectives about linear and iterative instructional design processes were a mix of elements of usefulness with drawbacks and obstacles. The interpretations are organized by themes within each of the RQs.

Underlying the interpretation of the findings are the constructs of the TPACK model, which relate to the types of decisions instructional designers make when designing e-learning solutions. Additionally, the findings of this study relate to relevant

studies, which included a primary or secondary focus on the use of instructional design processes. However, although the literature includes many references to instructional design processes, often the data did not include perspectives of instructional designers. Little information existed about choosing a linear or iterative instructional model for instruction (Battle, 2019). Few researchers revealed in-depth findings of an adherence to an instructional design process for their studies, and little information existed about the awareness of the distinct types of instructional design processes used in workplaces (Lorimer, 2019).

The findings in this study include themes that supplement what is known and offer new data. The participants provided insight into the usefulness of (a) the analysis phase in a linear instructional design process, (b) the prototyping in an iterative instructional design process, and (c) the experience of working independently on e-learning solutions when using an instructional design process. Overall, the instructional designers found a linear, iterative, or customized process useful for completing tasks associated with developing e-learning solutions. When asked about usefulness, the participants described experiences in which they revealed how and when an instructional design process was beneficial. Additionally, they provided insight into the benefits of knowing more than one instructional design process when given details about the constraints of an e-learning solution. The findings contribute to the conversation about how and when researchers, instructional designers, and stakeholders find instructional design processes useful as a guide in developing e-learning curricula. For example, the

findings in this study include similarities and differences between prior studies and reports in the literature.

Additionally, and more importantly, the participants in this study revealed new perspectives. When familiar with instructional design processes, instructional designers blend phases from distinctive design processes to design e-learning solutions (Gawlik-Kobylińska, 2018). The participants in this study revealed they either followed a single instructional design process or blended multiple instructional design processes when making design decisions. Furthermore, instructional designers draw on project management constructs aligned with the phases in the instructional design process. In the literature, some authors established guidelines for managing learning projects in terms of costs, resources' time, and due dates when describing the phases of instructional design processes (Allen, 2012, 2016; Torrance, 2014b). In this study, the instructional designers considered project milestones, schedules, and budgets when selecting a design process.

Theme 1: Linear Instructional Design Process When Time is Allotted to Conduct an Analysis and Get Buy-In from Stakeholders

The findings support the continued use of the ADDIE design process. The participants in the study moved from a linear process to an agile one. P7 revealed, "I do miss having that formality even though it does take a little bit longer to do" and "I do still think ADDIE has a lot of benefits." Though the ADDIE has limitations due to being nonflexible and time-consuming because each phase must be completed before moving to the next phase (Allen, 2016; Arshaviskiy, 2013), there has been a successful outcome when instructional designers delivered a software course by blending ADDIE with a

transformational model, including technological integration, to aid learners' skill acquisition (Albeanu & Popentiu-Vladicescu, 2019). Even though the analysis phase has to be completed before moving to the next phase, the strength of the analysis phase provides the instructional designers the opportunities to define the types of decisions to make in subsequent phases (Minaya, 2016). In agreement, P1 stated that working through the linear aspects of the model helped lead to good content. P2 also revealed that using a linear instructional design process was useful "when a deliverable needed to be turned around rapidly."

To achieve the benefits of the ADDIE model, time is needed to identify tasks that must be completed after the analysis phase. During the analysis phase, P1 explained, "that's where you spend time." finding out about "what are the constraints" and "what's the scope." Accordingly, P9 explained the usefulness of the analysis phase is due to "whether you have more time in the very beginning for analyzing the project." The time allotted for completing the analysis phase of the linear process varies. In the literature, the length of time for an instructional designer to complete the analysis phase ranged from long to short and sometimes was not completed (Hodell, 2016). Supplementing how time is spent during the analysis phase, P1 stated that the analysis phase is where designers spend time to learn what delivery method works best. During the analysis phase, P1 found, "I was able to get a real clear vision." Further insight was provided by P6 who revealed, "[in] the more compressed timelines, I find a linear model works well," however, "we run the risk of designing something that's not going to be necessary helpful."

The time allotted also needs to include the instructional designers' work style. Stakeholders should consider the amount of time to design and develop to meet the quality indicators defined for online courses (Durak & Ataizi, 2016). In considering how time is allocated, instructional designers using the linear approach might work toward perfection, which means taking more time to meet their goals (Allen, 2016). In this study, even though the instructional designers found that working linearly sometimes blocked their progress, they conveyed that the analysis phase provided the context for an in-depth, thorough examination of what information was needed to make effective design decisions about e-learning solutions. P4 discerned, "each block in my linear process will lead me to a question that will help me develop the next topic." It is also apparent that giving instructional designers enough time to complete the analysis phase adds to quality outcomes. The information uncovered during the analysis phase is important for making informed decisions about learning solutions that meet the requirements of the organization, subject, learner, and technology (Durak & Ataizi, 2016). During the analysis phase, the instructional designers answer questions about which technology to use, should e-learning be the modality, the audience, and the knowledge and skill gaps (Arshaviskiy, 2013). To demonstrate thoroughness, P6 described the analysis phase in terms of having "the full comprehensive picture of where from A-Z this topic is going to go."

In this study, the instructional designers revealed answers during the analysis phase about technology, pedagogy, and content regarding making design decisions for e-learning solutions—these perspectives aligned with the conceptual framework of the

TPACK model (Koehler & Mishra, 2006). The key to this first theme is when time is allotted, instructional designers found the analysis phase of the linear instructional design process useful.

Theme 2: Linear Instructional Design Process When the Opportunity to Work Independently Exists

Instructional designers experience various forms of control, whether over their choices, workflow, or interactions. In the literature, a linear approach lacks stringent guidelines that require set meeting times, which conveys more control by the instructional designer on whom to meet with and when to collaborate (Minaya, 2016). In this study, the instructional designers expressed control regarding how, when, and with whom they performed design and development tasks. P7 revealed, “I felt like I had more control … I have more control of what we’re doing.”

In contrast, instructional designers either experience a minimal control or control with a different process. There is an absence of freedom in overarching governing elements for the ADDIE instructional design process (Minaya, 2016). For example, P8 revealed a lack of control with either a linear or an iterative instructional design process when choosing the technology: “I don’t think the design process has that much control over what tool you pick.” Alternatively, P5 experienced feeling in control, not with a linear instructional design process but instead with an iterative instructional design process, explaining, “you wanted to have a chance to work independently” due to the flexibility.

Instructional designers blend process elements to gain a sense of control. The element of independence is realized when customizing the design process (Gawlik-Kobylińska, 2018). Furthermore, instructional designers do not share a functioning prototype until the development phase of the ADDIE instructional design process was well underway (Allen, 2012). By doing so, the instructional designers work somewhat independently until revealing the e-learning solution for review. About control, P6 stated, "I find that in that linear model, it gives me the opportunity to [really] understand the full context before I begin making those design decisions."

ADDIE has more opportunities for instructional designers to work independently. However, this does not overlook instructional designers' collaboration steps and ways they sought feedback. The participants in this study revealed a unique perspective of the control instructional designers experience when working through design processes. For the most part, the instructional designers expressed they had more control using a linear instructional design process than the dependency found with collaboration in an iterative process. When assigned to an e-learning project, the instructional designers rarely work solo. There is a continuum of collaboration. With less collaboration, there is more independence. P5 described working independently, "if you're not making all the decisions maybe right up front" and "you wanted to have a chance to work independently," by choosing an iterative instructional design process. The participants shared their insights to experiencing control, and independence was revealed in this study. Specifically, the instructional designers found a linear instructional design process useful when the preference to work independently existed.

Theme 3: Linear Instructional Design Process When the Content is Known and Less Likely to Change

At the start of a project, instructional designers consider whether the content is known and less likely to change before choosing a design process. The instructional designers discover how static or dynamic the content is. Educators using the ADDIE instructional design process can manage changes by (a) meeting the needs of a project team and (b) having a clear understanding of the learning solution that was not expected to change from the initial scoping efforts (Torrance, 2014b). In agreement, P2 noted the linear instructional design process useful when the content was "straightforward" and "if it's [the content is known] more baked [content not subject to change]." However, one disadvantage is instructional designers might overlook innovative changes by adhering to the original plan (Torrance, 2014b).

ADDIE is inflexible and fits when the objectives, technology, and content are more static than dynamic. How and when instructional designers make decisions influence the usefulness of design processes. Some instructional designers make key design decisions about integrating technology to support a learning strategy before the project begins (Hodell, 2016). Instructional designers find handling changes challenging when using a linear instructional design process (Minaya, 2016). Along these lines, P8 explained, "it's a one-shot deal" and "you're more locked in." P6 shared, "once it's designed and developed, you have to roll with it." P3 experienced consequences due to the inflexibility of a linear instructional design process due to change by asserting that "if things shift or change over time, you might be working on outdated information."

Theme 4: Iterative Instructional Design Process When Time is Allotted for Prototyping and Getting Buy-In from Stakeholders

Prototyping serves as a tool for communication to capture the feedback dynamically throughout the design process. Instructional designers use prototypes to find problems with instructional strategies (Rothwell et al., 2016). In establishing the use of agile design processes, Jung et al. (2019) found that researchers had conducted a few studies about organizations that used the SAM instructional design process. The findings of this study revealed the importance of prototyping performed using the SAM process. Overall, the usefulness of prototypes outweighed the requirement for longer durations needed to build prototypes for e-learning solutions.

Building Prototypes

Instructional designers build prototypes to convey how learners will interact with an e-learning solution. There are numerous accounts in the literature about the criticality of prototyping. Prototyping is central to the agile process or interative instructional design process (Allen, 2012; Jung et al., 2019; Sites & Green, 2014). Jung et al. (2019) described SAM as faster and more efficient. Allen (2012) and Jung et al. described the incremental development tasks, which means time must be allotted for these tasks. In agreement, P2 shared, “a little more input as you go versus you get all of your input upfront.” Adding supplemental information, P6 declared, “[the] SAM model allows me to basically [to do] trial and error,” which takes time.

Initially, the prototypes are rough, working examples of the instructional strategy. Each prototype iteration approaches the optimal solution. The goal is to reach a minimum

viable product to support the learning criteria (Hunter, 2016; Radin, 2018). Using various publishing tools, instructional designers build prototypes to convey to their stakeholders how learners will interact with the e-learning. Concurring with the concept of working toward an optimal outcome, P6 connected the purpose of a prototype to "see what resonates with the business during those iterative opportunities." Providing more details, P4 emphasized, "you only have time to get that certain portion [topic] done before and the other one has to be done … you have to give him that plain donut [minimal viable product] with the hopes of coming back." Time must be allotted for the instructional designers to build prototypes and manage the rework required with each iteration.

Instructional designers express creativity through prototyping. Researchers contributed to the conversation about the usefulness of design processes when identifying which instructional design process was leveraged to create materials for a study or be used as the conceptual framework for the design. For example, Jung et al. (2019) used SAM to develop e-learning and attributed the ideation through numerous team collaborations. Furthermore, Jung et al. pointed out the benefits of learner input by comparing original and revised versions of the online deliverable and stakeholders' feedback. Much the same, Torrance (2014b) found agile design processes a better fit for expressing ideas. In the interview, P7 shared, "we collaborate more on what the prototype is going to look like." Relating ideation with prototyping, P6 explained the reviewers shared, "you just keep coming back to me with ideas." However, the findings in this study revealed there needs to be an understanding of the iterative nature. P6 cautioned there is a need for "being very clear with the business that this is an iterative process."

Instructional designers use prototypes to drive innovation while confirming that expectations are met. In the literature, Shen and Lai (2017) described the nature of design processes as innovative by combining creativity with instruction. In another study, Nadiyah and Faaizah (2015) concluded that prototyping ensures that an envisioned learning interface is what the stakeholders expected. Site and Green (2014) explained the outcomes are more creative when the team uses prototyping to enable differing views by trying new designs. Insight into the varying feedback was shared by P6 when pointing out SMEs' suggestions, "I see that you are refining, and it's getting better." Instructional designers use prototypes as a tool for collaboration. The participants in this study shared insight into the usefulness of building prototypes when following an iterative process. P7 expounded upon this perception, "we collaborate more on what the prototype is going to look like … with all stages." Thus, project managers responsible for establishing schedules need to allot time for collaboration and revisions to prototype properly.

Considerations for When to Prototype

Development time, project budget, and learning outcomes criteria for an e-learning solution are considerations for prototyping. Prototyping takes time. Prototyping using SAM can be time-consuming (Hutanu et al., 2015). Torrance (2014b) explained instructional designers consider time allotted and costs when determining the number of iterations. Allen (2012) explained a prototype represents how learners interact with an e-learning solution. Relevant to the considerations expressed in the literature, the participants in this study shared the perspectives of the usefulness of an iterative design process. For example, P6 stated, "[the SAM Model] allows me to prototype" and "[the]

SAM model is better suited because I can come back to them [the reviewers] with different iterations."

If not managed, prototyping can be costly. Minaya (2016) cautioned that the iterative approach could be costly for time and work efforts. Setting different expectations about time, Hutanu et al. (2015) found that the size of the project determines the number of hours to allocate to incorporate changes. Relevant, P6 explained that, regarding the consideration for time, an iterative approach is useful, "when I have a timeline that's more long term and allows us the opportunity to explore solutions." There are consequences for not allocating time for prototyping, such as having a deliverable that does not meet learners' needs.

Instructional designers prototype until they meet the learners' needs and the stakeholders' quality expectations. The researchers in the literature provided various accounts about the dynamics of prototyping. The learning solution is available for rollout when a minimal viable product is achieved (Allen, 2012). Arshavskiy (2013) explained teams reach a usable learning deliverable in less time using an iterative approach. Providing insight into the timing associated with a prototype, P7 demonstrated the usefulness of being iterative to "get to the high-level look … sooner in the process." Equally important for quality indicators, P7 expressed, "showing them [reviewers] exactly [what] we're going to be doing" and "you don't go down this road … that might not be correct." Notably, with each iteration, the instructional designers refine the prototypes.

The timing for prototype creation and schedule reviews depends on the design process. Establishing the benefits of an iterative approach, Allen (2012) proposed instructional designers using SAM build prototypes earlier in the process to ensure meeting the criteria for quality. Somewhat related, P9 offered insight that prototyping steps in an iterative process "take a little bit more time." Instructional designers prototype learning solutions to evaluate the learning strategy, including technology, content, and presentation.

In summary, in the iterative-develop phase of SAM, instructional designers build prototypes to collect feedback. Additionally, the iterative versions of prototypes help the instructional designers make informed decisions leading to the final e-learning iteration (Allen, 2012, 2016; Arshavskiy, 2013). Instructional designers work through the iterative-develop phases of SAM until meeting the criteria for a minimum viable product (Allen, 2012). Several participants reiterated time considerations when using an iterative process. For example, P6 established the iterative process useful "when I have a timeline that is more long term."

Furthermore, P1 stated, "[the SAM instructional design process] lends itself just to that prototype in [the] review." Notably, P7 offered, "the biggest issue that I find with it [Sam instructional design process] is trying to get … the SMEs' time" because "we are constantly going back to them." In this study, the instructional designers found that an iterative instructional design process is useful for making decisions when there is time to build prototypes.

Prototyping When Working Linearly versus Working Iteratively

For the most part, instructional designers associate prototypes when working through an iterative process. In one study, Nadiyah and Faaizah (2015) followed the ADDIE instructional design process when building a prototype for training. On the contrary, with a linear design process, P7 revealed, "you can have an outline, but you don't really have a prototype," P5 stated, "I'm not really sure if ADDIE talks a lot about … doing prototypes." P5 added, "by the time we came to a prototype [in a linear process], the topics and learning outcomes were clearly defined," which meant limited opportunities for incorporating feedback. The collaboration needed for iterative reviews and the development of prototypes takes time.

Theme 5: Iterative Instructional Design Process When There Are Multiple Decision-Makers

In anticipation of multiple review phases, the instructional designers found an iterative design process useful for managing the prototypes review process and iterative workflow. Typically, the reviewers include project team members, SMEs, and members of the target audience who participate, review, and prepare feedback. Jung et al. (2019) explained managing the involvement of several roles for collaborating, providing input, and sharing ideas is critical when using an iterative process to update the learning solution continually. P5 brought to light that an iterative instructional design process offers a way "to give people a chance to provide their input." P5 revealed the linear instructional design process useful when "having those [design] decisions made early" and "establish[ing] a team of clearly defined roles."

When there are multiple decision-makers, the instructional designer must manage how and when tasks are performed. Minaya (2016) explained team members working with an iterative instructional design process expect to share information for clarity by submitting work in progress for approval. The findings in this study include a confirmation of the usefulness of a design process. For example, P2 provided an awareness of the involvement of the reviewers by stating, "you're able to … test as you go," "you're able to review," and working iteratively on tasks is about "information being shared … involvement along the way." When obtaining approval, P8 described the dynamic exchanges between the instructional designers and reviewers by stating, "because SAM has overlapping processes where … there are more handoffs."

Instructional designers must manage quality. Allen (2012) explained the instructional designers found a reduction in development time when collaborators discovered issues or missing information early in the process. In addressing managing quality, P1 asserted with an iterative process the instructional designers "get to that initial … high-level … look a little bit faster" The findings in this study uncovered the perceptions of instructional designers about the usefulness of an instructional design process for managing tasks. These findings provide a detailed exploration into how the instructional designers realized smaller budgets and decreased unplanned rework as defined by Allen (2012).

Instructional designers communicate with learners and stakeholders. Torrance (2014b) pointed out the need for a communication plan when working iteratively for a successful outcome. Furthermore, when using SAM to collaborate on what should be

included in the content, Jung et al. (2019) suggested instructional designers maintain a schedule. Following this further and providing insight into the dynamic interactions between instructional designers and reviewers, P1 disclosed, “those iterations have been looked at several times [and] signed-off.” In the same way, when working with multiple decision-makers, P8 stated, “the thing that they really adhere to is the project plan” and “there is some formal, there’s the informal.”

Instructional designers collaborate on prototypes, schedules, and project documents by exchanging emails and contacting team members by phone. The participants in this study shared their experiences about how and when they collaborated during the design process. For example, P5 pointed out, “you may be able to follow up on a couple of things either by email or giving them [reviewers] a quick call.” P5 added, “[the iterative instructional design process] requires a little bit more meetings.” Although the iterative process supports multiple decision-makers, the instructional designers need to manage the SMEs’ time. In another example, P3 expressed collaboration in terms of “having the contact and collaboration … more consistent over time.” Somewhat related is the experience of P7 who asserted conducting “brainstorming if it’s a larger project.” In the light of these findings, such as managing times for brainstorming, communicating, and conducting reviews, the instructional designers found the iterative instructional design process useful when working with multiple decision-makers.

Theme 6: Iterative Instructional Design Process When the Content is Unknown and More Likely to Change

Instructional designers work with content that might be unknown and subject to change. At the start of a project, the instructional designers discover how static or dynamic the content is. Instructional designers determine what information is unknown and likely to change. In the literature, Gawlik-Kobylińska (2018) described an agile approach or iterative process in which instructional designers managed unplanned tasks, continuous collaboration, and rapid prototyping activities. Specifically, Jung et al. (2019) realized successful outcomes when using SAM for continual adjustments to the e-learning solutions to meet changing learners' needs. Adding to the conversation, P1 claimed, "I think it works better when you're creating a brand-new course from scratch," which meant that the iterative instructional design process was useful when the technology, subject, and pedagogy were unknown at the start of the project.

Considerations exist for instructional designers when there are unknowns about the project. In one example, P4 explained "we might be doing iterative because we don't know all the topics yet." However, there are times when information is known. In another example, P6 stated, "they [stakeholders] have some outcomes that they'd like to reach." In terms of publishing tools, P4 shared, "I will scale back the technology because … there's a lot of times we need to … make changes quickly" or "it wasn't high maintenance" due to changes. On the contrary, P6 explained an iterative approach "lends itself to allowing me to choose more [rich] media." In this study, the findings uncovered

the instructional designers' perspectives about how they made design decisions when using an iterative approach.

The balance between project analysis and scoping overlaps and is not to be overlooked. The ADDIE instructional design process meets the needs of a project team with a clear understanding of the learning solution that will not evolve from the initial scoping efforts (Torrance, 2014b). Providing further insight into which design process is useful when working with unknown information, P6 stated, "I see the SAM model as being the most helpful when you don't have a clear-cut destination."

In comparing linear and iterative instructional design processes, the linear ADDIE instructional design process fits when the objectives, technology, and content are more static and less dynamic. On the one hand, the instructional designer might make incorrect decisions without quickly resolving issues when using the ADDIE process. For example, P7 revealed, "you might get too far into the training and it's not what they needed." On the other hand, with the SAM instructional design process, the instructional designer will realize in a timely way that there is a possibility that the technology, topics, or interactivity are inaccurate. For instance, P3 found, "with agile, you've obviously gone less far down that path." Similarly, P7 emphasize that with an iterative approach, "if we're not constantly checking in, then we could be going down a road that we shouldn't be."

With the iterative instructional design process, P3 identified ways to show its usefulness "because it doesn't have to be so fleshed out [the content does not need to be known]," which means the agile [iterative] approach works well for an instructional

designer managing changes. In the same way, P2 concurred using "iterative, if it's change, it's new, if it's constantly … being developed," an agile approach is useful. Allen (2012) described the complexity of a project in terms of continuously changing the content and publishing approaches. If not managed, the instructional designers experienced increased costs and less than optimal learning experiences. In this study, the instructional designers found an iterative instructional design process useful for making e-learning decisions when the content is unknown and likely to change.

Theoretical Models and Other Design Processes

The participants revealed details about other design processes when making design decisions about e-learning solutions. First, the assure model for working with advanced technology (Adedapo & Opoola, 2021) was referenced by one participant. P1 pointed out, "there's other models out there; there's an assure model that is sometimes used … I know the principles." Second, there is Gagné's nine events of instruction for multimedia e-learning development (Arshavskiy, 2013). Referencing instructional and motivational theories, P5 remarked, "I relied heavily on Gagńe's nine events when I started my career." Notably, P5 used a linear design process as a tool to communicate. Third, there is a project model. P8 expressed, "we don't really focus on any design theories" and instead "it's mostly the project plans." Similarly, P1, P2, P4, and P6 used project components—complexity, scope, size, and timelines—to guide how they made their decisions.

Additionally, the participants revealed details about how project management models aligned with their choice of design processes. Beginning with timelines, P1 and

P5 explained the scope and cost were posed during a linear process analysis phase. Similarly, P6 used timelines to make decisions throughout the design process. Choosing an alternative approach, P8 asserted, “I’ve been doing more like the cocktail napkin approach, just because of time constraints.” P8 continued, “I … basically draw a rough outline … it’s just this outline that I’m working from…so I don’t miss anything … have it all laid out.” In another approach, P3 experienced a blending of SAM with classic design process and shared, “[the process] is … aligned to ADDIE. It’s just that it’s much more iterative in terms of the cycles.”

Limitations of the Study

The limitations for this basic qualitative study included subjectivity, transferability, and sampling. I continually noted my reflections using a research journal. Although I have extensive knowledge about instructional design processes, this study was limited to accessing and reviewing articles listed in the search results found in the literature. The keywords and phrases that I used for the searches were framed by the TPACK model (Koehler & Mishra, 2006) and focused on two of many instructional design processes, namely SAM (Allen, 2012) and ADDIE (Molenda, 2015). For example, when P5 stated, “I relied heavily on Gagné’s nine events,” I noted awareness of how Gagné’s nine events of instruction (Arshavskiy, 2013; Gogineni et al., 2019) related to the usefulness of an instructional design process.

Similarly, when P7 shared, “I felt like I had more control,” I recorded this perspective as an alternative way of pointing out the usefulness of an instructional design process. I noted that these ideas warranted further investigation. In other words, I

remained open to discovering themes across the data collected during interviews while managing my personal views and noting my experiences.

This study is limited by the transferability of the findings from the context of the learning development department within a business setting, which employed instructional designers who were geographically dispersed and had experience with both SAM (Allen, 2012) and ADDIE (Molenda, 2015). The participants were from one learning development department in one business setting, and their perspectives might not represent other instructional designers in various industries. However, I included details about the procedures for recruitment, data collection, and data analysis for readers to determine if their context is similar. Additionally, the participant profile used for recruitment lists the requirements and experiences of the instructional designers.

Although the goal was to interview six to eight participants out of 12 instructional designers, nine participants participated in the study. This sample size is small, which is a limitation. However, purposeful sampling (Ravitch & Carl, 2021) was used to select participants with the experience and understanding needed to answer the RQs. A full description of the steps taken for recruitment and sampling is in Chapter 3.

Recommendations

For organizational leaders who decide which instructional design process to integrate into their business workflows, conduct a survey using the questions in the interview protocol (Appendix A) and reveal the perspectives of the instructional designers. By doing so, the leaders will understand at a greater depth the usefulness of applying a design process in its entirety, blending phases from multiple processes, or

confirming that existing processes meet the needs of the learners within the organization. Even though the participants in this study acknowledged valuable insights about the usefulness of an instructional design process (linear and iterative) for making e-learning design decisions, I found three areas for further investigation.

There are factors to consider for conducting future studies. The first recommendation is to explore the perspectives of instructional designers on integrating project milestones and design process tasks. In this study, the instructional designers shared the overarching project milestones were factors when making decisions about how learners would access the online courses, interact with the concepts and activities, and review the topics, which aligned with the TPACK model (Koehler & Mishra, 2006), the conceptual framework for this study.

Second, it is recommended to study the perspectives of instructional designers about the usefulness of integrating an instructional design process with a theoretical learning model. In this study, the instructional designers, at times, adopted a blended approach by integrating the tenets of theoretical models while making design decisions. The instructional designers pointed out how and when they leveraged various learning models underlying the instructional strategy or pedagogy. Upon inspection, these theoretical models focused on the ways learners acquire knowledge and skills. These learning models should not be overlooked. Consider exploring the perspectives of instructional designers about the outliers found in the data for this study. Exploring how instructional designers used only theoretical models and not design processes might generate new data.

Third, using the TPACK model (Koehler & Mishra, 2006) constructs for technology, pedagogy, and content knowledge as a conceptual framework, it is recommended to study the perspectives of instructional designers who are familiar with only one instructional design process. In this study, the instructional designers had experiences with the ADDIE and SAM instructional design processes. Exploring the perspectives of instructional designers familiar with ADDIE only, SAM only, or a different instructional design process might reveal new views and opinions.

There are other factors to consider, including the setting, scope, and project. The setting and participants for this study included a business context with corporate instructional designers. For the setting, exploring the perspectives of instructional designers in another context, for example, healthcare or manufacturing, might reveal similar, differing, or new data. Only a minimal description was given for a team with one instructional designer with a team that included multiple diverse roles. For the scope, exploring the views of instructional designers working on simple versus complex-sized e-learning solutions might offer alternative opinions. Regarding project size, some of the instructional designers shared their perspectives about the number and roles of team members. Perhaps, a more in-depth focus on the usefulness of an iterative instructional design process based on the number of reviews, including stakeholders, SMEs, and other instructional designers, might contribute to the conversation about design processes.

Implications

The findings of this basic qualitative study include perspectives in which instructional designers contributed to the conversation about finding ways to enhance e-

learning outcomes based on technology, instructional strategy, and content. Specifically, the findings will help instructional designers and organizational leaders make informed decisions about the usefulness of instructional design processes (linear and iterative) used to create training concepts and job tasks. The findings add to the literature information about how instructional designers used an instructional design process for productivity, meeting deadlines, and addressing quality.

In comparison to Galagan (2013), who reported the instructional designers missed opportunities for increased productivity, the findings of this study included the speed of development based on the usefulness of an instructional design process (linear or iterative). Comparatively, while Gökkaya and Güner (2014) found inconsistent levels of quality, the findings of this study included elements of quality based on the allotment of time for testing and collaboration when using an iterative. Not to be overlooked, levels of quality existed when instructional designers using a linear approach had an in-depth understanding of the technology, pedagogy, and content at the onset of a project. Along the same lines, the findings provided perspective data about the usefulness of an iterative process that met expectations through repetitive testing and collaboration, which aligned with the principles Allen (2012) identified for an agile instructional design process. In addition to these findings, there were new revelations.

The new revelations related to the data included working independently and working with known content. A linear or modified process was useful when the instructional designers had a dual role of designer and SME. Another theme was the linear process was useful when the content was known through prior scoping and in-

depth analysis. The remaining themes aligned with the literature and other prior studies. However, the data included the perspectives of the instructional designers, of which little information existed in the literature.

Conclusion

The purpose of this basic qualitative study was to understand the perspectives of corporate instructional designers on the usefulness of instructional design processes (linear and iterative) when making design decisions for e-learning solutions. One goal was to provide instructional designers and stakeholders with insights into making informed decisions when planning e-learning solutions. Furthermore, for positive social change for educational leaders and instructional designers, the findings in this study provide information about the practical application of the use of instructional design processes when designing e-learning solutions.

Overall, instructional designers' use of instructional design processes is crucial when making design decisions for e-learning solutions. In this study, the participants revealed that the general use of an instructional design process was beneficial. Because organizational leaders invest time and money into developing quality e-learning solutions for their employees, project teams using an instructional design process, linear, agile, or both follow practical guidance leading to optimal learning outcomes. The participants attributed well thought out instructional strategies, milestones for delivery schedules, and estimated costs for resources' time and budget to the adherence of an instructional design process in varying ways. All nine participants found a linear, iterative, or tailored instructional design process useful when working through the design and development

tasks. However, the participants expressed varying degrees of usefulness when considering project size, technology complexity, and subject details.

The findings have several uses for instructional designers, program directors, and organizational leaders, including (a) opportunities for future exploration of instructional design processes, (b) examples for an immediate application of instructional design processes, and (c) topics for professional development programs. First, there are opportunities for future studies to explore how design processes align with workflows within a different setting. Alternatively, the study could be conducted with participants who make choices about technology, types of presentation, and subjects in academic, manufacturing, or health care settings. Moreover, these future studies will strengthen the scholarly conversation about the perspectives of instructional designers about the practical applications of instructional design processes when making design decisions.

For program directors leading the efforts of cross-functional team members who include instructional designers, SMEs, and project managers, the decision to use an instructional design process guides establishing schedules, defining criteria for learning outcomes, and communicating ideas. The benefits realized by program directors choosing to use an instructional design process outweighs not following one. Additionally, by following an instructional design process, team members adhere to guidelines for collaboration from the start of an e-learning project to delivery. The program managers leverage the use of the instructional design process by instructional designers as a tool to communicate and check for the achievement of learning goals. However, the participants

shared by having an awareness of two or more instructional design processes, they could assess the situation and choose which instructional design process to follow.

Additionally, educators who develop instructional materials for online classes should use an instructional design process to identify the tasks for defining steps, managing collaboration, and evaluating the deliverable throughout design and development. For educators in supervisory roles supporting team members responsible for designing e-learning solutions, an awareness of the workflow associated with using an instructional design process is critical. This awareness promotes the extension of opportunities for professional development beyond technological knowledge and skills to include training on the trends for adapting instructional design processes, linear, iterative, or other.

Second, the findings include examples of an immediate application of instructional design processes. The instructional designers' experience, responsibilities, and support for organizational leaders are factors for optimal instructional design processes. The themes from the data included perspectives about working collaboratively versus independently, managing known versus unknown information, and changing versus non-changing. On the one hand, the participants expressed working independently on tasks adhering to a linear or iterative model. However, the timing of control and independence differed. For a linear process, that independence was experienced at the onset of the project. For an iterative process, working independently on parts of e-learning solutions occurred after tasks were assigned. On the other hand, participants expressed that a linear process best fit when working with known content that was subject

to minimal change. These examples provide practical ways to embrace instructional design processes.

Designing and developing training costs time and money. Additionally, there is the need to ensure quality. Organizational leaders having a vision and strategic plan for learning programs for their employees must ensure that the instructional design processes align with the business processes, which requires familiarity with instructional design processes. Instructional designers find an instructional design process useful when making design decisions for e-learning solutions. In this study, the instructional designers expressed the usefulness of an instructional design process. Although the levels of usefulness were expressed along a continuum, without exception, the nine participants described useful components of both a linear and iterative instructional design process.

Finally, there are considerations to broaden the subjects covered in instructional design programs. The organizers of these professional development programs should consider integrating project management and learning theories with instructional design processes. For certain deliverables, some participants performed project management tasks or had an awareness of project-related tasks being performed that might impact decisions for technology, presentation, and content for e-learning solutions. These include project timelines, meeting schedules, and resource assignments. Additionally, a few instructional designers found that project management decisions guided their workflow through the phases of e-learning development. For learning theories, the data included non-phased approaches to developing e-learning, such as applying theoretical constructs when choosing the technology, pedagogy, and content. By exploring the

usefulness components of instructional design processes through the constructs of the TPACK (Koehler & Mishra, 2005), few participants made connections to learning theories when making design decisions, which was out of scope for further exploration in this study. This revelation is an opportunity for future studies.

The data included practical applications of instructional design processes when designing e-learning solutions. Because there were limited data from prior studies about the perspectives of instructional designers regarding the usefulness of instructional design processes, the findings included innovative ways of viewing tools and interactions through project phases. The data could transform the ways organizational leaders make informed decisions about which instructional design process to use. While educators improve social change outcomes by leveraging creative and innovative ways to share practical knowledge (Walden University, n.d.-b, 2017), in this study, the instructional designers shared perspectives about best practices for planning time, budgets, and resources for e-learning solutions. The data in this study add to the literature about how and when instructional designers found instructional design processes useful for designing e-learning solutions. In conclusion, the findings were the instructional designers found using a linear, iterative, or custom design process more useful than not using one under any circumstances.

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Appendix A: Interview Guide and Protocol Analysis

Appendix A includes the participant profile, interview questions, and list of relevant studies and conceptual framework used to support each interview question.

PARTICIPANT PROFILE

The participant:

- Has a role as an instructional designer in a corporate education organization
- Has experience performing the task and needs analyses, defining the learning strategies, creating the storyboards for the multimedia deliverables, designing the prototypes, conducting the content reviews, and publishing and distributing the e-learning solutions
- Has at last one year of experience with the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) instructional design process
- Has at least one year of experience with the successive approximation model (SAM) instructional design process
- Has experience with e-learning publishing tools, such as Adobe Captivate, TechSmith Camtasia, and Articulate Presenter or Articulate Storyline, and other similar e-learning design, development, and delivery tools

INTERVIEW PROTOCOL

Opening Statements

Hello! My name is Helen Lenane. I am an Ed.D. student at Walden University specializing in educational technology. Thank you for your participation in this study. I appreciate your willingness to be interviewed. This interview is for a dissertation to earn my doctorate.

This interview will take approximately 45 minutes to 60 minutes. I will be asking the same questions of all the participants. Please know that your participation is voluntary. The details are in the consent form that you returned with your approval to participate.

You may decline to answer any question. You may end the interview at any time.

The purpose of this interview is to explore instructional designers' perspectives of the usefulness of an instructional design process when making design decisions for e-learning solutions. For example, each development step in a linear instructional design process, such as ADDIE, must be completed before beginning the next step. The steps in an iterative instructional design process, such as the successive approximation model,

might be repeatedly performed in parallel with other tasks until the development is done. There are no right or wrong answers to the interview questions.

With your permission, I will be recording the audio of our interview. Later, I will transcribe the recording myself. The transcript will only be used for this study. Your responses will remain confidential. My dissertation committee members and I will be the only ones who will be aware of your answers. I will not use your name in the transcription. Instead, I will use alphanumeric codes in place of your name and the organization name. When I have completed the data analysis, I will email you the findings for your information. Before we begin, what questions do you have for me?

May I have your permission to start the recorder?

General Questions
1. Describe your current profession.
2. How long have you been designing e-learning solutions?
3. Which instructional design process do you currently use for developing e-learning solutions?
4. Which instructional design processes have you used?

RQ 1: What are instructional designers' perspectives of the usefulness of a linear instructional design process when making design decisions for e-learning solutions?
1. How did using a linear instructional design process determine the technology you chose?
2. How did using a linear instructional design process determine the interactivity or the ways that the learners used the e-learning interface?
3. How did using a linear instructional design process determine the instructional strategy you chose?
4. How did using a linear instructional design process determine the topics you chose?
5. How did using a linear instructional design process effect the way you presented the subject?
6. How did the subject effect the way you used a linear instructional design process?
7. Tell me how you collaborate with others, such as members of the audience, team members, and stakeholders when using a linear instructional design process.
8. Tell me how you overcame obstacles when using a linear instructional design process.

RQ 2: What are instructional designers' perspectives of the usefulness of an iterative instructional design process when making design decisions for e-learning solutions?
1. How did using an iterative instructional design process determine the technology you chose?
2. How did using an iterative instructional design process determine the interactivity or the ways that the learners used the e-learning interface?

3. How did using an iterative instructional design process determine the instructional strategy you chose?
4. How did using an iterative instructional design process determine the topics you chose?
5. How did using an iterative instructional design process effect the way you presented the subject?
6. How did the subject effect the way you used an iterative instructional design process?
7. Tell me how you collaborate with others, such as members of the audience, team members, and stakeholders when using an iterative instructional design process.
8. Tell me how you overcame obstacles when using an iterative instructional design process.

Closing Statements

I am going to transition into closing statements.
What information about instructional design processes would you like to share that was not discussed?
Is there anything you would like to add?
Thank you for your participation in this study. This concludes the interview. I am going to stop and save the recording.
The following list includes follow-up questions that will be used to obtain more information or clarify unclear responses.

- Could you tell me more about…
- Could you give me an example of…
- Could you walk me through the steps…
- Could you describe the…

Appendix B: Permissions for Reprinting Images

Permission to Use the Image of the TPACK Model

From:
Sent: Sunday, October 10, 2021 5:11 PM
To: Helen Lenane
Subject: Re: Request for Permission to Use the TPACK Model in My Dissertation

That link you cited is all the permission you need. Good luck!

Permission to Use the Image of the Successive Approximation Model

From: Helen Lenane
Sent: Tuesday, July 20, 2021 5:18 PM
To:
Cc:
Subject: Re: Request permission to use image of the Successive Approximation Model

Hello,

Thank you for permission to use the image. I will attribute the image to Dr. Michael Allen and Allen Interactions.

Also, thank you for the prompt reply. It was greatly appreciated.

Thank you,

Helen Lenane