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An Examination of the Decision-Making Process Instructional Designers Use to Complete Projects With the Constraints of Limited Time and Tools

Denesha Kaye Rabel
Old Dominion University, dkrabel2@gmail.com

AN EXAMINATION OF THE DECISION-MAKING PROCESS INSTRUCTIONAL DESIGNERS USE TO COMPLETE PROJECTS WITH THE CONSTRAINTS OF LIMITED TIME AND TOOLS

by

Denesha Kaye Rabel
B.S. April 2004, Florida Atlantic University
M.A.T. August 2009, Valdosta State University
Ed.S. May 2012, Valdosta State University

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Approved by:

_____
John Baaki (Director)

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Jill E. Stefaniak (Member)

_____
Angela Eckhoff (Member)

ABSTRACT

AN EXAMINATION OF THE DECISION-MAKING PROCESS INSTRUCTIONAL DESIGNERS USE TO COMPLETE PROJECTS WITH THE CONSTRAINTS OF LIMTIED TIME AND TOOLS

Denesha Kaye Rabel
Old Dominion University, 2019
Director: John Baaki

Based on a phenomenological theoretical perspective, the purpose of this qualitative study was to explore how instructional designers make decisions related to determining which layers and related instructional design activities to address based on time and tool resource constraints. To explore the topic, this study was guided by five research questions which included: (a) what type of time and tool constraints do instructional design practitioners experience, (b) how do instructional design practitioners make decisions based on time constraints when completing work projects, (c) how do instructional design practitioners make decisions based on tool constraints when completing work projects, (d) how do instructional design practitioners determine which layers or questions to address given project constraints such as time and tool limitations, and (e) what steps do instructional design practitioners omit during work projects that have time and or/tool constraints?

The study included 20 instructional designers (*n*=20) that work in various industries including higher education institutions, consulting, tourism, charity/nonprofit, health care, government, and retail. There were a total 14 female participants and 6 male participants. Upon the completion of 20 interviews and analysis of interview notes, six themes and three patterns emerged. The findings from this study show that in response to the constraint of limited time to design, develop, and implement instructional

interventions, instructional designers modify instructional design processes that are based on traditional instructional design models. The findings suggested that when faced with tool constraints, instructional designers found ways to “figure it out” and worked within the constraints of the tools. The findings also highlighted that instructional designers reference prior knowledge and similar past projects in order to make decisions throughout the design process.

This dissertation is dedicated to my grandmother, Lena Mae Norman. You were my first teacher who taught me some of the most important lessons in life. Although you passed on before I started my doctoral program, you have always believed in me, wanted the best for me, and was excited when I wanted to move away to pursue my dreams. Nothing delighted me more than coming to visit you and seeing your eyes and smile light up the room simply because I was in it. I miss you so much and I know you would be incredibly proud of this moment if you were here.

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CHAPTER I

INTRODUCTION

Advances in technology and the internet have transformed major world economies from industrialism to knowledge based economies that rely heavily on knowledge workers (Patalas-Maliszewska, 2013). To ensure workers have adequate skills, organizations use various training methods including self-paced instruction to train knowledge workers to perform unobservable cognitive tasks. Instructional designers are knowledge workers who typically perform tasks that include (a) performing task and content analysis to gather domain specific information from subject matter experts (SMEs); (b) employing instructional design models, message design, and learning theories to design instruction; and (c) utilizing content authoring tools to develop instructional products (Sugar, 2014).

From a theoretical approach, the field has proposed the use of instructional design models to inform the practice of instructional design (Andrews & Goodson, 1980; Bruner, 1990; Dick, 2005; Gagné, 1988; Merrill & Twitchell, 1994; Morrison, Ross, Kalman, & Kemp, 2013; Reigeluth, Bunderson, & Merrill, 1978). Most traditional instructional design models are based upon a systems approach where there are discrete phases for designing and developing instructional interventions. Typically in traditional systems design models, the output of a subsequent phase becomes the input to the next phase (Andrews & Goodson, 1980; Dick, 2005; Gagné, 1988; Ives, 2010; Merrill & Twitchell, 1994; Reigeluth et al., 1978; Reiser, 2001b; Ross et al., 2007). There are several advantages for using these types of models including developing robust instructional products that are effective at helping the largest amount of learners achieve instructional goals. The system design approach dates back to World War II where the military needed an effective way to train mass amounts of soldiers and therefore employed learning

theorist and cognitive psychologist to develop a systems approach which became the foundation of instructional design models (Andrews & Goodson, 1980; Reiser, 2001b). While the systems approach informs an effective mechanism to develop instructional interventions, it does not take into consideration all of the constraints that practitioners need to balance while completing instructional design projects. Constraints are imposed requirements that exist in any project (Bowles, 2011). While practicing instructional design on the job, some of the constraints designers must also consider include project timelines (*time*) and available instructional design software and authoring applications (*tools*) (Stefaniak & Baaki, 2013; Tessmer & Wedman, 1990). A time constraint is the difference between the time that is available to complete a given project and the time that is required (Gonzalez, 2004). This difference could result in an instructional designer having a surplus of time or on the contrary, having very limited time to complete instructional design projects. For the purposes of this discussion, tool resource constraints include the instructional design and development tools (software applications and authoring tools) that an instructional designer has at their disposal to use to complete instructional design projects. For example, if an instructional designer uses PowerPoint or Dreamweaver to develop an instructional-led training, PowerPoint and Dreamweaver would be considered tools. Another example of a tool is if an instructional designer used Captivate or Articulate to develop an eLearning module; Captivate and Articulate would be then classified as tools.

Throughout the design process, instructional designers are required to make decisions under a variety of constraints including sacrificing work quality due to budget restrictions, maneuvering office politics, as well as limited access to new or updated versions of authoring tools (Larson & Lockee, 2009). The decision making process involves evaluating options to

solve complex problems without clear solutions (Jonassen, 2012). Making decisions under certain constraints may contribute to job dissatisfaction and performance problems among instructional designers; therefore understanding the decision-making process in this context will help educational institutions modify instructional design curricula by informing the type of constraints that should be embedded into instructional design programs to simulate real world work conditions to give students experience designing with these constraints. Additionally, further clarifying how instructional designers negotiate constraints during the design process may also inform heuristics or best practices for current instructional design practitioners.

The research related to the decision-making process given time and tool constraints is limited. Current studies that examine the decision making process with instructional designers explored decision making in regard to instructional strategies (Christensen & Osguthorpe, 2004), project solutions (Stefaniak & Tracey, 2014), solving workplace problems (Fortney & Yamagata-Lynch, 2013), design judgment in practice (Boling et al., 2017; Gray et al., 2015), and a software application that supports instructional design decision making (Dabbagh & Fake, 2017). Specifically, one study explored if instructional designers apply instructional design theories to make decisions in regard to instructional strategies, (Christensen & Osguthorpe, 2004). Additionally, Stefaniak and Tracey (2014) examined how design professionals make design related decisions from the perspective of if decision-making followed a discovery or idea imposition process and if implemented project solutions were ready-made or custom. While these studies examined decision-making, they did not examine how instructional designer make decisions during the instructional design process to accommodate various constraints. To inform the field as well as to help instructional design programs embed real world design problem solving scenarios into curriculum, this study explored how instructional designers make

decisions during the instructional design process based on time and tool constraints. The purpose of the study was to explore how instructional designers make design decisions given the constraints of limited time and limited access to tools. Detailing how instructional designers make decisions under time and tool constraints may inform rules to help instructional design students and practitioners make decisions during the design process when working on projects.

Literature Review

The following literature review discusses the roles and responsibilities common to instructional designers as well as the work environment and tools used by instructional designers. The review also goes on to explore the decision-making process including the role of problem solving, types of decisions, and approaches to decision making followed by a review of research related to how instructional designers make decisions. The literature review concludes with a discussion of the layers of necessity model.

Instructional Design Knowledge Base

Influences from behaviorism, cognitive psychology, gestalt psychology, schema theory, communications, and management science have contributed to shaping the field of instructional/educational technology (Reiser & Dempsey, 2012). Contributions from these fields provided heuristics for instructional technology. Additionally, limitations provided research opportunities, which addressed gaps that expanded the field.

Historically, instructional technology falls within the field of educational technology. Instructional systems design also referred to as instructional design falls within the instructional technology field (Pershing, Molenda, & Paulus, 2000). Instructional design relates to the tasks involved in designing instruction (Reiser, 2001b). A recent definition of instructional design and technology included the following:

> The field of instructional design and technology encompasses the analysis of learning and performance problems, and the design, development, implementation, evaluation and management of instructional and non-instructional processes and resources intended to improve learning and performance in a variety of settings, particularly educational institutions and the workplace. Professionals in the field of instructional design and technology often use systematic instructional design procedures and employ a variety of instructional media to accomplish their goals. (Reiser, 2001a, p. 53)

Instructional design and technology is adaptable to changing technologies and has evolved from simply referring to the usage of instructional media to include human performance technology as well as instructional design models.

Within instructional technology, Clark (2002) discussed that although critics of instructional systems design (ISD) suggest that the ISD approach is outdated and cumbersome, ISD is still quite relevant and still very much needed due to the unique challenges of today's geographically dispersed workforce. Additionally, often times, expert knowledge workers are not able to explain all of the tacit knowledge that they have acquired about their field including how to solve problems during the instructional design process; problem solving and making decisions are critical components throughout the design process (Dym, Agogino, Eris, Frey, & Leifer, 2005).

Considering the Instructional Designer

In the field today, instructional designers are practitioners whose craft involves the overall design and implementation of both training and non-instructional performance improving interventions. Although other job titles may be used in lieu of instructional designer such as instructional technologist, learning architect, curriculum developer, or learning

consultant (Larson & Lockee, 2004; Liu, Gibby, & Quiros, 2002), this dissertation will refer to individuals who perform instructional design tasks as instructional designers. Specifically, instructional designers conduct "the analysis of learning and performance problems, and the design, development, implementation, evaluation and management of instructional and non-instructional processes and resources intended to improve learning and performance" (Reiser, 2001b, p. 53). In addition to the development of instructional or training materials, instructional designers may incorporate human performance technology principles to develop non-instructional interventions. Human performance technology recognizes that instructional interventions are not always suited for addressing performance problems and therefore involves the systematic process to diagnose the root causes of issues within an organization to prescribe non-instructional interventions to improve performance at various levels within the organization including the individual worker level (Pershing, 2006). While formal preparation for instructional designers include curriculum in both instructional design and human performance technology, the sectors of business and industry typically seek instructional designers with skills in human performance technology (Larson & Lockee, 2009). Table 1 below highlights more specific instructional design tasks based on instructional design competencies.

Ultimately, instructional designers are practitioners that design and develop products and experiences (Boling & Smith, 2012) that improve learning and performance. Regardless of the discipline, the act of designing leads a design team to create a new idea or invention, which highlights the concept of design thinking (Boling & Smith, 2012). Synergistically, "design thinking reflects the processes of inquiry and learning that designers perform in a systems context, making decisions as they proceed, often working collaboratively on teams in a social process, and speaking several languages with each other…" (Dym et al., 2005, p. 104).

Effective designers can handle uncertainty during the design process, apply systems thinking, make decisions, work as part of team, and be able to understand jargon from various disciplines (Dym et al, 2005).

Table 1 *List of instructional designer tasks organized by competency*

Competency	Tasks
Communication & Professional Foundations	• Apply learning theory and instructional design models • Communicate effectively in all forms • Research new technologies • Employ relationship management skills to collaborate with clients and design team
Analysis	• Conduct needs assessment • Conduct learner, content, and context analysis • Conduct cause analysis
Design	• Develop goals and objectives • Create design documentation • Design instructional and non-instructional interventions • Design curriculum
Development	• Develop instructional materials • Develop and test prototypes and assessments
Implementation	• Implement instructional and non-instructional interventions • Apply diffusion and adoption strategies
Evaluation	• Align objectives, interventions, and assessments • Evaluate interventions
Evaluation Management	• Revise interventions based on data • Employ project management skills to plan and manage projects • Prepare budgets • Write proposals • Address legal and ethical issues • Employ change management strategies

From (Cheong, Wettasinghe, & Murphy, 2006; Christensen, 2008; International Board of Standards for Training, 2012; Klein & Jun, 2014; Larson & Lockee, 2009; Liu et al., 2002; Molenda & Pershing, 2004; Morrison et al., 2013; Sugar, 2014)

Common activities and responsibilities of instructional designers. There are several activities and responsibilities common for most instructional designers. These activities include (a) writing instructional or learning objectives, (b) developing assessment questions, (c)

selecting appropriate media formats, (d) selecting instructional objectives, (e) identifying learning outcomes, (f) conducting follow-up evaluation, (g) pilot testing instructional products, (h) conducting needs assessment, and (i) performing task and learner analysis (Wedman & Tessmer, 1993). Instructional designers also have diverse skills in audio production, desktop publishing, graphics design, learning management systems, video production, and web authoring tool (Sugar, 2014).

Instructional designers may also be responsible for aligning objectives, interventions, and assessments (Klein & Jun, 2014). Other responsibilities identified in the literature include developing new digital media or converting materials from older formats, client relationship management and requirements gathering (Liu et al., 2002). Instructional designers are also responsible for understanding the skills of other team members while sometimes balancing between acting as the instructional designer and project manager. Instructional designers can also be responsible for ensuring instructional products are free of gender and cultural bias (Liu et al., 2002). Instructional designers may also play a pivotal role and are responsible for writing funding proposals in order to acquire new clients and business. In addition, designers may also need to prioritize tasks based on resource and budget constraints (Klein & Jun, 2014; Liu et al., 2002).

Work environment and tools used by instructional designers. Instructional designers can be employed in a variety of settings and use a variety of software tools. Instructional designers may work in large fast-paced environments where they are evaluated based on a formal process using performance data or rating systems (Liu et al., 2002). Alternatively, instructional designers may be employed in smaller companies where performance is evaluated solely on client feedback. Both large and small companies may provide collaborative, flexible

work environments (Liu et al., 2002). Instructional designers may work as a sole designer, member of a team, perform multiple roles, or function as a consultant (Larson & Lockee, 2004). The actual environments where instructional designer work vary across industry and include higher education, government, k-12 schools, military, consulting organizations, banking and finance, healthcare, manufacturing, and nonprofit organizations (Klein & Jun, 2014; Larson & Lockee, 2004).

Instructional designers may use a variety tools for content authoring, graphics, and animations. A review of the literature revealed instructional designers may use tools such as Microsoft Word (Liu et al., 2002; Sugar, 2014), Premiere, Java, HTML, Macromedia Director, Flash (Liu et al., 2002), and Microsoft PowerPoint (Sugar, 2014) to develop content and use programs such as Photoshop to modify graphics (Liu et al., 2002). Table 2 below also shows some additional tools that instructional designers may use in regard to authoring content, performing front-end design or automated design tools that prescribe instructional interventions, and tools to develop simulations (Chapman, 2007). Table 2 is not meant to be an exhaustive list but provide a brief overview of some common tools.

Table 2 *Software Tools Used by Instructional Designers Based on Type of Tool*

Authoring Tools	Front-End Design/Automated ID Tools	Simulation Tools
Flash	IDExpert	Captivate
Dreamweaver	AIM II	OnDemand
Lectora	DesignWare	Assima
Captivate	CourseWriter	SoftSim
Articulate		

Note. Based on finding from Chapman, B. L. (2008). Tools for design and development of online instruction. *Handbook of research on educational communications and technology*, 671-684.

Instructional design professionals perform a variety of complex tasks to make decisions throughout the instructional design process. Studies were included to emphasize performance problems with new instructional designers (Chen, Moore, & Vo, 2012; Cheong et al., 2006; Thompson-Sellers & Calandra, 2012; Villachica, Marker, & Taylor, 2010) suggesting that the field needs to learn more about how current instructional designers arrive at design decisions to give new designers insight into possible ways of approaching the decision making process while completing projects under time and tool constraints.

Thompson-Sellers and Calandra (2012) explored the differences between the curriculum of formal instructional design programs and the actual tasks that are performed on the job. This topic was explored as the researchers noted that instructional design theories and models are not widely used in the field. Additionally, the literature suggests that “uncertainty still exists as to the nature of required ID competencies and that formal ID programs might not prepare their graduates adequately for the workforce" (Thompson-Sellers & Calandra, 2012, p. 22). The study sought to determine if instructional designers learned about theories informally, on the job, or during formal preparation. The study also examined if instructional designers unconsciously applied theories in their design projects. The researchers utilized initial and follow-up interviews of three corporate instructional designers. Following the interviews, the researchers coded and analyzed the data.

Findings from the study suggested that instructional designers make design decisions based on time, audience, and budget. Additionally, the researchers noted that informally trained instructional designers relied more on their formally trained peers during the design process (Thompson-Sellers & Calandra, 2012).

While this study helped to uncover constraints that should be incorporated in instructional design curricula to help instructional design students obtain an understanding of the pressures instructional design practitioners experience on the job, there were some limitations. There is limited generalizability due to small sample size of three instructional designers. Additionally, the study did not determine the optimal curricula for instructional design programs. The researchers also recommend replicating the study with a larger sample size as well as adding a survey to gather additional information (Thompson-Sellers & Calandra, 2012).

Problems Solving and Decision Making

How we make decisions. In order to be effective, instructional designers like other types of designers, must make decisions throughout the design process (Dym et al., 2005) to solve problems. Mintzberg and Westley (2001) suggests three approaches to making decisions which include *thinking first*, *seeing first*, and *doing first*. *Thinking first* involves identifying the problem, determining the cause, and designing and selecting a solution. *Seeing first* involves visualizing an entire solution and then testing the solution, while *doing firs*t is basically a trial and error test taking action and then determining if it solves the problem (Mintzberg & Westley, 2001). Table 3 details when it is appropriate to use each type of decision-making approach.

Table 3 *When to Use Each Decision-Making Approach*

Approach	Information Needed
Thinking First	Data are clearly defined in a structured context with established heuristics
Seeing First	Requires effective communication to combine numerous elements to develop a custom solution
Doing First	Is useful when limited rules exist and the context is complicated and unclear

Note. Based on Mintzberg, H., & Westley, F. (2001). Decision making: It's not what you think. *MIT Sloan Management Review, 42*(3), 89-93.

According to Jonassen (2012), decision making is the common way to solve problems. There are various types of problems, which include story problems, rule-using/induction problems, decision-making problems, troubleshooting problems, policy problems, and dilemmas. Table 4 below provides a description of each type of problem.

Table 4 *Types of Problems*

Problem	Description
Story	Problems include a short story with values where some type of formula is used to solve the problem.
Rule-using/Induction	Problems have known answers that may include multiple rules for solving the problem.
Decision-making	Problems can be very complicated and require a decision to determine a solution.
Troubleshooting	The solution to this type of problem is to determine the root cause of the issue.
Policy	Complex problems with multiple solutions that are related to and impact the public.
Design	Complex problems with multiple solutions that require the application of discipline specific knowledge.
Dilemmas	These are the most complex type of problem where there is no real solution.

Note. Based on Jonassen, D. (2011). Supporting problem solving in PBL. *Interdisciplinary Journal of Problem-based Learning, 5*(2).

Types of decision making. Jonassen (2012) suggests that there are different types of decisions, which include choices, acceptances, evaluations, and constructions. Choice involves making a selection based on alternatives. Acceptances are when one choice is accepted over another. Evaluations are decisions based on determining the merit or worth of an action. Constructions include synthesis of an ideal solution to a complex problem (Jonassen, 2012).

Decision making models. Jonassen (2012) highlights decision-making models, which include normative and naturalist models. Normative models include rational choice, cost-benefit, and risk assessment. Naturalistic approaches include narrative –based and identity based decisions. Rational decision-making involves arriving at a solution to a problem by

determining and evaluating options in a non-time sensitive context. However, naturalistic models are more appropriate for high pressure situations where the problem is complex and emotions are involved (Jonassen, 2012).

This review thus far has discussed the decision making process including the role of problem solving, types of decisions, and approaches to decision making within the context of educational communication. To provide additional context related to the decision making process, this review also explores two decision-making models outside of educational communication.

OODA Loop

The observe, orient, decide, act (OODA) loop is a model outside of educational communication that provides a framework for the decision making process. The OODA loop begins with observation (gathering information and feedback) that occurs throughout the process. The next step is the orientation phase where the decision maker addresses the situation from the context of various internal lens including cultural traditions. The next step is the decision phase where the decision maker compares possible solutions with goals. The last stage is action, where the decision maker takes action based on discerning the best solution (Gherman, 2013).

Recognition Primed Decision Model

The recognition primed decision (RPD) model is another decision making model outside of educational communication that helps to conceptualize the complex decision making process. The model includes the two stages of situation recognition and solution generation. During situation recognition, the decision maker gathers information and determines how information in the current situation aligns to any prior knowledge that is similar to the current situation.

Next the decision maker conjectures goals, cues or representations of the situation, expectations or mechanisms to access the situation, and actions. The decision maker compares expectations from memory with the current situation and evaluates them for alignment. The decision maker then mentally evaluates actions and implements actions if the decision maker feels the action will achieve the goal (Hu, Li, & Zhang, 2018).

Design Decisions

As previously discussed, instructional designers have faced a variety of challenges and issues based on making decisions during the design process given various constraints. As a result, the literature was reviewed to look at articles that specifically addressed how instructional designers make decisions during the instructional design process.

Due to ambiguity in regard to if instructional designers actually apply instructional design theories to make decisions in regard to instructional strategies, this study investigated the prevalence of use of such theories (Christensen & Osguthorpe, 2004). Specifically, the study sought to answer how instructional designers select instructional strategies to incorporate in their designs, how these practitioners use instructional design theory, the source of knowledge related to learning new theories and strategies, and what is the epistemology that guided their practice. The researchers utilized a survey to gathered data from 113 instructional designers that were graduates of an instructional design program from Brigham Young University, Florida State University, and Utah State University. The instructional designers were asked to rate their frequency of use of instructional design theories to make decisions related to instructional strategies as well as how often they used a provided list of 10 instructional strategies (Christensen & Osguthorpe, 2004).

The findings from the study suggested that most of the instructional designers collaborated and made decisions as a team; 86% of respondents indicated that they make decisions related to which instructional strategy to use as design or project team. A large percentage of practitioners indicated that they also reflect on instructional strategies that they have used in the past (Christensen & Osguthorpe, 2004). The findings also suggested that half of the respondents use theories to make instructional decisions. The implications of the study suggest that formal instructional design programs, training courses, and certification programs should incorporate group projects to emphasize the importance of developing skills to work as a member of the group. Additional training programs may need to include more coursework on the link between theory and practice and how instructional designers can practically apply instructional design theory to instructional design cases that reflect the constraints present in real world work projects (Christensen & Osguthorpe, 2004).

Stefaniak and Tracey (2014) examined how design professionals make design related decisions from the perspective of if decision-making followed a discovery or idea imposition process and if implemented project solutions were ready-made or custom. Discovery decision-making includes a mix of various steps to solve a problem while idea-imposition is a pre-identified mechanism for solving a problem (Nutt, 2008; Stefaniak & Tracey, 2014). Ready-made solutions are already intact and ready to be applied while custom solutions are derived to address the specific need. The participants included 20 professionals who worked as instructional designers, interior designers, architects, or graphic designers. The researchers conducted phone interviews where design professionals described a design problem and how they arrived at solutions to address the problem. The data were coded and analyzed (Stefaniak & Tracey, 2014).

Findings from the study revealed that most design professionals regardless of their area of design, used a discovery decision approach to develop custom solutions. This study is significant to the field of instructional design as it highlights the importance of understanding how designers make decisions; this research therefore has implications to inspire more research related to the decision making process that will help inform improving design projects (Stefaniak & Tracey, 2014). The researchers did note limited generalizability due to incorporating a convenience sample and recommend that future research expand the number of participants (Stefaniak & Tracey, 2014).

Layers-of-Necessity (LON) Model

Instructional designers use instructional design models to guide practice by providing a conceptual instrument to inform and manage the development of instructional interventions (Edmonds, Branch, & Mukherjee, 1994). Traditional instructional design models are systems based and prescribe tasks that should be done during discrete phases including analysis, design, development, implementation, and evaluation. Some examples include Dick, Carey, and Carey; Smith and Ragan; and Morrison, Ross, and Kemp. There are also models that prescribe specific steps within a given phase such as Gagne's Events of Instruction (Spector & Merrill, 2005). While these models provide procedures for developing instruction, they do not include mechanisms for addressing project constraints.

Since traditional theoretical systems based instructional design models do not include heuristics for addressing time and tool constraints during instructional design practice on the job, a more flexible practitioners' model is needed to help inform instructional design practice that considers project constraints while informing the theoretical development of instructional products. To bridge the gap between theory and practices and to provide instructional design

practitioners with an adaptable model, Tessmer and Wedman (1990), proposed the layers-of-necessity (LON) model where the instructional design practitioner selects a layer of design and development activities based on project constraints. The LON approach provides instructional designers with a flexible, streamlined, efficient approach for developing instruction while considering a variety of project constraints without sacrificing work quality. For the purposes of this discussion, which is focused on the constraints of time and tool resources, the instructional designer considers these constraints and determines which layers of design and development activities are appropriate for the necessity of the project. This approach recognizes a continuum where the instructional designer selects a more sophisticated layer when resources are abundant and conversely selects a simpler layer when resources are scarce. The LON model is iterative with the mindset that the project will be enhanced at a later date (Tessmer & Wedman, 1990). The LON model also suggests a principles versus a procedural approach, which is found in systems based models. The LON model is guided by two principles, which include layer selection and layer implementation. During the selection layer, the instructional designer considers constraints. For the purposes of this discussion, the practitioner considers time and tool resources and then selects an appropriate layer based on those constraints. The instructional designer implements the instructional design activities during the implementation layer (Tessmer & Wedman, 1990). While the model is not prescriptive like traditional instructional design models, it does include some application guidelines. The first guideline suggests that the depth of instructional activities be consistent across a given layer. The LON model also encourages instructional designers to modify layers based on their expertise and judgment with the caution that all components of a layer be addressed once selected (Tessmer & Wedman, 1990).

The following case provides an example of an instructional designer applying the LON approach:

> An instructional designer who works for a branch of the government receives a request to develop an eLearning module. The request states that there has been an update to 508 accessibility requirements for developing and maintaining websites. The new update takes into effect in the next 30 days and all of the employees in the IT department responsible for developing and maintaining websites will need to be trained on the new requirement which includes passing an assessment with a score of 80% or better. The department will need to have on file that all required employees completed and passed the assessment by the end of the 30-day timeframe. The organization could therefore be fined if they do not comply with this requirement.
>
> Upon reviewing the request, the instructional designer determines that he will not have enough time to develop an eLearning given the time constraint. Next, the instructional designer begins the first phase of analysis by contacting the person identified as the subject matter expert to determine the availability of current content resources. The subject matter expert informs the designer that she already started developing a PowerPoint presentation which includes instructional objectives, overviews of the changes, and instructions for website development and maintenance based on the new requirements. The subject matter expert also provides the instructional designer with website links containing information about the updates. The subject matter expert also informs the instructional designer that all of the learners will need to provide proof of completing the training which usually takes about two weeks for eLearnings. Reflecting on this information as well as the typical time it takes to develop eLearnings,

the instructional designer determines that he will need to modify their traditional design process and select a set of instructional design activities that will be feasible to design, develop, and administer an instructional intervention that meets the department's goal of having all required personnel trained on the new 508 accessibility requirements for website development and maintenance.

To do this, the instructional designer schedules a meeting with his manager and explains the situation. The designer and his manager determine that based on the limited time constraint, the designer will modify their traditional approach by streamlining analysis, design, and development as well as change the requested modality from eLearning to instructor led. The designer and his manager contact the stakeholders to explain the modification and move forward with the approach after the stakeholders provide approval. Instead of their traditional analysis approach of developing design documentation that specifies the learners, context, as a well as a task analysis, the designer streamlines analysis by reviewing the PowerPoint presentation developed by the subject matter expert to ensure the content aligns to the objectives. Next the designer streamlines development by transferring the PowerPoint to the department's template for instructor-led training and develops notes for the facilitator. Finally, the instructional designer sends the training for stakeholder review and then an editorial review. The designer and their manager also decide to eliminate piloting the training to also save time. The training is then administered and learners complete the assessment and the department meets the requirement of having all required personnel trained in the allotted timeframe.

As result of the limited time constraint, the instructional designer in the case needed to modify their traditional design approach to meet the goals of the training with the current timeframe which provides an illustration how the LON approach can be used to help instructional designers approach the design process while balancing project goals, theoretical principles of design and project constraints.

The traditional systems approach of instructional design models suggest that once a designer has completed a phase of the design process, there is not a reason to revisit previously addressed phases which may inhibit the effectiveness of instructional interventions. For example, Stefaniak and Baaki (2013) found that learner analysis in particular may suffer when instructional designers conduct their initial learner analysis and do not revisit this step throughout the design process like other fields such as marketing where practitioners constantly analyze the customer to customize products. Stefaniak and Baaki (2013) advocate that learner analysis like other components of the instructional design process should be iterative to continually improve instructional effectiveness. This iterative principle is directly reflected in the LON model (Stefaniak & Baaki, 2013; Tessmer & Wedman, 1990). The LON model also recognizes that constraints facilitate the depth of design activities where as other models do not address these factors. Stefaniak, Baaki, Hoard, and Stapleton (2018) found that time constraints and employer/client expectations negatively impacted needs assessment and applying the LON model suggests such areas can be revisited in future iterations of the project.

Since the LON model is more open and flexible and less prescriptive than traditional instructional design models (Tessmer & Wedman, 1990), one may ponder how do instructional designers make decisions to determine which layers and/or instructional design activities to address based on project constraints? For those studying to become instructional designers,

applying the LON model in practice may highlight several questions related to the decision making process such as how do instructional design practitioners determine which layers or questions to address given project constraints such as time and tool resources? Therefore this research explored how instructional designers make layer selection and implementation decisions based on time and tool resource constraints when completing work projects.

Purpose of the Study

The purpose of this study was to explore how instructional designers make decisions related to determining which layers and related instructional design activities to address based on time and tool resource constraints. Tessmer and Wedman (1990) proposed a LON instructional design approach in practice versus following a traditional instructional design model. Instructional design practice includes constraints such as time and tool limitations where the LON model suggests that there is a continuum or relationship between quality and available resources as well as the fact that revisions may be iterative based on project goals. In order to help instructional design practitioners learn more about the decision-making process in regard to layer selection and implementation based on time and tool constraints, the goal of this study was to address the following research questions:

Research Questions

1. What type of time and tool constraints do instructional design practitioners experience?
2. How do instructional design practitioners make decisions based on time constraints when completing work projects?
3. How do instructional design practitioners make decisions based on tool constraints when completing work projects?

4. How do instructional design practitioners determine which layers or questions to address given project constraints such as time and tool limitations?
5. What steps do instructional design practitioners omit during work projects that have time and or/tool constraints?

CHAPTER II

METHODS

Research Design

This study included a qualitative exploratory design using a phenomenological content analysis theoretical perspective. The phenomenological perspective provided a framework for capturing the voices of the instructional designers to share their perspectives on the decision making process (Hays & Singh, 2012). Phenomenology acknowledges reflexivity. In this case, the researcher works as an instructional designer and allowed her background, prior knowledge, and work experience of the topic to interpret, analyze, and summarize interview responses during the data gathering process. Particularly in the context of educational communication and technology, Valentine, Kopcha, and Vagle (2018) suggest phenomenology shows how a phenomenon manifests in a context without separating the researcher from the phenomenon. Due to the fact that the researcher is also an instructional designer, this method was selected over other methods because the researcher is a part of the phenomenon.

Specifically, this study examined how instructional designers make decisions related to determining which layers and instructional design activities to address based on time and tool resource constraints (Tessmer & Wedman, 1990). The researcher posted a call for participants which included a qualifying questionnaire. Potential participants who were interested in participating in the study completed the qualifying questionnaire. The qualifying questionnaire was used to gather demographic information about potential study participants including years of experience, educational backgrounds of instructional designers, and information related to the industries in which they work. The qualifying questionnaire was also used for instructional designers to provide information about a past project that would later be used during a follow-

up interview upon selection. The qualifying questionnaire asked instructional designers to provide information including the duration of the project, type of project (eLearning, training module, course, or other), as well as to specify the type of constraints that instructional designers experienced while completing the past project. The researcher used the information obtained from the qualifying questionnaire to determine if instructional designers were eligible for an interview. In order to be considered for interview, instructional designers needed to indicate the following on the qualifying questionnaire about a work project:

- The project must have included a tool and/or time constraint
- The project must have occurred in the past two years.

The researcher then contacted eligible instructional designers via email to schedule follow-up phone interviews. Interviews were used to gather information related to how instructional designers make decisions to address layers (Christensen & Osguthorpe, 2004; Stefaniak, Baaki, & Blake, 2012; Stefaniak & Tracey, 2014). During the interview, instructional designers were asked to reflect on a past instructional design project and discuss how they made design decisions based on time and/or tool resource constraints. The researcher took notes and summarized responses during the interviews. Following the interviews, the researcher emailed each participant a summary of the interview notes and asked participants to review and approve notes as well as to make edits if they thought an element was not captured correctly or if they believed an element was omitted. The researcher received approval from participants. The data was then coded and analyzed for trends.

Instruments

The instruments for the study included a qualifying questionnaire and semi-structured interview protocol (see Appendix A). Both the qualifying questionnaire and semi-structured

interview protocol were piloted with two instructional design subject matter experts to validate the instruments. Both subject matter experts earned doctorate degrees in instructional technology, have published extensive research related to the topic of instructional design and technology, have applied instructional design and performance improvement experience. During the pilot, the subject matter experts reviewed the qualifying questionnaire and did not have any feedback for revisions. Next, the researcher conducted a mock interview with one subject matter expert, while the second subject matter expert observed. Following the interview, both subject matter experts provided the researcher with comments and feedback. As a result of the comments and feedback, the researcher modified one question on the interview protocol to assist with the participants' understanding of the study as it relates to their work environment.

The qualifying questionnaire was used to obtain information related to years of experience, education, and industries in which designers have worked. The qualifying questionnaire was used to gather project information including duration, type of project, and applicable constraints. Based on the results of the qualifying questionnaire, the researcher identified participants and scheduled interviews.

The semi-structured interview protocol included questions to support the research questions. The researcher conducted phone interviews and employed a note-taking strategy to capture data. Interviews were not recorded because in some instances, instructional designers participants signed trade secret and confidentiality agreements. Therefore to protect participants, a note-taking approach was used. The researcher took notes during the interview, then summarize notes and emailed the notes to participants following the interview and asked participants to review the interview notes and provided approval as well as make any needed revisions or additions. All of the interview notes were approved by the participants. The

interview then conducted a review of the notes, coded responses and analyzed for the response for trends (Braun & Clarke, 2006).

Participants

The participants in this study were voluntary and were not paid. The participants included instructional designers with at least two years of instructional design work experience. Participants also worked as instructional designers on a work project within the past two years where they experienced a time and/or tool constraint. Additionally, participants represented instructional designers working in various industries, government, and higher education. To be included in the study, instructional designers need to have at least two years of instructional design work experience and have worked on a project with a time and/or tool constraint that occurred in the past two years.

Procedures

The researcher received International Review Board (IRB) approval for this project number: 1377018-1. The participants were recruited from the Association for Educational Communication and Technology (AECT), LinkedIn, International Society for Performance Improvement (ISPI), instructional design related Facebook Groups, and personal networks. A call for participants was distributed across the above mentioned institutions and forums. Participants were selected based on self-identification as an instructional designer that had worked on a project within the last two years where a time and/or tool constraint was present. The researcher achieved the specified goal of recruiting 20 participants. This sample size was identical to the sample size of a related study that examined decision making among design professionals (Stefaniak & Tracey, 2014).

A qualifying questionnaire was included in the call for participants. Interested potential participants completed the survey which was used to collect demographic data and project information including duration, type of project, and applicable constraints. The researcher then contacted eligible participants via email to schedule phone interviews. Utilizing a scheduling software tool, participants selected available interview appointments. Once the participant scheduled the interview, an appointment was created on the participant's and researcher's calendars.

Informed consent. Participants were provided with an information sheet explaining the goals of the research project. Participants had the opportunity to opt out before any research-related activity. Participants were assigned a code name for the study to protect their identity if they wish to use one. Interview notes were also de-identified and assigned a code.

Data collection and analysis. The study consisted of phone call interviews conducted with instructional designers to discuss how they make layer selection and implementation decisions based on time and tool resource constraints. An interview protocol was developed and administered to maintain consistency during the interview process.

Before conducting the interview, participants were asked if they have any questions in regard to the information sheet and/or study. During the interview, the researcher took notes. Following the interview, researcher summarized notes and provided participants with a copy of the notes. The researcher gave participants an opportunity to confirm that information was an accurate representation of the information they provided during the phone interviews. Upon the completion of all interviews, the researchers incorporated a thematic analysis method to identify patterns in the data. Thematic analysis was used to look for patterns related to decision making across the data and report the experiences of instructional designers and how they made

decisions based on time and tool limitation constraints during instructional design projects (Braun & Clarke, 2006). Specifically, the researcher utilized the six-phase thematic analysis protocol as well as incorporated their 15-point checklist of criteria for good thematic analysis to organize, review, analyze, code, and interpret data collected from interviews and write results (Braun & Clarke, 2006). Table 5 below discusses the phases of thematic analysis.

Table 5 *Thematic analysis phases*

Phase	Description
1 – Reviewed data	Summarized notes and sent back to participants for review and approval. Read and reviewed data and notated any ideas.
2 – Coded generalization	Reviewed data again and developed initial codes that immerged across the data set.
3 – Searched for themes	Reviewed codes and looked for themes across the data.
4 – Reviewed themes	Reviewed and ensured themes were compatible with codes.
5 – Defined themes	Recursively reviewed data, named, and defined themes.
6 – Wrote results	Finalized analysis and related it back to research questions and literature to write results.

Note. Based on Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Research in Psychology, 3*(2).

Trustworthiness. To promote trustworthiness, this study utilized a notated thematic analysis process as well as incorporated a purposeful sample size. The researchers utilized triangulation of data collection and analysis as well as detailed the data analysis steps (Hays & Singh, 2012) as prescribed in six-phase thematic analysis protocol (Braun & Clarke, 2006).

The researcher surveyed 41 potential participants and included 20 instructional designers from various work settings to incorporate multiple perspectives on the phenomenon; this also helped to establish trustworthiness by including multiple voices or sources of data (Hays & Singh, 2012).

During the interview and first phase of thematic analysis, the researcher wrote and summarized notes of the interview and then sent the notes back to participants for their review and approval followed by reviewing the data again and notating any ideas (Braun & Clarke,

2006). During this process, the researcher engaged in simultaneous data collection and analysis by summarizing the notes and obtaining participant approval of notes; this step promoted trustworthiness through credibility, confirmability, and authenticity (Hays & Singh, 2012). In a qualitative context, credibility refers to internal validity while confirmability and authenticity refer to the representation of accurate accounts from participants (Hays & Singh, 2012).

To further promote trustworthiness, the researcher incorporated a second peer researcher to review themes (Hays & Singh, 2012). The second peer researcher works as an instructional designer, has published qualitative research, and has earned a doctorate degree in instructional design and technology.

The researcher provided the peer researcher with the following:

- Description of project
    - Background and rationale
    - Study objectives and research questions
    - Summary of methods and research protocol
    - Recruitment email and informed consent
    - Information sheet provided to participants
    - Interview questions
- Interview notes, and
- Identified themes

The peer researcher reviewed all of the above mentioned information and notated recommendations. The researcher and peer researcher met to review the peer researcher's findings. Each of the peer researcher's findings and recommendations will be discussed in the results section in the context of applicable themes and patterns. Upon review and discussion of

the peer researcher's finding and recommendations, both the researcher and peer researcher came to a consensus in regards to all themes and patterns which contributed to the validity of the findings (Hays & Singh, 2012). In Chapter IV, the researcher discusses the findings related to a decision-making model, the LON model, and implications.

CHAPTER III

RESULTS

This chapter presents the results of the 20 interviews conducted with instructional design practitioners and thematic analyses. This chapter begins with an overview of the participants including their age ranges, the size and type of industries in which they work, and their educational backgrounds. Next, this chapter presents the themes that emerged during the study in the context of the research questions that guided the study.

Participants

A total of 41 potential participants completed the qualifying survey. The researcher contacted a total of 34 potential participants in order to schedule a phone interview. A total of 22 instructional designers scheduled interviews. However, one instructional designer was not available for the interview and one instructional designer was not able to recall the project described in the qualifying survey therefore the interview was not included in this study. A total of 20 instructional designers completed an interview resulting in a total of 20 participants (*n*=20). In order to participate in the study participants needed to have worked in a position as an instructional designer where they completed an instructional design project within the past two years that had a time and/or tool constraint.

Upon completing the qualifying survey, participants were asked to provide a variety of demographic information including gender, age range, type of industry, number of employees in their organization, postsecondary education and certifications. There were a total 14 female participants and 6 male participants. Table 6 shows the age range of participants.

Table 6 *Age Ranges of Participants*

Age Range	Total
20-29	1
30-39	9

40-49	2
50-59	8

The researcher achieved the goal of including instructional designers from various industries including higher education institutions, consulting, tourism, charity/nonprofit, health care, government, and retail. More than half of the participants work for organizations in industries other than higher education. Table 7 below provides details related to the percentage and total number of participants from each industry.

Table 7 *Type of Industries Where Participants Work*

Industry	Total Number	Percentage
Higher Education Institution	9	45%
Consulting	5	25%
Tourism	1	5%
Charity/Nonprofit	1	5%
Health care	2	10%
Government	1	5%
Retail	1	5%

Additionally, to add further diversity to study, the researcher sought to include participants that worked at organizations of various sizes. To conceptualize organizational size, small organizations typically employ at least one employee ranging up to 99 employees. Medium sized organizations employee between 100 to 499 employees, while large organizations have 500 or more employees (Caruso, 2015). Participants in this study work in organizations that reflect all three sizes. Table 8 summarizes this data.

Table 8 *Size of Organizations Where Participants Work*

Organizational Size	Total Number	Percentage
Small	6	30%
Medium	4	20%
Large	10	50%

All of the instructional designers earned college degrees ranging from bachelor's degrees to doctorate degrees. Table 9 provides a summary of the number and type of degrees. Degrees noted as *other* are in concentrations other than instructional design and technology.

Degrees noted as *IDT* include instructional design and technology, instructional technology, and curriculum and instruction.

Table 9 *Summary of the Number and Type of Degrees*

Types of Degrees	Total
Bachelor's Other	3
Master's Other	3
Master's IDT	13
Doctoral IDT Student	4
Doctorate IDT	5

Table 10 provides a summary of the industry in which each participant works as well as their post-secondary educational backgrounds.

Table 10 *Summary of Participant Demographics Including Industry and Credentials*

Participant	Industry	Bachelor's Other	Master's Other	Master's IDT	Doctorate IDT	Doctoral Student IDT
ID_C	Higher Education Institution			X		X
ID_N	Consulting			X		X
ID_B	Tourism			X		
ID_S	Charity/Nonprofit	x	X			
ID_E	Consulting			X		
ID_P	Health care			X		
ID_M	Retail			X	x	
ID_A	Consulting	x				
ID_U	Higher Education Institution			X		X
ID_I	Higher Education institution			X	x	
ID_H	Consulting	x				
ID_G	Higher Education Institution			x		
ID_J	Higher Education Institution			x		
ID_K	Higher Education Institution				x	
ID_O	Higher Education Institution			x	x	

ID_D	Health care		x			
ID_L	Government		x			
ID_Q	Higher Education Institution			x		
ID_T	Higher Education Institution	X			X	
ID_R	Consulting	X				

Themes

This study included a qualitative exploratory design using a phenomenological theoretical perspective to capture the views of instructional designers (Hays & Singh, 2012) related to the decision making process during instructional design projects with time and/or tool constraints. To explore the topic, this study was guided by five research questions which include:

1. What type of time and tool constraints do instructional design practitioners experience?
2. How do instructional design practitioners make decisions based on time constraints when completing work projects?
3. How do instructional design practitioners make decisions based on tool constraints when completing work projects?
4. How do instructional design practitioners determine which layers or questions to address given project constraints such as time and tool limitations?
5. What steps do instructional design practitioners omit during work projects that have time and or/tool constraints.

Upon the completion of 20 interviews and analysis of interview notes, the following six themes emerged:

1. Instructional designers experienced time constraints that relate to limited time to design, develop, and implement instructional interventions.
2. Instructional designers identified essential tasks and modified or omitted steps in the instructional design process based on project goals and time limitations.
3. Instructional designers referred to similar past projects when making decisions.
4. Instructional design practitioners reflected and identified lessons learned/best practices as a result of working through projects with time and/or tool constraints.
5. As a result of institutional tool constraints, instructional designers found ways to work within the constraints of the tools.
6. Instructional designers viewed the constraint of limited time negatively.

Additionally, the following three patterns emerged in response to limited time:

1. Instructional designers modified the following elements of the instructional design process:
    - Learner experience
    - Utilized a rapid prototyping approach instead of a traditional systems model
2. Instructional designers omitted design tasks and activities including:
    - Analysis
    - Evaluation
    - Instructional strategies (engagement, interaction, videos, and other multimedia interactions)
3. Instructional designers expressed wanting more time to do more instructional design tasks/activities when working on projects with limited time constraints.

Table 11 provides a summary of the themes and patterns that emerged organized by each research question. Patterns are basically trends that emerge across the data set. Themes are frequently occurring patterns in the data set (Braun & Clarke, 2006).

Table 11 *Summary of Themes and Patterns Organized by Research Question*

Research Question	Theme
What type of time and tool constraints do instructional design practitioners experience?	Theme 1: Instructional designers experienced time constraints that relate to limited time to design, develop, and implement instructional interventions.
How do instructional design practitioners make decisions based on time constraints when completing work projects?	Theme 3: Instructional designers referred to similar past projects when making decisions. Theme 4: Instructional design practitioners reflected and identified lessons learned/best practices as a result of working through projects with time and/or tool constraints. Theme 6: Instructional designers viewed the constraint of limited time negatively. Pattern 3: Instructional designers expressed wanting more time to do more instructional tasks/activities when working on projects with limited time constraints.
How do instructional design practitioners make decisions based on tool constraints when completing work projects?	Theme 3: Instructional designers referred to similar past projects when making decisions. Theme 4: Instructional design practitioners reflected and identified lessons learned/best practices as a result of working through projects with time and/or tool constraints. Theme 5: As a result of institutional tool constraints, instructional designers found ways to work within the constraints of the tools.
How do instructional design practitioners determine which layers or questions to address given project constraints such as time and tool limitations?	Theme 2: Instructional designers identified essential tasks and modified or omitted steps in the instructional design process based on project goals and time limitations.
What steps do instructional design practitioners omit during work projects that have time and or/tool constraints.	Theme 2: Instructional designers identified essential tasks and modified or omitted steps in the instructional design process based on project goals and time limitations. Pattern 1: Instructional designers modified the following elements of the instructional design process: • Learner experience • Utilized a rapid prototyping approach instead

	of a traditional systems model Pattern 2: Instructional designers omitted design tasks and activities including: • Analysis • Design • Evaluation • Instructional strategies (engagement, interaction, videos, and other multimedia interactions)

Type of Time and Tool Constraints

The goal of the first research question was to determine what type of time and tool constraints instructional design practitioners experience during work projects. During phone interviews, the researcher asked instructional designers to provide a description of their work project where they experienced a time and /or tool constraint.

Limited time. Upon analysis and coding of interview notes, the theme that instructional designers experience time constraints that relate to limited time to design, develop, and implement instructional interventions emerged. The researcher originally established the theme as limited time to design, develop "or" implement instructional interventions. However, upon review of information, the peer researcher recommended changing "or" to "and" to suggest there was limited time in all three phases verses each individual phase and the researcher agreed that the update was more representative of the actual phenomenon.

A total of 17 instructional designers reported experiencing time constraints in the work projects that they chose to discuss during the interview. When asked to further clarify how time specifically was a constraint, 16 out of 17 instructional designers that experienced a time constraint, described the time constraint as limited time to design, develop, and implement instructional interactions. Instructional designers expressed the limitation as "only having a

week to develop materials", "the client set unrealistic deadlines", "handed the assignment a few weeks before it was due", and "I had only two weeks to do everything". Instructional designers were working on a variety of projects from developing graduate and undergraduate courses in higher education to developing trainings and eLearnings for federal compliance regulations, software training, and job safety training. Table 12 below discusses the reason why each instructional designer experienced a time constraint. In summary the reasons generally included the following:

- Changes to federal mandates that required employees to be trained in order to be compliant
- Issues finding subject matter experts
- Pre-imposed deadlines by clients
- Being hired or brought into the project shortly before launch dates predetermined by clients, and
- As a result of a safety issue to prevent the reoccurrence of an incident

Reasons for limited time to implement or deliver training included limited time with the learners. In these instances, the learners are also employees and the organizations wanted to minimize the amount of time employees were away from performing job duties to attend training. Table 12 provides a summary of the participants that experienced limited time, the reason for the time constraint, and the industry in which the participant works.

Table 12 *Summary of Participants by Industry that Experienced Limited Time*

	Industry	Time Constraint	Reason
ID_C	Higher Education Institution	Limited time to design and develop	Brought into project shortly before launch date
ID_B	Tourism	Limited timed to design, develop, and implement	Mandate change/update
ID_S	Charity/Nonprofit	Limited time to design,	Mandate change/update

		develop, and implement	
ID_E	Consulting	Limited time to design and develop	Prevention of safety Issue
ID_P	Health care	Limited time to design and develop	Mandate change/update
ID_A	Consulting	Limited time to implement	Limited time with learners
ID_U	Higher Education Institution	Limited time to implement	Limited time with learners
ID_H	Consulting	Limited time to design and develop	Pre-imposed timeline by client
ID_G	Higher Education Institution	Limited time to design, develop, and implement	Pre-imposed timeline by client
ID_K	Higher Education Institution	Limited time to design and develop	Mandate change/update
ID_O	Higher Education Institution	Limited time to design and develop	Pre-imposed timeline by client
ID_D	Health care	Limited time to design and develop	Mandate change/update
ID_L	Government	Limited time to design and develop	Mandate change/update
ID_Q	Higher Education Institution	Limited time to design and develop	Issue finding SMEs
ID_T	Higher Education Institution	Limited time to design and develop	Mandate change/update
ID_R	Consulting	Limited time to design and develop	Brought into project shortly before launch date

While 16 out of the 17 instructional designers that had projects where the time constraint can be characterized as limited, one instructional designer who works in a higher education institution experienced the time constraint in a different way. In this designer's project, the project actually took longer than first expected. The course development time was initially scheduled for 3-4 weeks and ended up taking 6 months. This project did involve a design project where the content of a course needed to be transferred to a new learning management

system and required a redesign. ID_I reported the reason for the "scope creep" was the result of the client underestimating the amount of work required.

Tool constraints. Upon review of interview notes, a clear theme related to the type of tool constraints did not emerge due the limited number of instructional designers that actually experienced a tool constraint. Table 13 provides a summary of the participants that experienced a tool constraint, the reason for the constraint, and the industry in which the participant works. In some instances, such as tourism, the tool constraint was due to learners being on a cruise ship and not having access to the internet in order to access the LMS in order to deliver related to compliance. ID_N experienced an issue where he/she was working with a government agency to develop an eLearning and there was a lengthy approval process involved with gaining access to the tool.

Table 13 *Summary of Participants by Industry that Experienced a Tool Constraint*

	Industry	Tool Constraint	Reason
ID_N	Consulting	Limited access to tool	Issues gaining access because of approval process
ID_B	Tourism	Limited access to LMS	Internet access to LMS
ID_M	Retail	Did not have preferred tool	No access to preferred tool
ID_J	Higher Education Institution	Limited tool (feature/functionality)	Limited budget and extensive tool review process
ID_D	Health care	Limited access to tools (feature/functionality)	No access to preferred tool
ID_A	Consulting	Did not have preferred tool	No access to an LMS

How Instructional Designers Make Decisions Based on Time Constraints

The goal of the second research question was to determine how instructional designers make decisions based on time constraints during work projects. During phone interviews, the researcher asked instructional designers to describe their decision making process based on the time constraint including (a) if they referred to past projects; (b) the type of decisions they were

responsible for making during the project; (c) if they made decisions before they started the design process, during the design process, or both; and (d) if they gleaned any insights or lessons learned about their decisions. Upon analysis and coding of interview notes, the following themes and patterns emerged:

- Instructional designers refer to similar past projects when making decisions.
- Instructional design practitioners reflect and identify lessons learned/best practices as a result of working through projects with time constraints.
- Instructional designers view the constraint of limited time negatively.
    - Instructional designers expressed wanting more time to do more instructional design tasks/activities when working on projects with limited time constraints.

Instructional designers refer to similar past projects. The researcher originally established the theme as instructional designers refer to past projects. However, upon review of information, the peer researcher recommended adding "similar" to highlight that instructional designers made distinctions in the type of past projects that informed their decision-making process. The researcher agreed that the update was more representative of the actual phenomenon. This phenomenon also emerged as a theme for the third research question.

A total of 19 out of the 20 instructional designers interviewed reported that they referred to past projects as a basis for how they made decisions during the design and development process. Participant ID_M who works as an instructional designer in retail experienced a tool constraint where he/she needed to use MS PowerPoint to modify images because his/her organization does not provide Adobe Photoshop. ID_M remarked that he/she was familiar with how to use PowerPoint in this way because of past projects. Participant ID_Q who works at a

higher education institution and experienced a limited time constraint noted that referring to his/her institution's standard process and stated, "knowing all the steps that needed to be there, greatly helped to expedite things." ID_G shared a similar experience and discussed that the instructional design process and template are the same for every course and he/she just needed to modify the template. ID_T stated that he/she "relied heavily upon past instructional design experience to apply a streamlined ADDIE process and having this experience helped to navigate some of the pitfalls."

While these instructional designers may not be familiar with or aware they were utilizing the LON approach, the decisions that they made due to limited time demonstrate the LON approach in action. While the designers here remarked having an established instructional design process, they modified their processes to select feasible layers or instructional design activities to adjust for the limited time. The did not purely follow their traditional processes but decided to identify a set of activities as well as a level of depth to conduct the specified activities further illustrating the LON approach is indeed a way to think about instructional design (Baaki, 2018).

Instructional designers also refer to past projects by using templates. A total of nine instructional designers discussed modifying existing templates during their projects. ID_E, who works as a consultant, needed to quickly develop safety training in response to a workplace injury. ID_E discussed locating and modifying a "similar" template that had been used for a previous safety training in order to develop the new safety-training course. ID_S, who works for a nonprofit organization, discussed using a "standard eLearning template" to develop a new course in response to a regulation change.

Although 19 out of the 20 instructional designers interviewed reported that they referred to past projects as a basis for how they made decisions during the design and development process, ID_O reported that he/she did not refer to any past projects. ID_O works in higher education and experienced a time constraint where he/she stated, “the client set unrealistic deadlines and really didn’t have any goals.”

Instructional designers reflect on and identify lessons learned. Upon review of information, the peer researcher supported the researcher’s establishment of this theme. This phenomenon also emerged as a theme for the third research question.

A total of 17 out of the 20 instructional designers reported that they gleaned insights and lessons learned about the decisions they made during the project. Many of the participants walked away with heuristics or best practices that they implemented or planned on implementing as a standard process change in future projects; this demonstrates that instructional designers evaluate and reflect on the outcomes of their decisions. ID_A works as a consultant who was responsible for developing role-based software training. ID_A reported that during the analysis of instructor-led trainings, he/she will be sure to confirm the in-person seat time allocations to determine if he/she will need to develop asynchronous training alternatives in cases where the learners will not be able to attend a live training at the same time. ID_U, who works in higher education, reflected during his/her project where there was limited time to develop a faculty training course that he/she needed to be a better project manager and as result, ID_U planned on using templates and an agile methodology as a standard process change. ID_C determined that faculty needed training on the online course development process before being able to teach online, which became a process change. As a result of limited time, ID_S discussed plans on creating eLearning development timeframes and providing them to the

internal departments of their organization to limit the number of last-minute training requests. ID_T works in higher education as shown in Table 12. In response to limited time, ID_T implemented a rapid prototyping approach where he/she built and piloted the first week of a course and then received feedback for revisions; this process worked well so he/she decided to implement the process modification into his/her standard instructional design process.

While 17 out of the 20 instructional designers reported that they gleaned insights and lessons learned about the decisions they made during their projects, three instructional designers reported not gleaning any insights.

Instructional designers view limited time negatively. Upon review of information, the peer researcher supported the researcher's establishment of this theme. However, the peer researcher did highlight a trend that the level of negativity was higher when the time constraint was not originally known before the start of the project. Upon discussion with the peer researcher and reviewing the interview notes again, the researcher agreed with the peer reviewer's findings. The researcher concluded that the level of negativity increased along a continuum where the highest level of negativity appeared to be experienced by instructional designers with limited time constraints that arose during the project or if all of the implications of the time constraint were not previously known.

This study found that when completing projects with constraints, at some point in the analysis of the project when the instructional designer determines there is a limited time constraint, they assign a negative emotional response to the time constraint. There was a total of 16 instructional designers that experienced the limited time constraint. Out of the 16 designers, 14 designers viewed limited time negatively in the project, which was expressed by instructional designers saying although they wanted to do all of the phases of the instructional

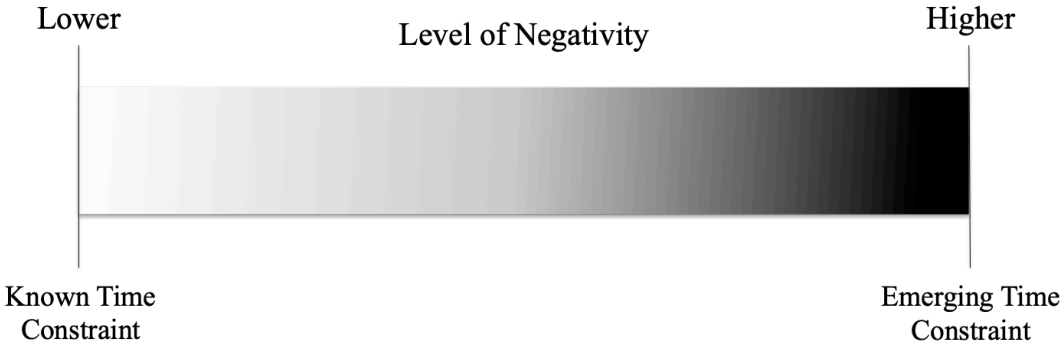
design process, either they were not able to do all of the phases of the design process or they needed to omit of instructional tasks or activities. Instructional designers also reported being "stressed" or "frustrated" as a result of limited time. When instructional designers described experiencing limited time there were multiple occasions of them saying "I didn't have enough time" or "if I had more time, I would have done more engaging learning activities". There was a tone of disappointment of not being able to do their full process or what they considered to be their best work. ID_S reported being stressed by the timeframe. The designer expressed feeling stressed because of deciding to develop what he/she considered was a basic training due to the time limitation. ID_S stated that the training did not include "a lot" of interaction and the designer felt that people would complain that the training was boring. ID_G expressed that the quality of the course suffered because of limited time. ID_Q stated the course that he/she developed was "good enough instead of good".

When instructional designers typically knew of the limited time constraint before starting the project, their level of frustration did not appear to be as high as instructional designers with emerging time constraints. ID_E worked on training where he/she knew there was going to be limited time to design, develop, and implement the training. This instructional designer expressed some frustration due to the limited time constraint by not being able to include videos or attend training delivery but commented that "my performance was good based on the time constraint". Here, ID_E knew of the limited time constraint and modified the process and recognized how the constraints shape what is feasible for the project. ID_E's process also demonstrates the LON approach in practice where he/she did not experience the same types of frustrations reported by other designers. ID_B knew about the limited time constraint beforehand and although there was some frustration because of a desire to include

more interaction, the instructional designer did express that their performance was good because he/she met the goal of being in compliance. Like other participants in the study, these examples show some level of negativity with the limited time constraint in general because of the limitations on the design process, however they did not appear to express as much frustration as instructional designers that experienced emerging time limitations.

On the two instances when instructional designers did not know all of the implications of the limited time constraint before starting the project or when the time limitations emerged during the project, they appeared to express more frustration. ID_S experienced some unexpected delays with receiving content and approvals, which exacerbated the original time constraint even more. As result of the emerging time limitation, this designer admitted to being more stressed than usual when dealing with time constraints. ID_Q expressed frustration also because of an emerging time limitation and stated, “it could have been a better experience for the students and the instructor”. In these instances, these two participants experienced emerging or exacerbated time constraints. They also appeared to be more frustrated with the time constraint as compared to other participants. These findings suggest there may be a continuum of negativity based on if the limited time constraint is known before starting the project or if it emerges during the project as a new constraint or a known time constraint becomes more severe. Figure 1 provides a representation of the continuum of negativity.

Figure 1. Continuum of Negativity Based on Known Verses Emerging Time Constraints



A patterned also emerged where 14 instructional designers expressed wanting more time to do instructional tasks or activities. Instructional designers stated they wanted more time to (a) do analysis, (d) do deeper design and development in general, (c) incorporate more engaging and interactive instructional strategies such as videos and branching scenarios, and (d) conduct more elements of evaluation including more extensive quality assurance reviews of content. ID_L, who works in government, wanted more time for design and development and to be able to include more engagement and interaction in instructional strategies. ID_H, who works in consulting and was working on a skills training eLearning, wanted to include more videos with branching scenarios. ID_G, an instructional designer in higher education, wanted to include more time for quality assurance reviews of content. ID_K, who also works in higher education, wanted more time for analysis and to clarify learning objectives. ID_C wanted to include more multimedia interactions. ID_J also wanted to do analysis and include more engaging activities. Although the participants here expressed wanting to do more instructional design activities or layers, they recognized that it was not feasible given project constraints which therefore again supports the LON as way to approach the instructional design process.

Although 14 out of the 16 instructional designers that experienced a limited time constraint viewed the constraint with some level of negativity, one instructional designer did not. ID_P, who works in higher education, knew of the limited timeframe before the start of the project. The time constraint was due to a change in protocol as mandated by a federal agency that provides oversight to their organization. In order to be compliant, ID_P needed to develop training and provide evidence of training delivery. ID_P reported being happy with their performance and that the project ran smoothly. This designer also did not express a desire to

change anything about the course if he/she had more time because the learners were already familiar with the content.

How Instructional Designers Make Decisions Based on Tool Constraints

The goal of the third research question was to determine how instructional designers make decisions based on tool constraints during work projects. During phone interviews, the researcher asked instructional designers to describe their decision making process based on the tool constraint including (a) if they referred to past projects; (b) the type of decisions they were responsible for making during the project; (c) if they made decisions before they started the design process, during the design process, or both; and (d) if they gleaned any insights or lessons learned about their decisions. Upon analysis and coding of interview notes, the following themes emerged:

- Instructional designers refer to similar past projects when making decisions.
- Instructional design practitioners reflect and identify lessons learned/best practices as a result of working through projects with time constraints.
- As a result of institutional tool constraints, instructional designers find ways to work within the constraints of the tools.

The themes of (a) instructional designers refer to similar past projects when making decisions and (b) instructional design practitioners reflect and identify lessons learned/best were discussed under Research #2 of this chapter therefore this discussion includes only theme (c) as a result of institutional tool constraints, instructional designers find ways to work within the constraints of the tools.

Instructional designers find ways to work within the constraints of the tools. Upon review of information, the peer researcher determined the emergence of this theme. The

researcher reviewed the interview notes again, engaged in a discussion with the peer researcher about the findings, and agreed with the validity of the theme.

A total of six out of the 20 instructional designers reported experiencing a tool constraint. Unlike the time constraint, instructional designers did not modify the instructional design process or omit steps in response to the tool constraint. Instructional designers reported that they ultimately found "work arounds" in regard to the tool limitation that they experienced. ID_B works in the tourism industry and experienced a tool limitation. The tool limitation occurred as a result of no access to the Internet and consequently the learning management system (LMS) would not be able to be utilized for training delivery. As a result, ID_B changed the delivery mode to in-person instead of asynchronously. ID_A also was limited by not having access to an LMS because his/her organization did not have one LMS that all users would be able to access. As a result, ID_A used other tools such as SharePoint as a training delivery tool. ID_D, who works in healthcare, wanted access to Captivate and Adobe Creative Cloud to make training more engaging but is limited to Camtasia because his/her organization's tool approval process and budget. However, ID_D noted that he/she was still able to include interaction in the training and quizzes. An instructional designer in higher education, ID_J also had a similar experience of a lengthy tool approval process and is limited to using the LMS solely to develop and deliver content. ID_J noted the need to reorganize and restructure content because of LMS limitations but followed the standard instructional design process. ID_N experienced access issues while developing the content. However, ID_N was able to work with his/her IT department to use a remote desktop feature to capture screenshots instead of the normal method. ID_M had to use PowerPoint to modify screenshots instead of his/her preferred tool of Photoshop. While these instructional designers experienced tool limitations for various reasons,

they employed innovative strategies to work within the constraints of the tools without inhibiting the instructional design process.

Additionally, these instructional designers did not express frustration with the tool constraint as observed with participants who experienced time limitations.

How Instructional Designers Modify or Omit Elements of the Instructional Design Process

Due to the same theme emerging for research questions four and five, the results for these research questions will be discussed in conjunction. The goal of the fourth research question was to determine how instructional designers worked through the instructional design process based on time and tool limitations. This study uncovered that as a result of time limitations, instructional designers modified or omitted elements of the instructional design process which supports the LON as an approach to the instructional design process (Baaki, 2018). The goal of the fifth research question was then to specify the types of modifications and which instructional design steps or activities instructional designers omitted in response to constraints. During phone interviews, the researcher asked instructional designers if they modified the project based on time and tool constraints. Instructional designers indicated they modified the design process based on limited time constraints and project goals. The researcher then asked instructional designers to described modifications. Upon analysis and coding of interview notes, the following themes and patterns emerged:

- Instructional designers identify essential tasks and modify or omit steps in the instructional design process based on project goals and time limitations.
    - Instructional designers modified the following elements of the instructional design process:
        - Learner experience

        - Utilizing a rapid prototyping approach instead of a traditional systems model
    - Instructional designers omit design tasks and activities including:
        - Analysis
        - Design
        - Evaluation
        - Instructional strategies (engagement, interaction, videos, and other)

Instructional designers identify essential tasks and modify or omit steps in the instructional design process based on project goals and time limitations. The researcher originally established the following themes:

- Instructional designers identify essential tasks based on project goals and time constraints.
- As a result of limited time during projects, instructional designers modify or omit steps in the instructional design process.

Upon review of information, the peer researcher supported the researcher's establishment of these themes but suggested combining them due to the cause and effect relationship between the two separate themes. The researcher agreed with the peer researcher's recommendation and combined the two separate themes into the theme: Instructional designers identify essential tasks and modify or omit steps in the instructional design process based on project goals and time limitations.

The six instructional designers that experienced a tool constraint were able to perform what they indicated was their "normal" instructional design process without the need to modify

or omit steps due to the tool constraint. However, 16 instructional designers that experienced a time constraint determined that they needed to modify the instructional design process including macro and micro levels of analysis, design, development, implementation, and evaluation, in order to achieve project goals within the confines of the time limitation. *Marco level* in this contest refers to an entire design phase such as analysis, while *micro level* refers to design tasks or activities such as the selection of instructional strategies.

To accommodate for limited time to analyze, design, develop, implement and evaluate instructional interventions, these 16 instructional designers referenced project goals and then determined which phases of the instructional design process were essential in order to achieve specified project goals. Throughout the instructional design process, instructional designers continued to refer back to project goals to determine essential tasks. Instructional designers performed the tasks they deemed essential and either modified or omitted instructional design tasks or activities they considered nonessential based on the time constraint and an emphasis to achieve project goals.

Omission of analysis, design and evaluation. There were instances when instructional designers determined that only development and implementation were essential based on time constraints. ID_L was provided content by subject matter experts that needed to be converted to eLearning to include narration. Due to limited time to meet compliance requirements for all employees to be trained a federal mandate change, ID_L decided to skip analysis and design and use the content that was provided be SMEs “as is” and go straight into development; this included imported the SME provided content directly into the authoring tool and adding narration.

Some instructional designers decided all of the phases of the design process were essential except formative evaluation and decided to skip or modify that step in the process. ID_G typically conducts two separate types of quality assurance reviews including a technical review of the functionality of the course and another one for the validity and accuracy of the content. However, as a process modification, these two reviews were combined to minimize time.

Omission of instructional strategies. Other instructional designers decided all of the phases of the design process were essential except including interactive instructional strategies. ID_H wanted to include more videos with interactive branching scenarios but limited the project to less interactive learning activities where the learner interacted with content approximately 25% of the time in response to the time constraint. ID_R decided to omit a planned video during the design process due to limited time.

Modification of learner experience. ID_P modified the learner experience from eLearning to a training handout and quiz questions to also meet a compliance requirement for all employees to be trained on a federal mandate change. In additional to limited time to design, ID_A also experienced a time limitation during implementation. As a result, ID_A modified the learner experience from live synchronous sessions to asynchronous training where learners would have access to on-demand videos. ID_A also omitted live Q&A sessions that had been previously planned.

Utilization of a rapid prototyping approach. ID_K needed to quickly develop and implement training for employees so their organization would be in compliance with an update to a federal regulation. ID_K expressed that being in compliance was very important for his/her organization as it impacted funding. To ensure he/she met project deadlines, ID_K utilized a

rapid prototyping approach to streamline the instructional design process and quickly develop training. Also, in order for his/her organization to be in compliance with an update to a federal regulation, ID_S was contacted about developing training in a short timeframe of 3 weeks. In response to the project goal of needing to ensure organizational compliance and the limited time to develop training, ID_S also used a rapid prototyping approach. ID_S did not do analysis or designed and used the provided source files to go straight into development by uploading files into the authoring tool.

In the higher education course development process, rapid prototyping translates to completing the first few weeks of a course prior to the start of semester, and then building the remaining weeks of a course while students are working through the completed components. In response to time constraints, some instructional designers in higher education used this modification. ID_Q used this strategy. ID_C used a similar modification to build the first three weeks of the course prior to the start of the semester and then built the remaining weeks of the course during the semester. Table 14 provides a summary of the type of project and the process modification and/or instructional design tasks or steps that instructional designers omitted.

Table 14 Project *Summary, Reason for Time Limitation and Type of Process Modification/Omission*

	Project Summary/Reason for Time Limitation	Modification/Omission
ID_C	Instructional designer working in higher education was brought into project to develop a course shortly before launch date (start of semester)	Modified Evaluation element to omit QA review of content prior to course launch, Employed rapid prototyping approach to build course during implementation where the first few weeks of the course were complete at launch and remaining weeks where built during the course delivery
ID_B	Instructional designer working in the tourism industry needed to develop training in response to a government mandate change/update in order for his/her company to be in compliance	Modified learner experience from eLearning to live in-person, Modified Analysis element to omit learner analysis, Modified Evaluation element to omit first the prototype with review/feedback

ID_S	Instructional designer working in nonprofit industry needed to develop training in response to a government mandate change/update in order for his/her company to be in compliance	Omitted Analysis and Design, Modified overall instructional design process to a rapid prototyping methodology where he/she used SME provided content and moved directly into development in the authoring tool
ID_E	Instructional designer working in consulting needed to develop a training in response to an accident to prevent a safety Issue	Modified Evaluation element to omitted content QA review of content
ID_P	Instructional designer working in healthcare needed to develop training in response to a government mandate change/update in order for his/her company to be in compliance	Modified learner experience from eLearning to checklist document and assessment questions
ID_A	Instructional designer working in consulting had limited time with learners and needed to develop skills training	Modified learner experience from the originally planned live synchronous sessions to include asynchronous training (on-demand videos) and omitted Q&A sessions
ID_U	Instructional designer working in higher education had limited time with learners and limited time to develop content needed to develop a training course	Modified Evaluation element to omit QA review of content
ID_H	Instructional designer working in consulting had limited time to develop all of the content because of pre-imposed timeline by client	Modified instructional strategy to include less interaction by not including scenarios, Modified Evaluation element of QA review of content and functionality
ID_G	Instructional designer working in higher education had limited time to develop all of the content because of pre-imposed timeline by client	Modified Evaluation element of QA review to make two separate QA reviews (one for functionality and one for content) instead of one larger review
ID_K	Instructional designer working in higher education needed to develop training in response to a government mandate change/update in order for his/her company to be in compliance	Modified overall instructional design process to a rapid prototyping methodology, Limited analysis of instructional objectives as they were pre-determined
ID_O	Instructional designer working in higher education had limited time to develop all of the content because of pre-imposed timeline	Modified Evaluation element to omitted content approvals

	by client	
ID_D	Instructional designer working in healthcare needed to develop training in response to a government mandate change/update in order for his/her company to be in compliance	Modified Design element to limit the number of SMEs involved in the process
ID_L	Instructional designer working in government needed to develop training in response to a government mandate change/update in order for his/her company to be in compliance	Omitted Analysis and Design, Modified overall instructional design process to a rapid prototyping methodology where he/she used SME provided content and moved directly into development in the authoring tool
ID_Q	Instructional designer working in higher education had project delays due to issue finding SMEs	Modified Evaluation element to omit QA review of content, Modified Development to a rapid prototyping approach to build course during implementation where the first few weeks of the course were complete at launch and remaining weeks where built during the course delivery
ID_T	Instructional designer working in higher education needed to develop a course in response to a mandate change/update	Modified Analysis element to omit front-end analysis
ID_R	Instructional designer working in consulting needed to develop skills training was brought into project shortly before launch date	Omitted an instructional strategy of including a planned video, Modified Evaluation element to omit separate QA reviews for content, grammar, and functionality and did one combined review

CHAPTER IV

DISCUSSION

The researcher, who has worked as an instructional design practitioner for the past nine years, observed in her own work that traditional instructional design models require adjustments and modifications due to project constraints. These observations led to the researcher to inquire how others approach this process; therefore, the purpose of this study was to explore how instructional designers make decisions related to determining how to navigate and negotiate the instructional design process based on time and tool resource constraints. The findings from this study show that instructional designers modify instructional design processes that are based on traditional instructional design models in response to limited time constraints; this finding validates that as a result of constraints, instructional designers select and implement an appropriate layer of instructional design activities as described in the LON (Tessmer & Wedman, 1990) and supports the LON approach as a way of thinking about instructional design as discussed by Baaki (2018). The findings also highlight that instructional designers rely on prior knowledge and similar past projects to make decisions throughout the design process which can be conceptualized using the recognition primed decision (RPD) model.

Support of the LON Approach

The findings from this study show that instructional designers modify instructional design processes that are based on traditional instructional design models in response to limited time constraints. Instructional designers identified essential tasks based on project goals and time constraints. Additionally, as a result of limited time during projects, instructional designers modified or omitted steps in the instructional design process.

These modifications included omitting steps or tasks or doing a less complex set of instructional design tasks. In essence, these phenomena describe the operationalization of the LON approach as described by Baaki (2018). Although, Tessmer and Wedman (1990) referred to the LON as an instructional design model, the findings of this study support Baaki's (2018) discussion that Tessmer and Wedman where indeed revolutionary in regard to the LON as a perspective or "…a way of thinking about instructional design" (p. 18). To support his position, Baaki (2018) discussed that the LON approach included mechanisms for task enhancements, principle-based design, merged stages, opportunistic perspective, and efficiency-based design.

Task enhancement. The LON approach includes enhancements to "…previously completed design work" (Baaki, 2018, p. 18). ID_K provided an excellent example of this process during his/her interview. Recall that ID_K, an instructional designer in higher education, worked on a project where he/she experienced the constraint of limited time as a result of needing to quickly develop and implement training in response to an update to a federal regulation. As result of limited time, one of the modifications that ID_K made during the project was to limit the analysis of SME provided learning objectives. However, at a later date during a revision of the course, ID_K had the opportunity to make enhancements by conducting analysis as it relates to the alignment of learning objectives and was therefore able to refine the learning objectives.

Principle-based design and merged stages. Tessmer and Wedman (1990) proposed that during the instructional development process, designers select and implement a layer of design and development activities based on project constraints. Baaki (2018) went on to further clarify "a layer is a merged set of specific tasks that enhance the design within the design constraints" (p. 19). Table 14 shows that each of the instructional designers selected a specific

set of tasks to perform and implement based on time constraints; this represents the "layers" they selected and implemented. Here we see the traditional instructional design model as a framework to inform the overall instructional design process, however, the designer examines project goals and constraints in order to select feasible tasks. Designers then continue to reflect on feasibility and make adjustments throughout the design process. Instructional designers chose to implement a layer, which omitted certain tasks or only included addressing certain tasks at a less complex level in order to achieve project goals. For example, there were instances when instructional designers determined that only development and implementation were essential based on time constraints and project goals. Although ID_L may not have been aware of following the LON approach, his/her experiences provides an exemplary example. This designer who works in government decided to forego analysis and design and use the content provided by SMEs "as is". Based on project timelines and goals, ID_L chose to go straight into development by "dumping the [SME provided] PowerPoint into Captivate" in order to achieve the project goal of developing and delivering training so his/her organization would be in compliance with a federal regulation. ID_L discussed reflecting during each stage of the process to ensure the project would be delivered on time to meet compliance. While project constraints drive what can be done, project goals are also considered in relationship with the constraints to determine feasible tasks. Figure 2 below provides a display of how project goals influenced or trickled down to the layer selection and implementation process during ID_L's application of the LON approach.

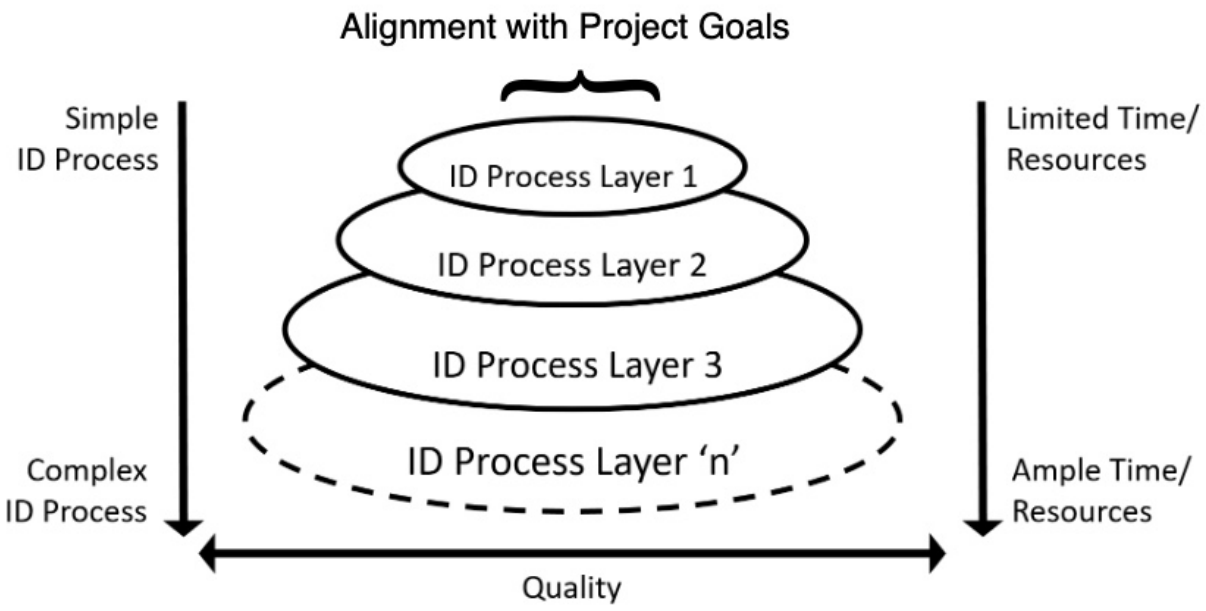


Figure 2. *Note.* Modified based on Tessmer, M., & Wedman, J. (1990). A LON instructional development model. *Educational Technology Research and Development*, 38(2), 77-85.

While the LON approach does provide a mechanism for conceptualizing instructional design in the context of designing with project constraints (Baaki, 2018), and Tessmer and Wedman (1990) discussed goals and project scope, the pictorial presentation of the 1990's LON does not show the relationship of project goals and instructional layers or activities. The findings from this study and ID_L's experience in particular suggest that designers balance project goals along with constraints in regard to the selection and implementation of instructional designer tasks and activities.

Opportunistic perspective and efficiency-based design. Applied instructional design can be thought of as a science and an art; using instructional design models to guide instructional design practice embodies the science within the field, while how instructional designers modify models in response to project constraints and unknown conditions can be

considered an art. A group of instructional designers may all agree on the steps of the ADDIE process for example, but each designer may determine a different approach to make modifications given project constraints. The opportunistic perspective of the LON approach reflects that instructional designers may need to expedite the design process in order to develop efficient training. The project that ID_Q discussed during his/her interview provides an example of this concept. ID_Q works in higher education and described a project with a limited time constraint where the course development time was cut in half because his/her organization needed to replace the SME he/she was assigned to work with in order to develop a graduate level course. In response to the time constraint, ID_Q omitted the QA review of content and utilized a rapid prototyping approach to build the course during implementation where the first few weeks of the course were completed at the start of the semester and the remaining weeks where built while students worked through the completed sections of the course. ID_Q remarked that this process was not ideal but he/she was able to develop a course that was "good enough". This shows efficiency in response to a need. The course needed to be developed and ID_Q was able to work in an efficient manner to develop a course that met the need. The course may not have been exceptional but it was "good enough". Based on conversations with instructional designers during this study and my own design experience, instructional designers in general want to be able to do what they consider their best work by doing all appropriate instructional design tasks, however, project constraints sometimes deem it essential to omit tasks or do less complex levels of tasks in order to achieve project goals as described in the LON approach (Baaki, 2018; Tessmer & Wedman, 1990).

Although instructional designers who experienced tool constraints did not modify the instructional design process or omit steps as was the case with instructional designers who

experienced time constraints, these designers also exhibited an opportunistic perspective to design efficient instructional interventions. These designers ultimately found "work arounds" in regard to the tool limitations that they experienced. For example, ID_B works in the tourism industry and experienced a tool limitation. The tool limitation occurred as a result of no access to the Internet and consequently the learning management system (LMS) would not be able to be utilized for training delivery. As a result, ID_B changed the delivery mode to synchronous in-person training instead of asynchronous eLearning that was originally planned. To provide another example, ID_M works in retail. This designer prefers to use Photoshop to modify screenshots in order to develop training. However, his/her organization does not provide this tool. As a "work around" this designer imports and modifies the screenshots in PowerPoint. While instructional designers experienced tool limitations for various reasons, they employed innovative strategies to "figure it out" to develop efficient instruction.

The Significance of Similar Past Projects

Recognition primed decision (RPD) model. As previously discussed, the RPD model is a decision making model outside of educational communication that helps to conceptualize complex decision making. The findings from the study in regard to how instructional designers made decisions can be described in the context of the RPD model as instructional designers referred back to past projects to make decisions and checked their expectations to confirm current situations were consistent with their prior knowledge and aligned with actions to modify traditional instructional design models. This suggests that instructional designers followed the RPD model to make decisions about which layers or instructional design activities to select and implement following a the LON approach.

The model includes the two stages of situation recognition and solution generation. During situation recognition, the decision maker gathers information and determines how information in the current situation aligns to any prior knowledge that is similar to the current situation. Next the decision maker conjectures goals, cues or representations of the situation, expectations or mechanisms to access the situation, and develops actions. The decision maker compares expectations from memory with the current situation and evaluates the two for alignment. The decision maker then mentally evaluates actions and implements actions if the decision maker feels the action will achieve the goal (Hu et al., 2018).

Situation recognition. During situation recognition, instructional designers gathered project information and determined how the information in that situation aligned to their prior knowledge. Instructional designers that worked on projects with both time and tool constraints discussed referring to similar past projects to make decisions during their current projects. A total of 19 out of the 20 instructional designers interviewed reported that they referred to past projects as a basis for how they made decisions during the design and development process. This was best epitomized by ID_Q who noted referring to his/her institution's standard process and stated, "knowing all the steps that needed to be there, greatly helped to expedite things". ID_T stated that he/she "relied heavily upon past instructional experience to apply a streamlined ADDIE process and having this experience helped to navigate some of the pitfalls." ID_B commented that he/she had other compliance trainings that he/she "…referred back to as a model for this type of training".

Instructional designers use templates demonstrating a reflection on past projects. A total of nine instructional designers discussed modifying existing templates during their projects. ID_E needed to quickly develop safety training in response to a workplace injury. ID_E

discussed locating and modifying a “similar” template that had been used for a previous safety training in order to develop the new safety-training course.

The findings from the literature also provide evidence that instructional designers refer back to past projects to make decisions. Stefaniak and Tracey (2014) examined how design professionals make design related decisions from the perspective of if decision-making followed a discovery or idea imposition process and also found that an instructional designer they interviewed referred to a similar past project to inform the decision-making process during the current project. Another related study that examined the decision making process with instructional designers found that a large percentage of practitioners indicated reflecting on instructional strategies that they used in the past (Christensen & Osguthorpe, 2004).

The process of referring back to similar past projects appears to be an important part of instructional designers’ decision making process as they appear to use a recursive reflective process during current projects to develop heuristics for future projects. Instructional designers who worked on projects with both time and tool constraints also reflected on their decision making processes during their current work project and identified lessons learned and best practices that informed future process changes. A total of 17 out of the 20 instructional designers reported that they gleaned insights and lessons learned about the decisions they made during the project. ID_U reflected and determined he/she needed to be a better project manager and planned on using templates and an agile methodology as a standard process change. ID_T found that a rapid prototyping approach worked well and consequently decided to implement the process modification and into his/her standard instructional design process.

Solution generation. During solution generation, instructional designers checked their expectations to confirm current situations were consistent with their prior knowledge and chose

actions to modify traditional instructional design models. Instructional designers then mentally evaluated modified models and implements actions to achieve project goals.

As a result of needing to balance meeting project goals combined with limited time to design and develop instructional design interventions, instructional designers made decisions to modify traditional instructional design models to guide their practice. During situation recognition, instructional designers compared current projects to similar past projects and identified the elements from past projects that were relevant to current projects. These elements included the utilization of templates and following an instructional design process to guide their practice. However due to time limitations, instructional designers identified a need to modify the instructional design process. Based on project goals and the criticality of the time limitation, instructional designers chose to modify or omit elements in traditional instructional design approaches. Next, instructional designers applied the modified model and continued to monitor and check the efficiency of the modified model throughout the project. Due to limited time to meet compliance goals for all employees to be trained a federal mandate change, ID_L modified the instructional design process to omit analysis and design to go straight into development. ID_L noted that this process modification was successful in achieving the project goal of compliance. ID_K modified his/her approach to a rapid prototyping instructional design process also and noted success of achieving the project goal of compliance. Additionally, ID_R noted initial process revisions to omit formative evaluation and then implemented more modifications to omit videos due to the exacerbation of the limited time constraint; this highlights instructional designers engage in a continuous loop of checking the feasibility of their actions against project goals throughout the design process until a workable action is found as described by Hu et al. (2018). ID_I also noted employing a “trial and error” process.

Implications

The implications of the findings validates that as a result of constraints, instructional designers select and implement an appropriate layer of instructional design activities as described in the LON (Tessmer & Wedman, 1990) and supports the LON approach as a way of thinking about instructional design as discussed by Baaki (2018). Additionally, past similar projects provide instructional designers with a scaffold to generate solutions during new projects.

Constraints in general provide instructional designers with a road map of how to fine-tune the instructional design process used to arrive at developing instructional interventions that achieve aims, goals, and objectives. Some instructional designers expressed a frustration with modifying the instructional design process because of limited time. Some of the designers actually stated they were "stressed" and indicated frustration due to wanting to do all or more of the steps in the instructional design process. However, like other fields, I argue that instructional designers view constraints as project parameters and think about design based on achieving project goals given project constraints. To help prepare instructional design students for work positions, instructional design programs should provide instruction on the LON and embed projects with constraints to facilitate designing under these conditions.

For example, students could be presented with case studies that include project goals and constraints within the design problem. As a part of the design approach, students could then be tasked with selecting and implementing an appropriate layer of activities based on project goals and constraints. Students would then need to provide a justification for their design decisions based on the constraints and project goals described in the case study. They could also be asked

to reflect on Figure 2 and discuss if the relationship of project goals and their selection of instructional designer tasks and activities followed a similar pattern.

Instructional design practitioners referenced referring back to past instructional design projects as an important part of the instructional design process. Instructional design students and novice instructional designers do not have the same repertoire of past projects to reference like more experienced instructional designers. In order to scaffold these experiences, employers should consider strategies to pair new instructional designers with more experienced designers. Additionally, instructional designers discussed the importance of using templates to streamline development during similar projects. Therefore, both employers and instructional design programs should incorporate approaches for developing templates and provide training on template modification and best practices.

The findings from the research suggested differences in the instructional design process based on industry. Specifically, employing a rapid prototyping approach differed in industry from higher education institutions. To give students a variety of perspectives related to workplace projects, instructional design curricula should explore these differences and include a variety of instructional design projects to provide students with the different types of projects they may encounter on the job.

Limitations

The current study replicated (Stefaniak & Tracey, 2014) or expanded (Christensen & Osguthorpe, 2004) the sample sizes of studies related to the decision making process with instructional designers. Additionally, the study included participants from various industries of various sizes further contributing to greater generalizability. However, the current study did not gather information related to the years of experience of participants, which limited the ability to

examine differences between expert and novice instructional designers. Additionally, the study only included instructional designers from the United States, which limits global generalizability.

Future Research

To strengthen the findings of the current study and to explore differences in the decision make process between novice and expert instructional designers, it is recommended that future research on this topic replicate the study and add a component to explore differences between expert and novice instructional designers. To contribute to global generalizability, it is also recommended to replicate the current study with instructional designers outside of the United States.

For example, a future study could include instructional designers in the United States and other countries. To recruit instructional designers globally, it is suggested that researchers place calls for participants in global professional instructional design organizations as well as leverage social media platforms such as LinkedIn, Facebook, and Twitter to recruit instructional designers working in other countries. Due to the nature of conducting phone interviews, interviewing instructional designers using applications such as Skype or similar applications is a feasible means of communicating with people in other countries.

Upon the recruitment of instructional designers working globally, the researcher could follow the research methods and protocols described herein to expand the diversity of the sample size. It is also suggested that potential future researchers add a demographic question to the qualifying questionnaire to obtain potential participants' years of experience to also examine differences in years of experience among participants.

Conclusion

The purpose of this study was to explore how instructional designers make decisions related to determining which layers or related instructional design activities to address based on time and tool resource constraints. The findings from this study show that instructional designers modify instructional design processes that are based on traditional instructional design models in response to time constraints; this finding supports the LON approach as discussed by Baaki (2018). The findings also highlight that instructional designers reference prior knowledge and similar past projects in order to make decisions throughout the design process which can be conceptualized using the recognition primed decision (RPD) model.

The implications of the findings from this study include support of Baaki's (2018) discussion that the LON approach is indeed a perspective or approach for thinking about instructional design. Additionally, past similar projects provide instructional designers with a scaffold to generate solutions during new projects. Consequently, the implications suggest instructional design programs should provide instruction on the LON approach and embed projects with constraints to facilitate designing with constraints. Additionally, both employers and instructional design programs should incorporate strategies for developing templates and provide training on template modification and heuristics. Finally, it is recommended that instructional design programs include instruction on differences in the instructional design process as it relates to application in higher education and other industries.

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APPENDIX A: INSTRUMENTS

An Examination of the Decision-Making Process Instructional Designers Use to Complete Projects with The Constraints of Limited Time and Tools
Qualifying Instructional Designer Questionnaire

Qualifying Questions

1. Do you currently work in a full-time position as an instructional designer?
   Yes, No

2. Have you worked as an instructional designer for at least 2 years?
   Yes, No

3. Have you worked on a work project where the amount of time that you were given to complete the project was as a project constraint (imposed requirement) or placed limitations on any phases of the design process?
   Yes, No

4. If you answered yes to #3, what was the duration of the project?

5. If you answered yes to #3, what was the type of project?
   eLearning, instructor-led training, course, other (please specify)

6. Have you worked on a work project where the availability or lack of available instructional design tools (i.e. Captivate, Articulate, Storyline, Camtasia, PowerPoint or any application used to develop/author instructional products) was as a project constraint (imposed requirement) or placed limitations on any phases of the design process?
   Yes, No

7. If you answered yes to #6, what was the duration of the project?

8. If you answered yes to #6, what was the type of project?
   eLearning, instructor-led training, course, other (please specify)

Demographic Questions

9. Please list any postsecondary education including degree type and major.
   Ex. Master of Education: Major in Instructional Technology.

10. Please list any certifications.

11. What is your gender?

12. What is your age range?
    a. Younger than 20
    b. 20 – 29
    c. 30 – 39
    d. 40 – 49
    e. 50 – 59
    f. 60 – 69
    g. 70 and older

13. How many employees are in your organization?
    a. 1-50
    b. 51 – 100
    c. 101 – 500
    d. 501 – 1,000
    e. 1,001 – 10,000
    f. 10,001 – 50,000
    g. More than 50,001

14. Which industry best describes your organization? (Please select one)
    - Consulting
    - Technology/Software
    - Educational institution
    - Government
    - Manufacturing
    - Telecommunications
    - Charity/Nonprofit
    - Financial services/Insurance
    - Banking
    - Health care
    - Military
    - Retail
    - Utilities
    - Transportation
    - Pharmaceuticals
    - Other (please specify)

An Examination of the Decision-Making Process Instructional Designers Use to Complete Projects with the Constraints of Limited Time and Tools
Interview Questions Protocol

Introduction:

First, I'd like to thank you for taking the time to talk to me today. Before we begin, I wanted to verify that you are still willing to participate in the study. My colleagues and I are conducting a study to determine the type of time and tool constraints that instructional design practitioners experience during work projects and also how practitioners make decisions based on these constraints. Just to clarify in regard to tools, we are referring to any software program or application that you used to design and develop or author content for instructional design projects. For example, if you use Captivate to develop an eLearning course, then Captivate would be considered a tool. We are also exploring how instructional design practitioners determine which layers or questions to address given the project constraints of time and tool limitations.

The information you share with me will be kept confidential and will not be used to identify you individually. It will be analyzed along with the responses from other participants in order to determine if certain themes emerge in relation to the decision-making process based on time and tool constraints. During this discussion, I will be taking notes and will summarize the responses and ask that you review them. Your participation is strictly voluntary, and you may withdraw from the study at any time. Would you like to use a code name?

The interview should take approximately 30 - 45 minutes to complete. Do you any questions before we begin?

Participant Name:_____

1. Please describe an instructional design work project, which occurred within the past 2 years where you experienced time and or/tool constraints?
    a. What was the goal or aim of the project?
    b. Who were the learners or end-users?
    c. What was most important to you about the project?
    d. How did feel about your performance on the project?
2. How was time a constraint?
3. Can you walk me through your decision-making process based on the time constraint?

   a. Did you refer to any past projects you had worked on as a basis for your decision-making?
   b. What type of decisions were you responsible for making during the project?
   c. Did you make decisions before you started the design process based on this constraint or make decisions during the design process or both? Why did you choose this approach?
   d. Did you evaluate the quality of your decisions? Why or Why not? If so, how?
   e. Did you revisit or change your mind about the decisions? If so, what prompted this? How did you modify the decision?
4. How did you modify the project based on time constraints?
   a. What would you have done differently if this constraint wasn't present or if you had significantly more time?
5. Were there instructional design tasks or activities that you normally do but omitted during this project due to the time constraint?
   a. If so, what where these tasks or activities and why did you omit them? When did you decide to omit them?
6. Again, in the context of tools – I am referring to any type of software program that you use to develop or design content. How were you limited based on available tools?
7. Can you walk me through your reasoning or thought process based on experiencing tool limitations?
   a. Did you refer to any past projects you had worked on as a basis for your decision-making?
   b. What type of decisions where you responsible for making during the project?

   c. Did you make decisions before you started the design process based on this constraint or make decisions during the design process or both? Why did you choose this approach?
   d. Did you evaluate the quality of your decisions? Why or Why not? If so, how?
   e. Did you revisit or change your made about decisions? If so, what prompted this? How did you modify the decision?

8. Were there tools that you would have preferred to use if they were available? If so, what tools and why?
   a. How would using these tools change your work product?
9. How did you modify the project based on tool limitations?
10. Were there instructional design tasks or activities that you normally do but omitted during this project due to tool limitations?
    a. If so, what where these tasks or activities and why did you omit them? When did you decide to omit them?

Closing:

That is all the questions that I have you. My next steps will be to summarize my notes from our interview. It would be great help if you could review the final report of my notes and make corrections if you feel like I have misstated anything or left anything out.

Do you have any questions?

Thank you for sharing your time and input. We really appreciate your help.

VITA

Denesha Kaye Rabel
Boca Raton, FL 33496 | 305-801-4491 | drabe002@odu.edu

Education

Instructional Design & Technology (Doctor of Philosophy)
Exp. July 2019
Old Dominion University, School of Education
Admitted to Doctoral Candidacy, December 2018

Instructional Technology (Education Specialist)
May 2012
Valdosta State University, School of Education

Special Education (Master of Arts)
August 2009
Valdosta State University, School of Education

Economics (Bachelor of Science)
April 2004
Florida Atlantic University, College of Business

Professional Experience

Instructional Systems Designer *(2014 – Present)* *Provider Resources Inc.*
Remote

- Manages curriculum development process for Compliance Training, Education & Outreach (CTEO) for Medicare Part C & D Programs as the Senior Instructional Designer.
- Employs relationship management skills to consult with and exceed clients' expectations.
- Designs and develops comprehensive onboarding programs, skills training and performance support tools.
- Manages the work of course developers and curriculum specialists.
- Provides LMS administration.
- Designs and develops blended learning environments including virtual instructor-led and eLearning.
- Screens, interviews job candidates, and makes recommendations for next steps in the hiring process.

Senior Instructional Designer *(2013-2014)* *United Healthcare*
Remote

- Managed projects to meet all milestones and deadlines.
- Evaluated work products of junior instructional designers and provided feedback.
- Consulted with various lines of businesses to provide performance-improving solutions including training, curriculum, and performance support aids.

- Identified risks and dependencies.
- Designed and developed online learning, eLearning, and Instructor-Led html modules.

Instructional Designer *(2012-2013)* *Kaplan University*
Remote

- Managed team of contract instructional designers/developers.
- Managed project milestones and course development process to meet all deadlines.
- Designed and developed video tutorials, multimedia learning interactions, online undergraduate and graduate courses.
- Trained instructors and other faculty on the instructional design process and learning technologies.

Instructional Designer *(2010-2012)* *Florida International University*
Miami, FL

- Managed the course development process.
- Supervised, coached, and developed course developers.
- Designed and developed online undergraduate and graduate courses in Computer Science, Engineering, and Education.
- Facilitated training on Learning Management Systems and multimedia software.
- Designed and developed video tutorials and multimedia learning interactions.

Professional Educator *(2004-2010)* *Rome City & Broward Schools*

- Instructed through lectures, discussions, and demonstrations in subjects such as Mathematics, Special Education, Reading, Public Speaking, and Computer Applications.
- Adapted instruction for ESL (English as a second language) students and students with learning disabilities.

Corporate Trainer *(2001-2004)* *Technion*

- Designed and developed procedure manuals, guides, and course materials.
- Facilitated training using a variety of instructional techniques including role-playing, simulations, team exercises, group discussions, videos, and lectures.

Publications

Rabel, Kaye, & Stefaniak, Jill. (2018). The Onboarding of Instructional Designers in the Workplace. *Performance Improvement, 57*(9), 48-60.

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