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An Examination of the Practice of Instructional Design and the Use of Instructional Design Models

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AN EXAMINATION OF THE PRACTICE OF INSTRUCTIONAL DESIGN AND THE USE OF INSTRUCTIONAL DESIGN MODELS

by

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ABSTRACT

This dissertation in practice utilized a sequential mixed methods research design to investigate the performance or exclusion of instructional design activities commonly prescribed by instructional design models during a typical instructional design project. The purpose of this study was to compare the performance of instructional design activities by practicing instructional designers with the performance of an experienced instructional designer to determine if instructional design models are being used to guide the practice of instructional design.

In this study, quantitative data was collected from a sample of 224 instructional designers to determine the activities routinely performed and excluded from typical projects. Qualitative data was collected from a single case study of an instructional design project to assess whether or not the performance or exclusion of the same instructional design activities were identified in the work of an experienced instructional designer. Analysis of the data revealed the activities that are not routinely performed by instructional designers, reasons for the exclusion of activities, and possible factors for the decisions to exclude activities.

The findings of this study indicate instructional designers may be sacrificing the quality and effectiveness of instruction in an attempt to increase the pace and reduce the cost of the instructional design process. The study concluded that instructional designers are not following the prescriptions of instructional design models during the practice of instructional design by routinely eliminating the fundamental activities involving the development of learner assessments, the performance of formative evaluations during the instructional design process, and summative evaluations after the implementation of the instruction.

This dissertation is dedicated to Dr. LeRoy Gayle Twilley, my father, who believed in me, encouraged me, pushed me, and told me I could accomplish anything I put my mind to. He has been my role model and my biggest cheerleader, even from heaven. I would have never attempted this degree if he had not set an example for me. My life has been blessed because of his love and guidance, if even for only the first twenty-four years of my life. I know he is very proud of me.

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CHAPTER ONE: INTRODUCTION

Background of the Problem

Instructional design is the formal process of creating an effective instructional solution based on how people learn and how best to instruct people to produce authentic, well-organized, and engaging materials to solve a training problem (Gustafson & Branch, 1997). Instructional design is both an art and a science because the designing of instructional materials is a highly creative process, yet the process is rooted in scientific theory (Bartram & Mishra, 2002). Thus, instructional design is a complex and purposeful process that requires creativity, collaboration, and an extensive knowledge of learning theory, instructional theory, and instructional design models (Gustafson & Branch, 2002).

Instructional design models define the process the instructional designer should use to perform instructional design (Siemens, 2002). Instructional design models are prescriptive rather than descriptive, meaning they provide guidance related to creating learning products rather than describing how learners acquire knowledge and skill from the instructional products (Merrill, 2002). Although instructional design models are frequently presented as a simple graphical representation, they are important and useful to the design of instruction because they supply instructional designers with the conceptual tools needed to visualize, direct, and manage the process of instructional development (Gustafson & Branch, 2002). Theoretically, when all of the activities outlined by an instructional design model are conducted, an instructional solution is efficiently produced that will effectively train individuals to improve job performance (Reigeluth & Carr-Chellman, 2009). Conversely, when some of the activities outlined by instructional

design models are not conducted, the instructional solution may not be adequately analyzed, designed, developed, implemented, and may not be effective or of the highest quality (Reigeluth & Carr-Chellman, 2009).

There are many different instructional design models available to inform the practice of instructional design, although some models are better suited for the development of classroom instruction and some models are better suited for the development of new courses. In either case, there is a set of principles that can be found in most instructional design models that are needed for efficient and effective instruction (Merrill, 2002). No single model should be used for every project, and a working knowledge of several models is necessary to perform the job of an instructional designer effectively (Gustafson & Branch, 2002).

An element of instructional design models that causes confusion in the industry is the inconsistent use of terminology by the authors of the models (Gustafson & Branch, 2002). This creates a unique challenge for instructional designers, who must be able to translate the terminology quickly and confidently from one model to the next. Instructional design theory is still evolving, and an agreement on the terminology used to identify instructional events and conditions has not yet been reached (Merrill, 2007). Another challenge instructional designers have is deciding how much detail to put into the performance of each activity. When diagramed, many instructional design models appear to be linear and rigid. In practice, however, most models can be iterative and flexible, allowing the instructional designer the flexibility to move backwards and forwards between the activities and leaving it to the instructional designer to decide how much detail is required for each activity (Bartram & Mishra, 2002).

The performance of all of the activities outlined by common instructional design models takes a great deal of time. Even experienced instructional designers cannot do it quickly. For example, the ADDIE instructional design model identifies 19 different activities that must be conducted during five different phases of the training development process. Each of the activities identified by instructional design models was specifically selected to keep instructional designers focused on the development of relevant, customized, and effective instruction (Gustafson & Branch, 2002). Although it may seem time-consuming to conduct each of the activities, ultimately, the models provide instructional designers with the guidelines needed to create instructional solutions that allow learners to achieve the learning objectives for improving job performance (Siemens, 2002).

Statement of the Problem

The top priority of every business manager, client, and instructional designer should be to produce high quality instruction by precisely following the instructional development process prescribed by instructional design models. Yet, business managers and clients continually express dissatisfaction with the speed and the cost of the instructional development process caused by the complicated prescriptions of common instructional design models (Gordon & Zemke, 2000). The use of instructional design models is vital to the creation of efficient and effective instruction (Merrill, 2007). If any of the activities prescribed by a model is omitted, the instruction may not teach exactly what is needed or the learners may not learn from the instruction (Department of Defense, 2001).

Business managers have made attempts to increase the pace of the training development process by hiring subject matter experts to work on instructional design projects as instructional designers. Although the subject matter experts may have extensive knowledge about the instructional content, they typically do not have the knowledge and skills necessary to create learner-centered instruction that satisfies a training need (Merrill, 2007). This is reflected in the research that indicates as much as 95% of training development professionals do not have any formal instructional design training (Merrill, 2007) and are not qualified to adequately practice instructional design and cannot competently perform the activities expected of the instructional design profession (Wedman & Tessmer, 1993; Loughner & Moller, 1998).

Instructional designers have also attempted to expedite the instructional development process by eliminating steps from the prescriptions of instructional design models and selectively performing instructional design activities (Wedman & Tessmer, 1993; Allen, 1996; Loughner & Moller, 1998; Roytek, 2010). Although modifications to instructional design models may increase the pace of the instructional design process, they may also shift the focus of instructional designers from the enhancement of learner efficiencies to the improvement of the instructional design process (Roytek, 2010), which can negatively influence the quality and effectiveness of the instructional products (Merrill, 2007). Thus, this study was designed to identify which activities prescribed by instructional design models are not being performed by instructional designers in an effort to make actionable and evidence-based recommendations to quickly and resourcefully produce high quality instruction.

Purpose of the Study

The purpose of this study was to examine and compare the performance of instructional design activities by currently practicing instructional designers as a whole with the performance of an experienced instructional designer to determine if instructional design models are being used to guide the practice of instructional design. For this study, practicing instructional designers are defined as professionals who actively practice instructional design and have at least one year of instructional design experience and experienced instructional designers are professionals who actively practice instructional design, have more than 15 years of instructional design experience, and are knowledgeable of the purpose and application of many different instructional design models. The use of instructional design models during the practice of instructional design is significant because the models establish a common framework that defines and guides the instructional design process (Bichelmeyer, 2005). Instructional design models also ensure the development of cost efficient and effective instructional solutions (Merriënboer, 1997). By comparing the performance of practicing instructional designers with the performance of an experienced instructional designer, it can be determined whether or not the performance or exclusion of the same instructional design activities were also identified in the work of the experienced instructional designer. The results of the comparison should identify the activities that are not frequently performed by instructional designers, the reasons for the exclusion of common instructional design activities, possible factors for the decisions to eliminate instructional design activities from a project, and the use of instructional design models to guide the practice of instructional design.

Research Questions

The following research questions were used to guide this study:

1. Which instructional design activities do instructional designers as a whole, routinely perform and eliminate during a typical project?
2. What are the reasons why instructional designers as a whole, eliminate common instructional design activities from projects?
3. Which instructional design activities do experienced instructional designers routinely perform and eliminate during a typical project?
4. What are the reasons why experienced instructional designers eliminate common instructional design activities from projects?
5. What are the differences between the activities instructional designers and experienced instructional designers perform and eliminate during a typical project?

Study Organization

This study used a sequential mixed methods data collection design, which collects, analyzes, and mixes both quantitative and qualitative data during the research process to examine a research problem more completely (Creswell, 2014). To manage the collection of the quantitative and qualitative data, this study was divided into two phases, a quantitative phase and a qualitative phase. The first phase of the study, the quantitative phase, used a quantitative research survey to determine the current performance trends of instructional design activities by instructional designers during the training development process. During the quantitative phase, an online survey was conducted of instructional designers to determine which activities are

typically performed and eliminated during the instructional design process and the reasons for the exclusion of any activities. The researcher administered the survey and collected the data using standardized procedures. The data analysis was performed using rigorous statistical analysis techniques and the results were interpreted based on the established values of the collected data to provide answers to the first two research questions.

The second phase of the study, the qualitative phase, used a qualitative single case study of a corporate training development team led by an experienced instructional designer during the course of a one-year instructional design project to identify the activities performed and eliminated from a typical instructional design project and the reasons for the exclusion of any activities. During the qualitative phase of this study, the researcher assumed a more participatory role. Not only did the researcher observe and note the completed and excluded activities throughout the course of the project, but the researcher also served as the lead and most experienced instructional designer on the project.

Finally, the data collected during each phase of the study was examined and compared to determine the use and influence of instructional design models. Additionally, the factors that may be motivating the reasons for excluding instructional design activities during the practice of instructional design were determined and examined.

Population and Sample

The population for this study included instructional design professionals from the Central Florida International Society of Performance Improvement (ISPI), several LinkedIn.com instructional design professional networking groups, and a corporate training development

organization in the Orlando, Florida area. For the purposes of this study, an instructional design professional is described as a person who creates and delivers educational training materials for businesses, educational institutions, and other organizations. Because various job titles are frequently used to describe an instructional design professional, the term ‘instructional designer’ was used during this dissertation in practice to collectively describe the instructional design practitioner. Other job titles frequently used to describe the role of an instructional designer are listed below.

- Curriculum Developers
- Curriculum Specialist
- Educational Developer
- Information Developer
- Instructional Designers
- Instructional Developer
- Instructional Systems Designers
- Instructional Systems Specialist
- Instructional Technologists
- Learning Technologist

A sample of the population of instructional designers was used during the quantitative phase of this study to examine the performance of instructional design activities by currently practicing instructional designers as a whole. The sample included. The sample was created by inviting the population of instructional designers to respond to an online survey. An invitation to

participate in the survey was emailed to 41 recipients, which included 25 members of the same corporate training development organization and 16 members of the Central Florida International Society of Performance Improvement (ISPI) who indicated their job title was related to corporate training development or instructional design. The email invitation resulted in 27 respondents. Another invitation to participate in the online survey was posted to four LinkedIn.com instructional design professional networking groups, which included Instructional Design Central, Instructional Design Professional Group, Instructional Design Professionals, and Instructional Designers. The LinkedIn posting resulted in 276 respondents. A total of 303 participants working in a training development capacity responded to the online survey. The data collected from the participants was filtered to eliminate the responses of the respondents who were not instructional designers and had less than one year of instructional design experience to create a sample of 224 instructional designers with at least one year of instructional design experience.

A sample of the population of instructional designers was used during the qualitative phase of this study to examine the performance of an experienced instructional designer. The sample involved the nine employees of a corporate training development team in Orlando, Florida assigned to an instructional design project. Four of the nine employees were instructional designers. One of the instructional designers was an experienced instructional designer with more than 16 years of instructional design experience and a solid understanding of the purpose and implementation of instructional design models, however, the experienced instructional designer in this sample, may not accurately represent the population of all experienced instructional designers.

The selection of the training development team employing the researcher presents the possibility of a sampling bias. This type of research bias indicates the selection of the training development team may have been made because of convenience and the performance of the researcher as the experienced instructional designer may not accurately represent the population of experienced instructional designers with more than 15 years of experience and a solid understanding of the purpose and implementation of instructional design models. Thus, the findings of this study cannot be considered representative of the larger population of experienced instructional designers due to the small sample size and may differ significantly from the findings of a study involving the entire population of experienced instructional designers or even a study involving multiple training development teams, lead by different experienced instructional designers.

Significance of the Study

This study is significant to the practice of instructional design because it reviews the use of instructional design models to guide the practice of instructional design and highlights possible factors driving the decisions of instructional designers to deviate from the prescriptions of instructional design models during a project. Significant differences between the performances of instructional design activities, the reasons for the exclusion of activities, and the factors driving the exclusion of activities between practicing instructional designers and experienced instructional designers may indicate instructional designers are sacrificing the effectiveness of the instructional products by reducing the time required to conduct the instructional design process.

The use of instructional design models during the practice of instructional design is significant to the practice because the research based models define the process instructional designers should use to create efficient and effective instructional solutions. When the prescriptions of a research based instructional design model are considerably altered, the model loses its scientific credibility and the resulting instructional solution may be significantly diminished because fundamental activities were eliminated from the development of the instructional materials.

An important aspect of the study lies in the collection and the comparison of the reasons why instructional designers are eliminating certain activities from the practice of instructional design. If instructional designers are eliminating instructional design activities because they are being directed to do so, then the organization, the client, or the corporate culture could be considered a primary factor for the deviation from the processes prescribed by instructional design models. Furthermore, if instructional designers are selectively choosing to exclude activities from practice, then the knowledge, skills, or discipline of the instructional designers could be considered primary factors for the deviation from the processes prescribed by instructional design models. Thus, determining the factors that drive the decisions to exclude certain instructional design activities from the practice of instructional design is important to make actionable and evidence-based recommendations to resolve this problem of practice.

Definition of Terms

Due to the lack of industry standards concerning terminology and to establish a working basis for the terminology used in this study, a list of terms and definitions is provided as defined by the Association for Talent Development (www.astd.org).

Curriculum Developers: Professionals who work in academic institutions and use learning theories and classroom instructional design models to improve upon materials and curricula for specific topics in various areas of education that meet the standards required to accomplish a specific degree (Instructional Design Central, 2012).

E-learning: Learning facilitated and supported by a digital medium such as the Internet, intranet, network, CD-ROM, or mobile phone.

Evaluation: The process of measuring the effectiveness of the instructional solution prior to and after the implementation of the instruction to assess the quality of the materials, the achievement of the learning objectives and the instructional goals, the strengths and weaknesses of the instruction, ways to improve the instruction, and the value of the instruction.

Formative evaluation: The process of collecting data to revise the different components of the instruction solution before implementation to make the instruction more effective. A pilot test is an example of formative evaluation.

Instructional design model: The process an instructional designer should use to create instruction to facilitate efficient and effective development of instruction. This might include any number of specific research or non-research based models.

Instructional design: The practice of creating effective instructional solutions based on how people learn (learning theory), how best to instruct people (instructional theory), and how to

develop effective instruction using instructional design models to produce authentic, well-organized, and engaging materials to solve a training problem.

Instructional designer: A professional with the competencies acquired by education or apprenticeship to identify and close a performance gap by using instructional design models to create authentic, well-organized, and engaging instructional materials based on how people learn (learning theory) and how best to instruct people (instructional theory).

Instructional goals: Statements describing what learners will to do because of instruction.

Instructional solution: Any combination of technology, methodology, and instructional products that deliver instruction to achieve an instructional goal.

Instructional strategies: The methods by which knowledge and skills are transferred from the training delivery system to the learner. Examples include, but are not limited to, demonstrations, role-plays, hands-on activities, practice, simulations, discussion, lecture, reviews, on-the-job training, practice with coaching, video demonstrations, examples.

Instructional Systems Designers (ISDs): Professionals who work in business and industry and use learning theories and systems oriented instructional design models to analyze, design, develop, implement, and evaluate instruction for employees and service sector entities to facilitate learning and improve performance (Instructional Design Central, 2012).

Instructional Technologists: Professionals who work in a variety of environments and use learning theories and product oriented instructional design models to analyze, design, develop, implement, and evaluate instruction with limited facilitation that is supported by a digital medium (such as the Internet, tablets, or smart phone apps), to facilitate learning and improve performance (Instructional Design Central, 2012).

Iterative process: The non-linear process that allows for the return to different parts of the process to make changes and revisions to the instructional materials.

Learner assessment: The process of determining whether the learning objectives have been met by measuring the knowledge, skills, attitudes, and behaviors gained by the learner as a result of instruction.

Learning objective: Observable and measurable statements describing the knowledge, skills, attitudes, and behaviors learners should demonstrate to achieve the instructional goals.

Learning theory: Describes what should take place during instruction for the learner to retain the instructional content.

LinkedIn: A social networking website used by professionals to network.

Pilot test: A small-scale implementation of the instruction to evaluate feasibility, time, and adverse events in an attempt to predict training effectiveness and improve upon the training design prior to the implementation of the instruction.

Subject matter expert: A person who is recognized as having proficient knowledge and skills in a particular topic or subject area and is responsible for the accuracy of facts, concepts, and other instructional content.

Summative evaluation: The process of reviewing the implementation of instruction to determine how well it satisfied the instructional goals by examining learner opinions, assessment results, job performance, and return on investment to the organization.

Task analysis: The process of collecting information to identify the knowledge and skills needed to perform a task needed to achieve an instructional goal.

CHAPTER TWO: LITERATURE REVIEW

Introduction

The purpose of this literature review is to establish the importance of instructional design models, define the purpose for different types of instructional design models, and examine the evidence supporting the role and expectations of instructional designers as well as the activities instructional designers perform during the practice of instructional design. This review begins by identifying the origins of most instructional design models through describing Gagne's Conditions of Learning, which is often considered one of the first instructional design models, then progresses to the ADDIE model, because the five phases of the model then progresses to a common framework for instructional design models and have inspired the development of more than 100 different models.

The review then describes the purpose for different types of instructional design models, the use of instructional design models in the practice of instructional design, and a taxonomy designed to help instructional designers with the selection of instructional design models. The taxonomy divides instructional design models into classroom, product, and systems categories. The categories identify the models best applied to the development of classroom instruction, products with reduced instructional guidance, and complex instructional solutions (Gustafson & Branch, 2002). A popular instructional design model representing each classification of the taxonomy is then presented.

The popularity of e-learning has increased the demand for more qualified instructional designers who are able to incorporate new technology into training and education. These

demands have also dramatically redefined the roles and expectations of instructional designers. Consequently, this review examines the evidence supporting the increase in the demand for instructional designers, the changes in the roles and expectations of instructional designers, and the effect of so many changes on the job performance of instructional design professionals.

Instructional Design Models

Although instructional design is relatively new, the literature and theories pertaining to instructional design and the instructional design process is extensive. The instructional design process is defined and guided by instructional design models, which specify how instructional design should be carried out, what strategies and approaches work in various contexts, and how instructional designers should systematically practice the craft (Seels & Glasgow, 1998; Dick, Carey & Carey, 2005; Smith & Ragan, 2005; Morrison, Ross, Kemp & Kalman, 2010). The first instructional design model is thought to have originated from the work of Robert Gagne in 1965 when he published the Conditions of Learning theory, which was an early attempt to define the instructional design process by applying learning theory and analysis to the development of instruction (Campbell, Kenny, Schwier & Zhang, 2005).

Gagne's Conditions of Learning

The Conditions of Learning theory outlined five different types of learning outcomes based on the characteristics of the content a learner must learn and suggested that each type of outcome requires a different approach to instruction (Gagne, 1965). Gagne classified the learning outcomes into five different categories of human performance based on how learning might be demonstrated. The categories included intellectual skills, verbal information, cognitive strategies,

motor skills, and attitudes. According to Gagne, when a learning outcome involves intellectual skills, the learner must know how to do something rather than simply knowing details about something. When a learning outcome involves verbal information, the learner must be able to state what was learned in a meaningful sentence. When a learning outcome involves cognitive strategies, the learner must be able to think of something new or solve a problem. When a learning outcome involves motor skills, the learner must be able to do something that involves the use of muscles, such as bounce a ball, drive a car, or change a tire. When a learning outcome involves attitudes, the learner must be able to choose an action or behavior.

In addition to recognizing that not all instruction should be developed in the same way, Gagne outlined nine instructional events that should occur during instruction to provide the necessary conditions for learning to take place (Gagne, Briggs & Wagner, 1992). The events in the nine steps of instruction were designed to achieve each of the five different learning outcomes, and include the following activities (Gagne, 1985):

1. Gain Attention: During the instruction, something should be done to gain the attention of the learner for learning to begin.
2. Inform Learner of Objectives: During the instruction, the learners should be informed of the objectives because learners are more motivated to learn if they are aware of the goals and know what is expected of them.
3. Stimulate Recall of Prior Learning: During the instruction, learners should be asked to reflect on previous experiences, because learners can remember new information more easily if they can associate the new information with prior knowledge or experiences.

4. Present Stimulus Material: During the instruction, the new information should be presented to learners in a meaningful and organized way.
5. Provide Learner Guidance: During the instruction, learners should be provided with relevant examples or demonstrations to help process the new information.
6. Elicit Performance: During the instruction, learners should practice what they learned to increases the likelihood the learners will remember what they learned.
7. Provide Feedback: During the instruction, learners should be provided with specific and immediate feedback anytime they practice something or ask a question. This type of formative feedback should not be used for scoring purposes.
8. Assess Performance: During the instruction, learners should be provided with a test of some kind to determine if they have achieved the objectives of the instruction. During this type of assessment, hints and coaching should not be available.
9. Enhance Retention Transfer: During the instruction, learners should be provided with a test of some kind to determine if the learners were able to transfer the new information into the work environment.

Gagne's nine steps of instruction combined with the notion that different types of learning outcomes require different types of instruction, resulted in a framework, or an instructional design model, which outlined a way to develop instruction to produce a specific learning outcome (Gagne, Briggs & Wagner, 1992). Gagne's conditions of learning theory suggested that different learners and different learning outcomes required different learning strategies and instructional designers must understand and include learning goals, prior learner

knowledge, and cognitive functioning in the design and implementation of instruction to create effective instruction (Gagne, 1985).

ADDIE Model

During the 1970s, instructional theorists began to experiment with different ways to present instructional materials based on Gagne's theory of instruction (Reiser & Dempsey, 2011). During this time, the ADDIE model was created for military instructional design by Florida State University in conjunction with the Department of Defense (Watson, 1981). The ADDIE model organized Gagne's nine steps of instruction into five high-level phases to guide instructional designers as they approach the practice of instructional design (Bichelmeyer, 2005). The five phases of the ADDIE model are Analysis, Design, Development, Implementation, and Evaluation. The first four phases of the model are sequential in nature, but the evaluation phase is a continuous and iterative process that should be conducted in conjunction with the other phases (Watson, 1981). Within the five phases of the ADDIE model are 19 activities essential to the design and development of educational and training programs (Watson, 1981). The activities and the phases of the ADDIE model are displayed in a flowchart in Figure 1 (Watson, 1981). A project management component is also necessary when using the ADDIE model to allow for the planning and management of the large and complex training development efforts associated with the development of new instruction (Andrews & Goodson, 1980).

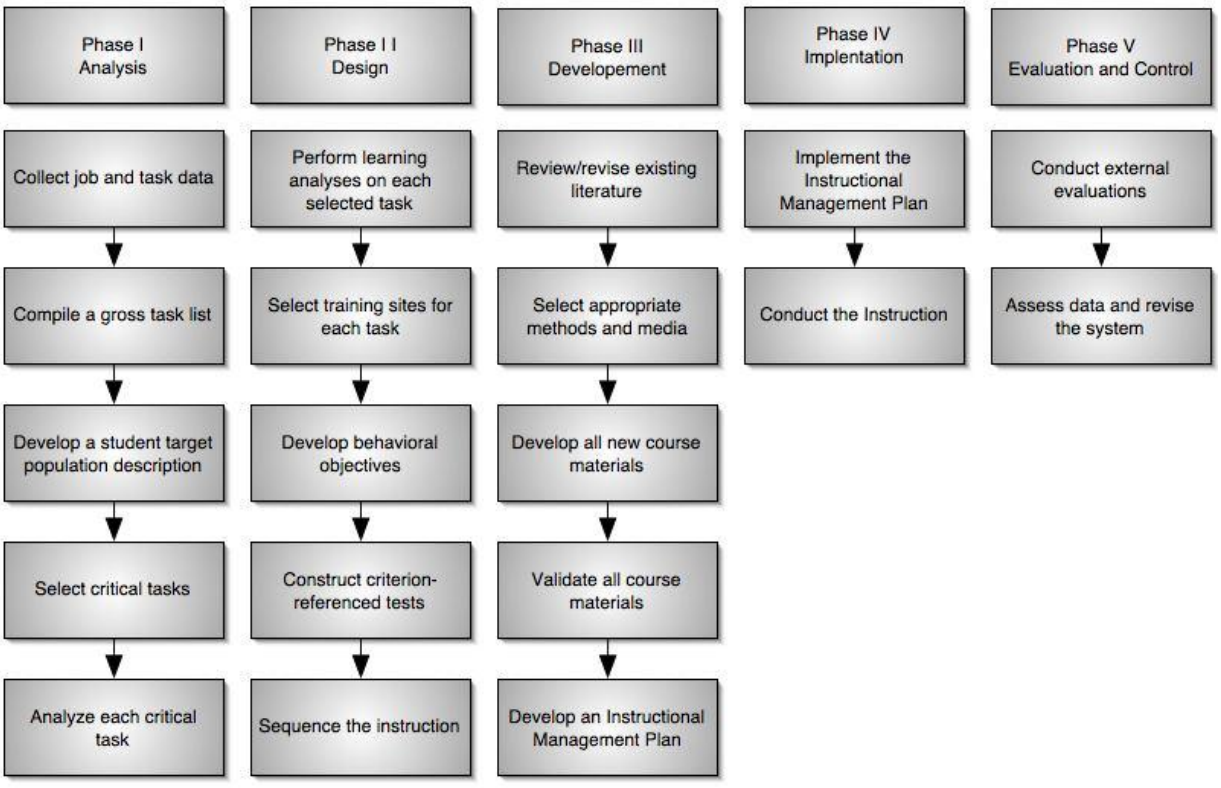


Figure 1: The ADDIE Model (Watson, 1981)

Source: Big Dog, Little Dog. http://www.nwlink.com/~donclark/history_isd/addie.html#revised.

The Department of Defense Instructional Systems Development/Systems Approach to Training and Education handbook (MIL-HDBK-29612-2A), describes the analysis phase of the ADDIE model (referred to as the ISD/SAT model) begins when the project planning has been completed. The fives phase of the ADDIE model, as defined by MIL-HDBK-29612-2A, are listed below.

- Analysis: During the analysis phase, the instructional designer analyzes the condition or situation to determine the problem and identify the instructional goals that must be achieved to satisfy the problem. In courses that tie the content to the performance of a particular job, the next step is to analyze the job performance requirements to identify the

knowledge, skills, and attitudes required to perform the job. Next, a learner analysis is performed to define the knowledge, skills, and attitudes of the learners (target audience). The knowledge, skills, and attitudes of the jobholder are compared with the knowledge, skills, and attitudes of the learners to identify the knowledge, skills, and attitudes that must be trained (performance gap). The next step of the analysis phase requires the performance of a task analysis to define the tasks that must be trained to close the performance gap as well as the standards, conditions, performance measures, and other criteria needed to perform each task.

- Design: During the design phase, the instructional designers develop the learning objectives, testing strategy, and test items. The learner assessments are created prior to the development of the instructional content to keep the development of the content focused on what the learner must master. Next, the training environment and resources are determined, the instructional media is selected, and the instructional strategy and methods are selected. The last activity in the design phase is to organize the learning objectives into a course outline and create the implementation plan.
- Development: During the development phase, the instructional materials are developed for the learners and the instructor. This is when the content is written, graphics are created, videos are recorded, and lesson plans are assembled. If e-learning is involved, the storyboards are created and provided to programmers who then build the files needed to support the computer-based instructional solutions. As a final step in this phase, the implementation plan is updated and a pilot test of the instruction is delivered to a test

class to validate the materials and to determine if the instruction is effective. After the pilot test, the instructional materials are revised, and the final materials are produced.

- Implementation: During the implementation phase, the materials are prepared, and a train-the-trainer delivery of the instruction is conducted to prepare the instructors for the delivery of the instruction to the learners. Finally, the instruction is delivered to the learners, learner performance is assessed, and feedback is collected from the learners and the instructors about the delivery of the instruction. The role of the instructional designer during the implementation phase is to monitor the delivery of the instruction to gather information and feedback from the instructors and the learners to use to evaluate the effectiveness of the instruction.
- Evaluation: Formative evaluations are conducted during the analysis phase and continue through the development and delivery of the instruction to judge the accuracy and effectiveness of the decisions, activities, and materials being created (Bichelmeyer, 2005). The feedback from the formative evaluations (such as the pilot test) is used to modify and improve the instruction. During the evaluation phase, a final evaluation (summative evaluation) is conducted that measures the success of the instruction. This evaluation measures the effectiveness of the instruction from the perspective of the learners and the instructor. The summative evaluation does not measure the performance of the learners.

Selection and Use of Instructional Design Models

Over the years, instructional design models have been used by instructional designers to organize and structure the instructional design process into activities that provide an outline for the creation of instructional materials with a goal to produce an effective instructional solution to a training problem (Merriënboer, 1997). Gagne's Conditions of Learning model was the first to suggest that different learners and different learning outcomes required different learning strategies, and instructional designers must understand and include learning goals, prior learner knowledge, and cognitive functioning in the design and implementation of instruction to create effective instruction (Gagne, 1985). The ADDIE model went a step further, and organized the components of Gagne's Conditions of Learning into five phases, which established a common framework for instructional design models to guide instructional designers as they approach the practice of training development (Bichelmeyer, 2005).

The widely accepted phases of the ADDIE model inspired the development of many instructional design models embracing different learning theories (Hannum, 2005). Many of the early models (Dick, Carey & Carey, 2005; Morrison, Ross, Kemp & Kalman, 2010; Smith & Ragan, 2005) described a linear, systematic, prescriptive approach to instructional design and stipulated the activities instructional designers should perform during practice. Some of the more popular models are listed in Table 1.

Table 1: Popular Instructional Design Models

Popular Instructional Design Models	
• 4C-ID (Merriënboer)	• Instructional Development Institute (IDI)
• ADDIE	• Instructional Planning (Reiser & Dick)
• ARCS (Keller)	• IPDM (Gentry)
• ASSURE	• IPISD (Branson)
• Backward Design (Wiggins)	• Layers of Necessity (Wedman & Tessmer)
• Conditions of Learning (Gagne)	• Leshin, Pollock, and Reigeluth
• Dick and Carey	• Kemp/Morrison/Ross
• Gerlach-Ely	• Smith/Ragan
• Hannafin-Peck	• Van Patten

Regrettably, instructional theories and most instructional design models have not been derived from professional practice (Reigeluth, 1999), and the utility and adaptability of the linear models were not meeting the needs of the practitioners. Complaints were voiced about the use of instructional design models. Claims were made that the models were slow and clumsy and produced poor instructional solutions (Gordon & Remke, 2000). Rebuttals to the complaints implied the process is not flawed, but the manner in which the process is performed is the real problem of practitioners (Zemke & Rossett, 2002). In either case, it is easier to revise a model than it is to correct a performance problem. Consequently, revisions were made to many of the existing models (Hannum, 2005) and a collection of new models with increasingly iterative and flexible designs were produced to allow instructional designers to incrementally develop and refine instruction based on frequent feedback and evaluation (Kenny, Zhang, Schwier & Campbell, 2005).

Although the more recent instructional design models have moved away from strict linearity and are now more iterative and flexible to accommodate a more rapid development

approach to the development of instruction, few instructional designers are following the prescriptions of the models (Kenny, Zhang, Schwier & Campbell, 2005). Instead, instructional designers are using the models as a conceptual framework and are citing the high-level phases of the ADDIE model as the 'process' they use to guide the practice of instructional design (Chevalier, 2011). This has created a disconnect between academia and the instructional design practice as educational institutions continue to teach the theories, models, and concepts that practitioners have confirmed they do not use in practice (Cox, 2003).

A study in 2010 was conducted of experienced instructional designers about ways to increase the efficiency of the instructional design process during practice (Roytek, 2010). The study conducted interviews with eleven experienced instructional designers who were selected based on years of instructional design experience, advanced academic degrees, and experience using a methodology to increase instructional design efficiency. During the study, many of the participants insisted that the instructional design process must be conducted in an integrated and systematic way instead of the selective performance of only a few instructional design activities. The participants also insisted the selection and use of an instructional design model was required for the creation of effective instruction. The study concluded that the participants were very concerned about the inconsistent use of instructional design models, the refusal to follow instructional design models, and the infrequent use of evaluation activities by other instructional designers (Roytek, 2010).

Taxonomy for Instructional Design Models

As more and more instructional design models are created, the terminology used to describe the activities within the model has not remained consistent (Reigeluth & Carr-Chellman, 2009). To follow the prescriptions of an instructional design model, instructional designers must understand the terminology and the requirements of the activities prescribed by the model. The inconsistent use of terminology has made it difficult for instructional designers to learn when and how to apply the different models to different situations during the practice of instructional design, so they tend to stick to the guidelines of only one model (Reigeluth & Carr-Chellman, 2009). Although most instructional design models allow for some variation of the implementation (Zemke & Rossett, 2002), instructional designers should recognize that no single model should be used for all settings and all purposes, and excessive modifications to a model should be avoided to preserve the effectiveness of the instruction (Roytek, 2010).

Instructional designers should also recognize that some instructional design models are better for classroom situations, and some models are better for the development of new instruction (Siemens, 2002). When instructional designers are familiar with various models, they are more likely to use a model that fits the situation instead of modifying the model to accommodate the situation (Roytek, 2010). Thus, to achieve maximum production efficiency and maintain the effectiveness of the instructional products, instructional designers should be familiar with various models, be able to select the most appropriate model for the situation, and be disciplined enough to follow the model with minimal modifications (Roytek, 2010).

To help instructional designers with the selection of a useful instructional design model for each project, a taxonomy was developed in 2002, which divided several popular instructional

design models into three categories; classroom models, product oriented models, and systems oriented models (Gustafson & Branch, 2002). The taxonomy was designed to indicate whether an instructional design model was best applied for the development of classroom instruction (classroom models), products with reduced instructional guidance (product oriented models), or large and complex instructional solutions (systems oriented models). A comparison of the taxonomy categories and several popular instructional design models associated with each category are displayed in Table 2 (Gustafson & Branch, 2002).

Table 2: Comparison of the Taxonomy Classifications (Gustafson & Branch, 2002)

	Classroom Models	**Product Models**	**System Models**
Approach	Holistic	Systematic	Systemic, Systematic
Typical Output	Hours of Instruction	Instructional Package	Course, Curriculum
Goal	Improve content	Create New Content	Create New Content
Resources	Very Low	High	High
Level of Effort	Individual	Team	Team
ID Skills	Low	High	Very high
Content Origins	Revise Existing	Develop New	Develop new
Analysis	Low	Low to Medium	Very High
Technology	Low	Medium to High	Medium to High
Revision Cycles	Medium	High	Medium to High
Implementation	Low	High	Medium to High
Instructional Design Models	• Morrison, Ross & Kemp Model • ASSURE • Gerlach-Ely Model	• Leshin, Pollock & Reigeluth Model • Bergman & Moore • Seels & Glasgow	• Dick & Carey Model • ADDIE Model • Smith & Ragan Model

Classroom Instructional Design Models

According to the taxonomy, classroom models are designed to be used by curriculum developers or teachers in educational institutions to improve existing instructional materials, rather than create new instructional materials. The models require minimal resources, effort, technology skills, and instructional design skills, and typically produce a small module of instruction (one hour or a few hours) to be used within the school year (Gustafson & Branch, 2002). The models assume the requirement of an instructor, students, and a classroom setting, and thus, do not require a rigorous up-front analysis, and have less arduous formative evaluation and revision cycles than product models or systems models (Gustafson & Branch, 2002).

A popular example of a classroom instructional design model is the Morrison, Ross, and Kemp model, displayed in Figure 2. This model supports a learner-focused approach to the development of instruction and allows an individual with minimal instructional design skills and resources to use existing materials to develop the necessary instruction (Morrison, Ross, Kemp & Kalman, 2010). The model does not present instructional design activities in phases or in a linear manner. Instead, the model prescribes a process that is iterative, subject to constant revision, and extremely flexible, because the nine activities are independent of each other and do not need to be conducted for every project. The model also requires constant planning, management of the process, and evaluation of the instruction to ensure the delivery of effective instruction (Morrison, Ross, Kemp & Kalman, 2010).

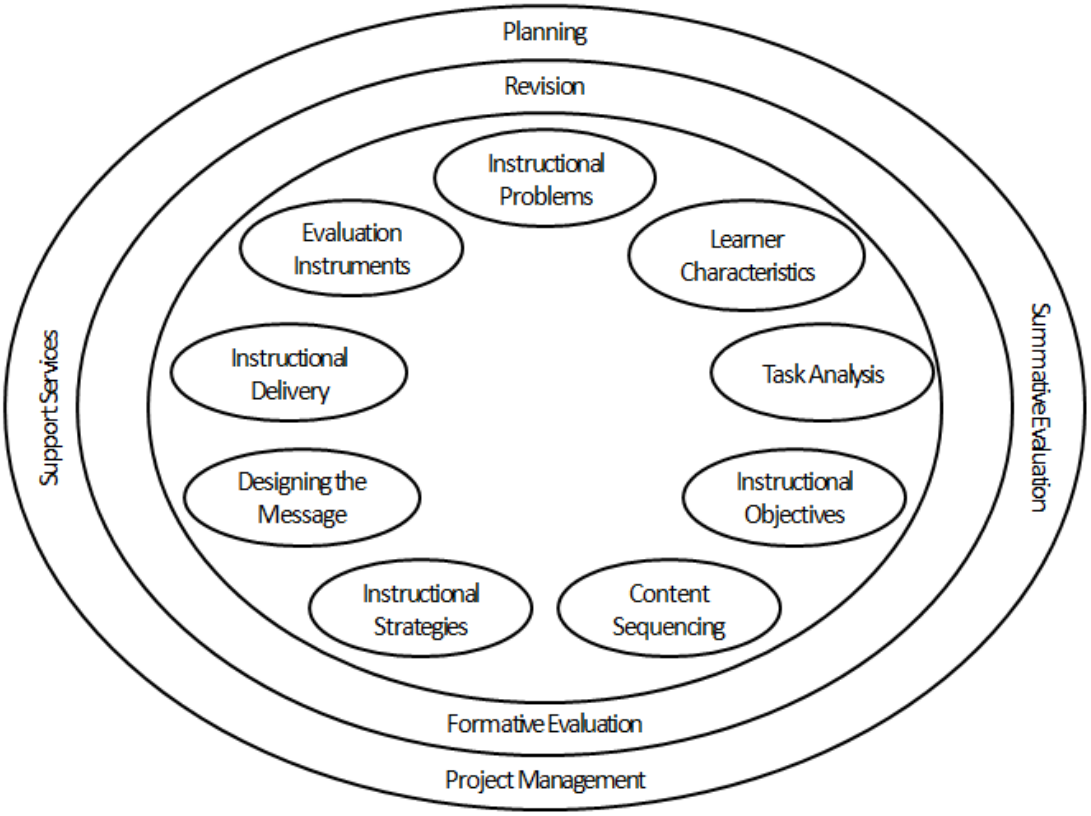


Figure 2: Morrison, Ross, and Kemp Model (Morrison, Ross, Kemp & Kalman, 2010)

The activities within the components of the model are briefly described in the list below.

1. Instructional Problems: Identify the instructional problems, the required level of learner readiness, and the instructional goals for the program.
2. Learner Characteristics: Describe the learner characteristics (learner analysis) that will influence the instructional decisions through the development of the materials and the level of learner support required for effective instruction.
3. Task Analysis: Identify the subject content and analyze the task components (task analysis) related to the instructional goals.

4. Instructional Objectives: State the learning objectives and the measurement of achievement (performance objectives) required to achieve the instructional goals.
5. Content Sequencing: Sequence the content for logical learning.
6. Instructional Strategies: Design an instructional strategy and select the media that are most appropriate for the content and the learners so each learner can master the learning objectives.
7. Designing the Message: Plan the instructional message (develop content) and the delivery of the instruction (lesson plans / instructional guidance).
8. Instructional Delivery: Identify the resources required to achieve the learning objectives and support the delivery of the instruction (plan of instruction).
9. Evaluation Instruments: Develop assessment instruments to evaluate the achievement of the learning objectives by the learners.

Product Oriented Instructional Design Models

According to the taxonomy, product oriented models are designed to be used primarily for the creation of a package of instructional materials be used without extensive guidance or facilitation and should not be used to create comprehensive instructional materials (Gustafson & Branch, 2002). These models require a team effort, a high level of resources, a high level of technical skills, and a high level of instructional design skills to create new self-study instructional products, self-paced computer based training, or other reduced guidance instructional materials (Gustafson & Branch, 2002). This classification of instructional design models focuses on making the production more efficient. These models are commonly used to develop e-learning, as computers have more frequently become the preferred instructional

delivery method (Gustafson & Branch, 2002). These models require an intermediate level of analysis, a high level of review and revision during development, and a high level of distribution planning. The models assume the instruction is needed, the creation of new materials is necessary, extensive review and revision (formative evaluations) will be conducted, and the instruction will require limited facilitation, rather than requiring an instructor or teacher (Gustafson & Branch, 2002).

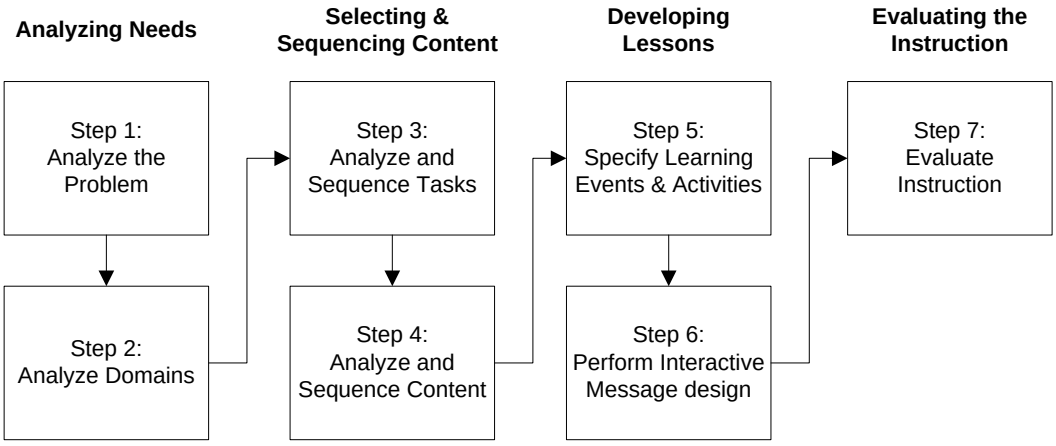


Figure 3: Leshin, Pollock, and Reigeluth Model (Leshin, Pollock & Reigeluth, 1992)

A popular example of a product oriented instructional design model is the Leshin, Pollock, and Reigeluth model, displayed in Figure 3. This model is designed to create multi-media instructional products requiring minimal implementation and facilitation (Leshin, Pollock & Reigeluth, 1992). The model contains seven activities clustered into four phases (analyzing needs, selecting and sequencing content, developing lessons, and evaluating the instruction). The activities prescribed by the Leshin, Pollock, and Reigeluth model are briefly described in the list below.

1. Analyze the Problem: Identify the performance or knowledge deficiency, the target audience, the instructional problem, and possible solutions to the problem.
2. Analyze the Domains: Identify the training tasks, identify the performance deficiencies, write performance objectives, and develop performance measures.
3. Analyze and Sequence Tasks: Organize the training tasks based on learning theory.
4. Analyze and Sequence Content: Organize the content based on learning theory.
5. Specify Learning Events and Activities: Classify the types of learning, select an instructional strategy, create practice and test items, and specify the instructional implementation plan.
6. Perform Interactive Message Design: Examine the delivery system and make corrections.
7. Evaluation: Conduct a one-on-one evaluation, pilot test the instruction, and perform a summative evaluation with a field test.

Systems Oriented Instructional Design Models

According to the taxonomy, systems oriented models are designed to develop large amounts of new instructional material involving a large scope of effort (Gustafson & Branch, 2002). These types of models require a team effort, a high level of resources, a medium to high level of technical skills, and a very high level of instructional design skills. These models align with the five phases of the ADDIE model and emphasize a need for a very high level of front-end analysis, an intermediate level of review and revision, and an intermediate level of implementation planning (Gustafson & Branch, 2002).

A popular example of a systems oriented instructional design model is the Dick and Carey model, developed in 1978 (Clark, 2014). This model is similar to the ADDIE model and is

designed to be used by highly skilled instructional designers to create new courses of instruction (Dick, Carey & Carey, 2005). The model expanded on the concept of the ADDIE model by introducing an iterative design, rather than a liner approach to the conduct of the activities, which allowed for a back and forth movement between the different activities during the course of development (Dick, Carey & Carey, 2005). Figure 4 displays a graphical representation of the Dick and Carey model (Dick, Carey & Carey, 2005).

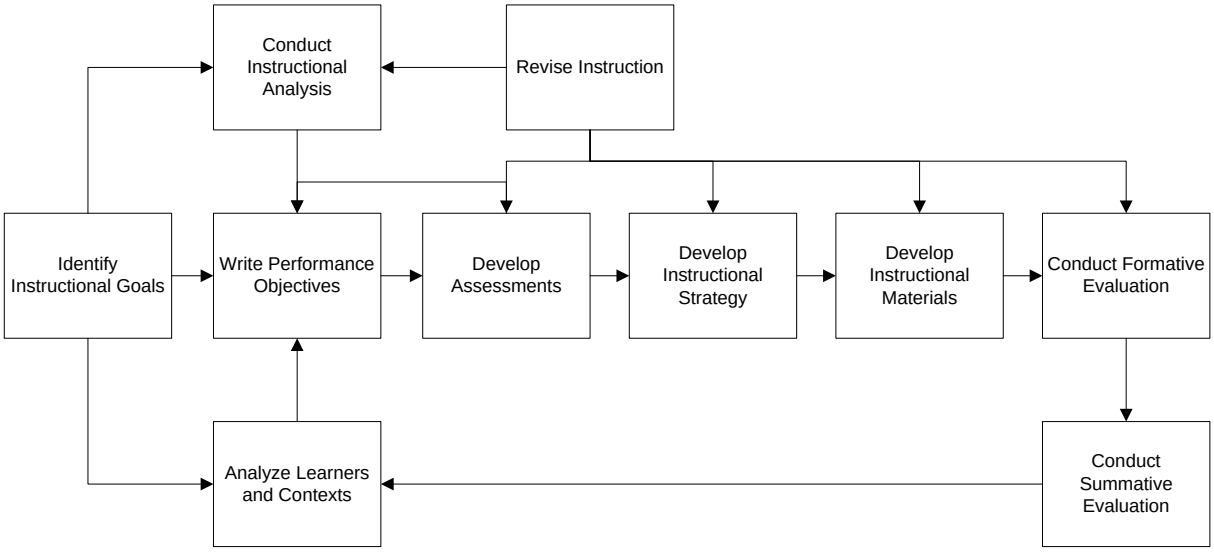


Figure 4: Dick and Carey Model (Dick, Carey & Carey, 2005).

The Dick and Carey model consists of ten components that outline a process for the development of instruction as an entire system, instead of a series of phases, which distinguishes the Dick and Carey model from the ADDIE model (Dick, Carey & Carey, 2005). According to Dick and Carey (2005), components such as the instructor, learners, materials, instructional activities, delivery system, and learning and performance environments interact with each other and work together to bring about the desired student learning outcomes. The activities prescribed

by the model include nine primary steps and one iterative cycle of evaluation to measure the effectiveness of the instruction (Dick, Carey & Carey, 2005). Each activity is critical to the outcome and can be completed concurrently but must not be skipped (Dick, Carey & Carey, 2005). The activities prescribed by the Dick and Carey model are briefly described in the list below.

1. Identify Instructional Goals: Describe the purpose of the instruction, which indicates what the learners are expected to know or do at the end of the instruction.
2. Conduct Instructional Analysis: Identify the performance gap between the current learner performance and the desired learner performance, the tasks required to close the gap, and the steps to accomplish the tasks that lead to the desired performance.
3. Analyze Learners and Contexts: Identify the characteristics of the learners, including knowledge, skills, experience, motivation, and demographics. Identify the job environment and the training environment.
4. Write Performance Objectives: Describe the tasks to be trained during the instruction, the items needed to perform the tasks (conditions), and how well the learners must perform each task (standards) to achieve the instructional goals.
5. Develop Assessment Instruments: Develop tests to ensure the learners have the prerequisites required to perform the new tasks, tests to measure the ability of the learner to achieve the performance objectives during the instruction, and tests to evaluate the learning process to ensure the instruction is effective.

6. Develop Instructional Strategy: Determine the best way to present the instruction to motivate the learner, organize the tasks into learning objectives, sequence the learning objectives into lessons, and create a course outline.
7. Develop Instructional Materials: Develop the instructional materials and activities based on the instructional strategy.
8. Conduct Formative Evaluation: Conduct regular evaluations (such as interviews with prospective learners, pilot tests, and field trials) throughout the instructional development process to collect data to identify ways to improve the instruction.
9. Conduct Summative Evaluation: Measure the effectiveness of the delivered instruction.
10. Revise Instruction: Examine the data collected from the summative evaluation and the formative evaluations to determine the validity of the instructional materials and make revisions to improve the instruction, as needed.

Impact of E-learning and Technology on Instructional Design

In the early 2000s, the Internet became a useful tool for online learning and the concept of e-learning became popular (Reiser & Dempsey, 2011). E-learning describes the incorporation of technology, such as computers, tablets, smartphones, and the Internet into education and training (Tavangarian, et al, 2004). As the popularity of e-learning increased, the demand for instructional designers grew (Career Junction Company, 2013). Additionally, the new methods for delivering instruction and the dramatic changes in technology redefined the roles and expectations of instructional designers and modified the activities instructional designers perform on the job (Reiser & Dempsey, 2011).

Increase in Popularity and Demand

According to the United States Department of Labor, the number of instructional designers in the workforce in 1999 (labor code 25-9031) was 76,870 (U.S. Department of Labor, Bureau of Labor Statistics, 2014). By the year 2013, the number of instructional designers in the workforce had increased 43% to 133,840. Based on historical data, statistics project the number of working instructional designers in the Unites States in the year 2022 to be close to 166,000 (U.S. Department of Labor, Bureau of Labor Statistics, 2014), which would more than double the number of instructional designers in the United States in less than twenty-five years. Table 3 displays the employment estimates for instructional designers collected from the Bureau of Labor Statistics website (www.bls.gov).

Table 3: US National Occupational and Employment Estimates for Labor Code 25-9031

Year	Employment
1999	76,870
2000	77,100
2001	88,340
2002	90,350
2003	109,470
2004	106,590
2005	112,880
2006	117,630
2007	117,940
2008	122,180
2009	124,480
2010	128,780
2011	130,230
2012	133,100
2013	133,840
2022	166,200 (projected)

The rapid expansion of the popularity of e-learning, the increased demand for instructional designers, and the dramatic changes in technology have created a situation where few managers, recruiters, or even practitioners know exactly what instructional designers are, what they actually do, and what skills they need to adequately practice instructional design (Gibby, Quiros, Demps & Liu, 2002). This situation makes it very difficult to find and hire the right people for the job.

In 2007, an article was published by David Merrill about the misunderstanding of the role of instructional designers. In the article, Merrill introduced the concept of "designers-by-assignment" and stated that as many as 95% of training development professionals are designers "by appointment" rather than by formal training. Furthermore, most instructional design is actually not performed by professional instructional designers, but rather by anyone who may have knowledge about the content to be taught or the skills to use the most current technology to create instruction (Merrill, 2007). According to Merrill (2007, p. 337), "Today you are an engineer, but your company needs a course in their latest product, so tomorrow you are an instructional designer because you are assigned to be an instructional designer, not because you were trained as an instructional designer. You are a designer-by-assignment." Only rarely does a company seek a professionally trained instructional designer to create an appropriate instructional solution to determine and address the actual training need (Merrill, 2007). This is a problem because when training is created without knowledge of learning theory and instructional theory, the resulting material may not address the training problem, it may not allow learners to retain the instruction, and it may not achieve the instructional goals.

Changes in Roles and Expectations

The dramatic changes in technology have also affected the process of developing instructional materials and redefined the role and expectations of the instructional designer (Gibby, Quiros, Demps & Liu, 2002). To manage the plethora of new technology and tools, instructional designers can no longer independently practice instructional design. Instead, they must work on a project team with a manager, subject matter expert, and various other stakeholders and technology experts who provide input regarding content and presentation and assist with the development of the materials (Gordon, 2014). Unfortunately, not every project has the funding to support so many people on a project team, so the instructional designer is forced to accommodate for the absence of those people (Gibby, Quiros, Demps & Liu, 2002).

In 1996, a survey of 99 participants was conducted of the role of instructional designers in Australia (Allen, 1996). The study asked the participants to rate the frequency with which they completed an extensive list of 29 instructional design activities. The activities were rated by the participants and then ranked in order of frequency of performance. The results of the study concluded instructional designers are routinely conducting activities that are considered outside the practice of instructional design.

In 2002, a study of eleven instructional designers was conducted to determine the challenges of being an instructional designer (Gibby, Quiros, Demps & Liu, 2002). The study asked the participants to discuss their responsibilities as instructional designers, the challenges they face in their practice, the ways in which they meet those challenges, and the knowledge and skills they feel are needed to make an effective instructional designer. The study reported the participants felt their instructional design responsibilities were to understand the client needs,

create a plan to meet the needs, determine instructional content, and work as a team to produce instructional products. In addition to their instructional design responsibilities, the participants felt they were also required to manage clients, perform multiple roles, adapt quickly to change, be extremely proficient in many different software applications, be a strong team player, an expert communicator, and willing to work long hours in a fast paced environment. This is a problem because the instructional design responsibilities of practitioners are already time consuming. Adding additional responsibilities to a full workload encourages instructional designers to cut corners on many activities to accomplish all the activities.

In 2003, a study was conducted of 142 participants employed in training development organizations in both academic and corporate settings (Cox & Osguthorpe, 2003). The purpose of the study was to determine how instructional designers spend their time on the job. The participants were asked to proportion their time between the five general phases of the ADDIE model and six general operational tasks (project management, supervising personnel, professional meetings, academic research, marketing/sales, and professional development). The study concluded that on average, respondents spent 53% of their professional time engaged in operational tasks, and 47% of their time engaged on the instructional design activities. This may occur more often when instructional designers work as part of a team, because they are often required to review the work of others, manage the needs of clients, write scripts for video and audio clips, write programming code, write technical documents, create animation and graphics, learn to use new tools and software, and train others (Gibby, Quiros, Demps & Liu, 2002). All of these activities remove the instructional designer from the development of instructional material.

The role of the instructional designer seems to have outgrown the traditional definition of this increasingly popular position, resulting in a contradiction between the definition of instructional design and the activities many instructional designers perform on the job (Allen, 1996). In addition to the activities required of the instructional design position, instructional designers are expected to understand the needs and wants of the client (sales and customer relations), analyze problems and devise effective solutions (researcher), understand the capabilities of programmers (developer), effectively use a variety of technical software applications (engineer), and have expert project management skills (Gibby, Quiros, Demps & Liu, 2002).

Job Performance

If qualified instructional designers are not being hired to perform the complex job of instructional design and instructional designers are now expected to perform the abundance of complicated and time-consuming activities required of the instructional design practice in addition to a multitude of other roles and operational tasks, how are instructional designers actually performing on the job? While some research was conducted in the 1990s to ascertain the specific roles and responsibilities of instructional design practitioners (Rowland, 1992; Wedman & Tessmer, 1993; Winer & Vásquez-Abad, 1995; Allen, 1996), these pre-Internet studies do not create an accurate reflection of the current practice. Current practitioners must also sustain a wealth of technology and a collection of new instructional theories and models to accommodate the demands of e-learning (Cox, 2003). Although instructional designers commonly use simple software such as Microsoft Word to write design documents, some instructional designers are also able to use sophisticated tools, such as Macromedia Flash, Adobe Photoshop, Java, and

HTML (Gibby, Quiros, Demps & Liu, 2002). Such knowledge enables the designers to participate in other tasks such as programming or creating graphics when needed. Being flexible and versatile is an admirable trait, but it may also divert the focus of the instructional designer from the reason they are employed, which is to create quality and effective instruction that solves a performance problem.

A study was conducted of the instructional design practice of 73 instructional designers to determine if they strictly followed the prescriptions of established instructional design models, and if the models were not followed, what reasons influenced the decision to perform some activities and disregard others (Wedman & Tessmer, 1993). The participants were provided a survey and asked to rate the frequency with which they completed eleven common instructional design activities. The activities were derived from the Dick and Carey model and are listed in Table 4.

Table 4: Common Instructional Design Activities (Wedman & Tessmer, 1993)

Instructional Design Activities
1. Conduct a needs assessment
2. Determine if need can be solved by training
3. Write learning objectives
4. Conduct task analyses
5. Identify types of learning outcomes
6. Assess trainee entry skills and characteristics
7. Develop test items
8. Select instructional strategies for training
9. Select media format
10. Pilot test instruction before completion
11. Do follow up evaluation of the training

The frequency of completion for each activity was expressed in terms of *always, usually, occasionally,* and *never*. After ranking the frequency of completion for each activity, the participants were then asked to select one or more reasons why an activity may be excluded from a project. The reasons for excluding an activity included *lack expertise, client won't support, decision already made, considered unnecessary, not enough time,* and *not enough money*.

Analysis of the data concluded that 95% of the participants claimed to perform less than half of the instructional design activities for each project. Only three of the activities were *always* performed by more than 50% of the participants. The most frequently selected reasons for excluding an activity were *decision already made, not enough time,* and *considered unnecessary*. The least frequently selected reasons were *not enough money, client won't support,* and *lack expertise*. The frequent selection of *decision already made, not enough time,* and *considered unnecessary* could actually indicate the decisions to exclude an activity may be due a lack of knowledge or experience by either the instructional designer, management, or the client, but prevents the instructional designer from directly placing the blame on others or incriminating themselves by selecting the reasons *not enough money, client won't support,* and *lack expertise*.

The reasons selected for not performing an activity varied from activity to activity. For example, *not enough time* was the prevailing reason for eliminating a pilot test. The *decision was already made* was the most frequently selected reason for eliminating a needs assessment and *considered unnecessary* was the most frequently selected reason for not conducting a task analysis. This response seemed curious to the researchers who then began to question the rationality of the instructional design practice of the participants. The vast majority of the participants claimed to *always* or *usually* create learning objectives, however only 31% indicated

they performed a task analysis, raising questions about how the learning objectives were derived. The study concluded that instructional design models do not seem to be compatible with the practice of instructional design because instructional designers skip many of the key instructional design activities prescribed by widely recognized instructional design models when designing and developing instructional solutions. Thus, there is an inconsistency between research-based practices developed within academia and the instructional design practice (Cox, 2003). Though educational institutions continue to teach theories, models, and concepts the practitioners themselves have confirmed they do not use to guide their practice.

In 1998, a study was conducted of the knowledge and use of task analysis procedures by instructional designers (Loughner & Moller, 1998). As of that time, no study had been performed which focused only on the task analysis process. A previous study (Wedman & Tessmer, 1993) revealed how frequently task analysis activities were performed and why they were not performed, but did not examine the knowledge and understanding the instructional designers had about task analysis, which is often considered to be the most integral part of the instructional design process (Jonassen, Tessmer & Hannum, 1999). The results of this study concluded that even though the participants reported spending a significant portion of time conducting task analyses, they were not well versed in task analysis. This is a problem because task analysis is often regarded as the most technical aspect of instructional design and considered an essential component of the instructional design process (Jonassen, Tessmer & Hannum, 1999). A poorly conducted task analysis can result in instruction that reduces the performance, productivity, and morale of learners, instead of increasing performance and productivity (Jonassen, Tessmer & Hannum, 1999).

Finally, a research study was conducted by Villachica, Marker, and Taylor (2010) that investigated the extent to which potential employers felt recently hired instructional designers were prepared to perform their jobs. The results of the study indicated over half of the 185 participants expected newly hired instructional designers to be able to perform 22 common instructional design activities but indicated the instructional designers frequently could not perform all of the activities in spite of assistance from others. Table 5 displays the activities expected of instructional designers (Villachica, Marker & Taylor, 2010).

Table 5: Common Expectations of Instructional Designers

ADDIE Phase	Instructional Design Activity
Analysis	1. Conduct a front-end analysis or needs assessment
	2. Conduct a learner analysis
	3. Conduct a context analysis (training and job environment conditions)
	4. Conduct a task analysis
Design	5. Write performance objectives (learning objectives)
	6. Sequence learning objectives
	7. Identify appropriate instructional strategy based on analysis
	8. Select appropriate media
	9. Select instructional content
	10. Create design documents (templates, storyboards, style guides, etc.)
	11. Create evaluation plan (testing strategy)
	12. Create implementation plan (plan of instruction)
	13. Create assessment instruments (develop test items)
Development	14. Develop instructional materials in the appropriate medium
Implementation	15. Promote collaboration among stakeholders
	16. Monitor the implementation
	17. Provide logistics support
Evaluation	18. Conduct a pilot test of the developed materials
	19. Conduct client reviews
	20. Create rapid prototypes
	21. Conduct a usability test of the prototypes
	22. Conduct summative evaluation

Summary

The practice of instructional design is a complex and time-consuming job that is frequently misconstrued and often oversimplified (Merrill, 2007). Through the years, multiple instructional design models have been established to provide instructional designers with the guidelines needed to perform their job. An instructional design model taxonomy was also created to help practitioners select the best model for each project and allow instructional designers to conduct their job more efficiently and effectively. Despite the establishment of these tools, the impact of e-learning, increasing demands for instructional designers, and the considerable use of technology during instruction have dramatically affected the field of instructional design. These new influences have radically redefined the roles and expectations of instructional designers, making the job of instructional designers even more difficult (Sims & Koszalka, 2008). In order to remain current and relevant in the fast-paced technology driven workforce, instructional designers are expected to practice instructional design, perform multiple roles, and be proficient in a plethora of technology and software. Additionally, instructional designers are expected to successfully manage clients, adapt quickly to change, be a strong team player, an expert communicator, and willing to work long hours in a fast paced and ever-changing environment (Gibby, Quiros, Demps & Liu, 2002).

Although the Internet, the establishment of e-learning, and the use of technology during instruction has made learning convenient for learners, it has negatively impacted the practice of instructional design by swiftly adding complicated tools and a high level of expectations to the profession, making the job even more difficult (Gibby, Quiros, Demps & Liu, 2002; Sims & Koszalka, 2008). The result is a growing number of working instructional designers that are not

able to select or competently perform the activities prescribed by common instructional design models and produce ineffective instructional products and solutions that do not allow learners to improve their performance on the job (Wedman & Tessmer, 1993; Allen, 1996; Loughner & Moller, 1998; Merrill, 2007; Villachica, Marker & Taylor, 2010).

CHAPTER THREE: RESEARCH METHODOLOGY

Research Design

This study used a sequential mixed methods research design to examine which activities prescribed by instructional design models are not being performed in an effort to make actionable and evidence-based recommendations to resolve this problem. The sequential mixed methods design collects, analyzes, and mixes both quantitative and qualitative data during the research process within a single study, to examine a research problem more completely (Creswell, 2014). In this sequential design, qualitative data was collected from a survey of instructional designers and the results of the data was compared to the quantitative data collected from the case study of the practice of an experienced instructional designer to provide further insight to the findings generated from the qualitative data. The possibility of a sampling bias exists as a result of the selection of the researcher as the experienced instructional designer in the case study. Thus, the findings of this study may not accurately represent the population of all experienced instructional designers and may differ significantly from the findings of a study involving the entire population of experienced instructional designers or a study involving multiple training development teams, lead by different experienced instructional designers.

The decision to use a mixed method approach for data collection was because neither quantitative nor qualitative methods were sufficient by themselves to capture the current trends of the practice of instructional design and determine the details of the situation, such as the exclusion of activities prescribed by common instructional design models during the practice of

instructional design. When used together, the quantitative and qualitative data collection methods allow for a more complete analysis of the situation (Creswell, 2014).

This study consisted of two distinct phases. In the first phase, the quantitative phase, quantitative data was collected using an online survey. The goal of the quantitative phase was to determine which activities are typically performed or excluded from the practice of instructional design and the reasons for the exclusion of any activities. In the second phase, a single qualitative case study approach was used to collect data through observations about the performance or exclusion of the same common instructional design activities from the quantitative phase and to determine the factors that influenced the exclusion of any activities. The reason for the selection of a single case study approach in addition to the quantitative approach was to allow for the collection of data based on actual performance in addition to data collected based on participant perceptions of performance.

Role of the Researcher

The involvement of the researcher in the data collection for this study varied for each phase. In the quantitative phase of the research, the researcher administered the survey and collected the data using standardized procedures. The data analysis was performed using rigorous statistical analysis techniques and the results were interpreted based on the established values of the collected data.

In the qualitative phase of the study, the researcher assumed a more participatory role in the study. Not only did the researcher observe and note the completed and excluded activities throughout the course of the project, but the researcher also served as the lead and most

experienced instructional designer on the project. The researcher worked with and knew all of the employees on the training development team. In addition, the researcher developed cordial and supportive relationships with all of the employees. Although the researcher has a great deal of instructional design experience; the researcher may have skewed the results of the study to portray a certain outcome, resulting in research bias.

Research bias occurs when the researcher influences the results by failing to consider all of the possible variables, selecting the most accessible research subjects, or selecting subjects that are more likely than others to generate the desired results (Shuttleworth, 2013). The selection of the most assessable or the most desirable subjects, results in a type of research bias referred to as sampling bias, which occurs when the process of sampling introduces an inherent bias into the study (Shuttleworth, 2013). The selection of the training development team employing the researcher as the experienced instructional designer presents the possibility of a sampling bias because the selection may have been made intentionally or because of convenience. Thus, the possibility exists that the experienced instructional designer in this sample may not accurately represent the population of all experienced instructional designers and the results of the study may differ significantly from the results of a study involving the entire population of experienced instructional designers or even a study involving multiple training development teams lead by different experienced instructional designers. If the experienced instructional designer does not accurately represent the population of all experienced instructional designers, the results of this study cannot be generalized to the rest of the population.

Phase 1: Quantitative

During the quantitative phase of this study, data was collected using an online survey with open-ended and rating scale questions. The goal of the collection of data was to determine which activities are typically excluded from practice and the reasons for the exclusion of those activities. An invitation to participate in the survey was emailed to 41 recipients (25 members of a corporate training development organization and 16 members of the Central Florida International Society of Performance Improvement), which requested the recipients to complete an online survey about their use of specific training development activities during the course of a typical instructional design project. Another invitation to participate in the survey was posted to four instructional design professional groups on LinkedIn.com asking for participation in the study. The posting introduced the researcher, explained the purpose of the study, asked for participation in the study, and provided a link to the online survey.

Participants

The participants in the qualitative phase of the research study included 303 respondents to an online survey employed in training organizations in both academic and corporate environments. An invitation to participate in the online survey was emailed to 41 recipients, which included 25 members of the same corporate training development organization, and 16 members of the Central Florida International Society of Performance Improvement (ISPI) who indicated their job title was related to corporate training development or instructional design. The email invitation resulted in 27 respondents. A second invitation to participate in the online survey was posted to four instructional design professional networking groups on LinkedIn.com, which included Instructional Design Central, Instructional Design Professional Group,

Instructional Design Professionals, and Instructional Designers. The LinkedIn postings resulted in 276 respondents.

- Instructional Design Central had 6,273 private members and provides instructional design professionals, educators, and students with access to instructional design resources, information, learning opportunities, and community services.
- Instructional Design Professional Group had 5,922 private members and provides a professional networking group for designers and developers of learning who imagine, create, and validate learning for instructor led and online training and learning.
- Instructional Design Professionals has 2,788 private members and provides a platform for instructional design professionals interested in freelance projects.
- Instructional Designers had 18,677 private members and brings together anyone involved in the art of instructional design.

The demographic data collected from the participants was filtered to eliminate the responses of respondents who had less than one year of instructional design experience and did not have a job title that indicated active participation in the creation of education and training materials for businesses, educational institutions, and other organizations. Because various job titles are frequently used to describe the position of an instructional design professional, the following job titles were included in the filtered sample:

- Content Developer , Course Developer, Curriculum Developer, Educational Developer
- Curriculum Specialist, Educational Specialist,
- Distributed Learning Specialist, eLearning Developer

- Instructional Designer, Instructional Systems Designer
- Instructional Design Specialist, Instructional Systems Specialist
- Instructional Developer
- Instructional Technologist, Instructional Design Technologist
- Learning Design Consultant
- Learning Solutions Architect
- Learning Technologist
- Technical Training Developer

The filtered data resulted in a sample of 224 instructional designers with at least one year of instructional design experience.

Instrumentation

The research began by constructing an online survey with three distinct sections to address the first two research questions. The instrument is displayed in Appendix D. The survey was created and delivered to respondents using www.surveymonkey.com. Survey Monkey was selected as the questionnaire development tool and the delivery method for the survey.

The first section of the survey, entitled Work Experience, asked the participants to answer three questions about their professional history. The questions were designed to collect data about the work experience of the participant, to include job title, training development exposure, and instructional design experience. The participants were asked the following three demographic questions in the first section of the survey:

1. What is the job title for your current position?

2. How many years have you been involved in the training development process?
3. How many years of Instructional Design experience do you have?

The second section of the survey, entitled Training Development Activities, asked participants to select the frequency with which they complete each of 17 commonly performed instructional design activities during a typical instructional design project. The frequency of completion for each activity was expressed in terms of *never*, *occasionally*, *usually*, and *always*, and *not my job*. The activity list originated from the 11 activities in the Wedman and Tessmer (1993) study, but the titles were slightly modified to address each of the phases of the common framework for instructional design models. Additional activities were also added to list of activities to include tasks performed by other roles within training development, such as project management and graphic design. The activities were added to determine if instructional designers are commonly performing activities considered outside the practice of instructional design. The activities included in the online survey are displayed in Table 6.

Table 6: Instructional Design Activities in the Survey

Instructional Design Activity List
1. Identify target audience
2. Compile total task inventory list
3. Identify prerequisite skills/knowledge
4. Select tasks to train
5. Identify task conditions/standards
6. Identify task performance steps
7. Develop learning objectives
8. Design lesson plans
9. Determine testing strategies
10. Develop test items
11. Prepare course outline/plan of instruction
12. Develop instructional materials
13. Pilot test instruction
14. Evaluate instructional feedback
15. Work with subject matter experts
16. Develop/select graphics
17. Manage project schedules/timelines

The third section of the survey, entitled Reasons for Excluding Training Development Activities, asked participants to select one or more reasons why they may not always perform any of the 17 common instructional design activities during a typical project. The options provided for the reason for the exclusion of an activity included *don't know how*, *already done*, *no need*, *not requested, told to omit, not enough time*, *not in scope,* and *not in budget*. The reasons for exclusion originated from the six reasons in the Wedman and Tessmer (1993) study, but the titles were modified to be more specific and additional reasons were added to the list to address internal and external factors for exclusion.

Data Collection

An email invitation asking for participation in the research study was sent to the potential participants through Survey Monkey. The initial email introduced the researcher, explained the purpose of the study, asked for participation in the study, and provided a link to the online survey. Another invitation to participate in the survey was posted to five professional groups in LinkedIn.com. The postings also introduced the researcher, explained the purpose of the study, asked for participation, and provided a link to the online survey. Invitations to participate in the online survey are displayed in Appendix C. Upon selecting the survey link, respondents accessed the online survey hosted by SurveyMonkey.com and entered their responses to five survey questions. The survey remained open for 2 weeks and all of the survey data was recorded and stored online on www.SurveyMonkey.com under a password protected user account.

Data Analysis

The data analysis for the quantitative phase of the study consisted of quantitative analysis techniques using descriptive statistics. The performance and exclusion of instructional design activities during a typical training development project was determined by calculating the percentage of selections for each frequency option in response to question number four in the survey. Survey question number four asked participants to select the frequency with which they completed each of 17 common instructional design activities during a typical training development project. The frequency options included *never*, *occasionally*, *usually*, *always*, and *not my job*. The activities with larger percentages of *usually* and *always* selections were considered activities routinely performed during the practice of instructional design. Activities

with larger percentages of *never*, *occasionally*, and *not my job* selections were considered activities routinely excluded during the practice of instructional design.

The reasons for the exclusion of instructional design activities during a typical project were determined by calculating the number of selections for each reason in response to survey question number five. The activities with the largest number of selections for a reason were considered significant. The significant reasons could then be categorized into internal and external factors to identify possible causes for the exclusion of each activity. External factors involve the conduct or directive of someone other than the instructional designer that prevents or restricts the performance of an activity. The selections that indicate external factors are driving the decision to eliminate an activity include the following:

- Already done: Indicates the activity was performed by someone else or the activity was previously performed for another project and the data was reused for this project.
- Not in scope: Indicates someone other than the instructional designer limited the scope of the project, which eliminated the performance of the activity.
- Not enough time: Indicates someone other than the instructional designer limited the project schedule, which eliminated the performance of the activity.
- Told to omit: Indicates someone other than the instructional designer requested the elimination of the activity.
- Not in budget: Indicating someone other than the instructional designer reduced the project budget, which eliminated the performance of the activity.

Internal factors involve a decision by the instructional designer not to perform the activity. The selections that indicate internal factors are driving the decision to eliminate an activity include the following:

- Don't know how: Indicates the instructional designer does not know how to perform the activity.
- No need: Indicates the instructional designer independently decided there is no need to perform the activity.
- Not requested: Indicates the instructional designer decided not to perform the activity because it was not specifically requested by someone else.

Phase 2: Qualitative

In the second phase of the study, a qualitative single case study approach was used to collect data through observations about the completion or exclusion of the same common instructional design activities from the quantitative phase and to determine the factors that influenced the reasons for the exclusion of any activities. During this phase of the study, the researcher observed a single training development team during the course of a one-year instructional design project. During the course of the project, the researcher observed the completion or exclusion of the 17 common instructional design activities and noted the roles of the participant who conducted each activity on a performance checklist. The researcher also observed the reasons for the exclusion of any activity.

Participants

The participants in the qualitative phase of the research study involved nine employees of a corporate training development team in Orlando, Florida assigned to a one year training development project. The instructional design activities performed by each member of the team were tracked for the entire length of the one-year project. Four of the nine employees were instructional designers. One of the instructional designers was an experienced instructional designer with more than 16 years of instructional design experience and a solid understanding of the purpose and implementation of instructional design models. The remaining members of the team included one project lead, one trainer, one subject matter expert, one graphic artist, and one technical developer.

The project lead was employed by the company for nineteen years, had six years of training development experience, and a degree in graphic design. The responsibilities of the project lead included the supervision of each member of the team during the project, the establishment and management of the project schedule and timelines, status updates, meetings (both with clients, program management, and team members), the management of document repositories, and the quality assurance of the instructional materials. The project lead was a full time member of the project team.

The experienced instructional designer, who was also the researcher, was employed by the company three years, had sixteen years of instructional design experience, and was pursuing a doctorate degree in instructional design. The responsibilities of the experienced instructional designer included the overall analysis, design, development, verification, implementation, and evaluation of the instructional materials. Additionally, the experienced instructional designer was

responsible for mentoring and assigning instructional tasks to the other instructional designers on the team and managing the product quality of all instructional materials. The experienced instructional designer was a full time member of the project team.

The three additional instructional designers assigned to the project were contract employees hired on a temporary basis to support the project effort. The responsibilities of these instructional designers included the analysis, design, development, verification, implementation, and evaluation of specific instructional materials, as assigned. The instructional designers were full time members of the project team.

The corporate trainer assigned to the project was employed by the company five years and had ten years of training development experience. The responsibilities of the trainer included learning the instructional content well enough to deliver training to the target audience during the implementation of training. The trainer was a full time member of the project team.

The subject matter expert assigned to the project was a contract employee hired on a temporary basis to support the project effort. The responsibilities of the subject matter expert included the development of all content specific to the topic of expertise, including the identification of the target audience, the identification of the performance environment (context), and the development of practical exercise scenarios and scripts. The subject matter expert was a full time member of the project team.

The graphic artist assigned to the project was employed by the company for five years and was responsible for the selection, creation, and modification of graphical content as identified by the project lead. The graphic artist worked on many different projects at the same time and was not was not a full time member of the project team.

The developer was a contract employee hired to support the project effort. The responsibilities of the developer included the development of the computer based training products. The developer worked on many different projects at the same time and was not was not a full time member of the project team.

Study Setting

The setting for the qualitative phase of the study was the offices of a corporate training development team within of an engineering corporation in Orlando, Florida. The training development team is regularly tasked to provide end-to-end instructional solutions from concept to post-deployment by analyzing, designing, developing, and integrating content using modern instructional technologies and sound instructional design processes based on valid instructional design models. In keeping with the process-driven environment of the engineering culture in which they work, and because the organization primarily develops training for large complex systems, the team uses a set of processes and procedures derived from the ADDIE model and the Dick and Carey model to guide their training development projects. The training development process commonly used by the training development team is listed in Appendix A.

The employment philosophy of the organization is to hire and keep a core collection of highly skilled and technically advanced full time employees that are supplemented by contract employees based on individual project requirements. When additional help is required to meet a project schedule or additional expertise is required to achieve a project goal, additional employees are hired on a temporary three to six month contract and added to the project team. When a project is assigned to the training development team, the training manager selects employees to support the project based on availability, skill, and knowledge sets. If additional

employees are required for the project, the training manager hires additional contract employees to support the project. The employees collectively form a project team and work together to schedule and attend meetings, make strategic decisions, coordinate roles and responsibilities, and accomplish project tasks. This lateral type of arrangement works best when complex projects must be performed in a fast paced and ever-changing environment (Bolman & Deal, 2008). Each project team consists of a project leader and workers with the skills and knowledge required to complete the project. The project lead is responsible for the schedules, documentation, meetings, and status updates for the team. The workers from each group perform the specialized tasks required to develop the products, plan for the delivery of the products, and deliver or facilitate the delivery of the products to the client. Along with documented processes and procedures, the project team is expected to achieve its goals efficiently and effectively.

During the course of the project observed during the qualitative phase of this study, the training development team primarily worked in an office environment, but was occasionally required to travel to the training site. The training site was located in Schofield Barracks, Hawaii.

Data Collection

A checklist was constructed to account for the performance or elimination of the 17 common instructional design activities from the first phase of this study during the performance of a training development project. The purpose of the checklist was to collect the data required to answer research question number three and research question number four. Table 7 displays the performance checklist used by the researcher to track the performance of the instructional design activities during the course of the project.

The checklist contained only the instructional design activities listed in the survey and was to be completed by the researcher as observations were made about the performance of instructional design activities during a training development project. If the researcher observed an activity being conducted, the box next to the activity under the role of the person who completed the activity was selected. If multiple people in different roles completed the same activity, multiple selections would be made on the checklist in the different columns of the different roles to indicate the participation of the different people. If the researcher did not observe the conduct of an activity on the checklist during the course of the project, the box under the most likely reason for the exclusion of the activity was selected next to the activity. Additionally, extenuating circumstances involving the exclusion of activities and any unusual factors that may have influenced the performance of activities were noted by the researcher. Table 7 displays the performance checklist used by the researcher to record the performance of the instructional design activities by the training development team in the case study.

Table 7: Instructional Design Activity Performance Checklist

Instructional Design Activity	Completed								Not Completed by ID							
	Project Lead	Senior ID	ID	Graphic Artist	SME	Trainer	Developer	Customer / Client	Don't know how	Already done	No need	Not requested	Told to omit	Not enough time	Not in scope	Not in budget
Manage project schedules/timelines																
Identify target audience																
Identify prerequisite skills/knowledge																
Compile total task inventory list																
Select tasks to train																
Identify task conditions/standards																
Identify task performance steps																
Work with subject matter experts																
Develop learning objectives																
Determine testing strategies																
Design lesson plans																
Develop test items																
Prepare course outline/plan of instruction																
Develop instructional materials																
Develop/select graphics																
Pilot test instruction																
Evaluate instructional feedback																

Data Analysis

Descriptive statistics were used to examine the differences between the activities instructional designers perceive to be performed or excluded and the activities that are actually performed or excluded by experienced instructional designers during the practice of instructional design. The data on the checklist was compared to the data collected from survey question

number four and survey question number five to identify discrepancies in performance between practicing instructional designers and an experienced instructional designer.

Establishing Credibility

The criterion for analyzing qualitative research is uniquely different from quantitative research. For qualitative research, the researcher seeks believability based on coherence and insight through verification rather than through traditional validity and reliability measures (Eisner, 1991). The combination of both approaches provides a better understanding of the research problem and strengthens the overall research design to provide more comprehensive and convincing evidence than either approach could do alone (Creswell, 2014).

Role of the Researcher

The involvement of the researcher in the data collection for this study varied for each phase. In the quantitative phase of the research, the researcher administered the survey and collected the data using standardized procedures. The data analysis was performed using rigorous statistical analysis techniques and the results were interpreted based on the established values of the collected data.

In the qualitative phase of the study, the researcher assumed a more participatory role in the study. Not only did the researcher observe and note the completed and excluded activities throughout the course of the project, but the researcher also served as the lead and most experienced instructional designer on the project. The researcher worked with and knew all of the participants on the training development team. In addition, the researcher developed cordial and supportive relationships with most of the participants. The selection of the training

development team employing the researcher presents the possibility of a sampling bias and indicates the selection may have been made intentionally or because of convenience. Thus, the possibility exists that the experienced instructional designer in this sample may not accurately represent the population of all experienced instructional designers and the results of the study may differ significantly from the results of a study involving the entire population of experienced instructional designers or even a study involving multiple training development teams lead by different experienced instructional designers. If the experienced instructional designer does not accurately represent the population of all experienced instructional designers, the results of this study cannot be generalized to the rest of the population.

Limitations

During the investigation of the research questions in this study, assumptions were made. It was assumed that the participants were representative of the population of instructional design practitioners, they responded truthfully as well as completely to the survey questions, and based their answers on their performance, experience, perceptions, and beliefs. These assumptions were made because participation in the online survey was voluntary and participants were not asked to provide any personal information, thus their anonymity was protected.

The following limitations, which may have affected the collection and analysis of the data, were recognized by this study.

1. Validity was limited to the reliability of the quantitative instrument used in the study, which may have been affected by the familiarity of the survey participants with the terminology used in the survey.

2. Validity was limited by the number of participants who voluntarily completed the online survey, which included a select number of members from a corporate training development group, a professional training and performance improvement organization, and several online networking groups for instructional designers.
3. Generalization of the findings of the case study were limited by the number of participants and projects observed during the case study, which were confined to a single instructional design project and the nine members of a large corporate training development group assigned to that project, and may not be representative of the population of all experienced instructional designers.
4. Due to the interpretative nature of descriptive statistics, the results provide only one perspective of the findings and may be subject to different interpretations.
5. The researcher was a member of the training development team and actively participated in the performance of the instructional design activities observed during the case study which determined that research bias could reflect on findings.

CHAPER FOUR: ANALYSIS AND RESULTS

Introduction

The purpose of this study was to examine and compare the performance of common instructional design activities by practicing instructional designers with the performance of an experienced instructional designer to determine if instructional design models are being used to guide the practice of instructional design. In this study, quantitative data was collected from 303 respondents and qualitative data was collected from a single case study of a corporate instructional design project led by an experienced instructional designer. Descriptive statistics were used to describe the collected data and the descriptive statistics were analyzed to answer the following research questions:

1. Which instructional design activities do instructional designers as a whole, routinely perform and exclude during a typical project?
2. What are the reasons why instructional designers as a whole, exclude common instructional design activities from projects?
3. Which instructional design activities do experienced instructional designers routinely perform and exclude during a typical project?
4. What are the reasons why experienced instructional designers exclude common instructional design activities from projects?
5. What are the differences between the activities instructional designers and experienced instructional designers perform and exclude during a typical project?

The possibility of a sampling bias exists as a result of the selection of the researcher as the experienced instructional designer in the case study. Thus, the findings of this study may not accurately represent the population of all experienced instructional designers and may differ significantly from the findings of a study involving the entire population of experienced instructional designers or a study involving multiple training development teams, lead by different experienced instructional designers.

Demographic Data

Demographic data was collected from the first two questions in the survey to determine the professional experience of the 303 respondents who participated in the survey. Descriptive statistics were then used to describe the basic features of the collected data for each question. Data collected from survey question number one (What is the job title for your current position?) was used to determine the current job title of the participants. The analysis of the descriptive statistics indicated 56% of the participants identified their job title as an instructional designer. Seventeen percent of the participants indicated they were a training manager or director, 7% indicated they were a training and development consultant, and 5% indicated they were an e-learning specialist or developer. Table 8 displays the descriptive statistics for the participant job titles across the six different categories.

Table 8: Descriptive Statistics for Participant Job Title

Job Title	Participants	%
Instructional Designer	171	56%
Manager / Director	51	17%
Consultant	21	7%
Developer / e-learning	15	5%
Teacher / Trainer	17	6%
Other	28	9%
Total	303	100

The analysis of the data indicated all of the participants had between 0 and 49 years of training development experience, with an average of fifteen years of experience. Training development experience is defined as working within a training development group in some capacity, not necessarily in an instructional design position. Most of the participants (43%) had between six and fifteen years of training development experience, 38% of the participants had sixteen or more years of training development experience, and 19% had less than six years of experience in training development. Table 9 displays the descriptive statistics for the training development experience of the participants.

Table 9: Descriptive Statistics for Participant Training Development Experience

Years of Experience	Participants	%	Average Years
0 - 5 years	57	19%	3
6 - 15 years	131	43%	11
16 + years	115	38%	25
Total	303	100%	15

The analysis of the data indicated all of the participants had an average of twelve years of experience working as an instructional designer. Instructional design experience is commonly defined as working within a training development group specifically with the job title of an instructional designer. The majority of the participants (45%) had between six and fifteen years of instructional design experience, 28% had sixteen or more years of instructional design experience, and 27% had less than six years of instructional design experience. Table 10 displays the instructional design experience of the participants.

Table 10: Descriptive Statistics for Participant Instructional Design Experience

Years of Experience	**Participants**	**%**	**Average Years**
0 - 5 years	81	27%	3
6 - 15 years	136	45%	10
16 + years	86	28%	24
Total	303	100%	12

To eliminate the responses of the participants who were not practicing instructional designers or who had less than one year of instructional design experience, the collected data was filtered by the responses to survey question number one and survey question number three to create a sample of instructional designers with at least one year of instructional design experience. The sample included data with '*instructional'*, '*design'*, '*designer'*, '*ISD',* '*ID'*, '*educational'*, '*specialist'*, '*learning'*, '*developer',* or '*consultant'* collected from survey question number one (What is the job title for your current position?) and data with greater than one collected from survey question number three (How many years of Instructional Design experience do you have?). The filtering of the data resulted in a sample of 224 instructional

designers with at least one year of instructional design experience. Data from the sample was used to answer the first two research questions in this study.

Research Question 1

Which instructional design activities do instructional designers as a whole, routinely perform and exclude during a typical project? Descriptive statistics were used to describe the frequency of performance for each activity. The dataset used to answer this research question was collected from survey question number four and is displayed in Appendix E. Figure 5 displays the descriptive statistics for the frequency of performance for each of the instructional design activities in the survey.

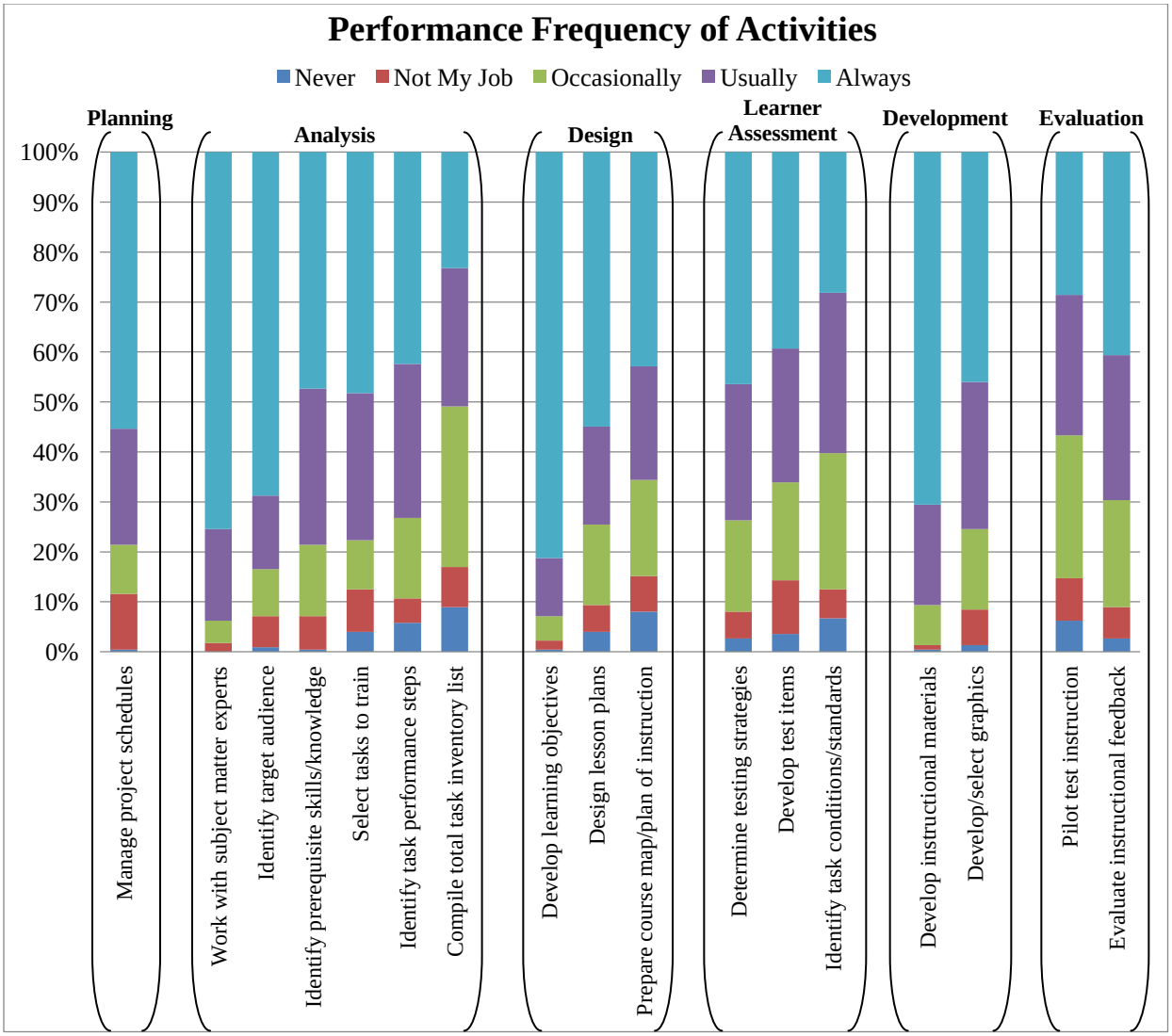


Figure 5: Descriptive Statistics for the Frequency of Performance of Activities

The analysis of the descriptive statistics indicated 71% of the participants *always* perform only three of the instructional design activities listed in the survey and 10% of the participants indicated it was *not my job* or *never* perform nine of the listed activities. The activities *always* performed and *never* performed are listed in Table 11. The three activities that are always performed involve the design and development of the instructional materials. These results

indicate a strong propensity for instructional designers to spend more time developing the instructional content than they do on any of the other activities. The findings for these results are discussed in the next chapter.

Table 11: Descriptive Statistics for Activities Always and Never Performed

Always Performed (71% of Participants)	**Never Performed (10% of Participants)**
• Develop learning objectives	• Identify prerequisite skills/knowledge
• Work with subject matter experts	• Identify task performance steps
• Develop instructional materials	• Select tasks to train
	• Design lesson plans
	• Develop/select graphics
	• Determine testing strategies
	• Develop test items
	• Evaluate instructional feedback
	• Manage project schedules

Descriptive statistics were then used to describe the activities the participants routinely perform (*usually* and *always* selections >70%) and exclude (*never*, *occasionally*, and *not my job* selections = or <30%) during a typical project. The analysis of the descriptive statistics indicated eleven of the activities are routinely performed and six activities are routinely excluded. Table 12 displays the descriptive statistics for the routinely performed and excluded instructional design activities.

Table 12: Descriptive Statistics for Routinely Performed and Excluded Activities

Performed		**Excluded**	
Instructional Design Activity	%	Instructional Design Activity	%
Work with subject matter experts	94%	Compile total task inventory list	49%
Develop learning objectives	93%	Pilot test instruction	43%
Develop instructional materials	91%	Identify task conditions/standards	40%
Identify target audience	83%	Prepare course map/plan of instruction	34%
Manage project schedules	79%	Develop test items	34%
Design lesson plans	75%	Evaluate instructional feedback	30%
Identify prerequisite skills/knowledge	79%		
Select tasks to train	78%		
Develop/select graphics	75%		
Determine testing strategies	74%		
Identify task performance steps	73%		

Further analysis was conducted of the activities identified as routinely excluded. With the exception of *compile total task list*, the activities collectively involve the complex and time-consuming components of learner assessments, formative evaluations, and summative evaluations. The results are summarized in the list below and the findings are discussed in the next chapter.

- 37% of the participants do not routinely perform two of the three learner assessment related activities (*identify task conditions/standards* and *develop test items*).
- 11% of the participants indicated it was not their job to *develop test items.*
- 43% of the participants do not frequently conduct formative evaluations.
- 30% of the participants do not frequently conduct a summative evaluation of the instruction.

Research Question 2

What are the reasons why instructional designers as a whole, exclude instructional design activities from a project? Descriptive statistics were used to describe the reasons why instructional designers exclude an activity from a project. The dataset used to answer this research question was collected from survey question number five and is displayed in Appendix E.

The analysis of the descriptive statistics indicated the instructional design activities with the most reasons for the exclusion from a typical project were *pilot test instruction* (224 selections), *compile total task inventory list* (212 selections), and *identify task conditions/standards* (198 selections). The activities with the fewest reasons for the exclusion from a typical project were *develop instructional materials* (112 selections), *develop learning objectives* (114 selections), and *work with subject matter experts* (117 selections). Although multiple reasons for exclusion were selected for each activity, the most frequently selected reason for the exclusion of most of the activities was that the activity had already been performed (*already done*, 38%). These results suggest most instructional design activities are being conducted by someone other than the instructional designers or the activities were conducted for previous projects and the data was reused. The results also indicated more participants eliminated an activity from a project because of scope limitations (*not in scope*, 13%) than for financial issues (*not in budget*, 6%) or time restrictions (*not enough time*, 10%). These results suggest the scope of the project is adjusted to accommodate for scheduling and funding limitations, thus time and money are not significant reasons for the elimination of an activity. Figure 6 displays the

descriptive statistics for the reasons each instructional design activity may not be performed during a typical project.

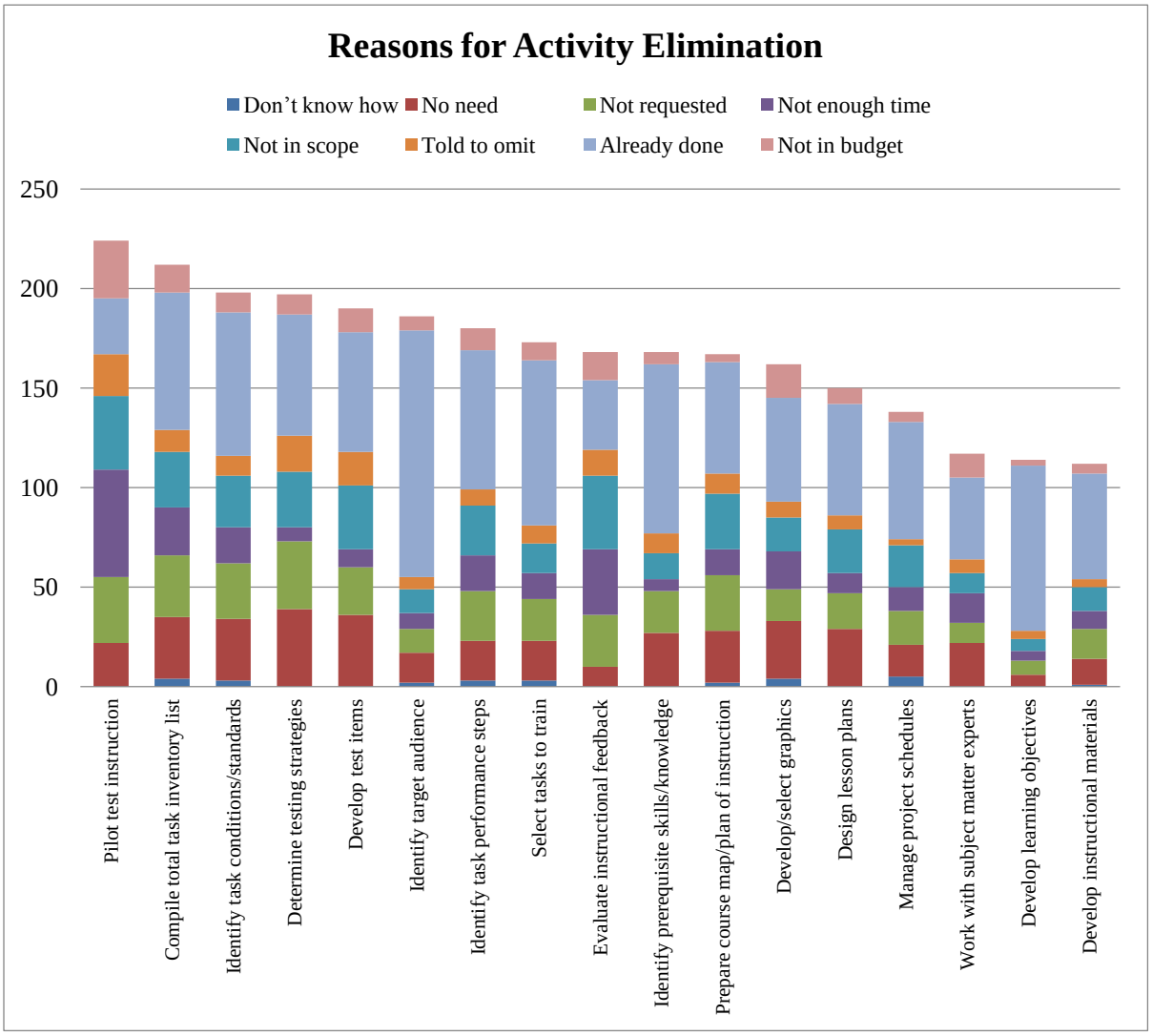


Figure 6: Descriptive Statistics for Reasons for Activity Exclusion

Additional results included the frequent selection of *not enough time* for the activities *compile total task inventory list, evaluate instructional feedback,* and *pilot test instruction*. These activities are time-consuming activities that are difficult to perform and suggest the participants

are eliminating these activities because they do not have the skills and knowledge to complete these activities within the project time-frame. Activities with frequent selections of *not requested* included *compile total task inventory list* (31 selections), *identify task conditions/standards* (28 selections), and *identify task performance steps* (25 selections). Collectively, these activities involve the task analysis component of the instructional design process. These results suggest the participants do not perform a task analysis if it is not specifically requested by either management or the client.

Additional analysis was conducted for the reasons selected for the exclusion of the six most frequently eliminated activities from a project. The results of the analysis suggest the most routinely excluded activities from a project are not performed because the scope of the project does not allow for the performance of the activity, there is not enough time to conduct the activity, or the activity was previously performed and the information was reused. Table 14 displays the descriptive statistics for the reasons of the elimination of the six most routinely excluded activities from a project.

Table 13: Descriptive Statistics for Primary Reason for Activity Exclusion

Instructional Design Activity	Total Selections	Primary Reason	%
Pilot test instruction	224	Not enough time	24%
Compile total task inventory list	212	Already done	33%
Identify task conditions/standards	198	Already done	36%
Determine testing strategies	197	Already done	31%
Develop test items	190	Already done	32%
Identify target audience	186	Already done	67%
Identify task performance steps	180	Already done	39%
Select tasks to train	173	Already done	48%
Evaluate instructional feedback	168	Not in scope	22%
Identify prerequisite skills/knowledge	168	Already done	51%
Prepare course map/plan of instruction	167	Already done	34%
Develop/select graphics	162	Already done	32%
Design lesson plans	150	Already done	37%
Manage project schedules	138	Already done	43%
Work with subject matter experts	117	Already done	35%
Develop learning objectives	114	Already done	73%
Develop instructional materials	112	Already done	47%

The most frequently selected reasons for the exclusion of the six most frequently eliminated activities from a project are displayed in Table 14 and described in the list below.

- The task analysis component and is frequently excluded because it was previously performed.
- *Identify task conditions/standards* identifies the performance objectives for the learner assessment and is frequently excluded because it was previously performed.
- The learner assessment activity of *develop test items* is frequently excluded because it was previously performed.

- The formative evaluation activity of *pilot test instruction* is frequently excluded because there was *not enough time* to perform the activity.
- The prepare course map/plan of instruction activity, which indicates how to deliver the instruction, is frequently excluded because it was previously performed.
- The summative evaluation activity of *evaluate instructional feedback* is frequently excluded because it is not included in the scope of the project (*out of scope).*

Table 14: Descriptive Statistics for Reasons for Exclusion of Frequently Excluded Activities

Instructional Design Activity	Component	Not in scope	Already done	Not enough time
Compile total task inventory list	Task Analysis	13%	17%	24%
Identify task conditions/standards	Performance Objectives	33%	13%	11%
Develop test items	Learner Assessment	36%	13%	9%
Pilot test instruction	Formative Evaluation	32%	17%	5%
Prepare course map/plan of instruction	Implementation Plan	34%	17%	8%
Evaluate instructional feedback	Summative Evaluation	21%	22%	20%

Descriptive statistics were also used to describe the factors influencing the reasons for the exclusion of an activity during a project. The analysis of the descriptive statistics indicated 73% of the selected reasons for the exclusion of an activity involved external factors that imply someone other than the instructional designer made the decision to eliminate the activity or someone else performed the activity. The analysis also indicated 27% of the reasons for the exclusion of an activity involved internal factors that imply the instructional designer made an independent decision to eliminate the activity. Table 15 displays the descriptive statistics for the factors driving the exclusion of an activity from a project.

Table 15: Descriptive Statistics for Exclusion Factors for Instructional Designers

External Factors			**Internal Factors**		
Reasons	Selections	%	Reasons	Selections	%
Already done	1087	38%	Don't know how	27	1%
Not in scope	369	13%	No need	392	14%
Not enough time	273	10%	Not requested	366	13%
Told to omit	166	6%			
Not in budget	176	6%			
Totals	2071	73%	Totals	785	27%

Research Question 3

Which instructional design activities do experienced instructional designers routinely perform and eliminate during a typical project? Data was collected and analyzed from the observation of a training development team during an instructional design project to answer this research question. During the course of the project, the performance and exclusion of common instructional design activities were observed and recorded in the performance checklist displayed in Table 16. The analysis of the data indicated the experienced instructional designer did not perform three activities during the project. The activities *develop/select graphics* and *manage project schedules/timelines* were not performed by the experienced instructional designer, but were completed by other members of the training development team. The only activity that was not performed by anyone on the training development team was *compile total task inventory list*.

Table 16: Instructional Design Activity Performance Checklist

Instructional Design Activity	Completed								Not Completed by ID							
	Project Lead	Senior ID	ID	Graphic Artist	SME	Trainer	Developer	Customer / Client	Don't know how	Already done	No need	Not requested	Told to omit	Not enough time	Not in scope	Not in budget
Manage project schedules/timelines	X									X						
Identify target audience		X			X			X		X						
Identify prerequisite skills/knowledge		X			X			X		X						
Compile total task inventory list											X			X	X	
Select tasks to train		X			X					X						
Identify task conditions/standards		X								X						
Identify task performance steps		X	X		X											
Work with subject matter experts		X	X		X											
Develop learning objectives		X								X						
Determine testing strategies		X								X						
Design lesson plans	X	X								X						
Develop test items		X			X					X						
Prepare course outline/plan of instruction	X	X								X						
Develop instructional materials	X	X	X	X	X	X	X									
Develop/select graphics	X			X						X						
Pilot test instruction		X								X						
Evaluate instructional feedback		X								X						

During the analysis phase of the project, the instructional designers worked with the client and the subject matter expert to gather information about the target audience, define the job performance environment and the training environment, and conduct the task analysis. To manage the resources and deliverables of the project, the senior instructional designer provided input for the development of the project schedule, but the project lead managed the project schedule. Only the senior instructional designer had the skills and knowledge required to conduct the task analysis, which slowed the pace of the project because the senior instructional designer

needed to train the other instructional designers how to conduct a task analysis, while taking a lead role in performing most of the task analysis effort.

During the design phase of the project, the senior instructional designer developed the learning objectives, determined the testing strategies, designed the lesson plan template, developed the test items, and prepared a plan for the delivery of the instruction. The project lead assisted the instructional designer with the development of the lesson plan template, and the subject matter expert assisted with the development of a practical exercise to assess the abilities of the learners during the delivery of the instruction.

During the development phase, the entire project team worked on the development of the instructional materials. At the end of the development phase, the senior instructional designer conducted a pilot test of the instruction with a small group of participants, which included four members of the target audience and the instructors who were preparing to deliver the instruction. One of the instructional designers was released from the project after the instructional materials were finalized due to the decreased requirement of effort going into the next phase, meaning there was not enough work left on the project to retain more than two instructional designers.

During the implementation phase of the project, the trainer, two instructional designers, and the subject matter expert delivered the instruction to the students, who were the end users of the new system. The instructional designers and the subject matter expert had prior training delivery experience and acknowledged that training was not a normal part of their job, but they were happy to help with the implementation of the training and enjoyed the additional challenge. The instructional designers were also incentivized by the training location, which was in Hawaii.

During the implementation of the training and after the completion of the training, feedback about the training was collected from the learners and the instructors.

Throughout the course of the project, formative evaluations of the instructional decisions, process, and materials were conducted using an extensive peer review process. A summative evaluation of the training was conducted two weeks after the delivery of the training during a field trial of the system. During the field trial, the trainer assisted the learners when required and the senior instructional designer monitored the performance of the learners as the learners used the system to demonstrate their ability to perform the skills and knowledge they gained during training. At the end of this phase, a summative evaluation was conducted using the feedback collected during the implementation of the training and the performance of the learners during the field trial to determine the effectiveness of the instructional solution.

Research Question 4

What are the reasons why experienced instructional designers eliminate common instructional design activities from a project? Data was collected and analyzed from the observation of a training development team during an instructional design project to answer this research question. During the course of the project, the reasons for the exclusion of the common instructional design activities from the survey were observed and recorded in the performance checklist displayed in Table 16 in the previous section. The analysis of the data indicated the *compile total task inventory list* activity was not conducted during the course of the project by the senior instructional designer or anyone else on the training development team. According to the experienced instructional designer, the activity was not performed because it was considered

outside the scope of the project, it was not needed to conduct the task analysis, and there was not enough time to conduct the activity completely. The activities *develop/select graphics* and *manage project schedules/timelines* were not performed by the experienced instructional designer because they were performed by other members of the training development team.

Descriptive statistics were then used to describe the factors influencing the reasons for the exclusion of an activity by the experienced instructional designer and the three other instructional designers in the case study. The analysis of the descriptive statistics indicated 80% of the reasons for eliminating an activity involved external factors and 20% of the reasons involved internal factors. The primary reason for the exclusion of any activity was that the activity had already been performed (*already done*, 40%). Additional reasons for the exclusion of an activity included; *not in scope* (20%), *no need* (20%), and *not enough time* (20%). Table 17 displays the descriptive statistics for the factors for the exclusion of an activity. These results suggest experienced instructional designers will conduct every activity unless the activity is not prescribed by the model selected for the project, or the decisions of management or the client restrict the performance of an activity. The findings for these results are discussed in the next chapter.

Table 17: Descriptive Statistics for Exclusion Factors for Experienced Instructional Designer

External Factors			**Internal Factors**		
Reasons	Selections	%	Reasons	Selections	%
Already done	2	40%	Don't know how	0	0%
Not in scope	1	20%	No need	1	20%
Not enough time	1	0%	Not requested	0	0%
Told to omit	0	20%			
Not in budget	0	0%			
Totals	4	80%	Totals	1	20%

Research Question 5

Data from the survey sample and data from the case study were collected to answer the research question - What are the differences between the activities instructional designers and experienced instructional designers perform and eliminate during a typical project? Data from the survey sample and data from the case study were collected to answer this research question. The selection of the experienced instructional designer in the case study (the researcher) may not accurately represent the population of all experienced instructional designers. Thus, the data collected to answer this research question may differ significantly from the results of a study involving the entire population of experienced instructional designers or even a study involving multiple training development teams, lead by different experienced instructional designers.

Descriptive statistics were then used to compare the performance of activities between the survey participants and the experienced instructional designer from the case study. Table 18 displays the comparison of the activities performed by the instructional designers and the activities prescribed by the different classifications of instructional design models.

Table 18: Comparison of Instructional Design Activity Performance

Instructional Design Activity	Participants	Experienced ID
Identify target audience	X	X
Compile total task inventory list		
Identify prerequisite skills/knowledge	X	X
Select tasks to train	X	X
Identify task performance steps	X	X
Identify task conditions/standards		X
Develop learning objectives	X	X
Design lesson plans	X	X
Determine testing strategies	X	X
Develop test items		X
Prepare course map/plan of instruction		X
Develop instructional materials	X	X
Develop/select graphics	X	
Pilot test instruction		X
Evaluate instructional feedback		X
Manage project schedules/timelines	X	
Work with subject matter experts	X	X

When the activity performance of the participants was compared to the experienced instructional designer, only one activity (*compile total task inventory list*) was not performed by either the participants or the experienced instructional designer. Two activities were not performed by the experienced instructional designer (*manage project schedules/timelines* and *develop/select graphics*) that were performed by the participants. Five activities were performed by the experienced instructional designer that was not routinely performed by the participants. These activities include *identify task conditions/standards*, *develop test items*, *prepare course map/plan of instruction*, *pilot test instruction*, and *evaluate instructional feedback*. These results indicate the survey participants and the experienced instructional designer routinely perform

different activities during the course of a typical project. These results are discussed in the next chapter.

Additionally, the activities performed by the survey participants and activities performed by the experienced instructional designer from the case study were compared to the activities commonly prescribed by the three different classifications of instructional design models (classroom, product, and systems). The results of the comparison suggest the activities performed by the experienced instructional designer most closely match the prescriptions of systems oriented instructional design models and the activities performed by the survey participants do not closely match the prescriptions of any of the classifications of instructional design models. The findings for these results are discussed in the next chapter. Table 19 displays the comparison of the activities performed by the instructional designers and the activities prescribed by the different classifications of instructional design models.

Table 19: Comparison of Activities to Instructional Design Models

Instructional Design Activity	**Component**	Participants	Experienced ID	Classroom Models	Product Models	Systems Models
Identify target audience	Learner Analysis	X	X	X	X	X
Compile total task inventory list	Task Analysis					X
Identify prerequisite skills/knowledge	Task Analysis	X	X	X		X
Select tasks to train	Task Analysis	X	X	X	X	X
Identify task performance steps	Task Analysis	X	X	X	X	X
Identify task conditions/standards	Performance Objectives		X	X	X	X
Develop learning objectives	Learning Objectives	X	X	X	X	X
Design lesson plans	Content Sequencing	X	X	X	X	X
Determine testing strategies	Learner Assessment	X	X	X	X	X
Develop test items	Learner Assessment		X	X	X	X
Prepare course map/plan of instruction	Implementation Plan		X	X	X	X
Develop instructional materials	Develop Materials	X	X	X	X	X
Develop/select graphics	Develop Materials	X				
Pilot test instruction	Formative Evaluation		X		X	X
Evaluate instructional feedback	Summative Evaluation		X		X	X
Manage project schedules/timelines	Project Management	X		X		X
Work with subject matter experts	Analysis & Evaluation	X	X			

Summary

The results of the data analysis for the first phase of the study indicated the respondents to the survey had an average of 12 years of instructional design experience and an average of 15 years of training development experience. Training development experience is defined as experience working in a training development organization in any capacity, not necessarily as an instructional designer. Fifty-six percent of the respondents identified themselves as an

instructional designer and 17% indicated their job title was related to instructional design, such as instructional technologist, instructional consultant, or curriculum developer. Of the sample of 224 practicing instructional designers, 71% indicated they *always* perform only three of the seventeen common instructional design activities listed in the survey, which involve the design and development of instructional materials. Furthermore, six activities are routinely excluded (*never*, *occasionally*, and *not my job*) from typical instructional design projects. These activities involve the development of learner assessments, the conduct of formative evaluations, and the conduct of summative evaluations. The most frequently selected reasons for the elimination of an activity was the activity was previously performed (*already done*, 38%), the scope of the project restricted the performance of the activity (*not in scope*, 13%), and there was not enough time to conduct the activity (*not enough time*, 10%).

The results of the data analysis for the second phase of the study indicated experienced instructional designers routinely perform fourteen of the seventeen activities listed in the survey. The activities *develop/select graphics* and *manage project schedules/timelines* were not performed by the experienced instructional designer because they were performed by other members of the training development team. Thus, the most frequently selected reason for the elimination of an activity was that the activity had already been performed (*already done*, 40%). Additional reasons for the exclusion of an activity included; *not in scope* (20%), *no need* (20%), and *not enough time* (20%). These results suggest experienced instructional designers will conduct every activity unless the activity is not prescribed by the model selected for the project, or the decisions of management or the client restrict the performance of an activity.

When the descriptive statistics from the first phase of the study was compared to the second phase of the study, only one activity (*compile total task inventory list*) was not performed by either the survey participants or the experienced instructional designer from the case study. Two activities were not performed by the experienced instructional designer (*manage project schedules/timelines* and *develop/select graphics*) that were performed by the participants five activities were performed by the experienced instructional designer that were not routinely performed by the participants. These results suggest the participants in the study and the experienced instructional designer from the case study are routinely performing different activities during the course of a typical project. Furthermore, the activities performed by the survey participants and the experienced instructional designer were compared to the instructional design activities commonly prescribed by the three different classifications of instructional design models (classroom, product, and systems). The results of the comparison suggest the activities performed by the experienced instructional designer most closely match the prescriptions of systems oriented instructional design models and the activities performed by the survey participants do not closely match the prescriptions of any of the classifications of instructional design models.

CHAPTER FIVE: DISCUSSION AND CONCLUSION

Introduction

The final chapter in this dissertation in practice presents a discussion of the results of the data analysis presented in the previous chapter and provides recommendations for future research. The purpose of this study was to examine and compare the performance of common instructional design activities by instructional designers with the performance of an experienced instructional designer to determine if instructional design models are being used to guide the practice of instructional design.

In this study, quantitative data was collected from a sample of 224 instructional designers to determine the activities instructional designers routinely perform and eliminate from practice. Qualitative data was collected from a single case study of an instructional design project to assess whether or not the performance or exclusion of the same instructional design activities were identified in the work of an experienced instructional designer. Descriptive statistics were used to describe the collected data and the descriptive statistics were analyzed to answer the research questions used to guide this study.

The findings of this study cannot be considered representative of the larger population of experienced instructional designers due to the small sample size and may differ significantly from the findings of a study involving the entire population of experienced instructional designers or even a study involving multiple training development teams, lead by different experienced instructional designers. Consequently the discussion of the results of this study is limited to the survey respondents of the survey and the case study participants.

Discussion of Research Question 1

Which instructional design activities do instructional designers as a whole, routinely perform and eliminate during a typical project? The analysis of the data collected to answer this research question indicated 71% of the participants reported they *always* performed three of the activities in the survey and six of the activities were routinely excluded by most of the participants during a typical project. Based on the findings, it was concluded that instructional designers frequently eliminate the complex and time-consuming activities from instructional design projects to concentrate on the development of instructional materials.

Ninety-four percent of the sample indicated they frequently *work with subject matter experts*, 93% frequently *develop learning objectives*, and 91% frequently *develop instructional materials*. Together, these three most frequently performed activities involve the design and creation of the instructional materials. These findings indicate a strong propensity for instructional designers to spend more time on these three activities than they do on any of the other activities. This is supported by the Wedman and Tessmer (1993) research that concluded the vast majority of instructional designers wrote learning objectives.

A possible explanation for the focus on the development of the instructional materials is that the instructional materials are often the only deliverable for instructional design projects. Instructional designers are not normally required to deliver analysis, design, or evaluation materials along with the instructional materials. It seems logical to conclude that the development of the instruction materials is the primary concern for instructional designers because they typically must provide the finalized instructional materials to the client upon the completion of the project. Therefore, the focus of the project would be to simply develop and

deliver the instructional materials, without performing adequate analysis, design, or evaluation activities.

Thirty percent of the sample indicated they do not frequently *evaluate instructional feedback*, 34% do not frequently *develop test items* or *prepare course map/plan of instruction*, 40% do not frequently *identify task conditions/standards*, 43% do not frequently *pilot test instruction*, and 49% do not frequently *compile total task list*. With the exception of *compile total task list*, these activities collectively involve the complex and time-consuming components of learner assessment, formative evaluations, and the summative evaluation of the instruction. The frequent exclusion of the *compile total task inventory list* activity suggests instructional designers are modifying instructional design models the prescribe activities that do not support efficient training development. Some variation of the implementation of an activity, such as a task analysis, can be applied in an attempt to increase the efficiency of the instructional design process. The compilation of a total task inventory list, prescribed only by the ADDIE model, is part of the task analysis component and requires the expenditure of a significant amount of time and effort to identify and analyze all of the tasks performed by the target audience regardless of the criticality of each task. A more efficient way to identify and analyze the tasks to include in the instruction would be to identify all relevant tasks, select the tasks to train, and then analyze each task to determine the conditions required for effective performance of the task, the standards required to identify when the task is performed satisfactorily, and the steps required to perform the task.

The frequent exclusion of the *identify task conditions/standards*, *develop test items*, and *prepare course map/plan of instruction* activities, which collectively involve the development of

learner assessments, suggest learner assessments are not being routinely created or used during instruction to verify the learners have achieved the learning objectives. The learner assessment activities define and create the tools needed to measure the ability of the learner to achieve the learning objectives. The *identify task conditions/standards* activity defines the items needed and the performance level required of the learner to demonstrate the ability to perform a task during the implementation of training. The *develop test items* activity involves the creation of the assessment instruments used to measure the ability of the learners to achieve the learning objectives during the instruction. Lastly, the *prepare course map/plan of instruction* activity defines how the instruction should be implemented and how and when the learner should be assessed. A possible explanation for the frequent exclusion of learner assessment activities from typical instructional design projects is that devising creative ways to make assessments more relevant, interesting, friendly, participatory, and non-threatening that satisfy adult learners is a difficult undertaking. Consequently, eliminating the activity on the premise that learners dislike testing or the client specifically requested the elimination of formal tests is an easy way to disguise the inability of the instructional designer to invent new and ingenious ways to assess the ability of the learners to achieve the learning objectives.

The frequent exclusion of the *pilot test instruction* activity suggests instructional designers are not conducting sufficient formative evaluations to measure the quality or effectiveness of the instruction during the development of the instruction. Although costly, a suggestion would be pilot tests of the instruction could be conducted during the development phase of the instructional design process to evaluate the delivery and the effectiveness of the instruction before it is delivered to the actual learners. This is especially important if the

implementation and evaluation of the instruction will not be observed or conducted by the instructional designers who created the instructional solution. Still, 43% of instructional designers indicate they do not pilot test the instruction they create. Perhaps this is because pilot testing takes too much time to conduct or because all the other instructional design activities take too much time to complete leaving no time left at the end of the project to conduct a pilot test of the instruction before the instruction is delivered to the learners. This conclusion is supported by the Wedman and Tessmer (1993) research that states only 50% of instructional designers pilot test instruction on a regular basis to test the quality of the instruction prior to full-scale implementation.

A possible explanation for this finding is that instructional designers do not take the time needed to determine if the instruction they create is efficient or effective because they are not being held accountable for the value of the instructional products they create. Perhaps many instructional designers feel as long as the instructional products are formatted consistently or advance from page to page without errors, the instructional products are finished and additional activities, such as pilot testing or summative evaluations are not necessary to ensure the instructional materials are accepted by the client.

The frequent exclusion of the *evaluate instructional feedback* activity suggests instructional designers are not conducting summative evaluations to measure the quality or effectiveness of the instruction they create after the implementation of the instructional solution. Thirty percent of instructional designers indicate they do not frequently evaluate the feedback collected during the implementation of instruction to determine the effectiveness of the instructional solution. A possible explanation for this finding is that the scope of the instructional

design project may be limited to only the analysis, design, and implementation of the instruction, which requires someone else, in many cases the client to implement the instruction and conduct the summative evaluation to measure the effectiveness and the value of the instruction. This practice would allow the client to save money on the cost of training development, but often results in a poorly evaluated instructional solution, because clients can effectively deliver training, but are not frequently able to evaluate the effectiveness of the instruction, which is a much more complex task.

The findings for this research question are similar to the findings of the Wedman and Tessmer study of the instructional design practice conducted in 1993, which indicated the top three most frequently performed instructional design activities were *always* performed by only 50% of the participants. Other similar findings were the frequent performance of learning objectives and the infrequent performance of pilot tests. The findings in this study replicate the earlier findings of Zemke (1985), Winer and Vásquez-Abad (1995), and Roytek (2010), which all reported a concern about the haphazard performance of instructional design activities and the infrequent use of evaluation activities by instructional designers. All of these studies, in addition to this study, indicate instructional designers are not performing the instructional design activity prescribed by most instructional design models during the instructional design process.

Collectively, these findings suggest instructional designers may not feel like a stakeholder in the improvement of learner performance. A 1997 study (Klimczak & Wedman, 1997) indicated instructional designers must be sensitive to the possibility that they do not share the same priorities as other stakeholders, such as managers, clients, teachers, instructors, and learners. Perhaps this is because instructional designers do not directly interact with the learners,

do not frequently witness the delivery of the instruction, and do not feel responsible for the ultimate success or failure of the learners.

Discussion of Research Question 2

What are the reasons why instructional designers as a whole, exclude common instructional design activities from a project? The analysis of the data collected to answer this research question indicated the most frequently selected reasons for the exclusion of an activity from a project were *already done* (38%), *no need* (14%), *not requested* (13%) and *not enough time* (13%). The least frequently selected reasons were *don't know how* (1%), *told to omit* (6%), and *not in budget* (6%). Based on these findings, it was concluded that instructional design projects are frequently limited in scope and instructional designers are do not have the instructional design skills and knowledge necessary to perform all of the prescribed instructional design activities.

The determination that instructional design projects are frequently limited in scope was based on the frequent elimination of the implementation and evaluation activities, the high number of selections of *already done* for all of the task analysis activities, and the primary selection of *not in scope* for the exclusion of the *evaluate instructional feedback* activity. These findings supports the notion that in order to save money on training development, the client limits the project to the design and development of instruction and performs the analysis, implementation, and evaluation activities on behalf of the instructional designers, without the expertise of professional instructional designers.

Additional support for this conclusion is that more participants indicated an activity was eliminated from a project because of scope limitations (*not in scope*, 13%) than for financial issues (*not in budget*, 6%) or time restrictions (*not enough time*, 10%). These results suggest the time and budget for a project are commonly established prior to the start of a project and the scope of the project is adjusted to accommodate for scheduling and funding limitations. Unfortunately, effective instructional solutions cannot be produced if they are not designed from accurate data analysis and evaluated for quality and effectiveness during implementation. The elimination of analysis and evaluation activities due to limited time and money significantly impacts the quality of the instructional solution and should not be tolerated by business managers, clients, or instructional designers.

The determination that instructional designers are eliminating activities because they do not have sufficient instructional design skills and knowledge was based on the frequent selections of *not requested* and *not enough time* for many of the more complex and time-consuming activities. This is consistent with the research of Villachica, Marker, and Taylor (2010), which states the majority of instructional designers require a lot of assistance to perform many of the instructional design activities associated with analysis, design, and evaluation to meet the expectations of their employers.

These findings indicate instructional designers may be purposefully eliminating activities from the instructional development process for one of three reasons:

1. Instructional designers are unaware of the need for the activity,
2. They lack the skills required to conduct the activity in a timely manner, or

3. They lack the discipline required to perform the activity due to the absence of process accountability.

The frequent selection of *not requested* indicates instructional designers may be unaware of the need for the activity or lack the discipline necessary to perform the activity if it is not specifically requested or required. This conclusion is supported by the finding that 13% of the participants do not perform activities if they are not specifically requested. The activities with frequent selections of *not requested* were *compile total task inventory list*, *identify task conditions/standards*, *identify task performance steps*, and *identify prerequisite skills/knowledge*. Collectively, these activities involve the task analysis component of the instructional design process, which is notoriously difficult to properly conduct (Loughner & Moller, 1998). If instructional designers do not know they are supposed to perform an activity and their performance is not monitored and corrected, they will continue to eliminate activities based on unawareness.

The frequent selection of *not enough time* indicates instructional designers do not have the skills required to plan, pace, and perform the activity in the allotted time period. This conclusion is supported by the finding that 10% of the participants do not do not frequently perform an activity due to time constraints and the activities of *evaluate instructional feedback* and *pilot test instruction* had large selections of *not enough time* as a reason for elimination. Additionally, 43% of the participants indicated they do not frequently conduct pilot tests of the developed instruction and 30% do not evaluate instructional feedback. A pilot test is difficult to perform because pilot tests are actually small-scale trials of the full implementation of the instruction where a select number of learners receive the instruction and comment on any

problems they perceive, such as relevance, content discrepancies, formatting, issues with the computer interface, and motivation or engagement issues (Van Teijlingen & Hundley, 2002). Perhaps the elimination of these activities is because the instructional designers run out of time to conduct those activities. If instructional designers are not skilled enough to perform the activities in a timely manner and are not being asked to increase the pace without the partial completion or total elimination of an activity, they will not make attempts to improve their performance.

Additionally, if instructional designers are not disciplined enough to perform an activity because they are not being held accountable for the quality and effectiveness of the delivered instructional solution, they may not be incentivized to perform the complicated and time-consuming activities during the instructional design process. This conclusion suggests instructional designers eliminate the difficult and time-consuming activities because they do not feel every instructional design activity needs to be performed for every project. This conclusion is consistent with the Wedman and Tessmer (1993) research which states the most frequently selected reasons for the exclusion of an activity were *decision already made*, *not enough time*, and *considered unnecessary*. Perhaps a reason for this conclusion is that requirements are not being implemented by clients to measure the effectiveness of the instruction before the delivery of the instructional materials or requirements are not being implemented by management to monitor the performance of the instructional designers to confirm they are performing all of the duties of the position.

Interestingly, only 1% of the participants in this study and in the Wedman and Tessmer (1993) study admitted to having limited instructional design skills and knowledge, yet 25% (one

of the four) instructional designers in the case study had inadequate instructional design skills and knowledge and was released from the project. How can the performance of instructional designers be so poor, based on the findings of this study and several previous studies (Wedman & Tessmer, 1993; Allen, 1996; Loughner & Moller, 1998; Gibby, Quiros, Demps & Liu, 2002; Merrill, 2007; Villachica, Marker & Taylor, 2010) when very few participants indicated they *don't know how* (1%) to perform an activity? The findings of this research question suggest most instructional designers are unaware their instructional design skills and knowledge are inadequate because they are not being required to evaluate the products they produce and are unable to accurately self-assess their knowledge of a topic. This is supported by the research of Gravill, Compeau, and Marcolin (2006), which stated that accurate self-assessment helps individuals to optimize the capabilities they possess and be aware of the capabilities they do not; however, most individuals can not accurately self-assess their knowledge. This lack of accountability prevents instructional designers from determining when they create ineffective products with little or no instructional value; thus, they continue to believe they are correctly conducting the instructional design process, and they never strive to improve the quality of their practice.

Discussion of Research Question 3

Which instructional design activities do experienced instructional designers routinely perform and eliminate during a typical project? The analysis of the data revealed the experienced instructional designer did not perform three of the instructional design activities listed in the survey (*compile total task inventory list*, *manage project schedules/timelines*, and *develop/select*

graphics) during the course of the instructional design project. These results suggest the experienced instructional designer focused on the complicated instructional design activities and allowed other members of the team to perform the activities considered outside the typical responsibilities of an instructional designer.

Based on these findings, it was concluded that when working on a team, experienced instructional designers perform the instructional design activities and allow other team members to assist with the role appropriate activities and the more time-consuming activities. When instructional designers work in teams, the instructional design activities can be divided among the team based on roles, preferences, and experience instead of requiring each instructional designer to individually perform all the activities required of the project. For example, the graphic artist conducts the creation and selection of the graphics, the project leader manages the schedules, and the instructional designers divide the instructional design activities based on preference and experience. This was evidenced by the assignment and performance of the instructional design activities by the training development team during the case study. The experienced instructional designer started the project by analyzing and designing the instruction and then assisted the other instructional designers with the development of the instructional materials. After the implementation of the instruction, the experienced instructional designer performed the summative evaluation of the instruction. This conclusion is supported by the research of Roytek (2010), which indicates experienced instructional designers should be able to perform these activities faster and with fewer mistakes than less experienced instructional designers, resulting in increased process efficiency and fewer requirements for revisions to the materials later in the project. The Roytek (2010) study advocated the assembly of training

development teams lead by experienced instructional designers to increase the speed and effectiveness of the instructional design process. The study states experienced instructional designers can quickly identify problems, have a repertoire of imaginative solutions, and are able to produce a basic design in days, rather than months.

Discussion of Research Question 4

What are the reasons why experienced instructional designers eliminate common instructional design activities from a project? The analysis of the data collected to answer this research question revealed the *manage project schedules/timelines* and the *develop/select graphics* activities were not performed by the experienced instructional designer because they were performed (*already done*) by someone else on the team. The third activity (*compile total task inventory list*) was not performed because the activity was not needed (*no need*), it was outside the scope of the project (*not in scope*), and it would take too long to complete (*not enough time*). In reality, the *compile total task inventory list* activity was not excluded, but partially performed by the experienced instructional designer. This was accomplished by limiting the scope of the project and then identifying and analyzing all of the tasks within the parameters of project. The partial performance of the activity provided the data needed to conduct the task analysis and reduced the time required to conduct the activity.

An explanation for these findings may be that the senior instructional designer may decide to limit the scope training in order to accommodate the allotted budget and the schedule. As a result of the reduced training scope, a complete list of the job tasks that can be performed by the target audience is not necessary. Only a list of tasks performed by the limited target

audience on specifically selected hardware and software needed to be identified. Therefore, to increase the efficiency of the process without affecting the quality of the instruction, the activity was partially performed and only the tasks associated with the selected hardware and software and three of the five job roles were identified and analyzed. The performance of the senior instructional designer supported the findings of the Roytek (2010) study, which suggested experienced instructional designers can recognize and solve problems much faster than other instructional designers. The findings also supported the conclusion of another study by Gibby, Quiros, Demps, and Liu (2002), which determined that a good instructional designer should have extensive experience to draw from and should be resourceful problem-solvers.

Discussion of Research Question 5

What are the differences between the activities instructional designers and experienced instructional designers perform and eliminate during a typical project? The analysis of the data collected to answer this research question revealed one activity (*compile total task inventory list*) was not performed by either the participants from the survey or the experienced instructional designer from the case study. Two activities were not performed by the experienced instructional designer (*manage project schedules/timelines* and *develop/select graphics*) that were performed by the participants, and five activities were performed by the experienced instructional designer that were not routinely performed by the participants. These five activities included *identify task conditions/standards*, *develop test items*, *prepare course map/plan of instruction*, *pilot test instruction*, and *evaluate instructional feedback*. With the exception of *pilot test instruction*, these activities are essential components of most instructional design models. Classroom oriented

models do not prescribe pilot testing during formative evaluations of the instruction, but every classification of instructional design models requires a plan for the implementation of the instruction, an assessment of the ability of the learners to achieve the learning objectives, and an evaluation of the effectiveness of the instruction (Gustafson & Branch, 2002). Consequently, when the activities performed by the participants in the survey and the experienced instructional designer from the case study were compared to the activities commonly prescribed by the three different classifications of instructional design models (classroom, product, and systems), the activities performed by the experienced instructional designer most closely matched the prescriptions of systems oriented instructional design models. The activities performed by the participants in the survey did not closely match the prescriptions of any of the instructional design models. Based on these findings, it was concluded that instructional designers are not following the guidelines of instructional design models during the practice of instructional design by eliminating the fundamental activities of learner assessments, implementation planning, formative evaluations, and summative evaluations. The exclusion of these activities may allow the instructional solution to be created that has not been measured for quality or effectiveness and does not define how the instruction should be delivered to the learners.

Summary of Findings

A common theme was revealed through the discussion of each of the research questions; experienced instructional designers typically perform the complex instructional design activities to allow other instructional designers to focus on the development of instructional materials. Perhaps this is simply due to experience, but the findings of this study suggest it may be because

clients are trying to save money by frequently limiting the scope of instructional design project to the design and development of instructional materials. Unfortunately, the practice of reducing the scope of the instructional design process has become problematic because it has taught business management, clients, and instructional designers to consent to the elimination of many fundamental instructional design activities, such as task analysis, learner assessments, formative evaluation activities, and summative evaluations, which ensure the development of efficient and effective instruction. The acceptance of this situation has affected the skills and the discipline required to practice instructional design and produced an environment with an absence of accountability for the delivery of effective instruction. When the activities prescribed by instructional design models are eliminated by truncating the instructional design process, the possibility of delivering poorly designed instruction based on incorrect data significantly increases, which could result in decreased productivity, lower motivation, higher turnovers, and possible injury or even death.

Implications of the Study

This study was conducted to examine and compare the performance of instructional design activities by practicing instructional designers with the performance of an experienced instructional designer to determine if instructional design models are being used to guide the practice of instructional design. The findings from this study suggest instructional designers are not following the prescriptions of instructional design models during the practice of instructional design by routinely eliminating fundamental instructional design activities involving learner assessments, implementation planning, formative evaluations, and summative evaluations.

Additionally, the findings indicate almost 60% of instructional design projects are not evaluated for quality and effectiveness before the delivery of the instruction to the learners. This conclusion is based on the finding that only 41% of the participants always evaluate instructional feedback and 59% do not frequently evaluate instructional feedback, which determines the effectiveness of the instructional solutions. Thus, the instructional product is developed but the actual value of the product and the impact of the product on the learner is not being measured.

These findings are significant because they suggest instructional designers do not typically test the instructional materials they create to determine if learners will actually learn from the delivered instruction. Based on these findings, it is vital for the training development community to recognize that a substantial number of instructional products are being regularly created and implemented but are not being tested for effectiveness. Additionally, clients must stop limiting project scopes to such a degree that evaluation of the instruction is impossible to conduct, and training management must hold instructional designers accountable for the design and development of quality and effective training and educational products.

Conclusion

This study sought to examine the activities being performed and eliminated by instructional designers during the instructional design process to reveal possible factors driving the decisions to eliminate activities from practice and determine if instructional design models are being used to guide the practice of instructional design. In this study, quantitative data was collected and analyzed from a sample of 224 instructional designers to determine the activities routinely performed and eliminated from practice. Qualitative data was collected from a single

case study of an instructional design project to assess whether or not the performance or exclusion of the same instructional design activities were identified in the work of an experienced instructional designer. When the performance of the practicing instructional designers was compared with the performance of an experienced instructional designer, it was determined the performance and exclusion of common instructional design activities by the practicing instructional designers were not identified in the work of the experienced instructional designer.

Analysis of the data collected in this study revealed instructional designers frequently work with subject matter experts to fabricate a set of learning objectives and develop content to support those objectives. Furthermore, instructional designers do not routinely develop learner assessments, conduct formative evaluations during the instructional design process, create plans for the implementation of the created instruction, or conduct summative evaluations after the implementation of the training to determine the effectiveness and value of the instruction. To increase the pace of the instructional design process, instructional designers may be routinely sacrificing the effectiveness of the instruction by reusing existing learner assessment materials, eliminating formative evaluations of the instruction, and completing the project after the development of the materials, thus forgoing participation in the implementation of the instruction and the evaluation of the effectiveness of the instruction.

Recommendations for Future Research

Based on the results of this research study and the review of current literature on these topics, the following suggestions are made for future research:

1. Further research should be conducted to determine the product acceptance requirements of clients for instructional materials and the accountability of instructional designers to produce quality and effective instruction. Are instructional designers frequently required to demonstrate or prove the effectiveness of the instructional solution?
2. Further research should be conducted on the implementation and evaluation activities of clients who restrict the project scope of instructional design project to the design and development of instructional materials. Are they actually evaluating the effectiveness of the instruction to determine if the instructional goals were achieved?
3. Further analysis should be conducted on the effectiveness of the instructional products being produced and delivered. Are the products being delivered today meeting the instructional goals and allowing learners to achieve the learning objectives?
4. Further research should be conducted to determine the actual effectiveness of delivered instructional solutions, particularly in the area of online learning. Are e-learning instructional products being developed and delivered without learner assessments and summative evaluations? If so, are the products actually effective and are clients and managers aware of the ineffective products?
5. Further research should also be conducted in the areas of online learning to determine if the instructional solutions are being delivered without a plan for the implementation of

the instruction. Are e-learning products being delivered directly to the learners or provided to the clients to implement as they choose without a written plan for delivery?

6. Further research should be conducted on the learner assessments commonly included in e-learning instruction.
7. Are e-learning instructional solutions frequently eliminating learner assessments in favor of an edutainment concept?

APPENDIX A: TRAINING DEVELOPMENT TEAM PROCESS

STANDARD TRAINING DEVELOPMENT PROCESS

1. Planning

- Review contract documents for training requirements.
- Convene a start-of-work meeting.
- Determine management strategy.
- Establish a training project information repository.
- Create project schedule.

2. Analyze

- Identify the job and the environment in which the job is to be performed.
- Compile a total task inventory list.
- Identify and analyze the target population.
- Establish task selection criteria and select tasks for training.
- Conduct a task analysis of each task to train.
  - Identify the conditions under which each task will be performed.
  - Identify standard of performance to achieve for each task.
  - Identify, define, and sequence the performance steps for each task.
  - Identify skills and knowledge requirements for each task.
  - Identify learner prerequisite skills and knowledge requirements.
  - Combine similar tasks for instructional purposes.
  - Categorize tasks by learning level
- Add task list to project information repository.
- Conduct conference with client to review task list (if required).
- Revise/finalize project schedule.

3. Design

- Perform learning analysis for each task, subtask, and learning type (KSA).
- Categorize learning objectives by learning type and learning level.
- Analyze resource requirements/constraints.
- Determine testing strategies.
- Develop assessment instruments.
- Classify, prioritize, cluster, and sequence learning objectives.
- Add learning objectives to project information repository.
- Design templates and style guide.

4. Development

- Review existing materials, if available.
- Select instructional methods and media.
- Develop instructional materials.
- Review and revise instructional materials (as required).
- Track development progress.
- Submit completed materials for review and incorporate comments.
- Prepare course outline / Plan of Instruction (POI).
- Conduct initial development meeting with client to review course outline/POI.
- Update project information repository with revised materials.

5. Implementation

- Prepare to conduct training.
- Prepare training materials.
- Perform pilot test.
- Conduct training.

6. Evaluation

- Redline training materials during training.
- Document student feedback received during training.
- Evaluate student feedback and course critiques for improvements to instruction.
- Determine revision requirements and make revisions, as required.
- Update project information repository with revised materials.

APPENDIX B: UCF IRB APPROVAL LETTER

University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Exempt Human Research

From: **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To: **Jennifer Spencer**

Date: **June 05, 2012**

Dear Researcher:

On 6/5/2012, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review:	Exempt Determination
Project Title:	INSTRUCTIONAL DESIGN ACTIVITIES: AN EXAMINATION OF THE INSTRUCTIONAL DESIGN PRACTICE WITHIN THE GDC4S TRAINING DEVELOPMENT GROUP
Investigator:	Jennifer Spencer
IRB Number:	SBE-12-08339
Funding Agency:	
Grant Title:	
Research ID:	N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Patria Davis on 06/05/2012 04:49:14 PM EDT

IRB Coordinator

APPENDIX C: INVITATIONS TO PARTICIPATE IN ONLINE SURVEY

EMAIL COMMUNICATION FOR PARTICIPATION IN ONLINE SURVEY

Hello,

I am an Instructional Designer and I am currently working on my doctorate in Instructional Design at the University of Central Florida. As part of my dissertation, I am conducting an online survey of instructional designers to determine which instructional design activities are commonly performed during typical projects and why some instructional design activities may be omitted.

I would like your participation in the survey. The survey will take approximately 5 minutes to complete. Survey link: http://www.surveymonkey.com/s.aspx?sm=KdDub2ECDxGwC8a9cfWKCw_3d_3d

Thank you!
Jennifer Twilley

LINKEDIN POSTING FOR PARTICIPATION IN ONLINE SURVEY

Instructional Design Survey

Jennifer Twilley Instructional Designer at GDC4S

I am working on my doctorate in Instructional Design at the University of Central Florida. As part of my dissertation, I am conducting a survey of instructional designers to determine which instructional design activities are commonly performed during typical projects and why some activities may be omitted. I would greatly appreciate your participation in the study! The survey is very short and should only take 5 minutes to complete.

Survey link: https://www.surveymonkey.com/s/7T998B7

Thank you!
Jennifer Twilley

APPENDIX D: SURVEY INSTRUMENT

Instructional Design Activities Survey

Work Experience

***1. What is the job title for your current position?**

***2. How many years have you been involved in the training development process?**

Training Development experience:

***3. How many years of Instructional Design experience do you have?**

Instructional Design experience:

Instructional Design Activities Survey

Training Development Activities

4. Rank the frequency with which you complete each of following activities during a typical training development project.

	Never	Occasionally	Usually	Always	Not My Job
Identify target audience	☐	☐	☐	☐	☐
Compile total task inventory list	☐	☐	☐	☐	☐
Identify task conditions and standards	☐	☐	☐	☐	☐
Identify task performance steps	☐	☐	☐	☐	☐
Identify prerequisite skills and knowledge	☐	☐	☐	☐	☐
Select tasks to train	☐	☐	☐	☐	☐
Develop learning objectives	☐	☐	☐	☐	☐
Determine testing strategies	☐	☐	☐	☐	☐
Design lesson plans	☐	☐	☐	☐	☐
Develop test items	☐	☐	☐	☐	☐
Prepare Course Map/Plan of Instruction (POI)	☐	☐	☐	☐	☐
Develop instructional materials	☐	☐	☐	☐	☐
Develop/select graphics	☐	☐	☐	☐	☐
Pilot test instruction	☐	☐	☐	☐	☐
Evaluate instructional feedback	☐	☐	☐	☐	☐
Work with Subject Matter Experts (SMEs)	☐	☐	☐	☐	☐
Manage project schedules/timelines	☐	☐	☐	☐	☐

Instructional Design Activities Survey

Reasons for Excluding Training Development Activities

In this section of the survey, please select one or more reasons why you may not always perform a particular activity during a project. You do not need to select a reason for every activity if you always perform that activity.

5. Select one or more reasons to explain why you may have excluded an activity from a project.

	Don't know how	Already done	No need	Not requested	Told to omit	Not enough time	Not in scope	Not in budget
Identify target audience	☐	☐	☐	☐	☐	☐	☐	☐
Compile total task inventory list	☐	☐	☐	☐	☐	☐	☐	☐
Identify task conditions and standards	☐	☐	☐	☐	☐	☐	☐	☐
Identify task performance steps	☐	☐	☐	☐	☐	☐	☐	☐
Identify prerequisite skills and knowledge	☐	☐	☐	☐	☐	☐	☐	☐
Select tasks to train	☐	☐	☐	☐	☐	☐	☐	☐
Develop learning objectives	☐	☐	☐	☐	☐	☐	☐	☐
Determine testing strategies	☐	☐	☐	☐	☐	☐	☐	☐
Design lesson plans	☐	☐	☐	☐	☐	☐	☐	☐
Develop test items	☐	☐	☐	☐	☐	☐	☐	☐
Prepare Course Map/Plan of Instruction (POI)	☐	☐	☐	☐	☐	☐	☐	☐
Develop instructional materials	☐	☐	☐	☐	☐	☐	☐	☐
Develop/select graphics	☐	☐	☐	☐	☐	☐	☐	☐
Pilot test instruction	☐	☐	☐	☐	☐	☐	☐	☐
Evaluate instructional feedback	☐	☐	☐	☐	☐	☐	☐	☐
Work with Subject Matter Experts (SMEs)	☐	☐	☐	☐	☐	☐	☐	☐
Manage project schedules/timelines	☐	☐	☐	☐	☐	☐	☐	☐

APPENDIX E: COLLECTED SURVEY DATA

TABLE 20: DATA FROM SURVEY QUESTION 4

	Never	Occasionally	Usually	Always	Not My Job	Count
Identify target audience	1%	9%	15%	69%	6%	
	2	21	33	154	14	224
Compile total task inventory list	8%	32%	28%	23%	8%	
	20	72	62	52	18	224
Identify task conditions/standards	6%	28%	33%	29%	6%	
	15	61	72	63	13	224
Identify task performance steps	6%	17%	32%	42%	5%	
	13	36	69	95	11	224
Identify prerequisite skills/knowledge	0%	14%	32%	48%	7%	
	1	32	70	106	15	224
Select tasks to train	4%	10%	29%	49%	8%	
	9	22	66	108	19	224
Develop learning objectives	0%	5%	12%	81%	2%	
	1	11	26	182	4	224
Determine testing strategies	3%	18%	27%	47%	5%	
	6	41	61	104	12	224
Design lesson plans	4%	16%	20%	55%	6%	
	9	36	44	123	12	224
Develop test items	4%	20%	27%	40%	11%	
	8	44	60	88	24	224
Prepare course map/plan of instruction	8%	19%	23%	44%	7%	
	18	43	51	96	16	224
Develop instructional materials	0%	8%	20%	71%	1%	
	1	18	45	158	2	224
Develop/select graphics	1%	16%	29%	47%	7%	
	3	36	66	103	16	224
Pilot test instruction	6%	29%	28%	29%	8%	
	14	64	63	64	19	224
Evaluate instructional feedback	2%	22%	29%	41%	6%	
	6	48	65	91	14	224
Work with subject matter experts	0%	4%	18%	76%	2%	
	0	10	41	169	4	224
Manage project schedules	0%	10%	23%	56%	11%	
	1	22	52	124	25	224
Regularly = Always + Usually					*answered completely*	224
Selectively = Never + Occasionally + Not My Job					*did not answer*	0

TABLE 21: DATA FROM SURVEY QUESTION 5

	Don't know how	No need	Not requested	Not in scope	Already done	Not enough time	Told to omit	Not in budget	Count
Identify target audience	1%	9%	8%	8%	78%	5%	4%	4%	
	2	15	12	12	124	8	6	7	186
Compile total task inventory list	2%	19%	19%	17%	43%	15%	7%	9%	
	4	31	31	28	69	24	11	14	212
Identify task conditions/standards	2%	21%	19%	17%	48%	12%	7%	7%	
	3	31	28	26	72	18	10	10	198
Identify task performance steps	2%	14%	18%	18%	50%	13%	6%	8%	
	3	20	25	25	70	18	8	11	180
Identify prerequisite skills/knowledge	0%	20%	16%	10%	63%	4%	7%	4%	
	0	27	21	13	85	6	10	6	168
Select tasks to train	2%	14%	15%	11%	60%	9%	7%	7%	
	3	20	21	15	83	13	9	9	173
Develop learning objectives	0%	5%	6%	5%	70%	4%	3%	3%	
	0	6	7	6	83	5	4	3	114
Determine testing strategies	0%	27%	24%	20%	43%	5%	13%	7%	
	0	39	34	28	61	7	18	10	197
Design lesson plans	0%	22%	14%	17%	42%	8%	5%	6%	
	0	29	18	22	56	10	7	8	150
Develop test items	0%	25%	17%	23%	42%	6%	12%	8%	
	0	36	24	32	60	9	17	12	190
Prepare course map/plan of instruction	1%	19%	21%	21%	41%	10%	7%	3%	
	2	26	28	28	56	13	10	4	167
Develop instructional materials	1%	12%	13%	11%	47%	8%	4%	4%	
	1	13	15	12	53	9	4	5	112
Develop/select graphics	3%	22%	12%	13%	40%	15%	6%	13%	
	4	29	16	17	52	19	8	17	162
Pilot test instruction	0%	15%	22%	25%	19%	38%	14%	19%	
	0	22	33	37	28	58	21	29	228
Evaluate instructional feedback	0%	8%	20%	28%	27%	25%	10%	11%	
	0	10	26	37	35	33	13	14	168
Work with subject matter experts	0%	19%	9%	9%	35%	13%	6%	10%	
	0	22	10	10	41	15	7	12	117
Manage project schedules	4%	12%	13%	16%	44%	9%	2%	4%	
	5	16	17	21	59	12	3	5	138
						answered completely			194

APPENDIX F: PERMISSION TO USE A GRAPHIC

PERMISSION TO USE ADDIE MODEL GRAPHIC

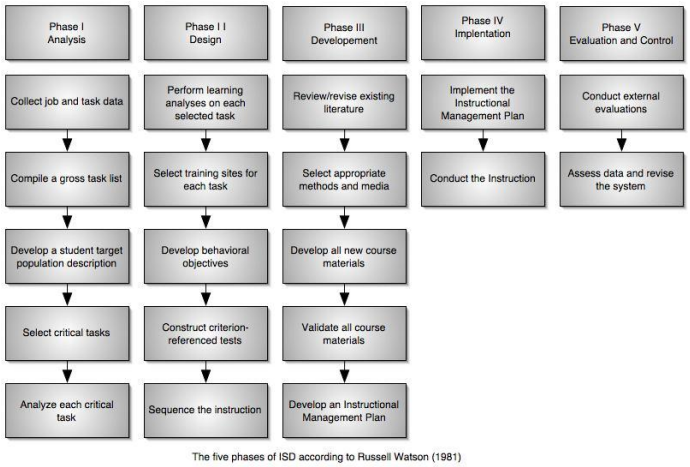
From: Donald Clark [donclark@nwlink.com]
Sent: Tuesday, May 20, 2014 6:38 PM
To: Twilley, Jennifer-P66653
Subject: Re: ADDIE Model Graphic

Hi Jennifer,
Please feel free to use the graphic and good luck with your paper!

Cheers,
Don

Donald Clark: http://www.nwlink.com/~donclark

On 5/20/2014 1:04 PM, Twilley, Jennifer-P66653 wrote:
Mr. Clark,
I would like your permission to use the following graphic of the ADDIE model from your website in my dissertation (see image below).



The five phases of ISD according to Russell Watson (1981)

Thanks,
Jennifer

Jennifer Twilley, Senior Instructional Designer
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APPENDIX G: DEFENSE ANNOUNCEMENT

DEFENSE ANNOUNCEMENT

Announcing the Final Examination of Jennifer L. Twilley for the degree of Doctor of Education
Date: June 18, 2014
Time: 2:00 pm
Room: University of Central Florida, Main Campus, ED 306

Dissertation Title: An Examination of the Practice of Instructional Design and the Use of Instructional Design Models

This dissertation in practice utilized a sequential mixed methods research design to investigate the performance or exclusion of instructional design activities commonly prescribed by instructional design models during a typical instructional design project. The purpose of this study was to compare the performance of instructional design activities by practicing instructional designers with the performance of an experienced instructional designer to determine if instructional design models are being used to guide the practice of instructional design.

In this study, quantitative data was collected from a sample of 224 instructional designers to determine the activities routinely performed and excluded from typical projects. Qualitative data was collected from a single case study of an instructional design project to assess whether or not the performance or exclusion of the same instructional design activities were identified in the work of an experienced instructional designer. Analysis of the data revealed the activities that are not routinely performed by instructional designers, reasons for the exclusion of activities, and possible factors for the decisions to exclude activities.

The findings of this study indicate instructional designers may be sacrificing the quality and effectiveness of instruction in an attempt to increase the pace and reduce the cost of the instructional design process. The study concluded that instructional designers are not following the prescriptions of instructional design models during the practice of instructional design by routinely eliminating the fundamental activities involving the development of learner assessments, the performance of formative evaluations during the instructional design process, and summative evaluations after the implementation of the instruction.

Committee in Charge:
Dr. Glenda H. Gunter
Dr. Edward H. Robinson
Dr. Thomas M. Vitale
Dr. Grant Hayes
Dr. Wiley Boland

Outline of Studies:
Major: Instructional Design

Educational Career:
B.S., 1992, University of Miami,
M.B.A., 1996, Embry Riddle Aeronautical University

Approved by Dr. Glenda Gunter, Committee Chair on June 5, 2014
The public is welcome to attend.

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