Fall 1-6-2022

A Review and Analysis of Instructional Design Competencies

Molly Lance

ACCEPTANCE

This dissertation, A Review and Analysis of Instructional Design Competencies,

by Molly B. Lance was prepared under the direction of the candidate's Dissertation Advisory Committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree, Doctor of Philosophy, in the College of Education and Human Development, Georgia State University. The Dissertation Advisory Committee and the student's Department Chairperson, as representatives of the faculty, certify that this dissertation has met all standards of excellence and scholarship as determined by the faculty.

_____
Jonathan Cohen, Ph.D.
Committee Chair

_____
Brendan Calandra, Ph.D.
Committee Member

_____
Audrey J. Leroux, Ph.D.
Committee Member

_____
Mike Law, Ph.D.
Committee Member

_____
Date

_____
Brendan Calandra, Ph.D.
Chairperson, Department of Learning Sciences

_____
Paul Alberto, Ph.D.
Dean, College of Education and Human Development

AUTHOR'S STATEMENT

By presenting this dissertation as a partial fulfillment of the requirements for the advanced degree from Georgia State University, I agree that the library of Georgia State University shall make it available for inspection and circulation in accordance with its regulations governing materials of this type. I agree that permission to quote, to copy from, or to publish this dissertation may be granted by the professor under whose direction it was written, by the College of Education and Human Development's Director of Graduate Studies, or by me. Such quoting, copying, or publishing must be solely for scholarly purposes and will not involve potential financial gain. It is understood that any copying from or publication of this dissertation which involves potential financial gain will not be allowed without my written permission.

_____

Molly B. Lance

NOTICE TO BORROWERS

All dissertations deposited in the Georgia State University library must be used in accordance with the stipulations prescribed by the author in the preceding statement. The author of this dissertation is:

Molly B. Lance

Department of Learning Sciences

College of Education and Human Development

Georgia State University

The director of this dissertation is:

Jonathan Cohen

Department of Learning Sciences

College of Education and Human Development

Georgia State University

Atlanta, GA 30303

CURRICULUM VITAE

Molly B. Lance

ADDRESS: 3273 Hunt Road
Acworth, GA 30102

EDUCATION:

Ph.D.	2022 (expected)	Georgia State University Learning Technologies
Master of Arts	2009	Kennesaw State University Professional Writing
Bachelor of Science	2008	Kennesaw State University Communication

PROFESSIONAL EXPERIENCE:

2017-present	Knowledge Manager UKG (formerly Ultimate Software)
2014-2016	Learning Specialist Ultimate Software
2007-2013	Content Owner/Technical Writer Ultimate Software

PROFESSIONAL SOCIETIES AND ORGANIZATIONS:

2018 - 2019 International Society for Performance Improvement (ISPI) Member
2015 - 2016 Association for Educational Communications and Technology (AECT) Member
2013 - 2014 Graduates in Instructional Technology (GrITS) Member

AWARDS AND RECOGNITION:

2021 Outstanding Ph.D. Student in Learning Technologies Award

A Review and Analysis of Instructional Design Competencies

by

Molly B. Lance

Under the Direction of Jonathan Cohen, Ph.D.

ABSTRACT

This dissertation includes a review of the instructional design competencies literature and a mixed-methods study on instructional design (ID) competencies. A literature review was conducted to identify ID competencies reflected in the literature and to compare those competencies to International Board of Standards for Training Performance and Instruction's (ibstpi) 2012 ID competency model. The literature review revealed alignment between the competencies found in the studies and the ibstpi standards. A study was conducted to identify the most important competencies for ID practitioners and to determine the degree to which those competencies align with the 2012 ibstpi ID competencies. The study included two data methodologies: (1) an online survey tool and (2) follow-up interviews. Study data found that the competencies most valued by ID professionals aligned with the 2012 ibstpi ID competency model. The data suggested, however, that the value of individual competencies varied when work setting was considered.

INDEX WORDS: literature review, instructional design, instructional technology, instructional designer competencies

A Review and Analysis of Instructional Design Competencies

by

Molly B. Lance

A Dissertation

Presented in Partial Fulfillment of Requirements for the

Degree of

Doctor of Philosophy

in

Instructional Technology

in

The Department of Learning Sciences

in

the College of Education and Human Development

Georgia State University

Atlanta, GA

2022

ACKNOWLEDGMENTS

Though only my name appears on the cover of this dissertation, a great many people have contributed to its production.

Firstly, I would like to express my sincere gratitude to my advisor, Dr. Jonathan Cohen, for the continuous support of my Ph.D study and research, for his patience, motivation, and knowledge. His guidance helped me in every stage of this great endeavor. Without his support and help, I would not have completed this dissertation. I could not have asked for a better advisor and mentor for my Ph.D. study.

Besides my advisor, I would like to thank the rest of my dissertation committee: Dr. Brendan Calandra, Dr. Mike Law, and Dr. Audrey Leroux, for their thorough reading and critical feedback, and for their insightful comments and encouragement.

My thanks must also go to all instructional designers who participated in this study and whose cooperation and input made this research possible.

I want to express my special thanks to my family, who listened to me explain my study over and over again, and who provided unconditional love and support throughout the entire dissertation experience. I love each of you so "munch," Les, France, Yueheng, Jackie, LaPeech, Tudor Pontis, Byllie, Ash, Poki, Mum, Scotty, Dad, Nancy, Steve, and Carol. I am grateful for the many blessings that I have received throughout my life and recognize God's hand in them.

Lastly, thank you to all of cheerleaders who lined my route, giving the daily encouragement that was needed more than you will ever know.

TABLE OF CONTENTS

LIST OF TABLES

ABBREVIATIONS

ID	Instructional design
IDT	Instructional design and technology
HPT	Human Performance Technology
ibstpi	International Board of Standards for Training Performance and Instruction (note that the correct abbreviation is lowercase, ibstpi)
ISPI	International Society for Performance Improvement
SME	Subject Matter Expert

Chapter 1

A Review of the Literature on Instructional Designer Competencies

The field of Instructional Design and Technology (IDT) has always been an amalgamation of both theory and practice (Spector, 2017). Changes in technology can be readily seen in the day-to-day practice of the instructional design (ID) professional and in the delivery of the resulting instruction (Lachheb & Boling, 2017). Design decisions made by practitioners as they endeavor to balance the use of available technology with learning and instruction theory have become more complex, owed in large part to the increase in the variety of platforms available.

The focus of instructional design (ID), and specifically ID professionals, is to help people learn. Spector (2017) summed up the whole field succinctly as he reflected on a debate between Richard Clark and Robert Kozma (Clark, 1994; Kozma, 1994):

> …media and technology can provide affordances and possibilities not previously available, but effective use of media and technology was still dependent on good instructional design as well as training and support for those using the technologies. What makes an instructional design good? Remember the goal – help people learn. An effective instructional design is one that can be demonstrated to have a positive impact on learning. (pp. 1419)

Throughout this research, I will refer to the professionals in the IDT field as instructional designers. This is a commonly used term to describe these individuals and this is clearly reflected in the name of the competencies which will be discussed later in this literature review. Reiser and Dempsey (2011) define the work of the instructional designer as "professionals in the field of instructional design and technology [who] often use systematic instructional design procedures and employ a variety of instructional media to accomplish their goals" (p. 5).

Each decision made by the instructional designer has a downstream impact on the learning of an individual. Many factors impact the ID professional's performance in this role and at various points in time along the way. Evaluating the proficiency or competencies of these professionals, who are key in success of learning for so many individuals, is understandable and necessary. Competencies must keep up with changes in the IDT field and employer expectations in order for those competencies to hold value. Munzenmaier (2014) reported that increasing expectations for ID professionals, changing career paths, and the convergence of disciplines within the field, support the need for frequent evaluation of competencies and their alignment with ID practice in the workplace.

A competency is defined by International Board of Standards for Training, Performance & Instruction (ibstpi) as "a knowledge, skill, or attitude that enables one to effectively perform the activities of a given occupation or function to the standards expected in employment" (Koszalka et al., 2013, pp. 7). Competencies are specific to the professionals within a given field or specialty and are defined by the practitioners as the knowledge, skills, and abilities most valuable to their practice (Martin & Ritzhaupt, 2020).

Studies focused on examining the competencies for instructional designers have been conducted by numerous researchers over the years. Some of the studies have sought to determine the impact of work setting on instructional designer competencies (Byun, 2000; Klein & Kelly, 2018; Liu et al., 2002, Park & Luo, 2017; Ritzhaupt & Kumar, 2015). Other research has isolated specific competency areas, such as instructional technology (Liu et al., 2002; Ritzhaupt & Martin, 2014; Sugar et al., 2011) and project management (van Rooij, 2011; van Rooij, 2013), to gain a more in-depth view.

In addition to studies on competencies, professional organizations in the field of instructional design publish competency standards as a means for providing benchmarks for excellence in ID practice. There are three major competency models developed by professional organizations for instructional designers: Association for Educational Communications & Technology (AECT), Association for Talent Development (ATD), and the International Board of Standards for Training, Performance, and Instruction (ibstpi).

Although the standards created by the organizations contain common elements, there are key differences that help distinguish each from the others. The AECT standards are used to accredit college programs in instructional design and technology (AECT, 2020). The ATD standards were designed to have application across a number of areas of expertise, including professionals in the areas of instructional design, training delivery, learning technologies, evaluating learning impact, and managing learning programs (ASTD, 2020). The ibstpi standards were established after extensive research was conducted to identify ID competencies used in the practice of ID professionals, regardless of job title, training, or work setting (ibstpi, 2020; Munzenmaier, 2014; Park & Luo, 2017). MacLean & Scott (2011) describe the ibstpi standards this way:

> The ibstpi competencies are now commonly used to set standards and define professional training programs in both academic and corporate environments. They provide the basis for drafting job descriptions and describing roles and are in themselves a research resource with a bibliography listing the key literature of instructional design. (p. 564)

I chose to use the ibstpi standards for this study because they focus specifically on instructional designer competencies for individuals in a workplace setting and as such, they align with the purposes of this research.

In 1986, ibstpi was the first to develop the Instructional Design Competencies (ibstpi, 2020). The competencies were revised in 2000 and 2012. With each revision, additional elements were added and refinements were made to more closely align with current ID practice (Koszalka et al., 2013). The 2000 revision included the distinction between essential and advanced competencies and the addition of two new domains, Professional Foundations and Implementation and Management. With the 2012 revision, the competencies were updated to reflect the increased importance of technology-related competencies that resulted from the need of instructional designers to leverage digital technologies in practice.

In addition to the Instructional Designer Competencies, to address the need for competencies in related areas while maintaining the specificity needed for a competency set to be most useful, ibstpi has published competency sets for evaluators, instructors, online learners, and training managers. Just as with the instructional designer competency model, each set focuses exclusively on the targeted competencies used in current practice by the individuals within each grouping.

Table 1

Primary Professional Organizations Related to IDT Field

Organization	Mission/Purpose
Association for Educational Communication & Technology (AECT)	To provide international leadership through their work in promoting best practices in creation, use, and management of technologies used in teaching and learning (AECT, 2020).
Association for Talent Development (ATD)	To empower professionals to develop talent in the workplace (ATD, 2020).
International Board of Standards for Training, Performance and Instruction (ibstpi)	To develop, validate and promote use of international standards in order to further improve training, instruction, learning and performance improvement for both individuals and organizations (ibstpi, 2020).

ibstpi's 22 instructional designer competencies are identified as essential, advanced, or managerial and organized into five domains (Koszalka et al., 2013): (1) professional foundations, (2) planning and analysis, (3) design and development, (4) evaluation and implementation, and (5) management. Within each of these domains, there are performance statements that provide greater detail about how the competency is demonstrated. In total, there are 105 performance statements. Table 2 summarizes the statements within each of the domains. The essential competencies apply to all instructional designers, advanced apply to experienced IDs, and managerial apply to managers of ID functions or teams.

Table 2

ibstpi's ID Competency Model

Domain	Competency (E = Essential, A = Advanced, M = Managerial)
Professional Foundation	1. Communicate effectively (visual, oral, & written) (E) 2. Update & improve personal competence (E) 3. Apply current research & theory in practice (A) 4. Applying data collection and analysis skills (A) 5. Identify, resolve ethical, legal, & implications of design in the workplace (A)
Planning & Analysis	6. Conduct a needs assessment (E) 7. Design a curriculum/program (E) 8. Determine instructional content (E) 9. Describe audience & environmental characteristics (E) 10. Analyze characteristics of existing & emerging technologies available for use (E) 11. Reflect upon current project characteristics prior to selection of design and technologies (E)
Design & Development	12. Employ a variety of techniques to define & order instructional content & strategies (E)

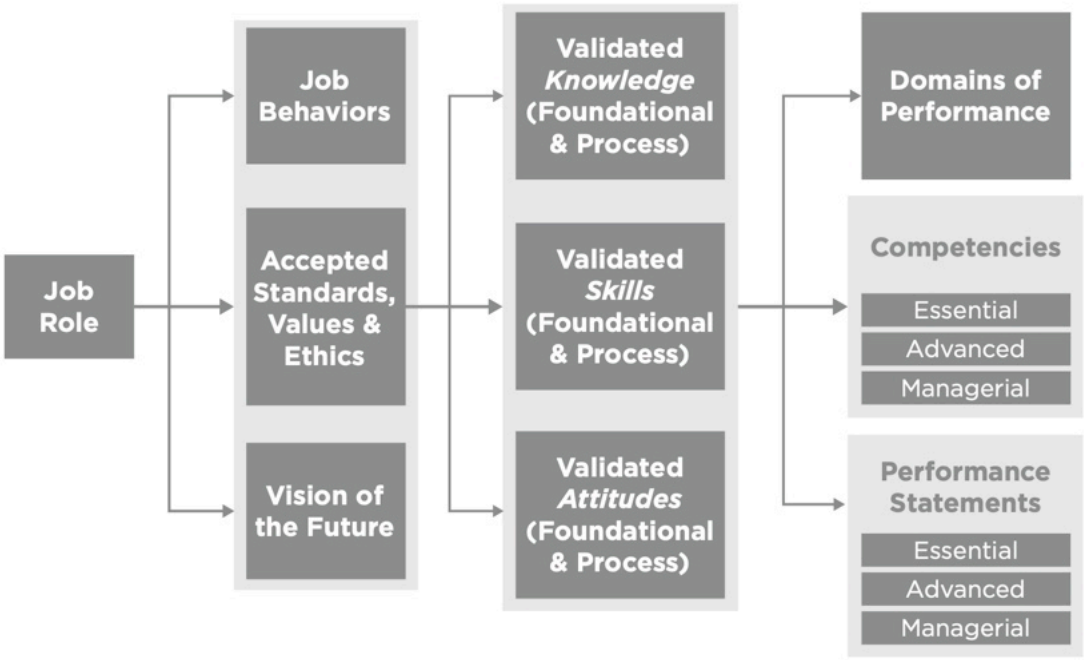
Domain	Competency (E = Essential, A = Advanced, M = Managerial)
	13. Select/modify existing instructional materials (E)
	14. Develop new instructional materials (E)
	15. Design instruction that reflects an understanding of diversity of learners (E)
	16. Evaluate/assess instruction and its impact (E)
	17. Select, modify, create design model appropriate for current project (A)
Implementation	18. Revision (E)
	19. Effectively implement instructional products & programs (E)
Management	20. Plan & manage instructional design projects (M)
	21. Promote collaboration among the participants of the design project (M)
	22. Apply business skills to managing instructional design (M)
	23. Design instructional management systems (M)

Note. Adapted from Koszalka, Russ-Eft, & Reiser (2013).

The competency model employed by ibstpi has four levels. At the first level is job role. Job role describes the function of the job. At the second level are job behaviors; accepted standards, values, and ethics; and vision of the future. Job behaviors describe the actual work tasks that instructional designers should perform. While in the performance of these work tasks, the ID needs to follow the standard, values and ethics. The vision of the future describes the directions and influences the future as an instructional designer. The third level contains the knowledge, skills, and attitudes that are foundational and necessary for performance in the role of ID. At the final and fourth level, the domains, competencies, and performance statements are detailed. Figure 1 provides the components of the model used by the ibstpi for the ID competencies.

Figure 1

Generic ibstpi Competency Development Model



Note. Adapted from Koszalka, Russ-Eft, & Reiser (2013).

The notable changes to the standards revision in 2012 included advanced technologies, team-based design, and management skills along with professional foundations of ID processes. These updates were made to reflect the nature of the ID work performed by a larger group of professionals in the field (Koszalka et al., 2013). Additionally, a variety of roles commonly held by ID professionals are covered, including the impact of role-specificity to the competencies. Those roles covered in the latest standards include instructor, instructional design specialist, instructional design manager, analysis/evaluator, and e-learning specialist/instructional technologist.

In order to better understand the alignment between the current ibstpi instructional design competencies and the competencies needed by ID professionals in practice, a literature review was conducted.

Purpose

The primary research question addressed in this study is "To what degree are the instructional design (ID) competencies set forth in the most recent ibstpi standards a reflection of the competencies used and needed by ID professionals as reported in published research?" This study has employed literature review as the primary method.

This analysis is intended to serve as an indicator of the degree to which the competencies can be used with confidence by those who most heavily rely upon them, namely (1) ID practitioners for guidance relative to professional development; (2) ID managers or hiring administrators for guidance in employee recruitment and evaluation; (3) ID academic departments for informing curriculum offerings; and (4) ID professional training organizations for relevancy of training offerings. As a researcher, familiarity with research in the IDT field led me to expect some variance in the role of the IDT professionals due to differences in job titles,

employer expectations, and workplace settings. ID professionals are employed in a variety of industries, including business and industry, higher education, K-12 education, government, military, health care, and non-profit organizations. Research on instructional design competencies have demonstrated that industry of employment impacts the degree to which ID competencies align with practice in the workplace (Klein & Kelly, 2018; Ritzhaupt & Martin, 2014; Ritzhaupt & Kumar, 2015; Sugar et. al, 2012; Thompson-Sellers & Calandra, 2012).

Method

Procedure

I used the guiding questions and identified topics to gather and review journal articles for the literature review. I queried the following online databases: ERIC, Galileo, and EBSCOhost. Additionally, I used *Google Scholar* to search for and acquire specific articles.

In an effort to provide a clear view of the process used for locating the studies included in this literature review, I created a diagram to document the steps, processes, and findings, see Figure A1 in Appendix. I applied the formatting prescribed in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) because this format provided a high degree of detail in a clear and concise flowchart (Moher et al., 2009).

Inclusion Criteria

The focus of the search was to gather full-text articles from empirical studies on the topics relevant to the topics included in this literature review. In an effort to make the number of reviewed articles feasible but comprehensive, a two-tiered data collection method was utilized to identify articles of value based on relevance to the research questions. The search strategies for

article selection are defined alongside each tier. All articles selected for further review were analyzed as to whether any of the following queries below were true:

1. Is the research examining competencies valued by ID professionals and/or their managers?
2. Is the research examining the competencies of ID set forth by professional organizations?
3. Is the research focused on the job skills needed by ID professionals?
4. Is the research examining training/education/preparation of ID professionals for success in the field?
5. Is the research focused on identifying the role of an ID professional in the workplace?
6. Is the article written in English?
7. Is the article published from 2011 to present?

First Tier - Selected Journals. The first tier of data collection consisted of examination of available archives for a preselected list of four instructional technology journals and included a review of all volumes published from 2011 forward:

1. *Educational Technology Research and Development,*
2. *Performance Improvement*,
3. *Performance Improvement Quarterly*, and
4. *Theory into Practice*.

These journals were selected due to their areas of focus and their value as a foundational area of evaluation. *Educational Technology Research and Development* focuses on research and development in educational technology. *ETR&D* is published by the Association for Educational Communications & Technology and it publishes research reports, literature reviews, theoretical and conceptual articles, and descriptions of programs, methods, and models. *Performance*

Improvement and Performance Improvement Quarterly are publications of the International Society for Performance Improvement. *PI* focuses on performance technology in the workplace. Because practitioners in the workplace are the target audience, *PI* publishes on-the-job performance support along with research articles. *Performance Improvement Quarterly* publishes literature reviews and experimental studies. *PIQ* is focused on furthering the field of human performance technology (HPT) by stimulating discussion among practitioners in the field. *Theory into Practice* is published by The Ohio State University's College of Education. *TIP* published articles related to issues, both current and future, relevant to educators.

A search was conducted within these journals, where each issue and its associated articles were exported and reviewed for applicability to the literature review. Out of the available archives of the four journals, 36 articles were selected for further review, of which 16 were identified as applicable literature.

Second Tier - Instructional Technology Journals. The second tier of data collection consisted of examination of peer-reviewed journal articles from the educational discipline. The database used was ERIC (EBSCO), with the following parameters:

Search terms:

- "instructional design workplace" OR
- “instructional design career environment” OR
- "instructional design practice" OR
- "instructional design competencies" OR
- "instructional design role" OR
- "instructional design performance improvement" OR
- "instructional designer resources" OR

- “instructional design education” OR
- “instructional design training”

The following settings and configuration options were applied to the search query:

- Source Type - Academic Journals
- Subject - educational technology
- Limiters: Peer Reviewed
- Publication Date: 2011 - 2020 (present)

This search resulted in 153 results, of which 82 articles were selected for further examination, of which 11 were identified as applicable literature. These applicable articles were combined with those selected from first tier and a closer review was conducted. A full read of the articles allowed a complete appraisal of the research, including the specific points on which the literature review was focused. A table was constructed with specific information from each study that would allow the researcher to evaluate both the findings of the specific research article and the body of research on the topic as a whole (see Table 3, below).

Results

The primary research question for this study was “To what degree do current instructional design (ID) competencies reflect competencies needed by ID professionals in the workplace?” Table 1 presents the research articles selected for inclusion in the study. Related to the topic of this study, there were 27 articles of empirical research published between 2011 and 2020. Nearly 60% of those were published in the first 5 years, between 2011 and 2015. Only 11 of the 27 studies were conducted in the most recent 5 years.

Table 3

ibstpi's ID Competency Model Summary of Findings from ID Competency Studies from 2011-2020

Study #	Study Authors, Year	Title	Data Collected From	Summary of Study Findings
1	Arnold, Edwards, Magruder, & Shaun (2018)	The competencies and goals of instructional designers: A survey study	Practitioners	Revealed that the most important competencies were in the areas of learning design and theory. A subset of IDs indicated the need for competency in project management and policy reviewing.
2	Chongwony, Gardner, & Tope (2020)	Instructional design leadership and management competencies: Job description analysis	Job announcements	Findings indicate that the activities of managers of instructional design closely aligns with the competencies needed by this group. Competencies include technical skills and people skills. Although much overlap existed between this study's findings and previous research in the area, more specificity in competencies not previously reported were found, namely diversity, customer support skills, accreditation, decision-making, time management, and self-management.
3	Dabbagh & English (2015)	Using student self-ratings to assess the alignment of instructional	ID graduate students	Students chose between ibstpi and AECT competency standards to rate themselves. Overall, all students rated themselves as proficient in all competencies listed for both ibstpi and AECT. Students selecting ibstpi

Study #	Study Authors, Year	Title	Data Collected From	Summary of Study Findings
		design competencies and courses in a graduate program		rated the core program courses as highly relevant to these competencies, compared to those in the AECT group. Researchers concluded that this difference suggests that the curriculum more closely aligns with ibstpi competencies.
4	Fortney & Yamagata-Lynch (2013)	How instructional designers solve workplace problems	Practitioners	Findings were consistent with other research which indicate that ID professions report a difference in what is taught in ID programs and practice in the workplace. Expert and novice ID professionals reported different levels of ability in the following areas: • Coping with ambiguity • Expectations about their own roles in finding solutions • Adaptability • Attention to appropriate details • Management of workplace stress
5	Gray, Dagli, Demiral-Uzan, Ergulec, Tan, Altuwaijri, Gyabak, Hilligoss, Kizilboga, & Boling (2015)	Judgment and instructional design: How ID practitioners work in practice	Practitioners	Study examined the design judgments made by ID professionals in practice. Findings suggest that the judgments were made continuously and not simply at prescribed points in time during the employ of a certain theory or model. Judgments were influenced by specific factors in the environment or the project and required the ID professional to make adjustments on an ongoing basis.

Study #	Study Authors, Year	Title	Data Collected From	Summary of Study Findings
6	Hoard, Stefaniak, Baaki, & Draper (2019)	The influence of multimedia development knowledge and workplace pressures on the design decisions of the instructional designer.	Practitioners	Study focused on the decisions of the ID professional related to use of multimedia. Differences were noted between novice and experienced IDs as to the timing of when selections were made in the design process. Susceptibility to pressures from employers, budget and time constraints were given as factors influencing the novice IDs to a greater extent.
7	Iqdami & Branch (2016)	Examining multimedia competencies for educational technologists in higher education	Practitioners	Findings revealed that several factors contribute to the importance given to competencies. Factors included demographic and career specific characteristics of the participant. Researchers noted that job title was a factor suggested by the data and recommended that more research was needed to more closely align competencies with specific job titles.
8	Kang & Ritzhaupt (2015)	A job announcement analysis of educational technology professional positions, knowledge, skills, and abilities	Job announcements	The data collected over a five-month period indicated that the necessary competencies for an educational technologist were: • Instructional design • Project management • Technical skills • Soft skills

Study #	Study Authors, Year	Title	Data Collected From	Summary of Study Findings
9	Klein & Jun (2014)	Skills for instructional design professionals	Practitioners	Revealed that IDs felt that the most important competencies were: • Aligning objectives, interventions, and assessments • Preparing measurable goals and objectives • Collaborating and partnering with others • Specifying strategies for intended outcomes • Designing a curriculum Differences were revealed in the value given to certain competencies based on work setting of the ID. IDs in higher education reported that designing instructor-led instruction was second in overall importance while this was not even listed in the top five for IDs working as consultants or for government. Consultants rated designing for emerging technologies as second in importance overall while this was not in the top 5 for those in higher education or government.
10	Klein & Kelly (2018)	Competencies for instructional designers: A view from employers	Job announcements, ID managers	Revealed that the most important competencies and skills for ID professionals were: • Collaborating effectively with stakeholders

Study #	Study Authors, Year	Title	Data Collected From	Summary of Study Findings
				• Being subject matter experts and teammates • Ability to use ADDIE procedures • Ability to use e-learning-authoring software Work environments of business, industry, consulting and healthcare require more skills related to instructional design; higher-education settings required additional competencies in instructional technology.
11	Lachheb & Boling (2017)	Design tools in practice: Instructional designers report which tools they use and why	Practitioners	Study focused on the instructional design practice of tool selection and use or instrumental judgment of ID professionals. Findings suggest that design judgment of the ID professional is a highly valued competency and extends to the selection and use of technological tools and that this aspect is not adequately covered in design models taught in ID programs.
12	Magruder, Arnold, Edwards, & Moore (2019)	What is an ID? A survey study	Practitioners	Revealed that IDs felt the most important competencies were in program evaluation and theory. Work with faculty on collaborating, creating content, and consulting was commonly reported.
13	Munzenmaier (2014)	Today's instructional designer: Competencies and careers	Job announcements	Revealed the following: • Interpersonal skills needed for advancement • Management skills given high priority

Study #	Study Authors, Year	Title	Data Collected From	Summary of Study Findings
				• Workplace setting impacts level of importance given to certain competencies/skills • Employers value knowledge of Human Performance Technology (HPT) higher than knowledge of ADDIE • Development of e-learning was indicated as an essential skill
14	Park & Luo (2017)	Refining a competency model for instructional designers in the context of online higher education	Organizational documents, practitioners	Revealed competencies in education and research that were needed by online higher education IDs, which were not part of the ibstpi standards for ID professionals. A refined competency model for online higher education IDs was proposed.
15	Rabel & Stefaniak (2018)	The onboarding of instructional designers in the workplace	Practitioners	Findings suggest a difference in expectations of ID role between employers and the ID professional. Differences were also noted to exist in terms of non-instructional interventions; employers expected the ID to design and develop instruction and the ID expected to perform analysis prior to the decision to produce instruction.
16	Ritzhaupt & Kumar (2015)	Knowledge and skills needed by instructional designers in	Practitioners	Findings support other studies' findings that workplace setting impacts the role of the ID. Revealed that IDs working in higher

Study #	Study Authors, Year	Title	Data Collected From	Summary of Study Findings
		higher education		education rated the following as most important: • Course improvement and development • Faculty support • Student support • Technical support or maintenance Researchers suggest that further study is needed in competency model specifically for instructional designers in higher education.
17	Ritzhaupt & Martin (2014)	Development and validation of the educational technologist multimedia competency survey	Job announcements	Job announcements in the IDT field were evaluated for multimedia competencies including soft skills, IDT-specific knowledge (theories and methods), and ability statements. 85 different multimedia competencies were demonstrated by the data.
18	Russ-Eft, Koszalka, Sleezer, Babbel, & Senior (2012)	Instructional designer competencies: A validation study	Practitioners	Revealed that IDs felt that the three most important competencies fell under the area of Design & Development. Those were: • Design learning assessment • Design instructional interventions • Organize instructional programs and/or products to be designed, developed, and evaluated Data revealed demographic differences in respondents from North America and those from other regions, suggesting that the

Study #	Study Authors, Year	Title	Data Collected From	Summary of Study Findings
				value/importance given to specific competencies is not universal.
19	Sharif & Cho (2015)	21st-Century instructional designers: Bridging the perceptual gaps between identity, practice, impact and professional development	Practitioners	Findings suggest that there is inconsistency in the expectations and identity of ID professionals. Constant evolution in the IDT field was noted as a significant factor contributing the inconsistency.
20	Stefaniak, Baaki, Hoard, & Stapleton (2018)	The influence of perceived constraints during needs assessment on design conjecture	Practitioners	Study focused on the relationship between analysis and conjecture in practice. Findings indicate that although ID professionals recognize need for analysis, it was often omitted due to pacing and workload pressures. Areas revealed in the study which caused concern for the researchers included uncertainty felt by the ID professionals and the need felt by many of the participants for more information (than was already provided) in order to complete the analysis phase. These areas of concern have implications for the ability of the ID

Study #	Study Authors, Year	Title	Data Collected From	Summary of Study Findings
				professional to confidently and efficiently perform ID in the workplace.
21	Sugar & Luterbach (2015)	Using critical incidents of instructional design and multimedia production activities to investigate instructional designers' current practices and roles	Practitioners	Study focused on the decisions of ID professionals related to instructional design and multimedia production activities. Findings suggest that there is an interrelationship between instructional design and multimedia production activities and positive outcomes in instructional design.
22	Sugar, Brown, Daniels, & Hoard (2011)	Instructional Design and Technology professionals in higher education: Multimedia production knowledge and skills identified from a Delphi study	Practitioners	Multimedia competencies used by practitioners employed in higher education were examined to determine which competencies were ranked higher than others and which applications were most used by these professionals.

Study #	Study Authors, Year	Title	Data Collected From	Summary of Study Findings
23	Sugar, Hoard, Brown, & Daniels (2012)	Identifying multimedia production competencies and skills of instructional design and technology professionals: an analysis of recent job postings	Job announcements	An inventory of media skills listed in job postings for instructional design and technology professionals were compiled. The data revealed notable differences between the job requirements for instructional design professions in business and industry compared to those in higher education.
24	Thompson-Sellers & Calandra (2012)	Ask the instructional designers: A cursory glance at practice in the workplace	Practitioners	Findings indicated that familiarity and use of ADDIE and adult learning theory were used regularly in their work. Participants reported having little training on how to use software that was necessary in their daily work.
25	Twilley (2014)	An examination of the practice of instructional design and the use of instructional design models	Practitioners	Findings revealed that in practice, activities that ensure quality and effectiveness of instruction were frequently not performed by the ID professional. Pressures related to producing materials more quickly and reducing costs related to the creation of instructional materials were given as the reasons for the omission.

Study #	Study Authors, Year	Title	Data Collected From	Summary of Study Findings
26	Van Roojj (2013)	The career path to instructional design project management: an expert perspective from the US professional services sector	Chief Learning Officers	Specifically focused on the project manager for instructional design. Included competencies, work experiences, educational background, and organization-specific characteristics. Interpersonal skills were reported as the most important competency for success for these professionals.
27	York & Ertmer (2016)	Examining instructional design principles applied by experienced designers in practice	Practitioners	Findings suggest that in practice, ID professionals cited that of the most used principles in their daily work, approximately half were related to general ID models (such as ADDIE). The other half were principles not typically related to ID models, such as communication, client and project management, and general design elements.

After the studies were reviewed, I coded specific competencies reported in the findings of those studies. Next, I compiled a list of the specific competencies and then which studies were associated with each. In the ibstpi standards, competencies are grouped into domains as a means of organization. For purposes of organizing the competencies for this study, I used a similar approach to facilitate the grouping of competencies that were related but not identical. For example, ibstpi's Design & Development domain includes, among other competencies, the following: design learning assessment, design instructional interventions, organize instructional programs and/or products to be designed, developed, and evaluated (Koszalka, Russ-Eft, & Reiser, 2013; Russ-Eft, Koszalka, Sleezer, Babbel, & Senior, 2012). Because I identified more than 26 competency themes, only those competency themes found in at least 15% of the studies are included Table 4 and discussed in the following section. For the full results of the competencies identified in the studies, see Table A1 in Appendix A. I made the decision to focus on only those competencies found in at least 15% of the 27 studies because the I wanted focus attention on those themes or domains found in more than one or two studies. The value of a set of competency standards is related to the applicability of those standards to the professionals for whom the competencies were created. Because of this, I felt that an evaluation of competencies for instructional designers should be primarily concerned with competencies having wider application among professionals.

Table 4

Competency Themes Found in at Least 15% of the Studies Included in Literature Review

Competency Theme/Domain	Number of Studies(%)	Which studies include this competency in their findings
Application of Instructional Design Theories & Models (including **ADDIE**)	16(59%)	**27**, **24**, **22**, 21, **20**, **16**, **13**, **12**, **10**, 9, 8, 7, 6, 3, 2, **1**
Knowledge of Learning Theories (including **Adult Learning Theory**)	11(40%)	**24**, **22**, 21, 17, **16**, **13**, 12, **8**, 7, **4**, 1
Soft Skill: Collaboration	10(37%)	25, 22, 21, 13, 12, 10, 9, 8, 2, 1
Soft Skill: Communication	10(37%)	27, 26, 22, 18, 16, 13, 8, 7, 4, 2
Specific Software Proficiency (including **Learning Management Systems (LMS)**)	8(30%)	23, **22**, **17**, 16, **13**, **11**, 9, **8**
Multimedia Production Skills	7(26%)	23, 22, 17, 16, 8, 7, 2
Course/Content Design & Development Skills	6(22%)	18, 15, 12, 8, 3, 1
Evaluation (Training & Content) Skills	4(15%)	22, 15, 12, 2
Online & e-Learning Content Development Skills	4(15%)	23, 13, 10, 8
Project Management Skills	4(15%)	22, 8, 2, 1

Note. Bolded numbers indicate studies corresponding to the bolded competency in the Competency Theme/Domain column.

Application of Instructional Design Theories & Models. Sixteen of the 27 studies described the need for instructional designers to be familiar with and apply instructional design theories and models. Unsurprisingly, the Analysis, Design, Development, Implementation, and Evaluation (ADDIE) model appeared in 9 of these 16 studies (56%). ADDIE is a generic instructional design framework commonly used early in an ID project. Even when ADDIE was not specifically named, steps within the model were cited individually as important (see, e.g., Hoard et al., 2019; Iqdami & Branch, 2016; Kang & Ritzhaupt, 2015; Klein & Jun, 2014; Sugar & Luterbach, 2015). The ID professional was able to determine whether training or instruction was needed by following the ADDIE model's first step of analysis. The evaluation of whether

instructional materials are warranted is a valuable competency in practice and has been well documented in the literature (Thompson-Sellers & Calandra, 2012; York & Ertmer, 2016) and supported by the studies included in this literature review (Ritzhaupt & Kumar, 2015; Stefaniak, Baaki, Hoard, & Stapleton, 2018; Sugar, Hoard, Brown, & Daniels, 2012).

Knowledge of Learning Theories. Eleven of the 27 (40%) studies included findings that described the need for instructional designers to be familiar with and apply learning theories. Adult learning theory, specifically, was cited in 6 of the 11 (55%). Of the remaining studies where learning theories appeared in the findings, 4 (36%) used the generic label of learning theory and 1 (9%) named the cognitive learning theory.

Soft Skills. Sixteen studies included specific soft skills among the most needed competencies for instructional designers. Collaboration skills were cited in 10 studies. Communication skills were cited in 10 studies as well. However, they were not cited in the same 10 studies. Four studied cited both communication skills and collaboration skills while the remaining 6 for each competency were not shared. When considered together (communication skills and/or collaboration skills), the number of studies rises to 16 (59%), which is equal to the frequency cited the most frequently, which is application of design theories and models. Clearly, the data support the import of these skills in the success of instructional design work. Among the studies, two of the most oft-listed groups with which the instructional designer must collaborate were subject matter experts (SMEs) and faculty (Twilley, 2014; Sugar, Brown, Daniels, & Hoard, 2011; Sugar & Luterbach, 2015; Munzenmaier, 2014; Magruder, Arnold, Edwards, & Moore, 2019; Klein & Kelly, 2018; Klein & Jun, 2014; Kang & Ritzhaupt, 2015; Chongwony, Gardner, & Tope, 2020; Arnold, Edwards, Magruder, & Shaun, 2018). Because the subject matter can be unfamiliar to the designer, the role of the SME is important for the success of the project (York

& Ertmer, 2016). However, when the collaboration with faculty was described, the collaboration was for a different purpose. Magruder, Arnold, Moore, and Edwards (2019) shared this description, collected from one of their study participants: “An instructional designer bridges the gap between an instructor and the learner – closely identifying objectives and content and aligning that with best practices for activities and assessments to help the learners and instructors in the best methods possible for maximum learning” (p. 149).

Specific Software Proficiency. Eight (30%) of the studies contained competencies for specific software. The specific software named in more than one of the studies included Microsoft Office Suite (3x), Articulate 360 Suite (2x), and Adobe Captivate (3x). Learning Management Systems appeared in 5 of the 8 studies within this theme. Interestingly, Microsoft Office, a general office productivity software, was specifically cited the same number of times as Adobe Captivate software, given that a creative software solution would seem to be more relevant/important to the work of the instructional designer. One explanation for why no single software package was cited with more frequency is that even though the creative software offerings (collectively) may carry a greater importance in the role of the instructional designer’s practice than does the general office software, no single offering dominates within the field or among employers.

Multimedia Production Skills. Seven (26%) of the studies indicated that multimedia production skills as a competency needed by instructional designers. Categorized within this domain are competencies described as generic multimedia skills and the use of digital media production. Sugar, Hoard, Brown, & Daniels (2012) found this competency in over 80% of job postings for instructional designers and characterized the relationship multimedia and

instructional design competencies as interdependent; for every instructional designer competency listed in the job postings, there was one multimedia competency.

Course/Content Design & Development Skills. Six (22%) of the studies contained competencies that fall under course/content design and development skills. This was not surprising, given that one of the primary activities most associated with instructional designers is the creation of course content. Some of the individual competencies included in this domain are creating learning objectives, developing instructional strategies, developing assessment strategies.

Evaluation Skills. Four (15%) of studies cited evaluation skills as a competency for instructional designers. Although the rubric or standards used in an evaluation or assessment can be specific to the organization, the goal of evaluation is to ensure quality, as defined by the stakeholders. Instructional materials are created to fulfill or achieve a predetermined outcome. As such, the quality of those materials produced by the instructional designer has direct impact to achieving the stated objectives (Boyd & Ralston-Berg, 2020).

Online & eLearning Content Development Skills. Four (15%) of the studies called out competencies in online and eLearning development. Classrooms, in both the academic and workplace settings, are increasingly online. This move away from face-to-face classrooms has increased the demand for instruction that can be delivered virtually. The future success of higher education is greatly tied to an organization's ability to deliver online education (Allen & Seaman, 2014).

Project Management Skills. Four (15%) of the studies included a need for project management skills. Whether or not a dedicated project manager is assigned to a given instructional design project, there is still a need for instructional designers to have project

management skills. Kang & Ritzhaupt (2015) reported that this need stems from the wide range of stakeholders involved in the project and with whom there is collaboration and communication. The project management domain involves a variety of activities including: the ability to work under deadlines, prioritize tasks, manage multiple projects, advise and supervise employees, manage vendors.

Limitations

While efforts were made to reduce the limitations to the greatest degree possible, several limitations exist. The literature search for the studies employed a systematic process to locate as many relevant studies as possible. However, the review was not exhaustive. The studies included in the review were limited to results that emerged in the databases and key works mentioned above. A dependency on the results made available through the research means employed meant that any body of research not published in a journal would be left out of consideration for inclusion. Although unpublished research may have impacted the results found in this literature review, the inclusion of such studies was not possible. The absence of unpublished studies has an impact on the degree to which a full appraisal of the subject in question can be achieved via literature review. Therefore, it is reasonable to assume that there were other related studies that did not emerge and were not included in this review. Although extensive, the scope of the combined research studies under consideration does not represent the scope of ID as a field. I was the only researcher involved in study selection and coding. To minimize bias, I followed systematic review standards for gathering, analyzing and reporting.

The results of this literature review and study must be interpreted within the limitations and delimitations of these data and my method. All of the studies included in the literature review came from within the United States. There is no guarantee that instructional designer

competencies in other countries would be the same. Finally, this research provides a temporal instance, at best, of the competencies of instructional designers reflected in the literature. The findings pulled from research published between 2011 and 2020 may not be relevant to future discussions about instructional designer competencies. Because of the ever-changing nature of competencies for instructional designers, a new study should be conducted to determine the degree of change that has occurred and to understand the degree to which published literature is a true reflection of practice in the field.

Discussion

A few key areas of focus emerged through the review of the literature. In order to frame this discussion, it is imperative to return to primary research question for this study: To what degree do current instructional design (ID) competencies align with the competencies needed by ID professionals in the workplace? The data did lead to several important findings in answer to this question.

One key finding is that instructional design work requires competency in the application of instructional design theories and models, particularly ADDIE. As one of the earlier conceptual frameworks developed in the field, ADDIE is argued to be outdated by some professionals (Gordon & Zemke, 2000). Although I did not find evidence to support that argument, I did find that when qualitative data was collected, the use of ADDIE was accompanied with clarifying statements that suggest that the individual steps within the ADDIE framework were still heavily relevant and employed by ID professionals, although specific steps may not be performed. Attributed to reasons such as employer pressures (Hoard et al., 2019; Stefaniak et al., 2018), employer expectations (Rabel & Stefaniak, 2018), tight timelines, scope of the project, and

budgetary constraints (Twilley, 2014), analysis was the step most commonly cited as not performed. As a model that can be applied in various settings, work environments, and along with a variety of instructional design models, it persists in ID practice.

Related to the use of ADDIE, other competencies that surfaced were course/content design and development skills and evaluation. I mention them in this section because although they were listed and treated independently up to this point, these are parts of the ADDIE process. Course/content design and development are represented by the letters DD. Evaluation is the last stage or phase of ADDIE, represented by the letter E. I found it interesting that even when ADDIE was not formally named, the elements prescribed by the process were employed, which strengthens the assertion that the model is still very much applicable to ID work.

Another key finding is that knowledge of learning theories, including adult learning theory, is a competency used and needed in instructional design practice. As the researcher, this finding was of particular interest because of earlier findings reported in the literature that found that the use of theory was not recognized by ID professionals as being influential in their work (Calandra, Barron, and Thompson-Sellers, 2008). Adult learning theory takes into account the specific characteristics of the adult learner and translates into designing instruction to support their learning. Because the studies included in this review involved ID professionals involved in workplace training and higher education, the focus on the adult learner is expected.

Soft skills, notably collaboration and communication, were third and fourth in the list of competency themes, in terms of the number of studies where this competency was named. Although these skills are important in great many professions, the importance for instructional designers is that these skills impact the quality of the instruction that results. The communication and collaboration with stakeholders, subject matter experts (SMEs), and teammates is the vehicle

by which the needed clarification and guidance is obtained by the designer, which in turn is applied to creation of deliverables. These skills are employed in each phase of the project, from needs assessment to final delivery of the project. With such a high number of interactions involving the instructional designer and the individuals in various roles, all providing specific information critical to the success of the project, it is easy to understand how project management skills surfaced as an important competency, as well. The ability to manage the interactions and the resulting details and action items in an efficient and detail-oriented manner is clearly an essential element of ID work.

Other competencies with high frequency were multimedia production skills, specific software proficiency, and online/elearning content development skills. I group these together for discussion purposes because the way in which one study reported findings and the naming conventions used were varied, which means that a study may have categorized the use of elearning software to produce an interactive elearning module in any one of the three categories. The lack of exclusivity among these three competencies is evidence of the interrelated nature of competencies and supports the notion that many competencies can be employed simultaneously in practice. The importance of these competencies is expected when the increased availability and demand for online learning is considered. While specific software was often cited, there was not a single authoring package used by professionals in practice. The lack of a single widely adopted software suite means that ability to learn and use the software provided or required for use by the organization is of greater importance than fluency in a particular piece of software.

When considered as a whole, the studies reveal that different workplace settings value competencies differently, with higher education, for example, being among those settings with specific differences (Park & Luo, 2017; Klein & Kelly, 2018; Magruder, et al., 2019). These

findings are of particular concern due to the increase in demand for online education and the projected increase in demand for instructional designers to meet this need. Those hoping to enter the profession and academic institutions involved in the preparation and training rely upon the competency standards for guidance in these endeavors.

Discussion of the findings would be incomplete without considering the research question proposed in this study, "To what degree are the instructional design (ID) competencies set forth in the most recent ibstpi standards a reflection of the competencies used and needed by ID professionals as reported in published research." In answer to this question, the findings of the literature review suggest that the ibstpi standards do reflect the competencies used and needed by ID professionals as reported in published research. The studies included in this literature review purposely involved participants from a variety of industries and having myriad job titles to make possible the evaluation of whether the ibstpi ID competencies were indeed able to hold relevance in the vast and varied practice of ID professionals, as reported in the literature. Alignment between the ibstpi standards and ID practice reported in the literature was demonstrated.

The practice of professionals in the field of IDT is continually evolving as it responds to the changing nature of employer expectations, technological offerings, and specializations within the field. As a result, it can be difficult to define the field and even all of the professionals who work in the field. Work settings and job roles are varied. Educational paths and career paths of a practicing instructional designer are as unique as the individuals themselves. However, IDT competency standards still provide utility as a means for determining qualifications for aspiring instructional designers, establishing a standard for professionals in the field, and guiding academic institutions in ID course/program offerings.

Recommendations

The studies included in this literature review, while useful, are, at best, merely snapshots of ID practice at the specific moment in time from which they were taken. The value of competency standards is directly tied to the degree to which the competencies adequately align with practice in the workplace. Ongoing and frequent research needs be conducted on the ID competencies used in practice. Additionally, as the field continues to evolve, specializations will continue to form, creating an even greater need for studies to validate alignment with current models or whether new competency models need to be developed to support these new areas. Research is integral to the IDT field for detecting shifts and trends in ID practice. Currency and relevancy in the literature is essential to meeting the needs of professionals in the field. Through regular and frequent appraisal performed during research, organizations, professional associations, and educational institutions are able to respond to the needs of practitioners by offering professional support within the community of practice, recognition within the field, and providing the necessary guidance for professionals wanting to enter the field. For the aforementioned reasons, I recommend that a research study be conducted to determine ID competencies reflected in practice of professionals today and to ensure the continual success of the field and the professionals within it.

References

AECT (2020). *About Us.* Retrieved from https://www.aect.org/about_us.php

Allen, I. E., & Seaman, J. (2010). Learning on demand: Online education in the United States, 2009. Retrieved from https://onlinelearningconsortium.org/survey_report/2009-learning-demand-online-education-united-states/

American Society for Training and Development (ASTD). (2020). *About ASTD*. Retrieved from http://www.astd.org/

Arnold, D., Edwards, M., Magruder, O., & Moore, S. (2018). The competencies and goals of instructional designers: A survey study. *The University Professional and Continuing Education Association*. Retrieved from: https://upcea.edu/wp-content/uploads/2018/04/The-Competencies-and-Goals-of-Instructional-Designers-A-Survey-Study.pdf?_zs=KjsHX&_zl=HxeF1

Association for Educational Communications and Technology (AECT). (1977). *The definition of educational technology*. Washington, D.C: Association for Educational Communications and Technology.

ATD (2020). *About us*. Retrieved from: https://www.td.org/about.

ATD (2020). *The ATD Competency model*. Retrieved from: https://www.td.org/Certification/Competency-Model.

Boyd, B., & Ralston-Berg, (2020). Quality measures of great instructional design. In W. Kilgore, & D. Weaver (Eds.). *Connecting the dots: Improving student outcomes with exceptional instructional design*. Retrieved from https://instructionaldesign2improvelearning.pressbooks.com/chapter/chapter-3-quality-measures-of-great-instructional-design/

Byun, H. (2000). Identifying job types and competencies for instructional technologists: A five-year analysis (Ph.D.). Retrieved from ProQuest Dissertations & Theses Full Text. (304601855).

Calandra, B., Barron, A. E., & Thompson-Sellers, I. (2008). Audio use in eLearning: What, why, when & how? *International Journal on E-learning, 7*(4), 589-601.

Chongwony, L., Gardner, J.L., & Tope, A. (2020). Instructional design leadership and management competencies: Job description analysis. *Online Journal of Distance Learning Administration, 23*(1). Retrieved from https://www.westga.edu/~distance/ojdla/spring231/Chongwony_Gardner_Tope231.html

Clark, R. E. (1994). Media will never influence learning. *Educational Technology Research and Development, 42*(2), 21-29.

Dabbagh, N., & English, M. (2015). Using student self-ratings to assess the alignment of instructional design competencies and courses in a graduate program. *TechTrends, 59*(4), 22-31. doi:10.1007/s11528-015-0868-4

Educational Technology Research and Development (2020). *About ETR&D*. Retrieved from https://www.aect.org/etrd.php

Fortney, K. S., & Yamagata-Lynch, L. C. (2013). How instructional designers solve workplace problems. *Performance Improvement Quarterly*, *25*(4), 91-109. doi:10.1002/piq.21130

Gordon, J., & Zemke, R. (2000). The attack on ISD. *Training*, *37*(1), 44-53.

Gray, C. M., Dagli, C., Demiral-Uzan, M., Ergulec, F., Tan, V., Altuwaijri, A. A., Gyabak, K., Hilligoss, M., Kizilboga, R., Tomita, K., Boling, E. (2015). Judgment and instructional design: How ID practitioners work in practice. *Performance Improvement Quarterly, 28*(3), 25-49. doi:10.1002/piq.21198

Hoard, B., Stefaniak, J., Baaki, J., & Draper, D. (2019). The influence of multimedia development knowledge and workplace pressures on the design decisions of the instructional designer. *Educational Technology Research and Development, 67(6)*, 1479-1505.

ibstpi (2020). *About us*. Retrieved from: http://ibstpi.org/about-us/.

International Board of Standards for Training, Performance & Instruction. (2012). Instructional design competencies. In *International Board of Standards for Training, Performance & Instruction*. Retrieved January 5, 2018, from http://ibstpi.org/instructional-design-competencies/.

Iqdami, M. N., & Branch, R. M. (2016). Examining multimedia competencies for educational technologists in higher education. *TechTrends, 60*(4), 365-373. doi:10.1007/s11528-016-0064-1

ISPI (2020). *About ISPI.* Retrieved from: https://ispi.org/#

Kang, Y., & Ritzhaupt, A. D. (2015). A job announcement analysis of educational technology professional positions, knowledge, skills, and abilities. *Journal of Educational Technology Systems, 43*(3), 231-256.

Klein, J. D., & Jun, S. (2014). Skills for instructional design professionals. *Performance Improvement, 53*(2), 41-46.

Klein, J. D., & Kelly, W. Q. (2018). Competencies for instructional designers: A view from employers. *Performance Improvement Quarterly, 31*(3), 225-247. doi:10.1002/piq.21257

Koszalka, T. A., Russ-Eft, D. F., & Reiser, R. (2013). *Instructional Designer Competencies: The Standards.* Charlotte, NC: Information Age Publishing.

Kozma, R. B. (1994). Will media influence learning? Reframing the debate. *Educational Technology Research and Development, 42*(2), 7-19.

Lachheb, A., & Boling, E. (2017). Design tools in practice: Instructional designers report which tools they use and why. *Journal of Computing in Higher Education, 30*(1), 34-54. doi:10.1007/s12528-017-9165-x

Liu, M., Gibby, S., Quiros, O., & Demps, E. (2002). Challenges of being an instructional designer for new media development: A view from the practitioners. *Journal of Educational Multimedia and Hypermedia, 11*(3), 195-219.

MacLean, P., & Scott, B. (2011). Competencies for learning design: A review of the literature and a proposed framework. *British Journal of Educational Technology, 42*(4), 557-572.

Magruder, O., Arnold, D.A., Edwards, M., & Moore, S. (2019). What is an ID? A survey study. *Online Learning, 23*(3), 137-160. doi:10.24059/olj.v23i3.1546

Martin, F. & Ritzhaupt, A. D. (2020). Standards and competencies for instructional design and technology professionals. In J. K. McDonald & R. E. West (Eds.), *Design for Learning*. EdTech Books. Retrieved from https://edtechbooks.org/id/standards_and_competencies

Moher D., Liberati A., Tetzlaff J., Altman D.G. (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med 6*(7): e1000097. https://doi.org/10.1371/journal.pmed.1000097

Munzenmaier, C. (2014). Today's instructional designer: Competencies and careers. *eLearning Guild.* Retrieved from https://www.elearningguild.com/insights/178/todays-instructional-designer-competencies-and-careers/

Park, J., & Luo, H. (2017). Refining a competency model for instructional designers in the context of online higher education. *International Education Studies, 10*(9), 87. doi:10.5539/ies.v10n9p87

Rabel, K., & Stefaniak, J. (2018). The onboarding of instructional designers in the workplace. *Performance Improvement, 57*(9), 48-60. doi:10.1002/pfi.21824

Reiser, R. A., & Dempsey, J. V. (Eds.). (2011). *Trends and Issues in Instructional Design and Technology* (3rd ed.) Upper Saddle River, NJ: Merrill Prentice Hall: Pearson.

Ritzhaupt, A. D., & Kumar, S. (2015). Knowledge and skills needed by instructional designers in higher education. *Performance Improvement Quarterly, 28*(3), 51-69. doi:10.1002/piq.21196

Ritzhaupt, A. D., & Martin, F. (2014). Development and validation of the educational technologist multimedia competency survey. *Educational Technology Research and Development, 62*(1), 13-33.

Russ-Eft, D., Koszalka, T., Sleezer, C., Babbel, B., & Senior, F. (2012). *Instructional designer competencies: A validation study.* Paper presented at the University Forum for Human Resource Development Conference, Universidade Lusíada de Vila Nova Famalicão. Retrieved from https://www.ufhrd.co.uk/wordpress/russ-eft-d-koszalka-t-a-sleezer-c-babbel-b-and-senior-f-instructional-designer-competencies-a-validation-study/

Sharif, A., & Cho, S. (2015). 21st-Century instructional designers: Bridging the perceptual gaps between identity, practice, impact and professional development. RUSC. *Universities and Knowledge Society Journal, 12*(3), 72. doi:10.7238/rusc.v12i3.2176

Spector, J.M. (2017). Reflections on educational technology research and development. *Educational Technology Research and Development 65(11), 1415-1423.*

Stefaniak, J., Baaki, J., Hoard, B., & Stapleton, L. (2018). The influence of perceived constraints during needs assessment on design conjecture. *Journal of Computing in Higher Education 30*(2), 55-71.

Sugar, W. A., & Luterbach, K. J. (2015). Using critical incidents of instructional design and multimedia production activities to investigate instructional designers' current practices and roles. *Educational Technology Research and Development, 64*(2), 285-312. doi:10.1007/s11423-015-9414-5

Sugar, W., Brown, A., Daniels, L., & Hoard, B. (2011). Instructional Design and Technology professionals in higher education: Multimedia production knowledge and skills identified from a delphi study. *Journal of Applied Instructional Design, 1*(2), 30-46.

Sugar, W., Hoard, B., Brown, A., & Daniels, L. (2012). Identifying multimedia production competencies and skills of instructional design and technology professionals: An analysis of recent job postings. *Journal of Educational Technology Systems, 40*(3), 227-249.

Thompson-Sellers, I., & Calandra, B. (2012). Ask the instructional designers: A cursory glance at practice in the workplace. *Performance Improvement, 51*(7), 21-27. doi:10.1002/pfi.21283

Twilley, J. L. (2014). An examination of the practice of instructional design and the use of instructional design models (Doctoral dissertation). University of Central Florida, Orlando, FL.

van Rooij, S. W. (2011). Instructional design and project management: Complementary or divergent? *Educational Technology, Research and Development, 59*(1), 139-158.

van Rooij, S. W. (2013). The career path to instructional design project management: An expert perspective from the US professional services sector. *International Journal of Training and Development, 17*(1), 33-53.

York, C. S., & Ertmer, P. A. (2016). Examining instructional design principles applied by experienced designers in practice. *Performance Improvement Quarterly, 29*(2), 169-192. doi:10.1002/piq.21220

Chapter 2

An Analysis of Instructional Design Competencies

Competency models, especially in a continually evolving field like instructional design and technology (IDT), provide standards that are intended to fit or align with a variety of individuals and scenarios within the profession. Such is the case with the International Board of Standards for Training, Performance and Instruction (ibstpi) instructional designer (ID) competency model. However, there can come a point when the current competency model no longer reflects the competencies needed in practice, necessitating a revision or update (Koszalka, Russ-Eft, & Reiser, 2013). Regular and ongoing research to validate the fit of competency statements with current practice is a necessary part of understanding the degree of alignment between a model and practice (Rasmussen, 2002; Russ-Eft et al., 2012).

These validation studies are also an integral part of detecting when the competency model no longer aligns with practice for ID practitioners in specific work settings. When the general competency model no longer mirrors practice for a specific segment of professionals, models must be revised or specialized models created. Park and Luo (2017) studied ID competencies in the context of online higher education and stated that "ibstpi's model is still too generic for the organization-specific context of online higher education, and does not reflect organizational characteristics such as strategy, vision, and mission" (p. 87). The evolving nature of ID suggests that the competencies required also change over time.

This study's purpose was to identify the must-have competencies for ID professionals in practice and determine the degree to which those competencies aligned with the 2012 ibstpi ID competency model. The study was grounded by the following research questions:

- RQ1. What are the must-have ID competencies identified by professionals?

- RQ2. Is there a difference in the ID competencies identified by ID professionals and the existing ibstpi ID competencies?
- RQ3: Is there a difference in the degree of alignment between the competencies identified by professionals and the ibstpi ID competencies for professionals in different work settings?

IDT has two primary areas: (1) the application of systematic design processes and (2) the use or technology to facilitate learning and improve performance. The broad nature of the field and the rapid pace of technology advancements can make it challenging to identify what is required to be a competent professional in the field as well as making it difficult to identify all of the professionals who work in the field. A variety of job titles are commonly used, including *curriculum developer, educational technologist*, *instructional designer*, *instructional technologist*, *learning designer*, *performance-improvement consultant,* and *training manager*. The term *instructional designer* (ID) is used throughout this paper because it is commonly used to refer to those who work in the IDT field. These professionals work in a multitude of settings such as business and industry, higher education, K-12 education, government/military, and healthcare (Klein & Kelly, 2018). Where an individual works can influence job title (Chongwony et al., 2020). In higher education, an ID practitioner is likely to have a title of *educational technologist* or *learning designer*, whereas in business the same type of role might be given a title of *training consultant* or *instructional designer*.

Amid the title differences from one setting to another, professional organizations in the field of instructional design publish competency standards as a means for providing benchmarks for excellence in ID practice. There are three major competency models developed by professional organizations for instructional designers: Association for Educational Communications &

Technology (AECT), Association for Talent Development (ATD), and the International Board of Standards for Training, Performance, and Instruction (ibstpi).

Although the standards created by the organizations contain common elements, there are key differences that help distinguish each from the others. The AECT standards are used to accredit college programs in instructional design and technology (AECT, 2020). The ATD standards were designed to have application across a number of areas of expertise, including professionals in the areas of instructional design, training delivery, learning technologies, evaluating learning impact, and managing learning programs (ATD, 2020). The ibstpi standards were established after extensive research was conducted to identify ID competencies used in the practice of ID professionals, regardless of job title, training, or work setting (ibstpi, 2020; Munzenmaier, 2014; Park & Luo, 2017). MacLean & Scott (2011) describe the ibstpi standards this way:

> The ibstpi competencies are now commonly used to set standards and define professional training programs in both academic and corporate environments. They provide the basis for drafting job descriptions and describing roles and are in themselves a research resource with a bibliography listing the key literature of instructional design. (p. 564)

I chose to use the ibstpi standards for this study because they focus specifically on instructional designer competencies for individuals in a workplace setting and as such, they align with the purposes of this research. Among the factors that influenced my decision to use the ibstpi competency model was the extensive research behind the development of the standards. The 2012 ibstpi competencies are the result of decades of research and development of professional standards in the IDT field (ibstpi, 2020). Additionally, these standards provide a list of essential competencies that have been validated by ID professionals as necessary for practice in the workplace. The literature review performed in preparation for the study supported that

alignment existed between the ibstpi competency model and ID competencies reported in the published literature.

In 1986, ibstpi was the first to develop the Instructional Design Competencies (ibstpi, 2020). The competencies were revised in 2000 and 2012. With each revision, additional elements were added and refinements were made to more closely align with current ID practice (Koszalka et al., 2013). The 2000 revision included two new domains, Professional Foundations and Implementation and Management. With the 2012 revision, the competencies were updated to reflect the increased importance of technology-related competencies that resulted from the need of instructional designers to leverage digital technologies in practice. Within the five domains, competencies are identified as *essential, advanced*, or *managerial*. *Essential* is defined as those competencies which every ID is expected to master. *Advanced* is reserved for those competencies only the most experienced and expert designers. *Managerial* is designated for the competencies specifically needed by an ID manager. See Table 5 for the complete ibstpi ID competency model.

Table 5

ibstpi's Ibstructional Designer Competency Model

Domain	Competency (E = Essential, A = Advanced, M = Managerial)
Professional Foundation	Communicate effectively (visual, oral, & written) (E)
	Update & improve personal competence (E)
	Apply current research & theory in practice (A)
	Applying data collection and analysis skills (A)
	Identify, resolve ethical, legal, & implications of design in the workplace (A)
Planning & Analysis	Conduct a needs assessment (E)
	Design a curriculum/program (E)
	Determine instructional content (E)
	Describe audience & environmental characteristics (E)
	Analyze characteristics of existing & emerging technologies available for use (E)
	Reflect upon current project characteristics prior to selection of design and technologies (E)
Design & Development	Employ a variety of techniques to define & order instructional content & strategies (E)
	Select/modify existing instructional materials (E)
	Develop new instructional materials (E)
	Design instruction that reflects an understanding of diversity of learners (E)

Domain	Competency (E = Essential, A = Advanced, M = Managerial)
	Evaluate/assess instruction and its impact (E)
	Select, modify, create design model appropriate for current project (A)
Implementation	Revision (E)
	Effectively implement instructional products & programs (E)
Management	Plan & manage instructional design projects (M)
	Promote collaboration among the participants of the design project (M)
	Apply business skills to managing instructional design (M)
	Design instructional management systems (M)

Note. Adapted from Koszalka, Russ-Eft, & Reiser (2013).

A compilation or set of competencies for a given occupation or profession is a competency model. Marrelli (1998) defined competency model as "the organization of identified competencies into a conceptual framework that enables the people in an organization to understand, talk about, and apply the competencies" (p. 10).

Researchers in the field have also studied ID competencies over the years. Table 6 below provides a list of competencies and standards identified in the literature for ID professionals.

Table 6

Instructional Design and Technology Competencies From Research

Authors	Audience	Competencies Identified
Tennyson (2001)	Instructional Technologists	Educational foundations, instructional systems design methodology, and instructional design process experience
Liu, Gibby, Quiros, and Demps (2002)	Instructional Designers	Problem-solving and decision-making skills
Brown, Sugar and Daniels (2007)	Media Producers in entry-level multimedia production	Authoring applications media producers regularly use and attributes that are most important to the choice of an authoring application
Kenny, Zhang, Schwier and Campbell (2007)	Instructional Designers	Communication skills, knowledge of instructional design models, problem-solving/decision-making skills, and technology skills
Ritzhaupt, Martin and Daniels (2010)	Educational Technologists	Multimedia competencies for educational technologists

Authors	Audience	Competencies Identified
Lowenthal, Wilson and Dunlap (2010)	Instructional Designers	Instructional design experience, communication skills and collaboration skills
Wakefield, Warren and Mills (2012)	Instructional Designers	Communication and interpersonal skills, managing multiple instructional Design projects, specific traits, and collaborative skills
Ritzhaupt and Kumar (2015)	Instructional Designers in Higher Education	Solid foundation in instructional design and learning theory, possess soft skills and technical skills, and have a willingness to learn on the job
Kang and Ritzhaupt (2015)	Educational Technologists	Instructional design, project management, technical skills, and soft skills
Ritzhaupt, Martin, Pastore and Kang (2018)	Educational Technologists	Instructional design, development, facilitation, assessment, evaluation, communication, problem-solving, and interpersonal skills

Note. Adapted from "Standards and Competencies: For Instructional Design and Technology Professionals," by F. Martin, and A. D. Ritzhaupt, 2020, In J. K. McDonald and R. E. West, *Design for Learning: Principles, Processes, and Praxis*. EdTech Books. CC-BY-NC.

The abundance of literature containing list of competencies is a testament to the demand for the competencies to be identified. The utility of having a competency model makes sense considering the many ways it is used. The model is instrumental for those preparing to enter the field, those who provide education or training, as well as employers of these professionals. Although in existence, studies describing the differences in ID competencies based on work setting are less plentiful.

Klein and Kelly (2018) reported differences in competencies found in job announcements when work settings were compared: business and industry contained more consulting and design competencies; health care contained those specific to learning and analyzing the needs from subject matter experts (SMEs) and designing relevant training programs; and higher education contained a greater number of instructional technology competencies than any other types of competencies besides communication and interpersonal skills (which were rated equal in importance as instructional design competencies).

ID practitioners working in higher education are called upon to perform functions that are not generally found in non-academic settings, such as provide ongoing professional development opportunities for faculty, one-on-one consultation, and technical and pedagogical support to faculty, students, and staff (Ritzhaupt et al., 2021). These additional responsibilities and the impact they have on the role of the ID professional in these institutions did not go unnoticed by

Stefaniak et al. (2021), who created a book last year entitled *A Practitioner's Guide to Instructional Design in Higher Education*. Although the book does not state that the competency models currently published by the various organizations are inadequate for those in the higher education work setting, it does state: "the unique case of higher education provides several opportunities and obstacles for these professionals…" (Ritzhaupt et al., 2021, p. 8).

At the time of this study, the 2012 ibstpi competency model was 10 years old. There was a need to validate whether the ID competency model still aligned with ID practice and to determine whether alignment with the model was impacted by work setting. The purpose of this sequential mixed methods study was to identify the must-have competencies for ID professionals in practice and determine the degree to which those competencies aligned with the ibstpi 2012 ID competency model.

Practitioners and employers look to competency models to know which competencies are essential for them to be effective. Aspiring ID professionals need competency models to know how to prepare for such a career. Universities need competency models to inform program offerings to meet the needs of their ID students. Because of the heavy dependence on competency models which reflect actual practice, validation of these models is critical to the future of the field.

In the quantitative, first phase of this study, an online survey was conducted with ID professionals to determine what they considered to be the must-have ID competencies. The survey findings then guided the qualitative phase of the study in which four ID professionals were interviewed to better understand the quantitative data and to uncover findings not captured in the online survey.

Method

Research Design

This study utilized an explanatory sequential mixed methods research design. Explanatory sequential mixed methods design consists of collecting and analyzing quantitative data and then gathering qualitative data to help augment or elaborate on the quantitative results (Creswell & Guetterman, 2019). The rationale for this approach is to first gain a general understanding of the research findings and then to gain greater understanding through the qualitative phase. In this way, there is greater priority given to the quantitative phase while the qualitative component is smaller and complimentary. In this study, quantitative data was collected from a survey of instructional designers. The results were analyzed prior to conducting the semi-structured interviews. By analyzing the data from the survey, areas were identified which required greater insight or understanding.

I made the decision to use a mixed method approach for data collection to mitigate the weaknesses of both methods and to benefit from the strengths of each. When used together, the quantitative and qualitative data collection methods allow for a more complete and accurate understanding of the area under study (Miles et al., 2020). Qualitative data yields multi-dimensional and deeper understanding (Johnson & Christensen, 2008), while quantitative data can uncover relationships among variables (Bogdan & Biklen, 2007). Furthermore, the use of only quantitative or qualitative methodology can lead to findings that cannot be explained or justified by the data collected (Feldon & Kafai, 2008).

First, the quantitative phase of data collection and analysis was utilized. The method used for data collection was an online survey of ID professionals. This phase of the study was informed by extensive literature review. During the second phase, qualitative data collection and analysis

was used to provide a fuller, deeper, and more complete understanding of the quantitative findings.

Sampling

The sampling method for the study was based on both a time and a quantitative/qualitative sample relationship criterion. In relation to time, a sequential quantitative and qualitative data collection and analysis method was used in which each phase was conducted separately. For phase 1, participants were selected using non-probability opportunity sampling method in which ID professionals working in the United States were selected. For phase 2, purposive sampling was used to identify and select participants who indicated a willingness to participate in semi-structured interviews while completing the online survey.

In preparation for the study, I reviewed the literature for competency framework studies to identify the methods used for the studies. Among the methods were online surveys followed by interviews (Ritzhaupt & Kumar, 2015). The mixed-methods study included two data collection methods to identify the must-have competencies for ID practitioners and to determine the degree to which those competencies aligned with the 2012 ibstpi ID competencies. Research on competency models supports the use of at least two different data collection methods so as to compensate for the inherent weaknesses of any single method and facilitate a type of built-in validation that the competencies have been accurately identified (if the competencies from the different methods are similar) (Marrelli et al., 2005).

Phase 1: Survey

The first method, an online survey, was designed and developed by me. It was used to determine the must-have competencies for ID professionals in practice and the degree of alignment between those competencies and the ibstpi ID competency model. The purpose of the

online survey was to obtain competency-related data and to identify participants who were willing to participate in a follow up interview. The survey allowed me to reach the largest number of potential respondents feasibly possible and gather enough data to perform meaningful statistical analysis (Dillman et al., 2014).

In addition to collecting data on competencies, the survey collected details about work setting, role, title, and experience of the professional, as these were used to answer RQ3. The work setting options, used for comparative purposes during data analysis, were business and industry, higher education, government/military, healthcare and a write-in option for "other" settings. The identification of these groups was made to align with those used in previously conducted ID competency studies (Klein & Kelly, 2018; Larson, 2004).

Sampling

The study employed a non-probability opportunity sampling method. Based on this sampling method, only currently practicing instructional designers and those who had practiced instructional design in the most recent 2 years were recruited to participate in the study. Participants were self-selected.

Survey Instrument

Survey participants were asked about the following:

- Level of employment as an instructional designer and years of experience
- Proportion of time at work spent on instructional design activities
- Gender
- Completed education
- Work setting

The decision to include demographic/attribute information about the respondents was made to enable further inference-making than would be possible without this data. This type of data can used for more than descriptive purposes; it can be used to inform the analysis and uncover relationships that might exist between an identifying characteristic and survey data in other areas (Miles et al., 2020).

The competency questions were based on competencies identified in the literature review and the 2012 ibstpi ID competency model, which contains 5 domains or categories, across which are 22 competencies. Within each ibstpi competency, there are performance statements which were not listed as separate questions but displayed in the survey to provide the respondent more detail about what types of activities fell under each of the competency statements. I decided to limit the survey questions to the competency level instead of listing each of the 105 performance statements to reduce the burden of length which could lead to incomplete surveys and item nonresponse from respondent skipping items (Dillman et al., 2014).

For each competency, participants were given a specific competency, the associated performance statements, and the following sentence (see Figure 2): I require this competency or capability to perform my current work assignments. A 5-point scale was provided for selection. The answer choices were *Never*, *Occasionally*, *Usually*, *Always*, and *Not My Job*. These answer-option labels were listed in the survey for each survey item, compared to only labeling the options at the two ends of the spectrum (i.e. never 1, 2, 3, 4, always 5). Fully labeled scales are preferred by respondents, rate higher in reliability and validity, and reduce errors related to context effects (Krosnick & Fabrigar, 1997).

Survey Development

The survey instrument was developed by me using the following process. The first step involved creating a pool of items using:

- findings from the extensive literature review performed in preparation for this study,
- the International Board of Standards for Training, Performance and Instruction's (ibstpi) 2012 Instructional Designer competency model

The next step involved in developing the survey instrument was to review each item in the pool and conduct necessary revisions. The review was conducted by a university faculty member whose expertise included instructional design and technology.

Following the review and revision of survey items, the instructions were written for the survey. The instructions included an overview of the topic areas covered in the survey as a form of advanced organizer. This information gave the participant an understanding of what topics would be covered and the ordering of those topics. The inclusion of this information in the instructions was a design decision made to help reduce the likelihood of a participant needing to go back and change previously answered questions because he or she felt that a later question addressed the use of skills or abilities that the participant included or considered when answering a question earlier in the survey. Anticipation of this possibility resulted in the decision to create the survey tool in such a way as to allow participants to return to previously answered questions and change responses.

The survey was created using Qualtrics. The online version of the survey was then pilot tested with five instructional designers who worked for a variety of organizations and industries within the United States.

The decision to employ the use of an online survey for this study was supported by the following rationale. Web-based surveys are self-paced, low cost, and able to reach a large number of professionals employed in a variety of work settings. Online surveys are also able to be conducted with a shorter data collection window in a platform that is easily accessible to professionals working in the IDT field, as these individuals require the necessities for accessing and participating in the study as part of their daily work, including a web-enabled device, internet connection, and connections with other professionals in the field via online communities.

A challenge associated with the use of the online survey includes gaining sufficient cooperation and participation from the targeted population (i.e., instructional designers) to obtain the pre-determined minimum number of completed surveys for each of the identified workplace settings. As a means for increasing participation in the survey, my Invitation to Participate in Research Study (see Appendix C) included the offer to provide the participant with a copy of the study upon completion in hopes that it would provide additional motivation to complete the survey. This logic was based on the view that because the study was relevant to the field in which they work, and the findings could be used in their own competency evaluation comparative to their peers in the field.

The email introduced me as the researcher, explained the purpose of the study, asked for participation in the study, and provided a link to the survey. Enough detail was provided in the initial email to help reduce recipient anxieties about participating in the survey and increase participation rate (Dillman et al., 2014). The posts to the LinkedIn groups, like the email, introduced me as the researcher, explained the purpose of the study, asked for participation in the study, and provided a link to the survey. The survey remained open for 20 weeks and all of the survey data was recorded and stored online on the Qualtrics website under a password protected

user account. See Appendix D for the full list of survey questions. The online survey was completed by 102 participants during the data collection timeframe.

Data Collection

This online survey was distributed using direct email and LinkedIn. A total of 208 direct emails were sent using a public university's email group of alumni of the school's instructional design and technology (IDT) master's degree program. Additionally, recruitment took place using instructional design professional networking groups on LinkedIn. Work by Wakefield et al. (2012) employed the use of LinkedIn for locating suitable participants for the online survey due to the profession-specific networking it facilitated, and the range of workplace settings represented. The participants were recruited from the following LinkedIn professional groups: Independent Instructional Design Professionals, Instructional Designer, Curriculum Developer & Instructional Technologist/Designer, E-Learning 2.0, Instructional Designers in Higher Education, Society for Teaching and Learning in Higher Education, eLearning Industry, and Instructional Technology. The invitation was shared beginning March 7, 2022 and was reshared to the LinkedIn networking groups' pages for increased visibility every two weeks until July 30, 2022.

Participants in the study could access to the survey between March 7, 2022 and July 30, 2022. Because the survey was administered via the Internet, all respondents needed access to a computer or internet-capable device. Participants needed to possess the following:

- Inclusion in either the e-mail group of IDT graduates or one of the ID professional groups on LinkedIn,
- Ability to read and comprehend the English language at least on a twelfth-grade level,
- Familiarity with computer-based navigation, and

- Ability to read and respond to e-mail messages.

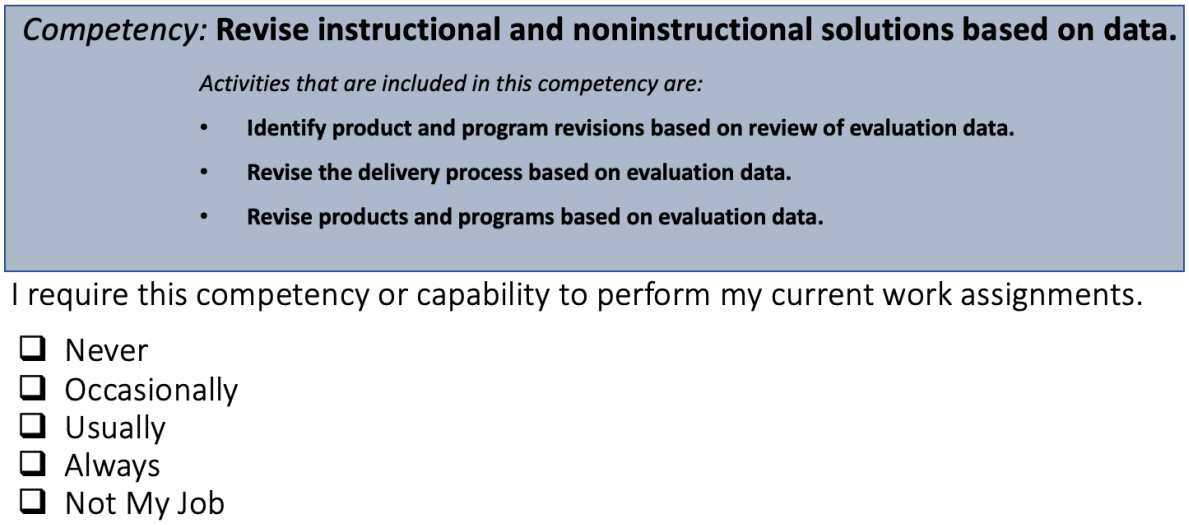
Data Analysis

Frequency statistics were run on the online survey data to answer RQ1: What are the must-have ID competencies identified by professionals? Data collected from the surveys was analyzed and compared to the ibstpi competency model to answer RQ2: Is there a difference in the ID competencies identified by ID professionals and the existing ibstpi ID competencies?

A Mann-Whitney *U* test of independence was performed to answer RQ3: Is there a difference in the degree of alignment between the competencies identified by professionals and the ibstpi ID competencies for professionals in different work settings? See Results for more detail on the data analysis.

Figure 2

Sample Competency Statement and Accompanying Performance Statements



Note. Adapted from Koszalka, Russ-Eft, & Reiser (2013).

During the online survey, participants were asked whether they would be willing to participate in a 45-minute follow-up interview. Although the online survey was important to reach a large number of participants in a timely and inexpensive manner, to gain a deeper understanding of the ID competencies used in practice, the semi-structured interviews were necessary.

Phase 2: Semi-Structured Interviews

After the data was collected from the online survey tool, analysis was performed. The semi-structured interviews were then conducted. The interviews provided the data necessary to form a more in-depth understanding than would have been possible with only the online survey. The combination of both quantitative and qualitative methods yielded both the quantity of participant data necessary for meaningful quantitative analysis and the richer qualitative data needed for

providing a more complete understanding, both of which are necessary for competency framework studies (Jakubowicz, 2006). In their work on ID competencies, Ritzhaupt & Kumar (2015) used follow-up interviews following their collection of data with an online survey tool. Miles et al. (2020) advocated the use of qualitative methods because the resulting data could be used to validate, interpret, clarify, and illustrate quantitative findings and because qualitative data has "richness and holism, with strong potential for revealing complexity" (pp. 36-37).

Data Collection

The semi-structured interviews were conducted using WebEx and recorded with permission. The goal of these interviews was to gain a better understanding of the types of activities ID professionals perform most often in practice and to explore competencies or activities not asked about in the survey. Participants for the interviews were selected from the pool of survey respondents who indicated a willingness to participate in follow-up interviews and based on their industry of employment. The goal was to have four participants, each representing a different work setting. This was achieved. To review the work setting for each participant, see Participants.

Participants

All participants came from a sample of instructional designers working in the United States. These individuals previously participated in the online survey, which is the means by which they indicated their willingness to participate in the interviews. The four individuals who were interviewed were given pseudonyms and are described below:

Chase worked full-time at a university as an associate professor. He had a bachelor's degree in business, a master's degree in business administration, a master's degree in management

information systems, and a Ph.D. in instructional technology. His first ID experience came while teaching at a technical college. He had 13 years of experience.

Paul worked full-time in a for-profit software business in the curriculum development department. He had a bachelor's degree in business and formal ID training. He was in the process of earning a master's degree in ID. He started his career as a retail manager creating PowerPoint presentations to train his employees. He had 8 years of ID experience.

Sally worked full-time in the training department of a healthcare organization. She held a bachelor's degree in communications and theatre arts and a master's degree in industrial design. She was pursuing a Ph.D. in ID at the time of the interview. She first started ID work when employed as an adjunct teacher in higher education. She had 10 years of ID experience.

Rita worked full-time in a government-affiliated organization. She held a bachelor's degree in education, a master's degree in history, and a Ph.D. in instructional technology. She began ID work while teaching at a community college following her master's degree. She had 15 years of ID experience.

Positionality

I was the main instrument for data collection. During the interviews, I kept a detailed log for notes of impressions, thoughts, and feelings during the interviews. These notes were transcribed with the interviews and included as data for phase 2 of the study.

I am an ID practitioner in the field, having my own personal view of what competencies are essential and the relative importance in daily ID work. As such, I am not neutral on the research topic. Nonetheless, I conducted this study with the intention to capture, preserve, and present the data as it was collected from study participants. Every effort was made to remove any bias and

strictly rely upon the data to form any narrative of the study's findings or to draw any conclusions.

Data Analysis

Data collection and analysis was concurrent during phase 2. The primary data source was direct quotes from the participants based on personal experiences and perspectives using their own language. An interview protocol was used during the interviews (see Appendix E). Participants were asked to describe the role they played in their ID work. They were also asked to describe what types of skills or abilities they had to acquire on their own in order to perform in their role as an ID professional. If, during the process of the interview, they described having ID experience in more than one industry, I asked them to describe any differences they felt existed when comparing the competencies or skills they needed to be effective in the different work settings.

The interviews were recorded by WebEx software and transcribed by me following the interviews. Following transcription, the interviewees were assigned pseudonyms and interview data was coded to identify themes for analysis. Data analysis yielded four themes in the interview data: need for ongoing education; mentor/mentee relationships; and importance of ID processes and learning theories.

Results

Phase 1: Survey Analysis

In quantitative studies, researchers commonly use analytical methods involving chi-square, t-test, or ANOVA (Fink, 2009). The methods employed for analysis of study data were selected based on suitability for answering the specific research questions. Qualtrics was used to collect

and store data. Excel and SPSS statistical programs were used to organize and analyze data from the online survey.

Quantitative data was collected from 102 respondents. Descriptive statistics were used to describe the collected data and the descriptive statistics were analyzed to answer the following research questions:

RQ1: What are the must-have ID competencies identified by professionals?

RQ2. Is there a difference in the ID competencies identified by ID professionals and the existing ibstpi ID competencies?

A Mann-Whitney *U* test was used to answer the final research question:

RQ3: Is there a difference in the degree of alignment between the competencies identified by professionals and the ibstpi ID competencies for professionals in different work settings?

There were four steps involved in the analysis of the data. First, frequencies were run to determine the demographics and describe the respondents. Second, the frequency data for responses were analyzed to answer the first research question concerning what the respondents felt were the must-have instructional design competencies. Next, frequency data was used to answer the second research question concerning whether a difference existed between the competencies identified by respondents and those indicated in the ibstpi ID competency model. Finally, the Mann-Whitney *U* test was performed to answer the third research question concerning whether there was a difference in the degree of alignment between the competencies identified by professionals and the ibstpi ID competencies for professionals in different work settings.

Demographic data was collected from the first section of the survey to determine gender, instructional design education, level of education, instructional design experience, proportion of

time at work spent on instructional design work, level of employment, and work setting. Descriptive statistics were used to describe the basic features of the collected data for each question. The analysis of the descriptive statistics indicated that the majority of survey participants were female at 62.7% (*n* = 64). Male participants represented 36.3% (*n* = 37). Only 1% (*n* = 1) indicated non-binary/third gender. See Table 7.

Table 7

Gender of Online Survey Respondents

Gender	*n*	%
Male	37	36.3%
Female	64	62.7%
Non-binary / third gender	1	1.0%

The analysis of the descriptive statistics indicated that most of the survey respondents had formal ID education at 64.7% (*n* = 66), but it was far from everyone. Those indicating that they did not have formal ID education were 30.4% (*n* = 31) and 4.9% (*n* = 5) indicated maybe. See Table 8.

Table 8

Formal ID Education of Online Survey Respondents

Formal Education	*n*	%
Yes	66	64.7%
Maybe	5	4.9%
No	31	30.4%

Even though instructional design is not generally offered as a bachelor's degree major, it was not surprising that the analysis of the descriptive statistics indicated that 44.1% (*n* = 45) completed bachelor's degrees because interviewees all indicated that they had entered the field after gaining some ID experience while working for a period of time in a different profession, as

opposed to entering the field directly after taking formal training for ID. Those participants with master's degrees represented 38.2% (*n* = 39). Only a small portion of participants had less than a bachelor's degree or more than a master's degree. Participants with doctoral degrees were 7.8% (*n* = 8) and 4.9% (*n* = 5) held associate degrees. With the vast number of certificate programs available for ID professionals, it was surprisingly to the researcher that only 3.9% (*n* = 4) obtained trade or technical certificates. Only 1% (*n* = 1) concluded education after high school. See Table 9.

Table 9

Highest Level of Completed Education of Online Survey Respondents

Level of Education	*n*	%
High School	1	1.0%
Trade/Technical Certificate	4	3.9%
Associate Degree	5	4.9%
Bachelor's Degree	45	44.1%
Master's Degree	39	38.2%
Doctoral Degree	8	7.8%

The analysis of the descriptive statistics indicated that the participants were experienced ID professionals with 41.2% (*n* = 42) had 5-10 years of ID experience, followed closely by 32.4% (*n* = 33) which had 11-15 years of experience. Approximately one in ten were in the most experienced group with 15 or more years of experience at 15.7% (*n* = 16). The smallest portion of participants were those newest to the profession with less than 5 years at 10.8% (*n* = 11). See Table 10.

Table 10

Years of ID Experience of Online Survey Respondents

Years	*n*	%
<5 years	11	10.8%
5-10 years	42	41.2%
11-15 years	33	32.4%
15+ years	16	15.7%

When asked about the proportion of time spent on ID activities, the answers given fell all along the spectrum, but the distribution was heaviest in the ranges between 21% and 60%. The largest percentage of respondents, 43.1% (*n* = 44), indicated that they spent 41%-60% of their work time on ID activities, followed by 38.2% (*n* = 39) respondents indicating 21%-40% of their time was spent on ID work. The analysis of the Only 6.9% (*n* = 7) of respondents spent more than 80% of their work time on ID activities, followed by 3.9% (*n* = 4) spending 61%-80% of their time on those activities. The lowest percentage of time was less than 20%, which was indicated by 7.8% (*n* = 8) of respondents. See Table 11.

Table 11

Proportion of Time at Work Spent on ID Activities of Online Survey Respondents

Proportion of Time	*n*	%
< 20%	8	7.8%
21% - 40%	39	38.2%
41% - 60%	44	43.1%
61% - 80%	4	3.9%
> 80%	7	6.9%

The analysis of the descriptive statistics indicated that when asked which work setting was the one in which they had spent the majority of their ID work experience, over half of the survey participants indicated business or industry with 54.9% (*n* = 56). The other work settings fell

closer together: 14.7% (*n* = 15) identified higher education, 10.8% (*n* = 11) identified government/military, 7.8% (*n* = 8) identified healthcare, and 11.8% (*n* = 12) identified other, which in all cases "other" was specified as pertaining to K-12 education. Therefore, for the purpose of this study, "other" is synonymous with the K-12 work setting. See Table 12.

Table 12

Work Setting of Online Survey Respondents

Work Setting	*n*	%
Business & Industry	56	54.9%
Higher Education	15	14.7%
Government/Military	11	10.8%
Healthcare	8	7.8%
Other (i.e., K-12)	12	11.8%

RQ 1: What are the must-have ID competencies identified by professionals?

The survey asked respondents to indicate the frequency of use for each competency presented. The frequency of use options available for selection were *never (1)*, *occasionally (2), usually (3), always (4),* and *not my job (5)*. For the purpose of answering the first research question, the frequencies of *usually (3)* and *always (4)* were taken to constitute a must-have competency for an instructional design practitioner. See Table 13 for the frequencies of all answer choices.

Table 13

ID Competencies and Respondent Data from Survey

Competency (E = Essential, A = Advanced, M = Managerial)	Never	Occasionally	Usually	Always	Not My Job
Communicate effectively in visual, oral & written form (E)	0%	2.0% (*n*=2)	8.8% (*n*=9)	88.2% (*n*=90)	1.0% (*n*=1)
Manage partnerships and collaborative relationships (M)	0%	7.8% (*n*=8)	33.3% (*n*=34)	56.9% (*n*=58)	2.0% (*n*=2)
Develop instructional materials (E)	1.0% (*n*=1)	6.9% (*n*=7)	36.3% (*n*=37)	55.9% (*n*=57)	0%
Plan and manage instructional design projects (M)	1.0% (*n*=1)	11.8% (*n*=12)	31.4% (*n*=32)	52.9% (*n*=54)	2.9% (*n*=3)
Update & improve knowledge, skills, and attitudes pertaining to the instructional design process and related fields (E)	1.0% (*n*=1)	24.5% (*n*=25)	48.0% (*n*=49)	25.5 (*n*=26)	1.0% (*n*=1)
Select/modify existing instructional materials (E)	0%	15.7% (*n*=16)	44.1% (*n*=45)	40.2% (*n*=41)	0%
Analyze characteristics of existing and emerging technologies and their potential use (E)	0%	23.5% (*n*=24)	39.2% (*n*=40)	36.3% (*n*=37)	1.0% (*n*=1)
Organize instructional programs and/or products to be designed, developed, and evaluated (E)	1.0% (*n*=1)	19.6% (*n*=20)	37.3% (*n*=38)	36.3% (*n*=37)	5.9% (*n*=6)
Use an instructional design and development process appropriate for a given project (E)	1.0% (*n*=1)	16.7% (*n*=17)	48.0% (*n*=49)	31.4% (*n*=32)	2.9% (*n*=3)
Design instructional interventions (E)	0%	23.5% (*n*=24)	44.1% (*n*=45)	31.4% (*n*=32)	1.0% (*n*=1)
Evaluate instructional and non-instructional interventions (E)	2.0% (*n*=2)	24.5% (*n*=25)	43.1% (*n*=44)	29.4% (*n*=30)	1.0% (*n*=1)
Select and use analysis techniques for determining instructional content (E)	6.9% (*n*=7)	29.4% (*n*=30)	35.3% (*n*=36)	28.4% (*n*=29)	0%
Revise instructional and non-instructional solutions based on data (E)	2.0% (*n*=2)	25.5% (*n*=26)	45.1% (*n*=46)	26.5% (*n*=27)	1.0% (*n*=1)
Design learning assessment (A)	4.9% (*n*=5)	25.5% (*n*=26)	42.2% (*n*=43)	26.5% (*n*=27)	1.0% (*n*=1)
Apply research & theory to the discipline of instructional design (A)	2.0% (*n*=2)	21.6% (*n*=22)	52.0% (*n*=53)	24.5% (*n*=25)	0%
Implement, disseminate, and diffuse instructional and non-instructional interventions (E)	3.9% (*n*=4)	17.6% (*n*=18)	50.0% (*n*=51)	24.5% (*n*=25)	3.9% (*n*=4)
Applying data collection and analysis skills in instructional design projects (A)	3.9% (*n*=4)	18.6% (*n*=19)	52.9% (*n*=54)	21.6% (*n*=22)	2.9% (*n*=3)
Identify and describe target population and environmental characteristics (E)	2.9% (*n*=3)	38.2% (*n*=39)	35.3% (*n*=36)	17.6% (*n*=18)	5.9% (*n*=6)
Conduct a needs assessment in order to recommend appropriate design solutions and strategies (E)	4.9% (*n*=5)	46.1% (*n*=47)	35.3% (*n*=36)	11.8% (*n*=12)	2.0% (*n*=2)
Identify and respond to ethical, legal, and political implications of design in the workplace (A)	6.9% (*n*=7)	34.3% (*n*=35)	43.1% (*n*=44)	10.8% (*n*=11)	4.9% (*n*=5)
Plan non-instructional interventions (A)	7.8% (*n*=8)	52.0% (*n*=53)	18.6% (*n*=19)	9.8% (*n*=10)	11.8% (*n*=12)

Analysis of the survey data revealed that 86% of the competencies listed on the survey were rated with a frequency of *usually* or *always* by the majority of participants. For this study, both of these ratings were considered to constitute a must-have competency. Those competencies with the highest frequencies, rated as either *usually* or *always* by 50% or more of survey participants, were:

- *Communicate effectively in visual, oral & written form*
- *Manage partnerships and collaborative relationships*
- *Develop instructional materials*
- *Plan and manage instructional design projects*
- *Update and improve knowledge, skills, and attitudes pertaining to the instructional design process and related fields*
- *Select/modify existing instructional materials*
- *Analyze characteristics of existing and emerging technologies and their potential use*
- *Organize instructional programs and/or products to be designed, developed, and evaluated*
- *Use an instructional design and development process appropriate for a given project*
- *Design instructional interventions*
- *Evaluate instructional and non-instructional interventions*
- *Select and use analysis techniques for determining instructional content*
- *Revise instructional and non-instructional solutions based on data*
- *Design learning assessment*
- *Apply research and theory to the discipline of instructional design*
- *Implement, disseminate, and diffuse instructional and non-instructional interventions*

- *Apply data collection and analysis skills in instructional design projects*
- *Identify and respond to ethical, legal, and political implications of design in the workplace*

The competencies not considered to be must-haves by at least 50% of survey participants were:

- *Identify and describe target population and environmental characteristics*
- *Conduct a needs assessment in order to recommend appropriate design solutions and strategies*
- *Plan non-instructional interventions*

RQ 2: Is there a difference in the ID competencies identified by ID professionals and the existing ibstpi ID competencies?

The analysis performed to answer RQ1 was used to compare the must-have frequencies identified by survey respondents to the list of *essential* ID competencies, as identified in the ibstpi ID competency model. See Table 14 for the complete list of competencies and their corresponding ibstpi designations. Those competencies rated by survey respondents as *always* or *usually* are considered the equivalent of *must-have* or *essential* for instructional design practice for the purposes of answering this research question.

Table 14

ID Competencies and Respondent Data from Survey Grouped by Essential, Advanced, and Managerial

7	Never	Occasionally	Usually	Always	Not My Job
Essential in the ibstpi ID Competency Model					
Communicate effectively in visual, oral & written form (E)	0%	2.0% (*n*=2)	8.8% (*n*=9)	88.2% (*n*=90)	1.0% (*n*=1)
Develop instructional materials (E)	1.0% (*n*=1)	6.9% (*n*=7)	36.3% (*n*=37)	55.9% (*n*=57)	0%
Update & improve knowledge, skills, and attitudes pertaining to the instructional design process and related fields (E)	1.0% (*n*=1)	24.5% (*n*=25)	48.0% (*n*=49)	25.5 (*n*=26)	1.0% (*n*=1)
Select/modify existing instructional materials (E)	0%	15.7% (*n*=16)	44.1% (*n*=45)	40.2% (*n*=41)	0%
Analyze characteristics of existing and emerging technologies and their potential use (E)	0%	23.5% (*n*=24)	39.2% (*n*=40)	36.3% (*n*=37)	1.0% (*n*=1)
Organize instructional programs and/or products to be designed, developed, and evaluated (E)	1.0% (*n*=1)	19.6% (*n*=20)	37.3% (*n*=38)	36.3% (*n*=37)	5.9% (*n*=6)
Use an instructional design and development process appropriate for a given project (E)	1.0% (*n*=1)	16.7% (*n*=17)	48.0% (*n*=49)	31.4% (*n*=32)	2.9% (*n*=3)
Design instructional interventions (E)	0%	23.5% (*n*=24)	44.1% (*n*=45)	31.4% (*n*=32)	1.0% (*n*=1)
Evaluate instructional and non-instructional interventions (E)	2.0% (*n*=2)	24.5% (*n*=25)	43.1% (*n*=44)	29.4% (*n*=30)	1.0% (*n*=1)
Select and use analysis techniques for determining instructional content (E)	6.9% (*n*=7)	29.4% (*n*=30)	35.3% (*n*=36)	28.4% (*n*=29)	0%
Revise instructional and non-instructional solutions based on data (E)	2.0% (*n*=2)	25.5% (*n*=26)	45.1% (*n*=46)	26.5% (*n*=27)	1.0% (*n*=1)
Implement, disseminate, and diffuse instructional and non-instructional interventions (E)	3.9% (*n*=4)	17.6% (*n*=18)	50.0% (*n*=51)	24.5% (*n*=25)	3.9% (*n*=4)
Identify and describe target population and environmental characteristics (E)	2.9% (*n*=3)	38.2% (*n*=39)	35.3% (*n*=36)	17.6% (*n*=18)	5.9% (*n*=6)
Conduct a needs assessment in order to recommend appropriate design solutions and strategies (E)	4.9% (*n*=5)	46.1% (*n*=47)	35.3% (*n*=36)	11.8% (*n*=12)	2.0% (*n*=2)
Advanced in the ibstpi ID Competency Model					
Design learning assessment (A)	4.9% (*n*=5)	25.5% (*n*=26)	42.2% (*n*=43)	26.5% (*n*=27)	1.0% (*n*=1)
Apply research & theory to the discipline of instructional design (A)	2.0% (*n*=2)	21.6% (*n*=22)	52.0% (*n*=53)	24.5% (*n*=25)	0%
Applying data collection and analysis skills in instructional design projects (A)	3.9% (*n*=4)	18.6% (*n*=19)	52.9% (*n*=54)	21.6% (*n*=22)	2.9% (*n*=3)
Identify and respond to ethical, legal, and political implications of design in the workplace (A)	6.9% (*n*=7)	34.3% (*n*=35)	43.1% (*n*=44)	10.8% (*n*=11)	4.9% (*n*=5)
Plan non-instructional interventions (A)	7.8% (*n*=8)	52.0% (*n*=53)	18.6% (*n*=19)	9.8% (*n*=10)	11.8% (*n*=12)
Managerial in the ibstpi ID Competency Model					
Manage partnerships and collaborative relationships (M)	0%	7.8% (*n*=8)	33.3% (*n*=34)	56.9% (*n*=58)	2.0% (*n*=2)
Plan and manage instructional design projects (M)	1.0% (*n*=1)	11.8% (*n*=12)	31.4% (*n*=32)	52.9% (*n*=54)	2.9% (*n*=3)

Analysis of the survey data confirmed that the competencies rated as must-have on the survey were mirrored by the competencies listed in the 2012 ibstpi ID competency model. Differences were found, however, in the distinction of whether a given competency was considered *must-have* or *essential* compared to *advanced* or *managerial*. The ibstpi ID competency model classified competencies as *essential, advanced*, or *managerial*. *Essential* is defined as those competencies which every ID is expected to master. *Advanced* is reserved for those competencies only the most experienced and expert designers. *Managerial* is designated for the competencies specifically needed by an ID manager. Although survey participants did have a range of experience, the largest group (41.2%, $n = 42$) fell in the 5-10 years range of experience. The frequencies of *usually* or *always* were reported as often for *essential* competencies as those rated *advanced* and *managerial*. There was one notable exceptions to this finding. The competency of Plan non-instructional interventions, rated as advanced by ibstpi, was rated as *Occasionally* used by 52.0% ($n = 53$) of survey participants. The overall finding, with the exception of planning non-instructional interventions, was that there did not appear to be notable differences in the frequency of use for competencies classified by ibstpi as advanced or managerial. This suggests that although the list of competencies found in the 2012 ibstpi ID competency model does reflect those most used in practice, the classifications of which are essential, advanced, or managerial is not mirrored by survey data.

RQ 3: Is there a difference in the degree of alignment between the competencies identified by professionals and the ibstpi ID competencies for professionals in different work settings?

A Mann-Whitney *U* test was performed to identify any differences between the work settings on the usage (i.e., “Never”, “Occasionally”, “Usually”, “Always”) of each competency. Given

the small sample sizes obtained for many of the work settings, the work settings were compared by two groups: (1) Business & Industry and (2) All other work settings combined.

A Mann-Whitney *U* test was run to determine if there were differences in competency use between ID professionals in the Business & Industry work setting and those working in other work settings. Distributions of competency use for the two groups were not similar, as assessed by visual inspection. Competency use was statistically significantly different between ID professionals working in the Business & Industry work setting and those working in other work settings for two competencies: Competency 4 – *Apply data collection and analysis skills in instructional design projects* and Competency 9 – *Analyze the characteristics of existing and emerging technologies and their potential use*. See Table 15.

Table 15

Descriptive Statistics and Mann-Whitney U Test Results for All Competencies

	Business & Industry		Other Work Setting		
Competency	*Mdn*	*n*	*Mdn*	*n*	*p*
Communicate effectively in visual, oral & written form	4.00	55	4.00	46	.487
Apply research and theory to the discipline of instructional design	3.00	56	3.00	46	.293
Update & improve knowledge, skills, and attitudes pertaining to the instructional design process and related fields	3.00	56	3.00	45	.250
Apply data collection and analysis skills in instructional design projects	3.00	53	3.00	46	.005
Identify and respond to ethical, legal, and political implications of design in the workplace	3.00	53	2.00	44	.093
Conduct a needs assessment in order to recommend appropriate design solutions and strategies	2.00	54	2.50	46	.825
Identify and describe target population and environmental characteristics	3.00	53	3.00	43	.421
Select and use analysis techniques for determining instructional content	3.00	56	3.00	46	.290
Analyze the characteristics of existing and emerging technologies and their potential use	3.00	55	3.00	46	.002
Use an instructional design and development process appropriate for a given project	3.00	56	3.00	43	.752
Organize instructional programs and/or products to be designed, developed, and evaluated	3.00	54	3.00	42	.363
Design instructional interventions	3.00	55	3.00	46	.084
Plan non-instructional interventions	2.00	49	2.00	41	.128
Select/modify existing instructional materials	3.00	56	3.00	46	.907
Develop instructional materials	3.50	56	4.00	46	.552
Design learning assessment	3.00	56	3.00	45	.249
Evaluate instructional and non-instructional interventions	3.00	55	3.00	46	.729
Revise instructional and non-instructional solutions based on data	3.00	56	3.00	45	.563
Implement, disseminate, and diffuse instructional and non-instructional interventions	3.00	55	3.00	43	.894
Manage partnerships and collaborative relationships	4.00	56	4.00	44	.256
Plan and manage instructional design projects	4.00	55	4.00	44	.680

Note. Ratings of 1 = “Never”, 2 = “Occasionally”, 3 = “Usually”, and 4 = “Always”.

Competency 4 – *Apply data collection and analysis skills in instructional design projects* competency use for ID professionals working in the Business & Industry work setting (mean rank = 56.9) were statistically significantly higher than for those ID professionals working in

other work settings (mean rank = 42.04; $U = 853.000$, $z = -2.836$, $p = .005$). See Table 16 and Table 17.

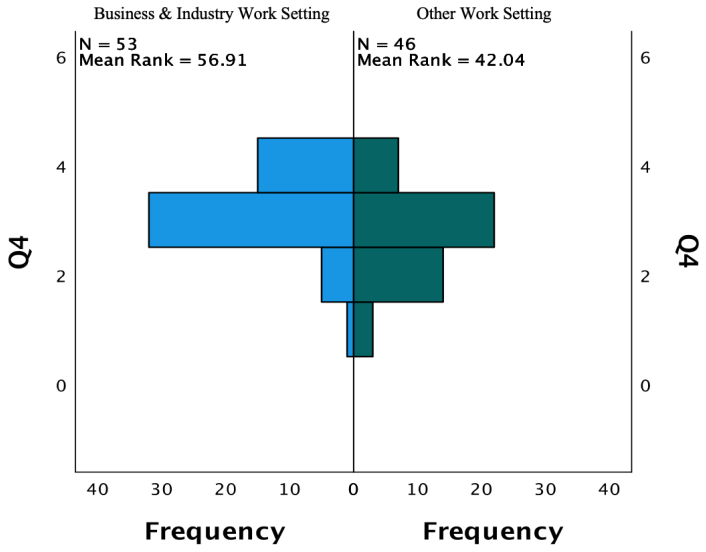
Table 16

Mann-Whitney U Test Summary for Competency 4 – Apply Data Collection and Analysis Skills in Instructional Design Projects

Total N	99
Mann-Whitney U	853.000
Wilcoxon W	1934.000
Test Statistic	853.000
Standard Error	129.048
Standardized Test Statistic	-2.836
Asymptotic Sig.(2-sided test)	.005

Table 17

Mann-Whitney U Test Mean Rank and Graph for Competency 4 – Apply Data Collection and Analysis Skills in Instructional Design Projects



Competency 9 – *Analyze the characteristics of existing and emerging technologies and their potential use* competency use for ID professionals working in the Business & Industry work

setting (mean rank = 58.63) were statistically significantly higher than for those ID professionals working in other work settings (mean rank = 41.88; $U = 845.500$, $z = -3.057$, $p = .002$). See Table 18 and Table 19.

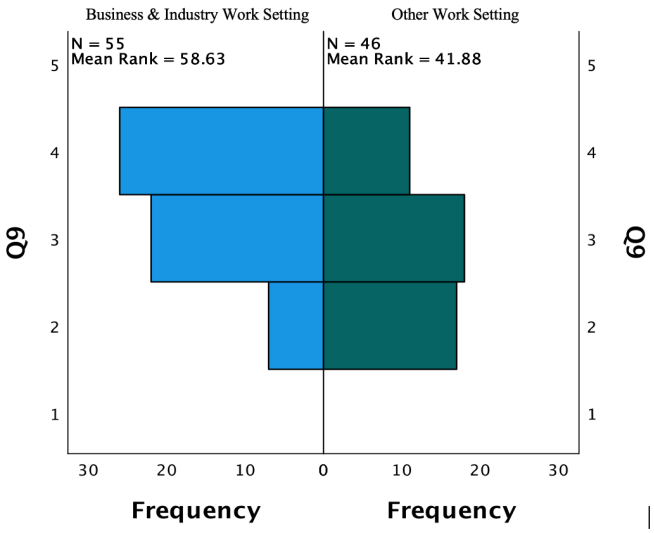
Table 18

Mann-Whitney U Test Summary for Competency 9 – Analyze the Characteristics of Existing and Emerging Technologies and Their Potential Use

Total N	101
Mann-Whitney U	845.500
Wilcoxon W	1926.500
Test Statistic	845.500
Standard Error	137.205
Standardized Test Statistic	-3.057
Asymptotic Sig.(2-sided test)	.002

Table 19

Mann-Whitney U Test Mean Rank and Graph for Competency 9 – Analyze the Characteristics of Existing and Emerging Technologies and Their Potential Use



Analysis of the survey data may suggest that there is a difference in the degree of alignment between the competencies identified by professionals and the ibstpi ID competencies for

professionals in different work settings. While the list of competencies needed by ID professionals in practice does align with the list contained in the 2012 ibstip ID competency model, which was discussed in the analysis section for RQ2, the necessity or importance given to individual competencies does appear to vary for ID professionals in Business & Industry compared to the other work settings for two of the competencies examined. This finding is supported by the prevalence of literature on ID competencies for specific work settings (Mani, 2013; Richey et al., 2007; Ritzhaupt & Kumar, 2015; Sugar et al., 2011).

Phase 2: Semi-Structured Interviews Analysis

The interview participants came from a variety of work settings, experience, and education. They also had different paths for entering the ID field.

The interview transcripts and notes from the interviews were coded and reviewed to identify themes and information that the quantitative data would not have revealed about ID work or those professionals in the field.

All of the interview participants had started careers in other fields before coming into ID. In fact, the beginning of their ID experience was gained while employed in a non-ID role. Although the paths were varied, all four of the participants reported that they enjoyed the ID work more than the other responsibilities of their roles and this was the reason that they eventually moved into ID-specific roles.

The purpose of the interview was to gain greater insight into the quantitative survey data findings. The interviews did provide greater detail on the competencies covered in the survey. However, some unexpected themes emerged from the interviews which have ramifications for the competencies. These ramifications are covered in the Discussion section.

The first theme to emerge from the interviews was the need for ongoing education or training. The differences came in when we discussed who was responsible for providing the training opportunities. Paul shared:

> It's one of those things where the person who is the instructional designer has to be flexible enough to learn, to understand that this is a field that is growing dynamically, and vertically. So that you have to be willing to learn new technologies on the fly. And you have to be willing to educate yourself. If you're not you're going to fall by the wayside. Quick. I mean, you will be out of date within months, literally.

Although Rita also shared about the need for ongoing education, the company she worked for would provide it. Rita said:

> All of the instructional designers do not have formal training in instructional design. Some came up through the business and learned instructional design. [The company] will put them through one of those [Association for Training and Development] (ATD) certificate programs. The tools are changing faster than the industry.

Also talking about the need for additional education or training, Chase shared:

> [Training] takes some sort of investment and is the university willing to make the investment. I recently changed universities, at my new place they require this online course, but it's not training. It's a baseline of do you know how to work the learning management system (LMS).

Sally shared her experience, which included software vendors, this way:

> We'll get training from the vendors based on how they set up their system, but we were never trained how to be necessarily instructional designers. They didn’t give us

> necessarily training or help us develop any competencies as far as being an actual instructional designer.

A second theme that emerged in the interviews was the mentor/mentee relationship as a means for providing support and guidance to newer instructional designers. Chase shared:

> I think there's that difference between instructional design as a professional and instructional design as a consultant, back slash mentor. I think there is a role out there for mentorship without a doubt. I definitely think that I would not have come as far as I did without my mentor, what my mentor meant was huge to me.

Paul shared about having a mentor in this way:

> I connected with a mentor, who explained to me, what are the instructional design guidelines, and she spent a lot of time educating me on basic processes, Addie, you know, what's Bloom's taxonomy? What is an objective? And that's when it came full circle. What are learning outcomes? What is the whole thing with evaluation? And why is that important, and all these things. You know, I still am good friends with my mentor.

A third theme that emerged was the importance given to the ID processes and learning theories. In each of the interviews, when asked about which ID competencies were necessary for ID work, Addie and learning theories were recurring. Addie is an acronym for the steps of an instructional design process: analysis, design, development, implementation, and evaluation. Paul said:

> I don't think you can function without the competency of understanding Addie. I think Addie is essential to being a designer. It just is. You have to understand basic analysis, and evaluation and implementation, or, you know, I mean, you have to understand those functional sets, because in some way, and you know, others will debate what theory you

> use, but everything kind of derives off of Addie in some way, whether it's [successive approximation model] (SAM), or whether it's any of the other theories, you want to pull out rapid design or whatnot.

Chase brought up learning theory this way:

> Learning theory tells you about scaffolding. Learning theory tells you to give it to them [students] in digestible chunks. Learning theory is all about if they don't get feedback, then they lose confidence. They become afraid to go on to the next module.

Although Rita, who worked in a government-affiliated organization, felt that Addie and learning theory was important, she cautioned about using the academic terms when talking with stakeholders:

> You know a lot of things. You don't need to tell everybody all that. You just make it work and let them think it's magic, that you did this magically. You don't need to tell them all about all these writers in these books that you've read. And if you do bring that stuff up, they [stakeholders] immediately tune out and disregard you as some academic person.

A fourth theme from the interviews was the importance of communication skills. In the semi-structured interview, Sally captured the importance of communication skills very succinctly by described the role she played in her ID work with stakeholders this way:

> I will be a liaison between the department and the software designers. I also understand how the department works. So, I would be the back-and-forth person to say no, they're not going to want this. They're going to need it to work this way.

Paul shared about the importance for written communication skills and the foundational aspect of this competency when he shared:

> From a basic skill set, I believe you have to have the ability to outline and organize your thoughts. That outline should always include a who, what, why, where, and when - answering the 5 Ws. Most trainings do that in some way and that's one of the first things you should have, no matter what.

Discussion

The main purpose of this study was to answer the following research questions:

- RQ1. What are the must-have ID competencies identified by professionals?
- RQ2. Is there a difference in the ID competencies identified by ID professionals and the existing ibstpi ID competencies?
- RQ3: Is there a difference in the degree of alignment between the competencies identified by professionals and the ibstpi ID competencies for professionals in different work settings/industries?

The quantitative data show that the must-have competencies identified by professionals were: *communicate effectively in visual, oral & written form*; *manage partnerships and collaborative relationships*; *develop instructional materials*; *plan and manage instructional design projects*; *applying data collection and analysis skills in instructional design projects; implement, disseminate, and diffuse instructional and non-instructional interventions*; and *apply research and theory to the discipline of instructional design.*

Communication skills are critical from the start of needs assessment and all the way to the point of delivering the final product (Klein & Kelly, 2018). Strong communication skills are necessary for success in other areas of ID work, such as creating effective instructional materials (Chongwony et al., 2020). The importance of communication skills was also supported by the interview data.

Related to communication skills is the competency of *manage partnerships and collaborative relationships*. Without strong communication skills, it would not be possible to build effective working relationships and participate in teamwork required in ID work (Anderson et al., 2019; Chongwony et al., 2020). ID professionals must work with a number of individuals throughout the course of a project, including subject matter experts, graphic designers, multimedia developers, video producers, students, project managers (Stefaniak et al, 2021).

The other competencies that ranked high in frequency of use all related to steps within the Addie model, one of the most well-known and commonly used among ID professionals. The competency of *develop instructional materials* is the third step of the Addie process. *Plan and manage instructional design projects* encompass the entire workflow and the relationships that are necessary for every step of the Addie model. *Applying data collection and analysis skills in instructional design projects* is necessary in the analysis, which happens as the first step of Addie and determines every aspect of the project that will follow. *Implement, disseminate, and diffuse instructional and non-instructional interventions* is synonymous with the implementation step of Addie. *Apply research and theory to the discipline of instructional design* is an integral part of the analysis and design steps of Addie. The use of Addie, whether all steps are used in order or only individual components are employed, is consistently reported in the literature as an essential competency for ID professionals (Klein & Kelly, 2018). Using an Addie process is one of the most effective tools for creating ID products (Branch & Merrill, 2012).

A comparison of the competencies most frequently used by ID professionals from the survey and the 2012 ibstpi ID competency model revealed that the model was still a good fit for the competencies needed in ID practice. However, the model classified competencies into one of three categories (*essential, advanced*, or *managerial*). This is where the study data differed from

the model. *Essential* is defined as those competencies which every ID is expected to master. *Advanced* is reserved for those competencies only the most experienced and expert designers. *Managerial* is designated for the competencies specifically needed by an ID manager. Although survey participants did have a range of experience, the largest group (41.2%, $n = 42$) fell in the 5-10 years range of experience. The frequencies of *usually* or *always* were reported as often for *essential* competencies as those rated *advanced* and *managerial*. There was one notable exceptions to this finding. The competency of *plan non-instructional interventions*, rated as advanced by ibstpi, was rated as *Occasionally* used by 52.0% ($n = 53$) of survey participants. The overall finding, with the exception of *planning non-instructional interventions*, was that there did not appear to be notable differences in the frequency of use for competencies classified by ibstpi as advanced or managerial. This suggests that although the list of competencies found in the 2012 ibstpi ID competency model does reflect those most used in practice, the classifications of which are *essential*, *advanced,* or *managerial* is not mirrored by survey data. These findings are supported by research by Klein and Kelly (2018), which found that the competencies for entry-level and experienced designers only differed in that the experienced designers were expected to have a higher proficiency in those competencies than was expected of entry-level designers.

The question of whether there was a difference in the degree of alignment between the competencies identified by professionals and the ibstpi ID competencies for professionals in different work settings is answered by the quantitative data. Although the 2012 ibstpi ID competency model does contain the competencies needed by ID professionals, as a whole, the survey data suggest that the degree of importance for individual competencies within that model vary for two of the 21 competencies when the work setting of Business & Industry is compared

to the other work settings. Although future studies would need to be performed to confirm these findings and contributing factors for them, it is possible that in the Business & Industry work setting, the group for which instruction is created may be the same over a longer period of time, such as the employees at a given facility, versus the changing nature of cohorts or classes that come through a given grade or class in the settings of academia or patients in healthcare settings. This more consistent group of learners or instructional recipients could account for the greater frequency of use for the competency of *Applying data collection and analysis skills in instructional design projects* because the results of those activities can be applied directly to the specifics of the training that will be produced. Business & Industry may also have a greater priority given to return on investment due to their for-profit business models, which could be a factor in the higher use of collecting data to ensure the instruction will fit the need of the population which will consume it.

For the competency of *Analyze the characteristics of existing and emerging technologies and their potential use*, it is possible that the tools and software available for use by ID professionals in the Business & Industry work setting changes more frequently due to the increased freedom of these organizations to allocate money for the acquisition of newer technologies for their ID departments as compared to the governance often in place over academic institutions which could slow the introduction of these tools into the ID departments. Additionally, the majority of ID professionals are employed in the Business & Industry work setting, which could make this setting the entry point for ID professions which have recently left school or other ID training programs. These newer additions to the workplace would also introduce the new technologies into these departments, resulting in the need for the department to more frequently *Analyze the characteristics of existing and emerging technologies and their potential use.*

The literature suggests reasons that these differences may exist, including whether an industry utilizes outsources for any of its training products, which would affect the role and responsibilities of the in-house ID professional (Richey et al., 2007). Studies that examined competencies listed in job postings for ID positions found work setting-specific differences (Klein & Kelly, 2018; Byun, 2000). The role and responsibilities of the ID professional in higher education is extensively covered in the literature (Stefaniak et al., 2021; Anderson et al., 2019; Kumar & Ritzhaupt, 2017; Kumar & Ritzhaupt, 2015). As an explanation for why there was a need for specialized content for these ID professionals, Kumar and Ritzhaupt (2017) pointed to the multitude of individuals with whom the ID must work beyond the normal group involved in ID projects, including faculty across academic disciplines as primary stakeholders and SMEs as well as learners as stakeholders. Additionally, Ritzhaupt et al. (2021) found that IDs in higher education commonly had the responsibility to provide ongoing technical and pedagogical support.

A theme that emerged in the qualitative phase of the study was the mentor/mentee relationship as a means for providing support and guidance to newer instructional designers. Additional studies should be conducted to determine whether a competency that should be added for ID professionals is the ability to work in a mentor/mentee relationship.

The utility of having competency models is reliant upon the model accurately reflecting practice. The aspiring ID professional needs to know how to prepare and what will be expected by employers. Schools need to align program offerings to produce work-ready professionals upon graduation from their institutions. Employers need to know what an effective ID professional should be able to demonstrate. At present, the ibstpi ID competency model is a useful place to start for professionals, schools, and employers. The competencies provided in the

model appear to be valid for ID practice. More studies are needed to evaluate the differences that may exist for specific work settings that would allow professionals within those organizations to function more efficiently, with greater confidence, and while being supported with all that knowledge can afford.

Recommendations for the Field

The findings of this study have implications for professionals, educators of ID professionals, professional organizations, and employers. Although future studies should be conducted with a larger sample to validate the findings, the following recommendations are offered for the utility they may provide in serving and bettering the IDT field.

1. Facilitate the formation of or participate in mentor/mentee relationships.
2. Promote awareness of and access to training that may be available on new tools or other ID competencies, such as from software vendors, especially in smaller ID departments or companies where resources may be limited.

Implications and Limitations

This study sought to identify the must-have competencies for instructional design practitioners in the workplace today, to determine whether the identified competencies aligned with the 2012 ibstpi ID competency model, and to determine if there was a difference in the degree of alignment between the competencies identified by professionals and the ibstpi ID competencies for professionals in different work settings. In this study, quantitative data was collected and analyzed from a sample of 102 instructional designers to determine the must-have competencies of ID professions in the workplace today. Qualitative data was collected from four instructional designers to give a more complete picture of the involvement of ID professions in the ID projects and changes they felt were taking place in the field and role of IDs today.

During the research study, assumptions were made. It was assumed that the respondents of the online survey were representative of instructional design practitioners, and they completed the survey questions truthfully and reflective of 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 findings of this study cannot be considered representative of the larger population of instructional designers due to the small sample size and may differ significantly from the findings of a study involving a larger number of participants. The following limitations, which may have affected the collection and analysis of the data, were recognized by this study.

1. Validity was limited by the number of participants who completed the online survey, which included a select number of individuals from business and industry, higher education, military and government, healthcare, and k-12 institutions.
2. Generalization of the findings from this study is limited by the number of participants and may not be representative of the population of all instructional designers in practice.

Analysis of the data collected in this study revealed that the 2012 ibstpi ID competency model contains the competencies most used by ID professionals in practice today. However, the division between essential and advance or managerial competencies no longer seems to exist, assuming that it did in 2012 when the ibstpi competency model was last revised. Furthermore, work setting does appear to impact the frequency of use for two of the competencies studied. The limited number of survey respondents from each of the various work settings limited the degree

to which significant differences could be examined statistically, which necessitated the combining of work settings during the analysis.

For the practitioner, the findings of this study can be used to determine what, if any, professional development might be needed to stay competitive in the field. Professional organizations catering to the ID field can use this study's findings to ensure that their professional development workshops meet the current needs of ID practitioners. Educational institutions can use the findings to design programs and course content most needed by students hoping to enter the field of instructional design.

Further study is needed to validate and understand the differences found among ID professionals employed in the various work settings. Since the ibstpi ID competencies have not been revised since 2012, future studies should be conducted to validate if expectations of employers has expanded and what revisions should be made to the ID competency model.

References

AECT (2020). *About Us.* Retrieved from https://www.aect.org/about_us.php

Anderson, M. C., Love, L. M., & Haggar, F. L. (2019). Looking beyond the physician educator: The evolving roles of instructional designers in medical education. Medical Science Educator, 29(2), 507-513.

Aron, A., Aron, E., & Coupe, E. (2009). *Statistics for psychology* (5th ed.). Upper Saddle River, NY: Pearson Education, Inc.

ATD (2020). *The ATD Competency model*. Retrieved from: https://www.td.org/Certification/Competency-Model.

Bloomberg, L.D., & Volpe, M. (2019). *Completing your qualitative dissertation: A road map from beginning to end.* Thousand Oaks, CA: Sage.

Bogdan, R.C., & Biklen, S.K. (2007). *Qualitative research for education: An introduction to theories and methods* (5th ed.). Boston: Pearson Education, Inc.

Branch, R. M., & Merrill, M.D. (2012). Characteristics of instructional design models. In R.A. Reiser, & J.V. Dempsey (Eds.), Trends and issues in instructional design and technology. (3rd ed., pp. 8-16). London, UK: Pearson.

Brown, A., Sugar, B. & Daniels, L. (2007). Media production curriculum and competencies: Identifying entry-level multimedia production competencies and skills of instructional design and technology professionals: Results from a biennial survey. Paper presented at Association of Educational Communications and Technology.

Byun, H. (2000). Identifying job types and competencies for instructional technologists: A five-year analysis (Ph.D.). Available from ProQuest Dissertations & Theses Full Text. (304601855).

Chongwony, L., Gardner, J.L., & Tope, A. (2020). Instructional design leadership and management competencies: Job description analysis. *Online Journal of Distance Learning Administration*, *23*(1).

Creswell, J.W. (2009). *Research design: Qualitative, quantitative, and mixed method approaches.* Thousand Oaks, CA: Sage.

Creswell, J.W., & Guetterman, T. C. (2019). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research (6th ed.)*. Boston: Pearson. -0=

Dillman, D.A., Smyth, J.D., & Christian, L.M. (2014). *internet, phone, mail, and mixed-mode surveys: The tailored design method* (4th ed.). Hoboken, NJ: Wiley & Sons.

Feldon, D., & Kafai, Y. (2008). Mixed methods for mixing reality: Understanding users' avatar activities in virtual worlds. *Educational Technology Research & Development, 56*(5/6), 575-593.

Fink, A. (2009). *How to conduct surveys: A step by step guide* (4th ed.). Thousand Oaks, CA: Sage.

Guerra-Lopez, I., (2008). Key competencies required of performance improvement professionals. *Performance Improvement Quarterly, 16*(1), 55-72.

Hsieh H. & Shannon, S. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research, 15*(9), 1277-1288.

ibstpi (2020). *About us*. Retrieved from: http://ibstpi.org/about-us/

Jakubowicz, P. (2006). *Complexity theory and online learning*. Paper presented at the Asia-Pacific Educational Research Association International Conference, Hong Kong, China.

Johnson, B., & Christensen, L. (2008). *Educational research: Quantitative, qualitative, and mixed approaches* (3rd ed.). Thousand Oaks: CA: Sage.

Kang, Y., & Ritzhaupt, A. D. (2015). A job announcement analysis of educational technology professional positions, knowledge, skills, and abilities. *Journal of Educational Technology Systems, 43*(3), 231-256.

Kenny, R.F., Zhang, Z., Schwier, R.A., & Campbell, K. (2008). A review of what instructional designers do: Questions answered and questions not asked. *Canadian Journal of Learning and Technology, 31*(1).

Klein, J. D., & Kelly, W. Q. (2018). Competencies for instructional designers: A view from employers. *Performance Improvement Quarterly, 31*(3), 225-247. doi:10.1002/piq.21257

Koszalka, T. A., Russ-Eft, D. F., & Reiser, R. (2013). *Instructional designer competencies: The standards.* Charlotte, NC: Information Age Publishing.

Krosnick, J.A., & Fabrigar, L.R. (1997). Designing rating scales for effective measurement in surveys. In L. Lyberg, P. Biemer, M. Collins, L. Decker, E.D. de Leeuw, C. Dippo, N. Schwarz, & D. Trewin (Eds.), *Survey measurement and process quality* (pp. 141-164). New York, NY: Wiley-Interscience.

Kumar, S. & Ritzhaupt, A. (2017). What do instructional designers in higher education really do?. *International Journal on E-Learning, 16*(4), 371-393. Waynesville, NC USA: Association for the Advancement of Computing in Education (AACE). Retrieved from https://www.learntechlib.org/primary/p/150980/.

Larson, M.B. (2004). *Survey and case study analyses of the professional preparation of instructional design and technology (IDT) graduates for different career environments* (Doctoral dissertation, Virginia Polytechnic Institute and State University). Retrieved from http://scholar.lib.vt.edu/theses/available/etd-10252004-171426/.

Liu, M., Gibby, S., Quiros, O. & Demps, E. (2002). Challenges of being an instructional designer for new media development: A view from the practitioners. *Journal of Educational Multimedia and Hypermedia, 11*(3), 195-219.

Lowenthal, P., Wilson, B.G., & Dunlap, J.C. (2010). An analysis of what instructional designers need to know and be able to do to get a job. Presented at the annual meeting of the Association for Educational Communications and Technology. Anaheim, CA.

MacLean, P., & Scott, B. (2011). Competencies for learning design: A review of the literature and a proposed framework. *British Journal of Educational Technology (42*)4, 557-572.

Mani, V. (2013). Assessing the competencies and developing a competency mapping system for managing talent. *International Journal in Management and Social Science, 1*(2), 69-92.

Marrelli, A.F. (1998). An introduction to competency analysis and modeling. *Performance Improvement, 37*(5), 8-17.

Marrelli, A.F., Tondora, J., & Hoge, M.A. (2005). Strategies for developing competency models. *Administration and Policy in Mental Health, 32*(5/6), 533-561.

Martin, F. & Ritzhaupt, A. D. (2020). Standards and Competencies: For Instructional Design and Technology Professionals. In J. K. McDonald & R. E. West, *Design for Learning: Principles, Processes, and Praxis.* EdTech Books. Retrieved from https://edtechbooks.org/id/standards_and_competencies

Miles, M.B., Huberman, A.M., & Saldana, J. (2020). *Qualitative data analysis: A methods sourcebook*. Thousand Oaks, CA: Sage.

Munzenmaier, C. (2014). Today's instructional designer: Competencies and careers. *eLearning Guild.* Retrieved from https://www.elearningguild.com/insights/178/todays-instructional-designer-competencies-and-careers/

Neuendorf, K.A. (2002). *The content analysis guidebook.* Thousand Oaks, CA: Sage.

Onwuegbuzie, A.J., & Burke Johnson, R. (2006). The validity issue in mixed research. *Research in the Schools, 13*(1), 48-63.

Park, J., & Luo, H. (2017). Refining a competency model for instructional designers in the context of online higher education. *International Education Studies, 10*(9), 87. doi:10.5539/ies.v10n9p87

Price, J.H., Dake, J.A., Murnan, J., Dimmig, J., & Akpanudo, S. (2005). Power analysis in survey research: Importance and use for health educators. *American Journal of Health Education, 36*(4), 202-207.

Rasmussen, K. L. (2002). Competence at a glance: Professional knowledge, skills, and abilities in the field of instructional design and technology. In R.A. Reiser & J.V. Dempsey (Eds.), *Trends and issues in instructional design and technology* (pp. 375-386). Upper Saddle River, NJ: Merrill Prentice Hall.

Richey, R. C., Morrison, G., & Foxon, M. (2007). Instructional design in business and industry. In R.A. Reiser, & J.V. Dempsey (Eds.), Trends and issues in instructional design and technology (2nd ed., pp. 174-184). Upper Saddle River, NJ: Prentice Hall.

Ritzhaupt, A. D., & Kumar, S. (2015). Knowledge and skills needed by instructional designers in higher education. *Performance Improvement Quarterly, 28*(3), 51-69. doi:10.1002/piq.21196

Ritzhaupt, A. D., Kumar, S., & Martin, F. (2021). The Competencies for Instructional Designers in Higher Education. In J. E. Stefaniak, S. Conklin, B. Oyarzun, & R. M. Reese (Eds.), *A Practitioner's Guide to Instructional Design in Higher Education*. EdTech Books. https://edtechbooks.org/id_highered/the_competencies_for

Ritzhaupt, A. D., & Martin, F. (2014). Development and validation of the educational technologist multimedia competency survey. *Educational Technology Research and Development, 62*(1), 13-33.

Ritzhaupt, A. D., Martin, F., Pastore, R., & Kang, Y. (2018). Development and validation of the educational technologist competencies survey (ETCS): Knowledge, skills, and abilities. *Journal of Computing in Higher Education, 30*(1), 3-33. doi:10.1007/s12528-017-9163-z

Ritzhaupt, A., Martin, F., & Daniels, K. (2010). Multimedia competencies for an educational technologist: A survey of professionals and job announcement analysis. *Journal of Educational Multimedia and Hypermedia, 19*(4), 421-449.

Russ-Eft, D., Koszalka, T., Sleezer, C., Babbel, B., & Senior, F. (2012). *Instructional designer competencies: A validation study.* Paper presented at the University Forum for Human Resource Development Conference, Universidade Lusíada de Vila Nova Famalicão. Retrieved from https://www.ufhrd.co.uk/wordpress/russ-eft-d-koszalka-t-a-sleezer-c-babbel-b-and-senior-f-instructional-designer-competencies-a-validation-study/

Stefaniak, J.E., Conklin, S., Oyarzun, B., & Reese, R.M. (2021). *A Practitioners Guide to Instructional Design in Higher Education,* EdTech Books. https://edtechbooks.org/id_highered

Sugar, W., Brown, A., Daniels, L., & Hoard, B. (2011). Instructional design and technology professionals in higher education: Multimedia production knowledge and skills identified from a Delphi study. *Journal of Applied Instructional Design, 1*(2), 30-46.

Sugar, W., Hoard, B., Brown, A., & Daniels, L. (2012). Identifying multimedia production competencies and skills of instructional design and technology professionals: An analysis of recent job postings. *Journal of Educational Technology Systems, 40*(3), 227-249.

Tennyson, R.D. (2001). Defining core competencies of an instructional technologist. *Computers in Human Behavior, 17*, 355-361

Wakefield, J.S., Warren, S. J., & Mills, L.A. (2012). Traits, skills, & competencies aligned with workplace demands: What today's instructional designers need to master. In P. Resta (Ed.), Proceedings of the *Society for Information Technology and Teacher Education International Conference 2012* (pp. 3126-3132).

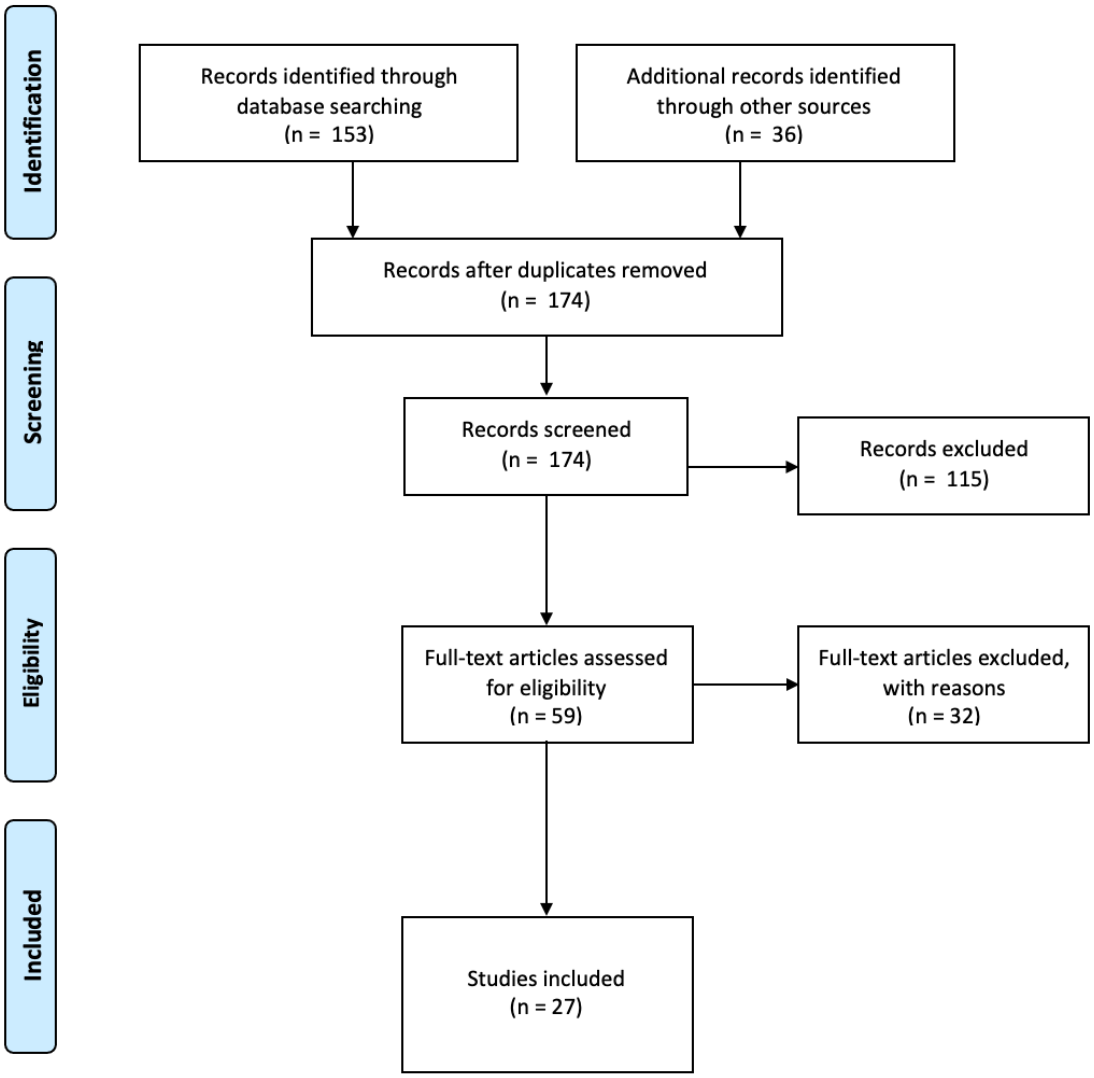
Yanchar, S.C., & Hawkley, M. (2014). "There's got to be a better way to do this": A qualitative investigation of informal learning among instructional designers. *Educational Technology Research and Development, 62*(3), 271-291.

APPENDICES

Appendix A

Figure A1

PRISMA 2009 Flow Diagram



Note. Adapted from D. Moher et al.(2009).

Table A1

Competency Themes Found in the Studies Included in Literature Review

Competency Theme/Domain	Number of Studies(%)	Which studies include this competency in their findings
Application of Instructional Design Theories & Models (including **ADDIE**)	16(59%)	**27**, **24**, **22**, 21, **20**, **16**, **13**, **12**, **10**, 9, 8, 7, 6, 3, 2, **1**
Knowledge of Learning Theories (including **Adult Learning Theory**)	11(40%)_	**24**, **22**, 21, 17, **16**, **13**, 12, **8**, 7, **4**, 1
Soft Skill: Collaboration	10(37%)	25, 22, 21, 13, 12, 10, 9, 8, 2, 1
Soft Skill: Communication	10(37%)	27, 26, 22, 18, 16, 13, 8, 7, 4, 2
Specific Software Proficiency (including **Learning Management Systems (LMS)**)	8(30%)	23, **22**, **17**, 16, **13**, **11**, 9, **8**
Multimedia Production Skills	7(26%)	23, 22, 17, 16, 8, 7, 2
Course/Content Design & Development Skills	6(22%)	18, 15, 12, 8, 3, 1
Evaluation (Training & Content) Skills	4(15%)	22, 15, 12, 2
Online & e-Learning Content Development Skills	4(15%)	23, 13, 10, 8
Project Management Skills	4(15%)	22, 8, 2, 1
Knowledge of Methods of Instruction	2(7%)	17, 7
Ability to Train Faculty	2(7%)	14, 1
Ability to Work Under Pressure	1(4%)	4
Ability to Work with Resource Constraints	1(4%)	4
Soft Skill: Adaptability	1(4%)	4
Alignment of Objectives, Intervention, & Assessment	1(4%)	9
Change Management Skills	1(4%)	2
Conflict Resolution Skills	1(4%)	4
Knowledge of Interviewing Techniques	1(4%)	4
Knowledge of Business of Learning Technologies	1(4%)	3

Competency Theme/Domain	Number of Studies(%)	Which studies include this competency in their findings
Ability to Mentor Junior Instructional Designers	1(4%)	14
Participation in Instructional Design Research	1(4%)	14
Soft Skill: Problem Solver	1(4%)	2
Professional Development Skills	1(4%)	2

Note. Bolded numbers indicate studies corresponding to the bolded competency in the Competency Theme/Domain column.

Appendix B

Table B1

Respondent Personal Data Collected Using Online Survey

Gender
Level of Employment (FT, PT)
Highest Level of Education Completed
Years of Instructional Design Experience

Appendix C

INVITATION TO PARTICIPATE IN SURVEY STUDY

My name is Molly Lance and I am a Ph.D. student at Georgia State University in Atlanta, GA. My major professor, Dr. Jonathan Cohen and I are conducting a research study regarding the perceptions of certain IDT practices and would appreciate your input via an online survey.

This survey should take no longer than 30 minutes to complete and if you choose to do so, please click on the link below.

To thank you for your time and response. If you would like a receive a copy of the completed study and its findings, there will be a place to indicate such and provide your e-mail address within the online survey.

Because the validity of the results depends on obtaining a high response rate, your participation is crucial to the success of this survey. Please be assured that your responses will be held in the strictest confidence. All responses will be reported only in aggregate; no identifying information will be reported.

Please do not hesitate to contact me at (678) 361-2350 or {e-mail} or Dr. Cohen at {e-mail} if you have any questions.

If you agree to participate in this study, please use the link below to access our online form.

Thank you in advance for your time and help.

{LINK}

Sincerely,

Molly B. Lance

Ph.D. Candidate

Georgia State University

Email: mlance3@student.gsu.edu

Appendix D

INITIAL CONTACT WITH SURVEY PARTICIPANTS

The letter/introduction text, shown below, was included with the survey link posts made to the professional ID groups in LinkedIn.

"I would like to invite you to participate in a survey conducted for my Ph.D. dissertation research investigating what the must-have competencies are in instructional design practice.

Data collected from your responses will remain confidential and no personally identifiable information was included in any publications that result from this study. Also, if you want to learn more about this research into our shared field and choose to participate, the results were made available to you at the conclusion of the research.

If you're interested in this topic and would like to participate in the 30-minute online survey (with optional follow-up phone interviews), then visit the following link to learn more about this research: INSERT.

Regards,

Molly Lance, Instructional Designer and Ph.D. Candidate

Georgia State University

Appendix E

INTERVIEW PROTOCOL

(Note: ID interviewees will receive these questions in advance.)

A. Interviewer Introduction:

My name is Molly Lance and I am doing research on the must-have competencies for instructional designers. In particular, I'm trying to identify those competencies which are essential for completion of ID projects today. Once these are identified, I will be reviewing the findings carefully to determine if there are any significant differences for any particular groups within the field, such as those employed in certain industries. From February to June, I conducted an online survey of ID practitioners. You completed that survey and also indicated that you would be willing to participate in this follow-up interview. Thank you for your willingness to participate in this interview.

I would like to ask you about your experiences and views related to some of my findings from the survey.

B. Obtain permission to record the video/audio call.

C. Discuss issues of confidentiality and anonymity.

D. Obtain verbal informed consent.

E. Start recording and ask the following:

- "Please state your name" (wait for statement of name)
- "You understand that I'm recording this interview?" (wait for affirmation)
- "...and you give me permission to do so?" (wait for affirmation)

- "You understand that you are not required to participate in this study and that you may withdraw at any time – or decline to answer any specific question – without being subject to adverse action?" (wait for affirmation)
- "...and do you wish to participate at this time?" (wait for affirmation)
- Continue with the questions, as follows...

1. Could you please briefly describe for me your background, how you came to choose a career in instructional design, your own academic degree program, and work experience? (I will also attempt to ascertain this in advance by reviewing his/her online survey responses.)
2. You indicated on the online survey that you have worked on instructional design projects. In thinking about these projects, will you discuss your role in those projects?
3. This study is interested in knowledge, skills, and attitudes/abilities (competencies) you needed in order to perform your role as an instructional designer.
    a. Will you talk a little about why you consider this important?
    b. What types of knowledge or skills did you need to brush up on to function sufficiently in these projects?
4. Tell me about a typical work day when you were working on an ID project.
    a. What were the tasks you typically perform?
    b. Who (what was their title or role) did you work with?
    c. What new skills did you need to master?
5. Did you work on a team with other professionals?
    a. What types of professionals did you work with in these teams?
    b. Were there challenges you encountered when working in a multidisciplined team?
    c. How did you resolve these challenges?

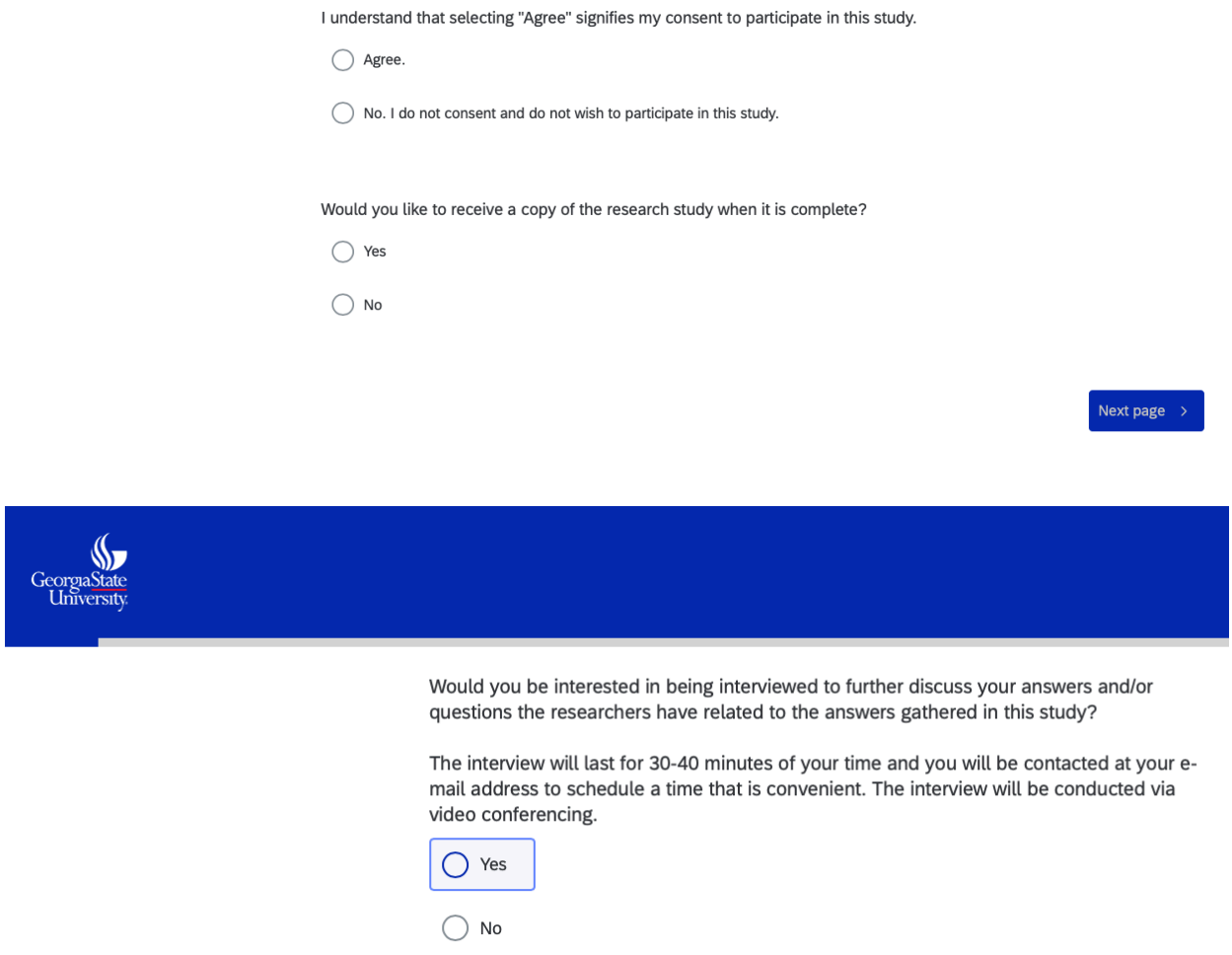
6. In considering the knowledge, skills, attitudes/abilities (competencies) of an instructional designer, which ones do you think are the most important ones for an instructional designer to have in order to successfully complete ID projects today?

Appendix F

Figure B1

Survey Instrument Interface Showing Demographic Questions and a Competency Question

Informed Consent will be inserted prior to the first question.



Are you currently working in an instructional design role or do you spend a significant amount of your time designing and developing instruction?

- ◯ Yes (If yes, skip the next question)
- ◯ No

If no, have you worked as an instructional designer or spent a significant amount of time designing or developing instruction **in the last 2 years**?

- ◯ Yes
- ◯ No (If you answered No to both of the last 2 questions, you should discontinue answering the remainder of the survey questions and simply submit the survey now. Thank you.)

Please indicate your current level of employment

- ◯ Full-time (40 hours/week, 10 months or more per year)
- ◯ Three-quarter time (30 hours/week, 10 months or more per year)
- ◯ Half-time (20 hours/week, 10 months or more per year)
- ◯ Less than half-time

Please indicate your gender:

- ◯ Male
- ◯ Female
- ◯ Non-binary / third gender
- ◯ Prefer not to say

Do you have formal instructional design (ID) education (e.g. a degree in instructional design or a closely related field)?

- ◯ Yes
- ◯ Maybe
- ◯ No

If YES, you do have formal ID education, do you feel this education prepared you for work in the field of instructional design in:

- ◯ All aspects
- ◯ Most aspects
- ◯ Some aspects
- ◯ Only a few aspects

Please indicate your highest level of completed education:

- ◯ High School
- ◯ Trade/Technical Certificate
- ◯ Associate's Degree
- ◯ Bachelor's Degree
- ◯ Master's Degree
- ◯ Doctoral Degree

Please select the option which best indicates your years of experience in instructional design:

- ◯ <5 years
- ◯ 5-10 years
- ◯ 11-15 years
- ◯ 15+ years

About how much of your time at work is invested in instructional design activities, not including management of other employees?

- ◯ < 20%
- ◯ 21% - 40%
- ◯ 41% - 60%
- ◯ 61% - 80%
- ◯ > 80%

In which of the following career environments have you had the **majority** of your instructional design work experience?

- ◯ Business & Industry
- ◯ Higher Education
- ◯ Government/Military
- ◯ Healthcare
- ◯ Other (please explain): _____

Competency: *Communicate effectively in visual, oral and written form.*
Activities that are included in this competency are:

- Write and edit messages that are clear, concise, and grammatically correct
- Use active listening skills
- Present written and oral messages that take into account the type of information being delivered and the diverse backgrounds, roles, and varied responsibilities of the audience
- Use effective collaboration and consensus-building skills
- Use effective negotiation and conflict resolution skills
- Use effective questioning techniques
- Solicit, accept, and provide constructive feedback

I require this competency or capability to perform my current work assignments.

- ◯ Never
- ◯ Occasionally
- ◯ Usually
- ◯ Always
- ◯ Not My Job

Appendix G

INFORMED CONSENT FOR FOLLOW UP INTERVIEW PARTICIPANTS

Georgia State University

Informed Consent

Title: Instructional Design Must-Have Competencies (Interview)

Principal Investigator: Jonathan Cohen, Ph.D.

Student Principal Investigator: Molly B. Lance

Introduction and Key Information

You are invited to take part in a research study. It is up to you to decide if you would like to take part in the study.

The purpose of this study is to identify what competencies are needed by today's instructional design professionals.

Your role in the study will last 45 minutes.

You will be asked to do the following: participate in one, 45-minute semi- structured online interview. A link to join the interview will be provided to you via the e-mail address you provided in the online survey portion of this study. The follow-up interview will be conducted using WebEx, an online meeting platform. The interview would be recorded to allow the investigator to transcribe the interview at the conclusion of the interview. During this interview, you will be asked questions concerning your experiences as an instructional designer. The transcripts will be securely stored until analysis is completed, at which time recordings and transcripts will be destroyed. The interview will be conducted by Molly Lance, the Student Principal Investigator. Participating in this study will not expose you to any more risks than you would experience in a typical day.

This study is not designed to benefit you. Overall, we hope to gain information about instructional design competencies which will benefit professionals in the field.

Purpose

The overall purpose of the study is to identify what competencies are needed by today's instructional design professionals. The purpose of the interview portion of the study is to gain deeper understanding on the findings of the online survey. You are invited to take part in this research study because you are an instructional design professional. A total of 10 people will be invited to take part in an individual follow up interview for this study.

Procedures

If you decide to take part, you will be provided a link to join the interview via the email address you provided in the online survey. The interview includes 6 open-ended questions about your experience and instructional design competencies. The interview should take 45 minutes to complete.

Future Research

Researchers will remove information that may identify you and may use your data for future research. If we do this, we will not ask for any additional consent from you.

Risks

In this study, you will not have any more risks than you would in a normal day of life. No injury is expected from this study, but if you believe you have been harmed, contact the research team as soon as possible. Georgia State University and the research team have not set aside funds to compensate for any injury.

Benefits

This study is not designed to benefit you personally. Overall, we hope to gain information about instructional design competencies which will benefit professionals in the field.

Alternatives

The alternative to taking part in this study is to not take part in the study.

Voluntary Participation and Withdrawal

You do not have to be in this study. If you decide to be in the study and change your mind, you have the right to drop out at any time. You may skip questions or stop participating at any time.

Confidentiality

We will keep your records private to the extent allowed by law. The following people and entities will have access to the information you provide:

- Jonathan Cohen, Ph.D. – Principal Investigator and Molly B. Lance – Student Principal Investigator
- GSU Institutional Review Board
- Office for Human Research Protection (OHRP)

We will use your initials rather than your name on study records. IP addresses will not be collected. The data sent over the Internet may not be secure. The information you provide will be downloaded and stored in a password protected area on the Investigator's personal computer. The records will be stored for one year. At the end of one year, the records will be destroyed.

When we present or publish the results of this study, we will not use your name or other information that may identify you.

Contact Information

Contact Jonathan Cohen, Ph.D. at 404-413-8422 phone or jcohen@gsu.edu e-mail or Molly B. Lance at 678-361-2350 phone or mlance3@student.gsu.edu e-mail.

- If you have questions about the study or your part in it
- If you have questions, concerns, or complaints about the study

The IRB at Georgia State University reviews all research that involves human participants. You can contact the IRB if you would like to speak to someone who is not involved directly with the study. You can contact the IRB for questions, concerns, problems, information, input, or questions about your rights as a research participant. Contact the IRB at 404-413-3500 or irb@gsu.edu.

Consent

You may print a copy of this consent form to keep.

If you agree to participate in this research, please continue with the interview.

Appendix H

INFORMED CONSENT FOR WEB-BASED SURVEY PARTICIPANTS

Georgia State University

Informed Consent

Title: Instructional Design Must-Have Competencies

Principal Investigator: Jonathan Cohen, Ph.D.

Student Principal Investigator: Molly B. Lance

Introduction and Key Information

You are invited to take part in a research study. It is up to you to decide if you would like to take part in the study.

The purpose of this study is to identify what competencies are needed by today's instructional design professionals.

Your role in the study will last 45 minutes.

You will be asked to do the following: Access the online survey with the link provided and answer a series of questions about yourself and instructional design competencies. In the survey questions, you will be asked if you would be willing to participate in an optional 45-minute follow-up interview with the Student Principal Investigator.

Participating in this study will not expose you to any more risks than you would experience in a typical day.

This study is not designed to benefit you. Overall, we hope to gain information about instructional design competencies which will benefit professionals in the field.

Purpose

The purpose of the study is to identify what competencies are needed by today's instructional design professionals. You are invited to take part in this research study because you are an instructional design professional. A total of 1710 people will be invited to take part in this study.

Procedures

If you decide to take part, you will be provided a link to access an online survey. The survey includes 34 questions about you and instructional design competencies. The survey should take 45 minutes to complete. In the survey questions, you will be asked if you would be willing to participate in an optional 45-minute follow-up interview with the Student Principal Investigator.

If you indicate a willingness to participate in the follow-up interview, you will be prompted to enter your name and e-mail address so that the interview can be scheduled. The follow-up interview would be conducted using WebEx, an online meeting platform. The interview would be recorded to allow the investigator to transcribe the interview at the conclusion of the interview.

Future Research

Researchers will remove information that may identify you and may use your data for future research. If we do this, we will not ask for any additional consent from you.

Risks

In this study, you will not have any more risks than you would in a normal day of life. No injury is expected from this study, but if you believe you have been harmed, contact the research team as soon as possible. Georgia State University and the research team have not set aside funds to compensate for any injury.

Benefits

This study is not designed to benefit you personally. Overall, we hope to gain information about instructional design competencies which will benefit professionals in the field.

Alternatives

The alternative to taking part in this study is to not take part in the study.

Voluntary Participation and Withdrawal

You do not have to be in this study. If you decide to be in the study and change your mind, you have the right to drop out at any time. You may skip questions or stop participating at any time.

Confidentiality

We will keep your records private to the extent allowed by law. The following people and entities will have access to the information you provide:

- Jonathan Cohen, Ph.D. – Principal Investigator and Molly B. Lance – Student Principal Investigator
- GSU Institutional Review Board
- Office for Human Research Protection (OHRP)

We will use a numeric code for the online survey and your initials (if you participate in the follow-up interview) rather than your name on study records. IP addresses will not be collected. The data sent over the Internet may not be secure. The information you provide will be downloaded and stored in a password protected area on the Investigator's personal computer. The records will be stored for one year. At the end of one year, the records will be destroyed.

When we present or publish the results of this study, we will not use your name or other information that may identify you.

Contact Information

Contact Jonathan Cohen, Ph.D. at 404-413-8422 phone or jcohen@gsu.edu e-mail or Molly B. Lance at 678-361-2350 phone or mlance3@student.gsu.edu e-mail.

- If you have questions about the study or your part in it
- If you have questions, concerns, or complaints about the study

The IRB at Georgia State University reviews all research that involves human participants. You can contact the IRB if you would like to speak to someone who is not involved directly with the study. You can contact the IRB for questions, concerns, problems, information, input, or questions about your rights as a research participant. Contact the IRB at 404-413-3500 or irb@gsu.edu.

Consent

You may print a copy of this consent form to keep.

If you agree to participate in this research, please continue with the survey.