OPERATIONALIZING CREATIVITY: DESIRED CHARACTERISTICS FOR INSTRUCTIONAL DESIGNERS

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Operationalizing Creativity: Desired Characteristics for Instructional Designers

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ABSTRACT

The purpose of this study was to explore the ways that creativity manifests itself in the field of higher education instructional design and to identify specific core competencies that could be considered desirable in this context. The study utilized the Delphi methodology in which an expert panel of 28 higher education instructional design managers and leaders, established through a selective snowball sampling process, provided both Likert scale and open – ended responses to a series of survey instruments to indicate their level of agreement with topic statements suggested by the literature as being related to creativity in the higher education instructional design context. Through this three-round process, the panel transformed these literature based constructs into their context of practice and reached consensus on 35 of 41 discrete concepts relating creativity to instructional design in higher education.

In parallel with the Delphi process, panelists were asked to provide examples of specific instructional design tasks or duties that embodied traits associated with the topic statements, and subsequently respond to the resulting 27 creativity-related competencies in terms of the desirability that their instructional designers possess the indicated competency as well as the perceived level of correlation between the competency and creative potential in general. This portion of the research effort resulted in the creation of 11 desirable, practical, context-specific instructional design competencies that are tied directly to the broad-based creativity literature.

DEDICATION

For my family.

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CHAPTER 1. INTRODUCTION

In the 21st century, disruptive innovations such as online learning coupled with the ubiquitous integration of academic technologies into the curriculum have redefined the educational environment. Learners seeking higher education have unprecedented access to an array of technology-based learning opportunities presented through any number of media, delivery modes, and instructional methodologies (Christensen & Eyring, 2011). Flexibilities inherent to these technology-enhanced educational opportunities have transformed both the classroom and the student population (Clark, 2010). Amid this shifting landscape, the future of instructional innovation – and perhaps higher education as a whole – lies at the crossroads between non-traditional students and non-traditional delivery methodologies. In the words of Sir Ken Robinson (2011) "We will not succeed in navigating the complex environment of the future by peering relentlessly into a rear view mirror. To do so, we would be out of our minds" (p. xiii).

As institutions of higher education continue to broaden and strengthen their technology-based flexible-delivery curricula, there has been an upsurge of instructional models and theories developed specifically to leverage the unique characteristics inherent to this new learning space (Irlbeck, Kays, Jones, & Sims, 2006). These new models and emerging pedagogies, which are based on a variety of alternative educational theories ranging from social learning to self-directed learning, generally feature a more contemporary approach to instruction and, by extension, the instructional design process (Hokanson, Miller, & Hooper, 2008). Likewise, academic technologies have evolved to facilitate a range of learning experiences from the individual, just-in-time mobile learning (m-learning), to Massively Open Online Courses (MOOCs). To help ensure that these new modes of instruction fulfill their promise of educational innovation while

maintaining the rigor of traditional higher education, the role(s) of the instructional designer have evolved radically (Irlbeck, 2011).

Organizational and operational variations within the university setting may also contribute to the variability and nuance of the role of the instructional designer. Relative strength of support from upper administration, alignment to the institutional mission, unit leadership, funding model(s), faculty compensation structures, and even university policies on intellectual property may all have a direct effect on the operationalization of instructional design services, and the role of the instructional designer. Moreover, in the higher education context, where faculty expertise in their own discipline is paramount and many professors have very little if any pedagogical training as part of their education, the role of the instructional designer is often expanded to help fill the gap between content knowledge and pedagogical knowledge (Postareff, Lindblom-Yla, & Nevgi, 2007).

As the instructional designer has become increasingly crucial to universities' educational endeavors (Gustafson & Branch, 2002), their adherence to step-by-step systems-based models has generally been replaced by more constructivist, heuristic approaches that provide the designer a wide range of latitude in solving the complex and ill-structured (ambiguous) problems inherent to their field (Clinton & Hokanson, 2012). Current instructional designers must not only possess a clear sense of the theoretical foundations that underpin assumptions about learning and cognition (Nunes & McPherson, 2007), they must also engage in a complex contextual analysis and problem solving process that involves idea generation, reflective judgment, attitudes and dispositions, and self-regulation (Baum & Newbill, 2010). Instructional design requires a special kind of problem solving (Silber, 2007) that involves problems that are complicated and vaguely defined. The design process is fundamentally dynamic and requires flexibility and divergent

thought (Cheung, 2011) in aligning and applying a variety of models, methods, and strategies in the search for effective and appropriate instructional solutions. In short, today's instructional designers are as dependent on creativity and artistry as much as on principles of cognitive science and education (Hirumi et al., 2010).

Despite the fact that professional instructional design organizations such as the International Board of Standards for Training, Performance, and Instruction (IBSTPI) have been slow to formally recognize creativity as an instructional design competency, Hirumi, Baum, and Newbill (2010), Clinton and Hokanson (2012), Cheung (2011), and several others have contributed to a recently emerging body of literature that has acknowledged and highlighted the role of the creative process and the importance of creativity to the instructional design endeavor.

Clinton and Hokanson (2012) argued that instructional design holds a unique position within education in that it is considered a design discipline and that as such, the same creative abilities that Cheung (2011) called; "…the paramount requirement for a design professional" (p. 845) are equally crucial to the field of instructional design. Unfortunately, even as the anecdotal evidence builds for the importance of (and need for) creative potential in instructional designers (Clinton & Hokanson, 2012), creativity is a complex (and frankly, not entirely understood) construct with many interrelated components that is notoriously difficult to assess easily, quantifiably, or reliably (Clary, Brzuszek, & Fulford, 2011; Diliello, Houghton, & Dawley, 2011).

If, as the recent literature suggests, creativity is central to the instructional design process, the management, recruiting, and hiring of instructional designers who exhibit creative potential in terms of context-specific creativity-related knowledge, skills, and abilities should be of vital importance to instructional design leaders and hiring agents. As the literature review of the next

chapter will demonstrate, significant work has been accomplished in a wide range of associated or foundational genres related to this topic. However, there has been very little published research to date undertaken for the purpose of operationalizing the concept of instructional design creativity in terms of creativity-related knowledge skills and abilities as well as creativity-related performance expectations.

Statement of the Problem

As technology-enhanced, flexible-delivery instruction continues to redefine the learning space, the job requirements of the instructional designer are evolving to encompass the creative, problem solving process inherent in the effective alignment of emerging pedagogies and new teaching and learning models specifically tailored to this new environment. These new creativity-related competencies, however, remain ill-defined. The purpose of this study was to explore the ways that creativity manifests itself in the field of higher education instructional design and to identify specific core competencies that could be considered desirable in this context.

Research Questions

The following research questions guided this study:

1. What literature-based creativity related constructs are manifest in the context of practice of higher education instructional designers?
2. What specific competencies exemplify desired creativity-related knowledge, skills, and abilities for instructional designers in higher education?

Design of the Study

Conceptual Framework

The initial research concept that prompted the development of this study was the nebulous, ill-defined nature of creativity as a desired competency for higher education instructional designers (see Figure 1). A preliminary investigation of extant research revealed that although there is significant material related to creativity as well as instructional design, it would seem that the relationship between the two has yet to be appreciably addressed. The initial research questions emerged from this preliminary investigation, and were refined as a result of a more thorough examination of the literature focused on the exploration of a variety of related concepts, factors, and influences. These included: a historic perspective on the evolution of instructional design, instructional design competencies, new and emerging instructional design models, alternative approaches to teaching and learning, creativity and related constructs, and finally, creativity in the workplace.

In the aggregate, the result of these efforts, presented in Chapter 2, indicated that in the higher education context, the role of the instructional designer is clearly evolving to incorporate more creative, heuristic approaches to design and as such, creative potential may be becoming an increasingly desirable competency for instructional designers. Furthermore, although creativity is a notoriously complex and difficult construct to measure as a whole, the literature suggested that a deconstructed approach to creativity, utilizing several associated (and interconnected) aspects could potentially facilitate an effective examination of operationalized creativity specific to the higher education instructional design context. These deconstructed perspectives of creativity served to inform the research design and provide a framework of conceptual lenses through which specific creativity-related knowledge, skills, and abilities specific to higher education

instructional designers could be identified. As outlined in Chapter 3, a mixed-methods approach including a modified three-phase Delphi study was used to address the research questions.

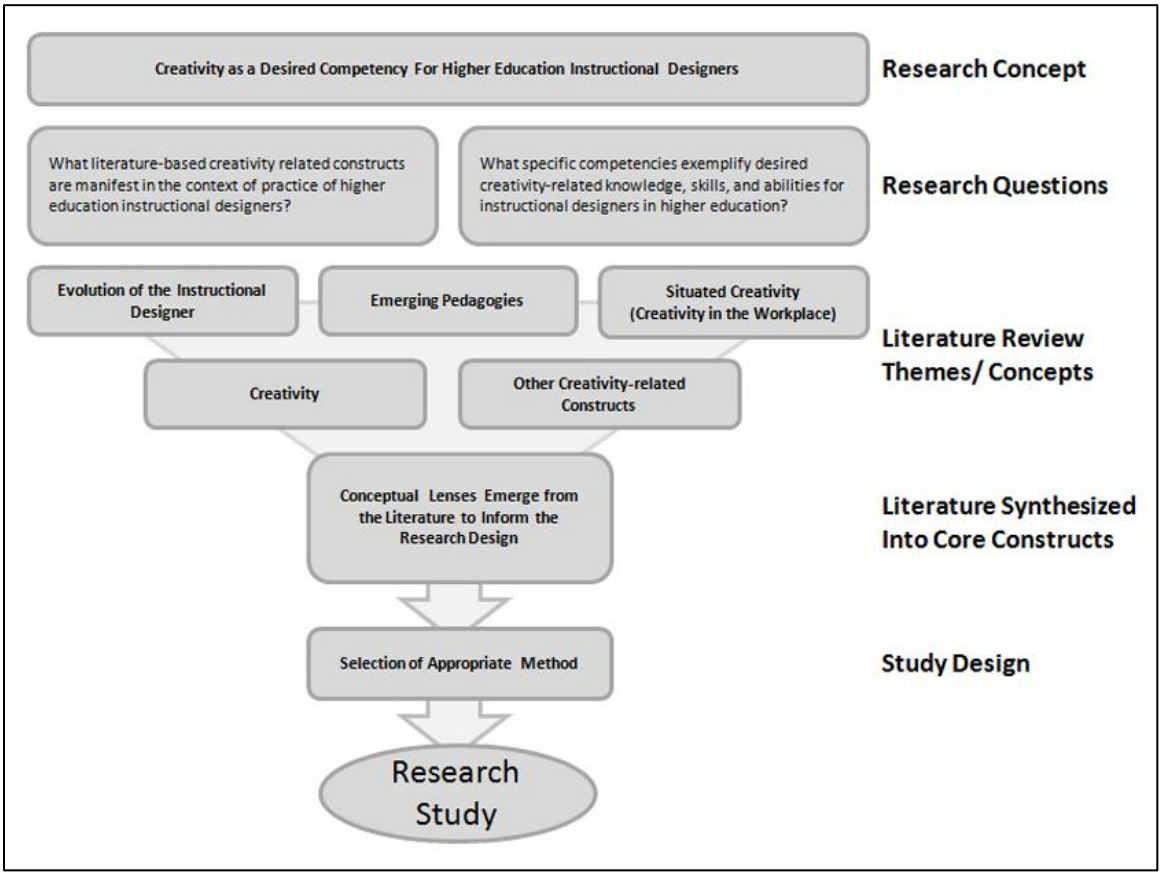

Figure 1. Conceptual Framework for the Research Design

Definition of Selected Terms

The terms in this section are used throughout the study. The following terms are defined by their intended meaning or by the meanings of cited references.

Instructional Design: Is defined as the practice of creating efficient and effective instructional experiences (Merrill et al., 1966).

Instructional Designer (ID): An instructional designer invents, conceptualizes, or creates educational products or materials and is responsible for the pedagogical aspects of those creations (Visscher-Voerman, 1999).

Instructional Design Model(s): Instructional design models are graphical, conceptual illustrations of the process of designing (effective) instructional experiences.

Emerging Pedagogies: Are defined as any number of instructional approaches based on recent educational theories that are designed specifically to leverage the opportunities and flexibilities inherent in technology-enhanced instruction.

Creativity: is defined as the ability to produce ideas that are both novel (i.e., original, unexpected) and appropriate (i.e., useful, adaptive to task constraints) in response to a problem that needs to be solved (Amabile, 1983; Csikszentmihalyi, 1996; Feist, 1999; Sternberg & Lubart, 1995; Sternberg & Pretz, 2005; Sternberg, 2007).

Ambiguity Tolerance: Tolerance for ambiguity is a *range*, from rejection to attraction, of reactions to stimuli perceived unfamiliar, complex, dynamically uncertain, or subject to multiple conflicting interpretations (McLain, 1993).

Ambiguity Intolerance: The lower end of the ambiguity tolerance range, Ambiguity Intolerance is the tendency to perceive or interpret ambiguous situations as sources of threat (Budner, 1962).

Limitations of the Study

The context for this research study is instructional design units producing educational products and solutions specifically for higher education. Likewise, the indicated creativity-related competencies and activities are entirely domain specific. Generalizability of the results of this research beyond this context is not assumed or implied.

Delimitations of the Study

The following delimitations relate to the size and scope of the study:

1. The first round of the study was limited to 28 panelists selected through a snowball sampling process where members of an initial sample nominated additional participants who met specific inclusion criteria.
2. The panelists for this study were senior instructional designers or instructional design directors (or equivalents) that are directly responsible for managing, recruiting, interviewing and hiring instructional designers.
3. Data collection was limited to a modified three-phase Delphi process plus an embedded parallel mixed-methods survey instrument.

Assumptions

The following assumptions were made about this study and the circumstances surrounding it.

1. The panelists will participate honestly and earnestly throughout the process.
2. The developed Delphi study is a valid and reliable means for data gathering and developing consensus.
3. The panelists nominated through the snowball sampling process have experience and expertise in the field; including membership/ participation in national professional organizations/ conferences, publications and academic research.
4. The study's inclusion of more concrete, domain-specific creative activities will minimize validity threats related to the inherent complexity of the creativity construct in the abstract.

5. Variations in the instructional design process and the job duties of instructional designers across institutions will not appreciably affect the general consensus as to the role of creativity in the instructional design process.

Organization of the Study

Chapter 1 provided an introduction to the problem, purpose of the study, conceptual framework, research questions, and definitions that guided the study. Chapter 2 contains a review of relevant literature pertaining to creativity in the higher education instructional design context including: the evolution of the instructional designer; emerging pedagogies; creativity; other creativity-related constructs; and situated creativity (creativity in the workplace). Chapter 3 includes the outline of methodology and processes utilized to complete the study. Chapter 4 presents an analysis of the resulting research data, and Chapter 5 contains a summary of the findings, conclusions, and recommendations for further research.

CHAPTER 2. REVIEW OF THE LITERATURE

Introduction

As available technologies and emerging pedagogies continue to redefine the learning environment, the role of the instructional designer has evolved to meet the escalating need for flexible, innovative curricula. The rote, step-by-step adherence to systematic models such as ADDIE (Analyze, Design, Develop, Implement, Evaluate) are quickly becoming a thing of the past, replaced instead by more creative, heuristic approaches that provide the designer a wide range of latitude in solving the complex and ill-structured problems inherent to their field (Clinton & Hokanson, 2012). Although a recent body of literature has unmistakably acknowledged the role of the creative process and the importance of creativity to the instructional design endeavor in the abstract, a clear connection between creativity in theory and instructional design in practice has yet to be established.

Research Questions

As stated in the previous chapter, the research questions for this study were:

1. What literature-based creativity related constructs are manifest in the context of practice of higher education instructional designers?
2. What specific competencies exemplify desired creativity-related knowledge, skills, and abilities for instructional designers in higher education?

Chapter Organization

To address the research questions, overcome an apparent gap in the extant research, and to provide an effectual exploration of a complex and multifaceted concept, a wide-ranging review of the literature relevant to the core themes and concepts illustrated in the conceptual framework was completed in an effort to illuminate the topic from a variety of interrelated

perspectives. These are: The Evolution of the Instructional Designer, Emerging Pedagogies, Creativity, Other Creativity-related Constructs, and finally, Situated Creativity (creativity in the workplace). The results of this effort have been organized and presented here. In the aggregate, the exploration of these constructs served to inform the research effort.

The Evolution of the Instructional Designer

The instructional design field has a relatively long history of using a competence perspective to outline the skills and abilities expected for practitioners in the field (Hartley et al., 2010). However, there has recently been growing disagreement on whether or not the generally accepted competencies truly encompass the skill set necessary to be an effective instructional designer.

This section will present a brief history of the evolution of the instructional design field, as well as an exploration of the various competencies, past and present, which have been regarded as essential for the effective practice of instructional design.

Instructional Design: Yesterday and Today

According to Richey, Fields, and Foxon (2001), instructional design has numerous origins. Dick (1987) traced its practice back to the military training demands of World War II. The Barson Model used at Michigan State University between 1961 and 1965 is often credited as one of the first instructional design models (Gustafson & Branch, 1997). The now-ubiquitous ADDIE model has a more elusive origin, evolving out of the Inter-service Procedures for Instructional Systems Development (IPISD) model developed in conjunction between Florida State University's Center for Educational Technology and the U.S. Army (Molenda, 2003). Dick (1987) stated that the term instructional design was not commonly used until the 1970s, preceded by such job titles as educational psychologist, media specialist, or training specialist.

Originating with the publication of Dick and Carey's *Systematic Design of Instruction* in the late 1970s, the instructional design field entered a phase of instructional systems design that de-prioritized creativity in favor of rational, logical thought, and structured processes, emphasized comprehensive requirements known at the outset, and more closely resembled engineering than design (Dunn, 2005). Instructional design had become a deterministic, essentially rational and logical process (Welch, 1999), with an unwavering adherence to the ADDIE model as a perfunctory and mechanical recipe for an instructional design process that did little (if anything) to encourage innovation when designing (Hokanson, Miller, & Hooper, 2008). As such, education had become out-of-synch; trapped by inflexible mechanisms and unable to adapt smoothly to changing expectations and needs (Martell, 1974).

Instructional Design Competencies

The decade of the 1980s brought with it an interest in adopting competence perspectives as an aid to managing human capital. A competency approach places the focus on behaviors, knowledge, skills, attitudes and personal attributes that demonstrate effective performance in a particular context (Hartley et al., 2010). In 1986, 2001, and 2013, the International Board of Standards for Training, Performance, and Instruction (IBSTPI) published their list of professional competencies for instructional designers (IDs). The 2000 list of 23 competencies (Richey et al., 2001, pp. 46-55) across four general domains is included below.

Professional Foundations

1. Communicate effectively in visual, oral and written form. (Essential)
2. Apply current research and theory to the practice of instructional design. (Advanced)

3. Update and improve one's knowledge, skills and attitudes pertaining to instructional design and related fields. (Essential)
4. Apply fundamental research skills to instructional design projects. (Advanced)
5. Identify and resolve ethical and legal implications of design in the work place. (Advanced)

Planning and Analysis

6. Conduct a needs assessment. (Essential)
7. Design a curriculum or program (Essential)
8. Select and use a variety of techniques for determining instructional content. (Essential)
9. Identify and describe target population characteristics. (Essential)
10. Analyze the characteristics of the environment. (Essential)
11. Analyze the characteristics of existing and emerging technologies and their use in an instructional environment. (Essential)
12. Reflect upon the elements of a situation before finalizing design solutions and strategies. (Essential)

Design and Development

13. Select, modify, or create a design and development model appropriate for a given project. (Advanced)
14. Select and use a variety of techniques to define and sequence the instructional content and strategies. (Essential)
15. Select or modify existing instructional materials. (Essential)
16. Develop instructional materials. (Essential)

17. Design instruction that reflects an understanding of the diversity of learners and groups of learners. (Essential)

18. Evaluate and assess instruction and its impact. (Essential)

Implementation and Management

19. Plan and manage instructional design projects. (Advanced)

20. Promote collaboration, partnerships and relationships among the participants in a design project. (Advanced)

21. Apply business skills to managing instructional design. (Advanced)

22. Design instructional management systems. (Advanced)

23. Provide for the effective implementation of instructional products and programs. (Essential)

While reorganized, streamlined, and perhaps slightly more focused on managerial and interpersonal competencies, the 2012 list (Koszalka et al., 2013, pp. 24-30) remained largely unchanged from the 2001 version.

Professional Foundations

1. Communicate effectively in visual, oral and written form (essential).

2. Apply current research and theory to the practice of instructional design (advanced).

3. Update and improve one's knowledge, skills and attitudes pertaining to instructional design and related fields (essential).

4. Apply data collection and analysis skills in instructional design projects (advanced).

5. Identify and respond to ethical, legal, and political implications of design in the workplace (essential).

Planning and Analysis

6. Conduct a needs assessment in order to recommend appropriate design solutions and strategies (advanced).
7. Identify and describe target population and environmental characteristics (essential).
8. Select and use analysis techniques for determining instructional content (essential).
9. Analyze the characteristics of existing and emerging technologies and their potential use (essential).

Design and Development

10. Use an instructional design and development process appropriate for a given project (essential).
11. Organize instructional programs and/ or products to be designed, developed, and evaluated (essential).
12. Design instructional interventions (essential).
13. Plan noninstructional interventions. (advanced).
14. Select or modify existing instructional materials (essential).
15. Develop specifications that serve as the basis for media production (essential).
16. Design learning assessment (advanced).

Evaluation and Implementation

17. Evaluate instructional and non instructional interventions (advanced).

18. Revise instructional and noninstructional solutions based on data (essential).
19. Implement, disseminate, and diffuse instructional and noninstructional interventions (advanced).

Management

20. Apply business skills to managing the instructional design function (managerial).
21. Manage partnerships and collaborative relationships (managerial).
22. Plan and manage instructional design projects (managerial).

It is interesting to note that even though Michael Spector (2005), co-editor of the 2001 list, stated that many creative aspects are involved in the instructional design process and that the role of the designer's imagination should not be devalued; there is no explicit mention of creativity in either version of the IBSTPI competencies. Only 2001 competency 13: *Select, modify, or create a design and development model appropriate for a given project*, even implies a creative element to instructional design. Remarkably, with a clear focus on selection of appropriate (existing) materials and strategies, the 2013 list would appear to leave almost no room for instructional design(er) creativity.

Similarly, case study research undertaken by Roytek (2010) exploring instructional design efficiencies identified 47 methodologies and the 13 competencies listed below (p. 178).

Instructional Designer Knowledge/Skills

1. Knowledge of authoring tool capabilities
2. Skill using authoring tools
3. Knowledge of client computer delivery system
4. Knowledge of programming return on investment costs

5. Skill designing within an environment using electronic templates
6. Ability to communicate with programmers
7. Willingness to push the technological envelope
8. Knowledge of specific industry
9. Knowledge of client organization
10. Knowledge of particular content
11. Organizational skills
12. Ability to work well within a team
13. Ability to write concisely and compellingly

Once again, the mention of instructional designer creativity is glaringly absent. In fact, according to one respondent, a lead instructional designer: "Creativity is proven to inefficiency…I appreciate creativity… but I can't have this project looking like seven different people did it" (cited in Roytek, 2010, p. 177).

While both the IBSTPI and Roytek competencies would seem to eschew the concept of creativity in instructional design, Spector (2005) referred to an on-going debate within the instructional design community of the role of creativity in instructional design, and whether creativity or engineering is more prominent, relevant or fundamental in planning and implementing instruction.

Heuristic Approach to Instructional Design

Kenny et al. (2005) asserted that while instructional designers apparently do make use of the techniques delineated by traditional, process-based models, it is clear that they do not they follow them in a rigid fashion. Hirumi et al. (2010) stated that the value in instructional design tools and processes lies in their use as heuristics that can guide the development of effective

learning environments. As such, instructional designers are dependent on creativity and artistry as much as on procedural job aids and recipes. Similarly, Van Merrienboer and Martens (2002) characterized rapid prototype instructional design as a non-linear, highly flexible "zigzag" approach that is "more apt for the design of new learning environments" (p. 6).

According to York and Ertmer (2011), although there is some evidence to suggest that experienced designers apply instructional design models in their practice, they typically adapt these models, using them heuristically rather than algorithmically (Nelson, 1988; Romiszowski, 1981). Similarly, Silber (2007) suggested that IDs follow a set of heuristic principles, rather than procedural instructional design models to solve instructional problems. Kirschner et al. (2002) reported, "While [instructional design] models often inspire designers, their activities typically don't reflect the systematic, step-by-step approach as prescribed in traditional [instructional design] models" (p. 91). Visscher-Voerman and Gustafson (2004) asserted that design processes are much more heterogeneous and diverse than the ADDIE model suggest. However, as Dunn (2005) suggested, creativity is not generally regarded as a core competency of learning design, or learning designers; a sharp contrast with most design disciplines, where creativity is regarded as the defining characteristic.

Villachica, Marker, and Taylor (2010) proposed that a potential cause for the discrepancy between what instructional design models suggest and what IDs actually do might be the fact that while IDs have been publishing models and reporting the results of their work for a while, they have only relatively recently begun studying what they do in the performance of their jobs. Although a study by Cox and Osguthorpe (2003) provides a rare exception, the activity categories indicated in the results are unsatisfyingly broad. According to Thofson (2010) it is not exactly known how instructional designers solve the problems they face in their "messy kind of

business" (p. 1). A Delphi study of expert instructional designers by York and Ertmer (2011) resulted in panel consensus on 61 different heuristics concerning the instructional design process, including three (*be prepared to think abstractly, never look at the problem at face value, and generate multiple possible solutions*) that can be directly linked to the concept of creativity.

Instructional Designers and Creativity

As the last century drew to a close, the role of creativity in the instructional design process became an increasing focus of the literature. Visscher-Voerman (1999) defined an instructional designer as someone who; invents, conceptualizes, or creates instructional products or materials, and is responsible for the pedagogical aspects of the product. According to Schön (1987), designers evaluate their ideas in a threefold way. First, they judge how desirable the consequences of their ideas might be. Second, they judge the extent to which their ideas conform to (or violate) both normative design domains and their own previous design decisions. Third, they estimate the new problems or potentials their intended solution would create. Thofson (2010) described instructional design as a complex problem-solving task with inherent unique challenges which is creative, active, and iterative. Schwier and Wilson (2010) suggested that instructional designers are largely problem-solvers who must anticipate problems, react to situations as they arise, or negotiate solutions to problems with others. Cropley and Cropley (2010) indicated that instructional design offers special opportunities for creativity because of the *openness* of the (typically ill-defined) problems that designers face. For Dasgupta (1996), "to design is to invent" (p. 5).

In their Critical and Creative Thinking – based model of the instructional design process, Baum and Newbill (2010) asserted that instructional design does indeed involve the skills required by creative thinkers. According to Baum and Newbill, in order to be successful the

instructional designer must exhibit certain attitudes and dispositions that involve being flexible, motivated and confident. Their model illustrated the reciprocal relationship between the processes of generating new instructional design ideas and reflecting on those ideas until an idea is developed that is worthwhile and valuable for the problem or situation.

The designer-as artist metaphor proposed by Henderson (1998) and Marsh and Willis (1995) among others, is central to the Visscher-Voerman and Gustafson (2004) design paradigm framework. The framework consists of four design paradigms, the Instrumental paradigm (planning-by-objectives), the Communicative paradigm (communication to reach consensus), the Pragmatic paradigm (interactive and repeated tryout and revision), and finally, the Artistic paradigm (creation of products based on connoisseurship). Visscher-Voerman and Gustafson (2004) insisted that even though the Artistic paradigm was not supported by the empirical evidence, they cited a theoretical basis in postmodernism that led them to characterize instructional designers as artists who choose among an almost unlimited variety of design options, and of ways of representing their views of reality.

The Role-based Design framework created by Hokanson, Miller, and Hooper (2008) described instructional design in terms of the various roles the designer may play on a design team; the Instructional Engineer (scientific realization), the Instructional Manufacturer (efficient production), the Instructional Craftsperson (experienced evolution), the Instructional Architect (holistic conceptualization), and finally, the Instructional Artist (playful experimentation). They describe the instructional artist as an iconoclast whose goal is to advance the understanding and development of new ideas by diverging from the norm, and embracing experimentation that allows for more diverse conceptualization. For them, the realm of the instructional artist is where most innovation in the field will occur (Hokanson, Miller, & Hooper, 2008).

The Competences Approach for the Education and Training of Learning Technologists recently developed by the Institute of Electrical and Electronics Engineers (IEEE) describes competencies across four competence domains (Knowledge Competence, Process Competence, Application Competence, and Personal and Social Competence), but also includes a fifth, Innovative and Creative Competence that addresses ways in which learning technologists realize the innovative potential of new technologies and can become a change agent which brings different perspectives to the education process (Hartley et al., 2010).

Finally, recent work by Clinton and Hokanson (2012) implored that meaningful ways be found to "formally and explicitly" establish a connection between creativity and instructional design "that is specific to our field" (p. 118). They contend that creativity has rarely been formally acknowledged in models of instructional design, despite its recognized value in parallel design fields such as architecture, industrial design, and fashion design. Their Design/Creativity Loops model illustrates creative 'excursions' that designers take in response to design obstacles. For Clinton and Hokanson (2012), "It is not difficult to imagine how…[this] iterative, largely non-linear process of design, even when conceptualized within a linear framework such as ADDIE … can benefit the various aspects of instructional design and development" (p. 122).

Instructional Design and Mindfulness

Work by Valentine and Ivey (2008) proposed that in order to gain an understanding of how to enrich the designer's internal processes of continuous cross-examination between facets of a problem, a parallel between design and mindfulness should be drawn. Defined by the authors as "an awareness and understanding of one's own mind and how it influences one's perceptions and actions" (p. 157), a mindful approach is recommended when dealing with the "ill-structured nature" common to many design problems, particularly "wicked" ones (p. 159).

According to Valentine and Ivey, the nature and process of a designer's internal dialogue when contemplating an ambiguous, uncertain, or indeterminate situation is uniquely suited to a mindful approach. For Valentine and Ivey, the essence of a mindful design (internal or external) dialogue is that it expands horizons, deepens conversation, directs exploration into unknown dimensions, and establishes and maintains interconnections. By providing insight into the working relationship between theory and practice, a mindful design approach provides for a trans-discipline plurality of perspective that recognizes that there is no one dominating theory of practice within the discipline. Mindful designers ask without expecting definitive answers, ponder the question "carrying the wonder with [them], letting it percolate, bubble, cook, ripen, come in and out of awareness, just as everything else comes in and out of awareness" (Kabat-Zinn, quoted in Valentine & Ivey, 2008, p. 157), and maintain a holistic approach to design problems.

Instructional Design for the 21st Century

Groves (2009) suggested that: "as a human race we are leaving the information age and entering the creative age. No longer will technology and current modes of teaching and learning be solely adequate for the millennial learner" (p. 5). Tillander (2011) added that the powerful alliance between information technology and creative design practices have established new domains of co-creativity and de-formalized education environments that extend beyond classroom curricula and into contemporary everyday life.

Unfortunately, current instructional design practices have largely been seen to have retained Prensky's (2001) foot in the past. Bates (2011) asserted that the old systems-based ADDIE model needs to be replaced with something lighter and more adaptable to a much a wider range of learning contexts, while Hokanson, Miller, and Hooper (2008) called for a fresh

perspective and set of models that support innovation in the design of learning experiences. According to Gordon and Zemke (2000), the process rigid, process-based approach to design: "Used as directed…produces bad solutions" (p. 42).

The influence of standardized Learning Management Systems (LMSs) cannot be minimized; although a certain level of inherent flexibility was present, the "florescent lighting" (Groom, 2009) of these systems were clearly designed to facilitate the creation and delivery of consistent, text heavy, asynchronous courses. The work of the Sloan Foundation, as well as the ubiquitous offerings of online content providers, has reinforced a conceptualization of technology-enhanced, flexible-delivery instruction that leans strongly toward an asynchronous, text based model.

Conclusion, the Evolution of the Instructional Designer

Even as online instructional practices have continued to facilitate standardization of the technology-enhanced, flexible-delivery environment, the emergence of myriad instructional design models featuring a variety of different underlying philosophical approaches to education is redefining the role of the instructional designer. To attain mastery in the new instructional design landscape requires a creative thinker (Clinton & Hokanson, 2012), who possesses a clear sense of the theoretical foundations that underpin assumptions about learning and cognition (Nunes & McPherson, 2007), as well as skills in problem solving, iterative refinement, and higher levels of skill in the development of internal representations for planning, monitoring, and evaluating (Ericsson, Roaring, & Nandagopal, 2007). Across the span of over 150 years, President Abraham Lincoln's December 1, 1862 plea to the United States Congress to engage in creative thought in the early stages of the American civil war remains remarkably resonant:

> …The dogmas of the quiet past are inadequate in the stormy present. The occasion is piled high with difficulty. As our case is new, so we must think anew and act anew. We must disenthrall ourselves and then we shall [succeed].

Emerging Pedagogies

One of the greatest challenges to practitioners in the field of instructional design is the effort to stay abreast of not only the rapid advances and improvements in educational delivery systems, but also the ever increasing body of alternative pedagogies and instructional design models. While the creation of these new models has long been a pursuit integral to the instructional design field (Clinton & Hokanson, 2012), the disruptive innovations (Christensen, Johnson, & Horn, 2008) of online learning programs and the ubiquitous integration academic technologies has led to an upsurge of models and theories developed specifically to leverage the unique flexibilities and opportunities inherent to the online learning environment.

The theoretical underpinnings of these models can often be traced back to a number of non-traditional (i.e. non-didactic, non linear) approaches that, while not necessarily new, represent an important re-conceptualization of teaching and learning. A review of some of these foundational principles of educational theory as well as several recent instructional design models that together represent the emerging pedagogies surrounding technology-enhanced, non-traditional course design is presented here to illustrate the levels of professional flexibility, adaptability, and creativity necessary to implement them in the traditionally slow-to-innovate higher education context.

Theoretical Foundations

The process of learning. The most striking development in educational theory over the last several decades is the seemingly inexorable movement towards the transference of ownership of the learning endeavor; the empowerment of the learner. Emerging pedagogies are

redefining the social structure of the classroom as educators move away from the adversarial role of master, to the more co-commitant role of advocate (Palmer, 2007). The "banking" philosophy of education, most famously loathed by Brazilian theorist Paulo Freire (1993), where learners are viewed as empty vessels to be filled by knowledge doled out by the instructor, has noticeably fallen out of favor. It has been replaced, instead, by a peer based structure where instructors recognize the experience, knowledge, and value of the student and help guide the student along their (increasingly self-directed) journey of discovery through encouragement and feedback.

Friere also held a strong aversion for what he called the student-teacher contradiction. He maintained that educators must be humble enough to be willing to relearn, to question assumptions, and empower the learner so that the poles of the contradiction are reconciled and both become a teacher who learns and a learner who teaches (Freire, 1993). At the Highlander school, Myles Horton's "percolator rather than drip" (Eby, 1953, p. 95) approach implored faculty to *unlearn* their years of prior schooling (Manke, 1999) and extricate themselves from the traditional expectation that they serve as subject matter experts (Thayer-Bacon, 2004). For Horton, the expertise of the faculty lay in the *process* of (group) learning.

The concept of self-directed learning was a key component in Malcolm Knowles' (1970) theory of andragogy. Knowles (1975) defines self-directed learning as "a process in which individuals take the initiative, with or without the help of others, to diagnose their learning needs, formulate learning goals, identify resources for learning, select and implement learning strategies, and evaluate learning outcomes" (p. 18). Hiemstra and Brockett (1994) indicated that self-directed learning exists across a continuum, and is represented to some degree in every learning situation where; learners are empowered, learners are able to transfer learning in terms of knowledge and study skill from one situation to another, and instructors facilitate the learning

process rather than direct it. At Highlander, the role of the instructor was clear: to provide a safe learning space; a climate of mutual respect where no assumptions were made and to provide resources, support, and guidance as necessary to help adult learners figure out answers to problems for themselves in a group setting (Manke, 1999).

One of the primary challenges facing instructors in this new shared mode of instruction is to ensure that self-directed learning is not mistaken for self-sufficient learning. In self-directed learning, the instructor must maintain an active and vital role, maintaining equilibrium between institutional expectations and the process of helping learners take personal ownership for learning, while achieving success as defined by the learning objectives (Hiemstra, 1994). The use of meta-instruction is another strategy to aid students in relating to a wide variety of learning environments to help them master the skills of learning (Joyce, 2009). Kirschner, Clark, and Sweller provided a somewhat contrarian view in their 2006 work *Why Minimal Guidance During Instruction Does Not Work: An Analysis of the Failure of Constructivist, Discovery, Problem-Based, Experiential, and Inquiry-Based Teaching* when they asserted that the *"*very popular and intuitively appealing" (p. 75) unguided or minimally guided instructional approach is less effective and less efficient than instructional approaches that place a strong emphasis on guidance.

As the focus of the learning process continues to shift toward a shared model, several pitfalls must be addressed. Marc Prensky (2001) has maintained a running commentary on the disconnect between how adults learn(ed) and their children's preferred method of instruction. Credited with coining the terms "digital natives" (p. 2) and "digital immigrants" (p. 1) to describe generational differences in approaching technology, Prensky asserted that as digital immigrants learn to adapt to their environment "they always retain, to some degree, their accent,

their foot in the past" (p. 2). Today, most adults conceptualize learning in terms of the educational system that they remember from their own experiences; as an instructor-designed and instructor-led endeavor that occurs in classrooms where students learn from the so- called sage on the stage. However, many adults want to take advantage of technology-enhanced, non-traditional learning environments, primarily due to their busy schedules and the format's flexibility and convenience. They are using technology with different sets of expectations that are based on their personal histories (Tweedell, 2000).

Similarly, of all the instructional suggestions outlined in his theory of andragogy, Knowles' assumptions regarding motivation are the most often misunderstood. Knowles did not (as many believe) contend that all adults are intrinsically motivated; rather he asserted that adults' most potent motivations are internal rather than external. This distinction is crucial as adult programs (facilitated largely by technology-enhanced curricula) are increasingly enrolling students who are continuing their study for professional advancement and do not seem to embrace learning as an academic, transformational process, rather simply as a means to an end. These students, simply by being adults, do not necessarily possess the motivation and volition necessary to initiate and maintain learner effort in a self-directed environment.

Clearly, the recent movement toward the increased student-centeredness of the learning environment has in many ways redefined the role of the learner. No longer a passive recipient of knowledge doled out by the instructor, students in this new teaching model enjoy increased flexibility and ownership of their learning experience, however, they must also be willing to accept the requisite responsibility and accountability inherent to the model. In short, the learning process is moving from a passive to an active endeavor.

The nature of learning. Amidst the sea-change of learner empowerment, a variety of philosophical perspectives on the very nature of learning continue to evolve that directly influence the concept of teaching and learning.

Postmodernism dictates that truth and knowledge are neither eternal nor universal; rather man must construct his own reality based upon his knowledge and experiences. Jarvis' "lifeworld" (Merriam et al., 2007, p. 101) is one of the more accessible models that hint at the postmodern perspective. In post-modernism, all facts reflect the values of the holder, and reality cannot be separated from context. Truth is molded through the individual lenses of culture, needs, and self-interest (Beck, 1993). Therefore, the learning process should not be viewed as uncovering preexisting knowledge, but an interactive experience of developing a working understanding of reality (Beck, 1993).

By its very definition, postmodernism embraces diversity through multiple interpretations depending on point of view, and the non-dogmatic post-modernist approach of finding one's own reality while recognizing (and respecting) those of others could be considered the ultimate expression of democratic learning. If one accepts the lifeworld prospective of developing a working understanding with reality, truth becomes relative. And once truth becomes a personal construct, learning, by definition, is democratized. This (transactional) democracy along with the inherent value of the individual and self-directed learning form the foundation of the Highlander ideal (Thayer-Bacon, 2004). Originally conceived as strongly individualistic liberal democracy, Horton's views evolved into a more connected, social, and transactional view of education, an approach that clearly resonates in the current social learning theory literature (Hoffmann-Kipp & McDermott, 2009).

Pragmatism offers a crucial collaboration tool, it provides a philosophical bridge between individual lifeworlds, allowing for consensual disagreement that does not impede progress toward creative solution. Quite simply, a pragmatic perspective allows us to disagree. In his lecture, *What Pragmatism Means*, William James (1907) describes the pragmatic method as a way of settling metaphysical disputes that otherwise might create an impasse. By distilling all contentions to their practical significance, pragmatism allows each learner freedom of latitude in their own conceptual journey. As long as no practical difference exists between two notions, each collaborator can be correct, and the barrier to (the collaborative learning) progress is removed. In short, pragmatism allows post-modernists to collaborate. Paradoxically, since the pragmatist believes that all personal perspectives are equally (un)important, pragmatism tends to reinforce the value of the individual and cultivate a democratic learning environment.

Finally, Mezirow's (1990) transformative learning theory introduces a process of (psychological, convictional, and behavioral) perspective transformation where the learner's worldview is altered by experience. In many ways an outgrowth of both Freire's (1993) concept of conscientization and Jarvis' (1987) lifeworld, Mezirow stated that transformation occurs in response to a disorienting event or dilemma where old ways of knowing cannot incorporate new information. Like Jarvis, this incongruent information triggers a process of integration of the confounding information, reflection, and ultimately perspective transformation. Making meaning then, is the process by which we make sense of this transformation, and learning has occurred once we use these interpretations to guide decision making (Mezirow, 1990).

These, among many other contemporary philosophies and approaches to teaching and learning are continuing to inform the development of an ever-growing diversity of instructional and design models.

An Evolution of Instructional Models

As technology-enhanced instruction moves out of its infancy, models of instruction and design specifically tailored to its flexible delivery environment continue to evolve. While early efforts involved conversion of existing instruction and design models, recent additions have moved beyond the traditional and have begun pushing the limits to fill this new instructional space.

In his provoking 1983 work, *Reconsidering Research on Learning from Media,* Richard E. Clark postulated that there was no significant difference in instructional benefit between the various forms of media, and that media have the same influence over learning as grocery trucks have over our health (Clark, 1983). By extension, Clark (and his disciples) view technology-enhanced learning (learning delivered by a specialized form of media), as simply another form of learning that could be governed by any appropriate instructional model.

In fact, many traditional over-arching theoretical models and strategies have proven to be highly adaptable to the technology-enhanced, flexible-delivery learning environment. For example, Gange's Nine Events of Instruction and Bloom's Revised Taxonomy of Cognitive Objectives have been readily adapted for these contexts (Yilmaz & Cinar, 2006). Likewise, many traditional classroom approaches (*teaching* models as opposed to learning theories) can rather simply and effectively be employed in technology-enhanced flexible delivery of education. The Mastery Learning model as well as the use of Educational Simulation would seem to be tailor made for online deployment. Likewise, the myriad communication opportunities possible on the web can (somewhat counter-intuitively) serve the implementation of approaches in the intra-personal realm such as non-directive teaching (Joyce et al., 2009).

Another category of models have been developed based upon improving the most common (text, assignment, discussion) online learning formats. These (largely administrative) models provide improvement strategies to be employed within these "traditionalized" online learning contexts. The CREST+ model, a model for writing effective online discussion questions, outlines strategies to balance maximum time efficiency with promoting higher order thinking and immersion into the course content (Akin & Neal, 2007). Likewise, content delivery strategies such as Supplemental, Replacement, Emporium, Fully, Online, and Buffet outline approaches allow faculty to employ incremental improvements to their traditional online offerings without necessitating a comprehensive re-design (Twigg, 2003).

Relatively recent endeavors such as Punya Mishra's TPACK (or TPCK) model attempt to illustrate the inherent and crucial role technology (and technology aptitude) play in the technology-enhanced learning environment. In his model, Mishra postulates that the integration for pedagogy around specific subject matter requires developing sensitivity to the dynamic, transactional relationship between three primary forms of knowledge: Content (CK), Pedagogy (PK), and Technology (TK) (Mishra & Koehler, 2006).

Certainly, the constructivists have found a home in the online environment and several models have been developed to support this philosophy. As an example, the RCET model, developed by the Research Center for Educational Technology at Kent State University, distinguishes three interacting domains of knowledge construction (representations, conceptualizations, and use) and explores their unique characteristics in the online environment (Swan, 2005).

As an offshoot of the constructivist movement, the concept of *online learning communities* has emerged as a predominant theme in current thinking about online teaching and

learning. Models such as the Supporting Collaborative Community (SCC) model as well as the Community of Inquiry (CoI) model each outline the establishment of an effective *learning space* in the online environment thorough supporting strengths of both individuals and the class as a whole by emphasizing relationships that define community dialogue. The SCC model emphasizes four main features: support of clearly-articulated purposes or tasks, regard for each individuals unique worth and diversity, acknowledgment of one's responsibility to others, and a sense of obligation to share (Bassett, & Hall, 2000). Similarly, the CoI model defines a community of inquiry as constituting three elements essential to an educational transaction - cognitive presence, social presence, and teaching presence (Garrison et al., 2000). Both the SCC and CoI models endeavor to provide dynamic social support to foster a supportive community, where learners feel safe to take academic risks and collaboratively explore the quest for new knowledge.

The author's own (unpublished) Intentional Design Framework shares both a similar structure and similar conceptual elements with the CoI model. While the CoI model supports the theoretical foundations by illustrating occurrences of successful collaborative inquiry, the Intentional Design Framework provides implementation structures to facilitate that occurrence. The Intentional Design Framework also provides conceptual illustration of the transformation of traditionally delivered instruction that dispenses with the self-imposed limitations of the most commonly imposed online pedagogy (weekly units comprised of text readings, assignments, and discussions), and instead provides instructors with increased opportunity for innovation in aligning and applying a variety of instructional models, methods, and strategies in a more focused manner.

In their *Seven Principles of Good Practice*, Chickering and Gamson (1987) outlined a shared responsibility between teacher and learner to create an effective learning environment. This concept has been reinforced by numerous Student-centered Instruction (SCI) models that put the student both (figuratively) at the center of the learning process, and (literally) at the center of the model. SCI is defined as an instructional approach in which students influence the content, activities, materials, and pace of learning. SCI models typically outline the use of techniques such as substituting active learning experiences for lectures, assigning open-ended critical or creative thinking problems and using self-paced and/or team-based learning. Proponents of this model believe that SCI can lead to increased motivation, greater knowledge retention, deeper understanding, and more positive attitudes (Collins & O'Brien, 2003).

Tolman and Christenson (2009) proposed an Engaged Teaching model designed specifically for Utah Valley University, a large, open enrolment regional university in north-central Utah. The model, contingent upon up-to-date disciplinary pedagogical and technical knowledge of the instructor, actively promotes students' acquisition of core intellectual and practical skills including inquiry and analysis, critical and creative thinking, written and oral communication, and the ability to work collaboratively and problem-solve with others. The model, which is clearly grounded in the tenets of Student Centered Instruction, advocates for the development skills through the use of modern and effective teaching strategies that involve students in course decisions, increase student direct contact with course content, increase student choices and responsibility for their own learning, promotes student self-reflection and engage students with each other and with the community (Tolman & Christenson, 2009).

Recently, the Flipped model of instruction has gained quite a bit of momentum in the field of education (Bergmann, Overmyer, & Wilie, 2011). At its core, flipped instruction

involves removing most or all of the lecture-based lessons from classrooms and giving students the ability to learn that content in their own time at their own pace (Spencer, Wolf, & Sams, 2011). This is done through a variety of technology-facilitated content dissemination, predominantly in the form of web-delivered media. Proponents of this model of instruction indicate several potential advantages to this technique. First, the instructor doesn't need to guess at what speed to deliver content –students can view and review content at their own speed, so time on task is greatly improved. Also, instructors can utilize the classroom previously dedicated to lecturing for more active learning activities such as mentored practice, break-out group work, and jig sawing (Bennett, Kern, Gudenrath, & McIntosh, 2011). Although acceptance of this instructional model is far from universal, it has found widespread usage in the context of hybrid or blended learning programs.

The Quantum Perspective of learning principles proposed by Janzen, Perry, and Edwards (2011), can also provide a powerful model when applied to the design of instruction. The QP model (pp. 5-6) holds that:

1. Online learning needs to be multi-dimensionally constructed. If it is accepted that humans are holistic beings, then learning must be able to reach the learners' multiple dimensions.
2. Online learning must occur in various planes/dimensions in order to access holistic development. Reaching the learner simply in one quantum dimension (i.e., cognitive or social) is not sufficient to promote learning that extends beyond the confines of the online classroom. Learning that reaches multiple dimensions becomes learning that is accessed for life.
3. Humans have infinite potential to learn and develop in all dimensions.

4. Human potential for learning is ubiquitous. Geographic separation and asynchronous learning are not limitations in online learning.
5. Online instructional design should encourage learners to reach beyond temporality and virtuality into holographic realities. Holographic realities (which encourage interaction with and between learners, instructors, the learning environment, and technology) become the essence of holistic online education.
6. Online learning environments are living systems which grow, evolve, and develop through the passage of time and space. Online learning environments are dynamic spaces which support the needs of learners, instructors, and educational institutions.
7. Online learning can result in transformation for teachers, learners, and the educational environment. Ultimately through this transformation, technology is potentially both directly and indirectly transformed.

Finally, one relative newcomer to the online model discussion is not technically a model at all; rather it might more accurately be considered a *frame of mind* regarding the technology-enhanced learning environment: EduPunk. Coined in 2008 by Jim Groom, an Instructional Technologist at the University of Mary Washington, EduPunk outlines a do-it-yourself approach to teaching embraced by tech-savvy faculty that eschews the limitations of the "florescent–lighted" environment of the Learning Management System. "In short, EduPunk is student-centered, resourceful, teacher- or community-created rather than corporate-sourced, and underwritten by a progressive political stance" (Madsen, 2008). EduPunk and other approaches like it may represent a milepost for the evolution and maturation of the technology-enhanced learning environment and herald the development of online learning models that, free of pre-

conceived constraints, are specifically designed to harness the power of web 2.0 to meet instructional aims.

Conclusion, Emerging Pedagogies

Paradoxically, even as the rapid advances in educational technology and disruptive innovations has continued to define new educational contexts and new ways of learning, the successful instructional designer must demonstrate not only the flexibility necessary to stay abreast of these innovative approaches and instructional models, but must also remain grounded in the historical bases of educational theory that form the foundation for these emerging pedagogies. Creative potential in an instructional designer facilitates the establishment of these innovative connections between the old and the new. In short, it can be argued, that creativity is at the core of what instructional designers do.

Creativity

> The alchemists of yore sought nothing less than to remake matter, a cherished objective being the conversion of lead into gold. This might be accomplished by the touch of the "philosopher's stone," a substance that could perform the precious transmutation. Alas, there was no such stone, and, although modern nuclear physics at last gives us ways of transmuting elements, in general the process is nowhere near worth the energy it consumes.
>
> If there is anything like the philosopher's stone, it is as unstony as something can get: It is the human mind. Through the use of the mind, human beings have transformed ordinary language into song and sonnet, arithmetic into algebra and then calculus, the Greek atom into quantum physics, geocentric cosmologies into the cosmology of the big bang. Human creativity, ineffable and

evanescent as it is generally said to be, is the stone of power. (Weber & Perkins, 1992, p. 3)

Although for the purposes of this study the construct of creativity is approached in a decidedly domain-specific manner, the following multi-faceted exploration of the construct of creativity is intended to provide a knowledge foundation of the evolution of the study of creativity as a whole as well as an overview of several conceptual approaches, evolving concepts, and avenues of research regarding creativity.

Evolution of the Field of Creativity Research

As recently as the first half of the last century, creativity was a relatively neglected topic for psychological research (Sternberg & Lubart, 1996). Currently, however, it would be difficult to imagine a concept that has been the focus of a larger number (or a wider variety) of research efforts. A simple search of the word creativity at the North Dakota State University Libraries electronic resources web page generated over nine hundred thousand results.

A 1950 address by American Psychological Association president J. P. Guilford calling for an increased focus on scientific studies in the creativity genre is often cited as the origin of mainstream creativity research (Beghetto & Kaufman, 2007). Of particular interest to Guilford was the assessment and fostering of creativity in schoolchildren. Since Guilford's challenge, numerous theories, perspectives, and approaches have been directed toward the creativity puzzle, and formal creativity research has captured increased attention at an accelerating pace (Hennessey & Amabile, 2010). The collection of over 80 different definitions of creativity by marketing consultant Simon Majaro (1989) for his text *The Creative Gap*, and over one hundred definitions by Nobel museum curators (McClary, 2009) give a sense of the immense scale of the current literature on creativity. As Ogoemeka (2011) stated: "If one asks a hundred people to

give the meaning of creativity, they are likely to come up with a hundred definitions. This is because creativity is an amazingly complex behavior that is multifactionally determined" (p. 595). In a 2002 compilation, Akinboye (cited in Ogoemeka, 2011, p. 595), assembled the following definitions of creativity from the literature.

1. Creativity describes the production of new ideas.
2. Creativity described the reconstruction of new ideas from the old.
3. Creativity is insight.
4. Creativity involves the active search for alternatives.
5. Creativity describes special ways of handling information.

In summation, Davis (1992) asserted: "there are about as many different definitions, theories and ideas about creativity as there are people who have set their ideas on paper" (p. 38).

To be sure, creativity research has seemingly illuminated every angle of the construct, from the cognitive to the mystical (Sternberg, 1999), but still, a definitive understanding of creativity remains elusive. By 1989, Glover, Ronning, and Reynolds argued that the attempt at development of a formal theory of creativity had come to be a large scale example of a "degenerating research program" (cited in Eysenck, 1993, p. 147). Creativity, it would appear, is not a particularly easy phenomenon to study. While there is seemingly no shortage of theoretical perspectives, clear and unambiguous data on the subject has been particularly scant (Simonton, 2012).

As an organizing construct, Jeffrey and Craft (2001) categorized four broad themes of creativity research in terms of chronological foci across the latter half of the twentieth century.

> In the 1950s the focus was on the individual, on genius and giftedness, and on the personality of the person who creates. As a result of this trend, the focus in the

> 1960's concentrated on measurable outcome and tests of creative ability related to cognition. Then in the 1970s the emphasis shifted to connecting creativity with imaginativeness and the need to stimulate creativity. Finally, during the 1980s researchers looked toward environmental conditioning and social theory, to understand the concept of creativity… At the same time the methodology for investigating creativity in education shifted from positivist, large-scale studies aiming to measure creativity, towards ethnographic, qualitative approaches to researching creativity in practice. (Jeffrey & Craft, 2001, p. 2)

Similarly, psychologist Robert J. Sternberg (2007), whose own contributions to the research of creativity includes the investment and propulsion theories of creative contributions, suggested that due to the complex and often esoteric nature of the subject of creativity, a confluence of approaches may be necessary to fully illustrate this elusive concept. To fully illuminate the construct of creativity, Sternberg (1999) suggested seven conceptual approaches:

1. The Mystical Approach: creativity as divine intervention
2. The Pragmatic Approach: techniques for improving creative potential
3. The Psychodynamic Approach: creativity as tension between conscious and subconscious
4. The Psychometric Approach: testing/ measurement of creativity
5. The Cognitive Approach: a study of the underlying mental processes of the creative act
6. The Social-Personality Approach: personality and motivational dynamics that influence creativity

7. The Confluence Approach: Creativity as a result of the confluence of many factors.

In the following section, each of Sternberg's seven conceptual approaches are explored in further detail and several evolving concepts or research avenues regarding creativity not included in the Sternberg framework will be addressed.

Mystical approach. Prior to its more recent position as the focus of an ever-increasing body of scientific research, creativity was largely relegated to the mystical realm of divine intervention and the muse. Sternberg recounted the author Rudyard Kipling's description of the "daemon that lives in the writer's pen":

> …my daemon was with me in the jungle books, Kim, and both puck books, and good care I took to walk delicately, lest he should withdraw… When your daemon is in charge, do not think consciously. Drift, wait, and obey. (quoted in Sternberg, 1999, p. 5)

More recently, novelist John Fowles (1982) provided another, slightly humorous, perspective on the role of the creative muse in his novella *Mantissa,* which was dedicated entirely to the internal dialogue between the protagonist (a writer) and his muse.

Pragmatic approach. A great deal of recent literature, particularly self-help volumes such as Dyer, Gregersen, and Christensen's *The Innovator's DNA*, as well as the work of Sir Kenneth Robinson focus on creativity as a marketable skill that can be honed and refined. Robinson's (2009, 2011) definitions of imagination as "the process of bringing to mind things that are not present to our senses" (2011, p. 141), creativity as the "process of having original ideas that have value" (2009, p. 67), and innovation as "putting new ideas into practice" (2011, p. 142) hint at the applied nature of this approach to creativity. Sternberg highlighted the work of

de Bono as an exemplar of the pragmatic approach. While originally intended as a social creativity/ brainstorming technique, de Bono's (2001) Six Thinking Hats creativity framework can also be used to metaphorically illustrate creativity as an ongoing thought conversation between different dimensions of the problem solving thought process. Several of these concepts, such as de Bono's (2001) Creative Hit List (p. 246), will be explored in greater detail in the Recruiting and Hiring for Creativity portion of this literature review. Although Sternberg (1999) actually characterized this approach as damaging to the field, dismissing it as not at all concerned with the testing of the validity or authenticity of the ideas about creativity, the numerous tools and techniques presented in this genre lend themselves well applied creativity approach of this research.

Psychodynamic approach. Austrian neurologist Sigmund Freud (1910), who is largely credited with pioneering 20th century creativity research, suggested that creativity stems from the tension between conscious reality and subconscious drives, that creative people are creative as a means of expressing their unconscious wishes in a societally acceptable fashion. Sternberg (1999) asserted that while the psychodynamic approach may have provided some early insights into the nature of creativity (principally through the use of case-study research of important historical creators), this vein of research has largely been abandoned.

Psychometric approach. Guilford (1967) and Torrence (1962) pioneered efforts to quantify creativity through the creation of simple paper and pencil tests designed to measure it. The work of Cox (1926) and Terman (1925) focused on the correlation between the intelligence quotient (IQ) and creativity. Their work suggested the possibility of a threshold of intelligence above which the correlation of intelligence to creativity does not hold. That is, below an IQ of 120, a higher IQ number would generally indicate higher creative ability. Above 120, however,

the correlation fails, and may actually invert for subjects with very high intelligence quotients. Other researchers believe that creativity and IQ are separate constructs altogether (Kim, 2010). Barron and Harrington (1981) suggested that the relative ease and convenience of the administration of tests developed by Guilford and Torrence led to their widespread use, which has, in turn forced distinctions in the operational definition between creative product, process, and abilities.

Cognitive approach. The cognitive approach to creativity holds that creativity is a process that occurs in the act of solving a problem. Wallas (1926), for example, outlined the creative process as four distinct stages; preparation, incubation, illumination, and verification. Sternberg and Williams (1996) defined creativity as the application of synthetic, analytic, and practical thinking, while Sternberg (2007) later asserted that creative ideas evolve through a process of selection called selective retention. Lucas (2001) proposed that "…creativity is a state of mind in which all of our intelligences are working together. It involves seeing, thinking and innovating. Although it is often found in the creative arts, creativity can be demonstrated in any subject at school or in any aspect of life" (p. 38).

In an exploration of the creative processes, Cross (2002) discovered commonality in the creative cognitive processes of three exceptional designers. In an assertion that echoes the now largely defunct psychodynamic approach; Cross observed that creative design occurs when tension exists between a problem's goal and the criteria used for its solution. To be successful, designers must holistically balance multiple constraints and interpretations to restructure problems and arrive at a desired solution (Cross, 2002). According to Mitchell, Inouye, and Blumenthal (2003): " the start of a creative act is the escape from one range of assumptions—a context—often with the aid of another context seemingly at odds with the first but that provides a

new way of viewing what we already thought we understood" (p. 31). Barron (1995) described the human act of creation as "basically… a personal reshaping of given materials, whether physical or mental" (p. 313). Csikszentmihalyi (1996) expanded the metaphor further, shifting the conversation about creativity from problem-solving to problem-finding. Torrance (1993) echoed the problem-finding concept, defining creative behavior as "the process of becoming aware of problems, deficiencies, gaps in knowledge, missing elements, bringing together in new relationships, available information, identifying the missing elements, searching for solutions, making guesses or formulating hypotheses" (p. 233).

In *The Element,* Sir Kenneth Robinson (2009) attempted to dispel what he considers the three myths of creativity: that only special people are creative; only certain domains can be creative; and creativity is a fixed trait, like eye color. Robinson asserted that "creativity is not a single power that people simply have or do not have." And "intelligence and creativity are *blood relatives*; you can't be creative without acting intelligently. Similarly, the highest form of intelligence is thinking creatively" (p. 56). Dyer et al. (2011) would seem to concur, stating: "…general intelligence is basically a genetic endowment, but creativity is not. Nurture trumps nature as far as creativity goes" (p. 22). In the context of creativity, the nature vs. nurture controversy is far from new; the debate has evolved through its behaviorist roots into more modern cognitive science approaches (Simonton, 2012).

Social-personality approach. Other efforts in the development of creativity theory have included attempts to map creativity directly to certain personality traits. For example, Simonton (2012) asserted that highly creative people notice additional stimuli that others may otherwise ignore, which enable them to "think outside the box" (p. 217). Similarly, Eysenck (1993) stated that those who are over-inclusive are more likely to produce new ideas.

Luh and Lu (2012) proposed that cognitive style is strongly related to creativity, and in particular, the innovative cognitive style positively and significantly predicts creative achievement. Gino and Ariely (2012) specified divergent thinking and cognitive flexibility as two main psychological factors underlying creative performance. Divergent thinking refers to the ability to envision multiple solutions to a problem and develop original ideas while cognitive flexibility relates to the ability to restructure knowledge to meet situational demands. Gino and Ariely (2012) went on to propose that moral flexibility, defined as an individual's ability and willingness to justify immoral (or at least morally ambiguous) actions may be an undesired side effect of creative psychological predilection. They found a robust relationship between creativity and dishonesty; "greater creativity helps individuals solve difficult tasks across many domains, but creative sparks may lead individuals to take unethical routes when searching for solutions" (p. 454). In addition to cognitive abilities, dispositional factors such as values, motivation and personality are essential to understanding creativity (Simonton, 2012). Eysenck (1993) held that creativity is conceived as both "a trait characteristic of a person" such as Mozart, Picasso, Einstein, or Hannibal and also that "we may define creativity in terms of a finished product" such as the Principia Mathematica (Newton), the Mona Lisa (Leonardo da Vinci), Hamlet (Shakespeare), or the Battle of Cannae (Hannibal) (p. 152).

The study of socially situated creativity is a recent evolution in the literature. As exemplified by the work of Baas, De Dreu, and Nijstad (2008) that correlated positive affect and creativity, social creativity research has expanded the focus from creativity as a fundamentally personal act to include impact of social evaluation and reward (Amabile, 1988), the reinforcing effect of group activities such as brainstorming (Stroebe, Nijstad, & Rietzschel, 2010), and the possibility that moods and drives have far more complex relations with creativity than

researchers originally believed (Simonton, 2012). Csikszentmihalyi (1996) explored the relationship between creativity and domain, defining creativity as "any act, idea, or product that changes the existing domain, or that transforms an existing domain into a new one" (p. 1). Csikszentmihalyi (1996) further asserted that any idea or product that deserves the label 'creative' arises from the synergy of many sources and not just from the mind of one person.

Confluence theory. Sternberg's (2007) final conceptual approach to creativity was that it could most clearly be modeled as the complex interrelationship of disparate constructs. Although largely metaphoric, an early example of this approach is Koestler's Triptych Model of creative activity (1964). Koestler proposed that every creative activity is influenced by the jester, the sage, and the artist; that is, there are three domains of creativity (humor, discovery, and art) that blend into each other. Although the logical pattern of the creative process is the same in all three cases, the emotional climate is different. Thus the tri-valency of creativity consists of the comic simile's touch of aggressiveness; the scientist's emotionally detached reasoning by analogy, and the sympathetic or admiring poetic image, inspired by a positive kind of emotion. The first is intended to make us laugh; the second to make us understand; the third to make us marvel (Koestler, 1964).

Boden (1998) defined creativity as possessing not only a cognitive dimension (the generation of new ideas) but also motivation and emotion, and is closely linked to cultural context and personality factors. Similarly, Eysneck's (1993) creativity model illustrates the synergistic interaction of various cognitive (intelligence, knowledge, technical skills, special talent), environmental (political-religious factors, cultural factors, socio economic, educational factors) and personality (internal motivation, confidence, non-conformity, originality) variables to produce creative achievement. Eysenck (1993) also postulated that originality (creativity as a

trait) is one of the essential ingredients of creativity (as achievement), but conceived it as a necessary, although not a sufficient, condition. Amabile (1996) suggested a componential model of creativity, where three variables were required for creativity to occur: domain-relevant skills, creativity-relevant skills, and task motivation.

In an effort to transcend the dichotomous relationship between creative and habitual behavior, Glaˇveanu (2012) explored the coconstitutive nature of creativity and habit where mastery, defined as "the uppermost expression of habitual practice, at which action has been so well exercised and internalized that it often becomes associated with advanced forms of creative expression" (p. 79), implies both the creativity of habitual action and the habitual nature of creativity. The resulting construct, habitual creativity is defined as " the ways in which novelties form an intrinsic part of habitual action by constantly adjusting it to dynamic contexts, allowing for transitions between and combination of different 'routines', and finally perfecting practices, thus resulting in mastery" (p. 84).

In his Investment Theory of Creative Contributions, Sternberg (2007) contended that to a large extent, creativity is a decision. Called the investment theory because it approximates the buy low sell high philosophy of business transactions, the theory concerns the *decision to be creative*. In this model, creative people produce new ideas that defy convention (buy low) persuade others of its veracity and value (sell high) and move on to the next opportunity for creativity (Sternberg, 2007). As part of this model, Sternberg (2007) proposes a new construct; creative capacity which represents a confluence (as opposed to a simple sum) of six personal traits or skills (intellectual skills [including the creative skill, the analytic skill, and the practical-contextual skill], knowledge, thinking styles, personality, motivation, and environment) where

strengths and weaknesses can interact to amplify strengths and mitigate weaknesses (pp. 109-110).

Sternberg's (2007) propulsion theory modeled creative contribution as the attempt to propel a concept from wherever it is to wherever the creator believes it should go, moving a field of thought from one place to another. Eight distinct types of creative contributions are illustrated in the model. Four types of creativity (replication, redefinition, forward incrementation, and advance forward incrementation) attempt to extend current accepted paradigms; three types of creativity (redirection, reconstruction, and re-initiation) reject and attempt to replace current paradigms; and one type of creativity (integration) merges current disparate paradigms (pp. 126-127).

Although the propulsion theory is not without certain weaknesses and ambiguities, Sternberg (2007) contended that even though "…it is unlikely that there is any one 'right' model…models such as this one can help people expand their thinking about the types of creative contributions that can be made in a field. And to the extent that this model accomplishes that goal, it is accomplishing what it should" (p. 143).

Creativity and domain specificity. The question of whether creativity is domain general or domain specific is one of the most enduring controversies in the field (Plucker & Beghetto, 2004). While at first glance it might seem perfectly reasonable to conceive of the creative process as a generic, one-size-fits-all procedure that could apply to any domain of creativity (Simonton, 2012), the extensive body of research studies of creative geniuses who were very creative in a specific domain, such as music, painting, writing, science, mathematics, etc. has led many researchers to believe that a person can be very creative within one domain, but not necessarily in another (Saebo, 2007).

Csikszentmihalyi's Systemic Model represented the creator and his context as inextricably connected, and that "in order to function well within the creative system, one must internalize the rules of the domain and the opinions of the field" (quoted in Sternberg, 1999, p. 332). Plucker, Beghetto, and Dow (2004) highlighted the need for "…interaction among aptitude, process, and environment" and that creativity by "…an individual or group produces a perceptible product that is both novel and useful as defined within a social context" (p. 90). Furthermore, Csikszentmihalyi asserted that creativity fundamentally exists in the eye of the beholder; whether or not something is creative is essentially a value judgment made by experts in a particular context, a judgment that itself may fall under a variety of influences; from the personal views of the evaluator to diversity inherent in different design cultures (cited in Cropley & Cropley, 2010).

This perspective stresses the importance of attaining domain-specific mastery through deliberate practice (Ericsson, Krampe, & Tesch-Romer, 1993). The concept of deliberate practice has led to the well-known 10-year rule that asserts that truly creative, high-impact contribution to a particular domain cannot be achieved without first devoting a full decade to acquiring the requisite knowledge and skills inherent to the domain (Ericsson, Roaring, & Nandagopal, 2007).

Although Cropley and Cropley (2010) postulated the existence of a universal aesthetic of creativity which would transcend design cultures, the current dominant perspective supports the need for situated cognition and domain specificity. Finally, Plucker and Beghetto (2004) contended that creativity has both domain-specific and domain-general characteristics, and that the level of specificity-generality changes with the social context and as one develops through childhood into adulthood.

The multi-dimensional nature of creativity. Historically, the study of creativity has often focused on the lives and works of visionary creators such as Einstein, Mozart, or Picasso. The achievements of these creative geniuses are often referred to as Creativity with a capital C or Big C Creativity (Gardner 1993). Educational theorist John Dewey (1934) presented a far broader view of creativity, defining it as a continuum of experience from the most mundane activities to the highest expressions of creative genius. Likewise, Pickering and Negus (2004) argued for a re-conceptualization of creativity that includes both ordinary everyday creative acts as well as those deemed exceptional by society. Boden (1998) made the distinction between psychological creativity - acts or ideas that are novel to the individual, and historical creativity – acts that are novel to the entire societal history. Boden (1998), went on to suggest that creativity is not only the domain of the intellectual elite, it is a feature of human intelligence in general grounded in everyday capacities such as the association of ideas, reminding, perception, analogical thinking, searching a structured problem-space, and reflective self-criticism. These contributions to everyday life have come to be considered little-c creativity (Beghetto & Kauffman, 2007).

Dasgupta (1996) provided a detailed description of his perspective on the creative sub-components:

> We will say that π *psychologically novel* for the agent if he believes that there exists no other thought product in his personal knowledge body that is identical to π. If, furthermore, the agent also believes that π adds significantly to the relevant community's public knowledge body associated with the domain, then we shall say that π is *psychologically original* for the agent.

> If on the other hand (or in addition), the relevant community believes that there is no other existing thought product in its public knowledge body that is identical to π, then π will be said to be *historically novel* for that community. If, in addition, the community agrees that π adds significantly to its knowledge body then we shall say that π is *historically original*.
>
> We can now distinguish between different levels of creativity as follows: A process conducted by an agent giving rise to some thought product π relevant to a domain will be said to be *PN-creative* if π is psychologically novel for the agent; it will be said to be *PO-creative* if π is psychologically original for the agent. The process will be deemed *HN-creative* if it is considered by the relevant community to be historically novel. Finally, it will be called *HO-creative* if π if historically original for that community. (pp. 56-57)

Finally, Beghetto and Kauffman (2007) postulated the existence of mini-c creativity, which they defined as "the novel and personally meaningful interpretation of experiences, actions, and events" (p. 73). Highlighting the relationship between learning and creativity, mini-c creativity is the process by which people "filter and interpret information through the lens of their existing conceptions, personal histories, and past experiences" (p. 73).

Applied creativity and innovation. The distinction between creativity and innovation is an emerging framework for the study of creativity. Defined as the process of both generating and applying creative ideas in a specific context (Davis & Rimm, 2004; Sternberg, 1999) innovation is an intentionally creative action that typically results in physical products. Weisberg (2006) claimed that an innovation "emerges when an individual intentionally produces something new in attempting to meet some goal" (p. 761), while Kaufman and Kaufman's (2004) criteria for

innovation is the creation of something new and different "with the specific understanding that it is new and different" (p. 148).

Echoing Eysenck (1993), Cropley and Cropley (2010) proposed that novelty (as the result of creativity), although absolutely essential to functional creativity, was not sufficient on its own. In other words, not every departure from what already exists is functionally creative. Novelty (an original solution) must be combined with relevance and effectiveness to meet the threshold of functional creativity. Additionally, a creative solution to a design problem can go further by being 'elegant.' Elegance, referred to the "grace of great things" by Grudin (1990), adds value to a relevant and effective solution that is already novel. Finally, a relevant and effective, novel, and elegant solution that is transferrable to different (quite possibly unanticipated) contexts yields the highest level of functional creativity - innovation (Cropley & Cropley 2010).

Conclusion, Creativity

In an assertion that is clearly supported by the previous pages, Clinton and Hokanson (2012) argued that a common understanding about the nature of creativity is not to be found in professional and research literature. What can be found, however, is a core definition that is fairly consistent: Creativity is defined as: the ability to produce ideas that are both novel (i.e., original, unexpected) and appropriate (i.e., useful, adaptive to task constraints) in response to a problem that needs to be solved (Amabile, 1983; Csikszentmihalyi, 1996; Feist, 1999; Sternberg & Lubart, 1995; Sternberg & Pretz, 2005; Sternberg, 2007).

Now that the foundation has been laid and a working definition has been established, the next section will explore several supporting constructs and concepts closely associated to creativity.

Other Creativity-related Constructs

If, as has been proposed, the practice of instructional design is becoming an increasingly heuristic, nonlinear exercise, the designer, removed from the relative safety of a step-by-step prescriptive (and perhaps proscriptive) process, may be directly influenced by a variety of issues related to the creative act. The following section will investigate the literature surrounding constructs closely associated with creativity, including ambiguity tolerance and creative uncertainty.

Ambiguity Tolerance

Ambiguity is a completely subjective concept (Budner, 1962). The ambiguity of an object or situation cannot be measured in and of itself; rather, it is wholly dependent on the perception and interpretation of the observer (Reisberg, 2006). Ambiguity tolerance refers to the ability of an observer to perceive and functionally process informational or situational vagueness. It is a variable that can be conceived of on an axial scale. The person with low tolerance of ambiguity may experience stress or avoid ambiguous stimuli altogether. At the other extreme of the scale, however, a person with high ambiguity tolerance generally perceives ambiguous situations or stimuli as desirable, challenging, and interesting and neither denies nor distorts their complexity or incongruity (Furnham & Ribchester, 1995). Gibson and Bingham (1982) asserted that tolerance (at least in the political context) need only be modeled uni-dimensionally; that is, ambiguity tolerance and ambiguity intolerance are not individual constructs, rather they lie at opposite ends of a continuum.

Frenkel-Brunswik (1949) identified two cognitive domains for processing ambiguity-producing stimuli. *Direct assimilation* involves fitting new information directly into existing knowledge. A one-shot explanation directed toward problem minimization, the assimilation approach conflates new information with prior beliefs in spite of contradictions. New

information is ignored, rejected, and distorted to accommodate existing beliefs. Alternatively, *knowledge building* involves treating new information's contradiction with previous knowledge as something problematic in need of an explanation, viewing the conflict of concepts as an opportunity to expand and constructing explanations to resolve the discrepancies.

In the adult learning context, the concept of ambiguity intolerance in the adult learner can be traced back at least as far as Knowles' (1970) concept of andragogy. Although it is not explicitly named ambiguity intolerance, Knowles' assumption that adults need to know why they need to learn something clearly illustrated a requirement for certainty in the learning endeavor. The effect of ambiguity to the learning process is also plainly evident in Mezirow's theory of transformative learning. For Mezirow (1990), "making meaning" (p. 3) is the process by which we make sense of our experiences, and learning has occurred once we use these interpretations to guide decision making. Experiences that are too strange or threatening (or ambiguous) can cause anxiety and the activation of psychological defense mechanisms to block out the incompatible information. Integration of this confounding information requires metaphorically relating new patterns into existing meaning perspectives (similar to Frenkel-Brunswik's knowledge building). Transformation occurs in response to a disorienting dilemma where old ways of knowing cannot incorporate new, incongruent information which in turn triggers reflection and perspective transformation.

The effect of ambiguity tolerance on individual success across a variety of domains (including learning, creativity, and leadership) has been the subject of an expanding canon of research. Works by Vernon (1970), Barron and Harrington (1981), Sternberg and Lubart (1995), Zenasni, Besançon, and Lubart (2008), and McClary (2009) have endeavored to demonstrate a positive correlation between creativity and ambiguity tolerance in a range of contexts. Vernon

(1970) postulated that ambiguity tolerance fosters creativity because it allows individuals to not be satisfied by partial or non-optimal solutions to complex problems. Ambiguity tolerant people can work effectively on a broader range of concurrent stimuli or situations, including ambiguous ones, while intolerant individuals will actively avoid such situations.

Urban's (2003) component model of creativity tied ambiguity tolerance to intrinsic motivation in the creative process, because it empowers persistence in the exploration of confounding, complex or unique stimuli. A recent study by Zenasni, Besançon and Lubart (2008) successfully demonstrated evidence of a correlation between tolerance of ambiguity and a variety of facets of creativity. Wilkinson's (2006) modes of leadership includes ambiguity tolerance as a crucial personality trait for creative success while Sternberg (2005) lists the ability to deal with novelty as a crucial personal trait for creative intelligence, a key component in his triarchic model of successful intelligence. Fields (2012) stated that "the ability to live in the question long enough for genius to emerge is a touchstone of creative success" (p. 1).

Beitel, Ferrer, and Cecero (2004), found a moderate positive correlation between Ambiguity Tolerance and Psychological Mindedness (PM). High PM individuals exhibit a willingness to try to understand oneself and others and openness to new ideas. They demonstrate comfort dealing with the shades of gray in life and do not rely upon all-or-none thinking, which tends to be associated with psychopathology.

Other appearances of ambiguity tolerance in the literature include the field of entrepreneurial learning. While not mentioned explicitly, Cope (2003) includes ambiguity tolerance (and built in motivation in the form of personal stake) as crucial elements to the development of higher level entrepreneurial learning. Lane and Klenke's (2004) Ambiguity

Tolerance Interface model and associated research demonstrated significant associations between ambiguity tolerance, flexibility, and leader effectiveness.

Uncertainty and Fear

According to Caropreso and Couch (1996); "the most insidious of all the roadblocks to creativity is fear" (p. 36). Gordon (2003) suggested that the typical response to uncertainty is an instinctual drive to impose order and regain control, stemming from an unwavering desire to put definitive boundaries on that which is, in essence, boundless. Similarly, Fields (2012) asserted that when most people are faced with the need to 'live in the question' they experience anything from unease to abject fear and paralyzing anxiety. Ahlfeldt (2010) stated that creativity, although a beautiful catalyst of new ideas and fresh perspective is lined with fear, dread, and panic. According to Whitson and Galinsky (2008), uncertainty is an aversive state that people feel a strong motivation to diminish and avoid. May (1975) maintained that "the possibility of freedom always arouses anxiety" (p. 391).

Many believe that the fear of uncertainty is a necessary component of the creative process. Gordon (2003) stated that creativity, authenticity, uncertainty, and anxiety were inseparable elements of a creative existence. Likewise, Krippner (1994) proposed that real transformative change is simultaneous with crisis, and Kuhn (1996) agreed that crisis is a necessary precondition for the emergence of creativity. May (1975) called ability to overcome the anxiety of uncertainty creative courage: the discovering of new forms, new symbols, new patterns on which a new society can be built. Gordon (2003) challenged that if anxiety is necessary for creativity, then it should be re-conceptualized so it may be experienced in a more positive light. Innovation consultant Jonathan Fields characterized uncertainty as a "signpost that what you're doing matters, that what you strive to create will not be derivative" (quoted in

McGuinness, 2011, p.2), and pronounced that "the greatest creators train not only in their chosen fields, but in the alchemy of fear" (quoted in McGuinness, 2011, p.3). Robinson (2011) put it more simply: "If you're not prepared to be wrong, it's unlikely you'll come up with anything original" (p. 153).

More than Tolerance: Creative Uncertainty

McClary's (2009) failure to find a statistically significant correlation between tolerance of ambiguity and creativity among military officers may present evidence of the inherent weakness of the treatment of ambiguity tolerance and ambiguity intolerance as separate constructs. If Gibson and Bingham's (1982) assertion that ambiguity tolerance be considered across a uni-dimensional continuum is ignored, we are left with erroneous (though generally accepted) definitions of ambiguity tolerance and ambiguity intolerance.

While the construct of ambiguity *in*tolerance provides a reasonable description of an individual's tendency to perceive (i.e., interpret) ambiguous situations as a source of threat (Budner, 1962), or the state of feeling constrained, anxious, or tense in ambiguous situations (Vernon, 1970). The construct of ambiguity tolerance (particularly in the educational context), however, is more problematic. Most current definitions of ambiguity tolerance indicate a capacity to *endure* ambiguity, rather than thrive in it. Ambiguity is presented as a necessary evil, a barrier to the learning process. MacDonald's (1970) definition of ambiguity tolerant people as those who like ambiguous situations (or at least can live with them for some time) is rare in that it at least concedes the possibility of a more positive implication.

Computer scientist Christopher Langton coined the phrase the *edge of chaos* to describe a transitional region between order (certainty) and complete randomness (uncertainty) where the components of the system never quite lock into place yet never quite dissolve into turbulence; a

realm of complexity, probability, and infinite potential (Gordon, 2003). Gordon expanded the metaphor to regard uncertainty not as a limit, but as an expression of the boundless creativity inherent in the universe.

Although the term *creative uncertainty* is currently in use in a wide variety of contexts, including innovation, alternative medicine, urban planning, and national security, there has been to date no unification of the term's definition. In the field of education, the foundational concepts supporting creative uncertainty are not new. References to it can be found in such disparate sources as transformative learning, self-directed learning, problem-based and discovery learning, entrepreneurial learning, creativity, and successful intelligence.

While the construct of creative uncertainty is closely related to ambiguity tolerance, it differs in the fact that creative uncertainty describes a state of active and productive engagement in educational ambiguity, not simply tolerance of it. In short, creative uncertainty represents the opposite of ambiguity intolerance, and is purposefully devoid of the negative connotations present in the ambiguity tolerance construct. For the purposes of this work, creative uncertainty is defined as: the embracing of ambiguity as an empowering opportunity to unlock creative potential.

As of yet, this definition of creative uncertainty has not been found explicitly in the literature, but the concept is described anecdotally in several sources. A collection of Richard Feynman's (1999) writings, appropriately named *The Pleasure of Finding Things Out*, contains a description of Feynman's problem solving thought processes in terms resonant of creative uncertainty; "This attitude of mind – this attitude of uncertainty – is vital to the scientist, and it is an attitude of mind that the student must first acquire. …but in saying that we do not know, we have probably found the open channel – if we allow only that, as we progress, we leave open

opportunities for alternatives … [we] remain always uncertain. … to decide upon the answer is not scientific. In order to make progress, one must leave the door to the unknown ajar…" (p. 115), and "you see, the thing is, I can live with doubt and uncertainty and not knowing… I don't have to have an answer, I don't' feel frightened by not knowing things…" (p. 24).

Similarly, in her book *Mindfullness* Ellen Langer (1989), a Psychology Professor at Harvard, described people who possess a mindful attitude as "those who can free themselves of old mindsets…who can open themselves to new information and surprise, play with perspective and context" (p. 115), and possess a "sense of possibility" (p. 123). She asserted that this ability to cognitively shift contexts increases flexibility, productivity, innovation, leadership ability, and satisfaction. Rollo May (1975) defined the creative act as an encounter: "Artists encounter the landscape they propose to paint- they look at it, observe it from this angle and that. They are, as we say, absorbed in it" (p. 39). Langer's mindful attitude, May's absorption, and Feynman's embracing of ambiguity begin to paint the clearest picture yet of the creative uncertainty construct.

Attributes of Creative Uncertainty

Fields (2011) speculated on the existence of a small number of innovators who "arrive on the planet more able to go to and even seek out that uncertainty-washed place that destroys so many others" (electronic version).

Clearly, self-efficacy plays a crucial role in the ability to succeed across a variety of environments, not just uncertain ones. Defined by psychologist Albert Bandura (1977) as belief in one's ability to succeed in specific situations, self-efficacy greatly influences how a learner approaches goals, tasks, and challenges. According to Bandura, people with high self-efficacy,

confidence in their ability to perform well, are more likely to view difficult tasks as something to be mastered rather than something to be avoided.

Doubt

The recognition of the threat that *certainty* provides to the educational or creative quest is likely an attitude crucial to creative uncertainty. John Dewey outlined these dangers in the *Quest for Certainty* (1933):

> No mode of action can, as we have insisted, give anything approaching absolute certitude. It provides insurance but no assurance. Doing is always subject to peril, to the danger of frustration. When men began to reflect philosophically it seemed to them altogether too risky to leave the place of values at the mercy of acts the results of which are never sure. ...this very uncertainty seemed to render it the more needful that ideal goods should be shown to have, by means of knowledge of the most assured type, an indefeasible and inexpugnable position in the realm of the ultimately real. … And to-day many persons find a peculiar consolation in… projecting a perfect form of good into a realm of essence, if not into a heaven beyond the earthly skies, wherein their authority, if not their existence, is wholly unshakeable. (p. 33)

Bertrand Russell (1912) put it slightly more succinctly in *The Problems of Philosophy*: “Is there any knowledge in the world that is so certain that no reasonable man could doubt it?” (p. 2). Ultimately, thriving in an environment of creative uncertainty requires a sense of openness and possibility in an atmosphere of respectful disagreement and challenge, where no existing knowledge is sacrosanct.

The role that doubt plays in creative uncertainty clearly reflects shades of postmodernist theory. According to Visscher-Voerman and Gustafson (2004), postmodernists contend that western scientific thought is inherently flawed with its emphasis on the discovery of ultimate theory and the one-and-only truth. They are unwilling to distill reality into one view and one truth; rather they continuously question the underlying assumptions of established science, and conceive knowledge as plural, abstract, and variable.

Wonder, Awe, and Wisdom

An increasing catalog of literature has explored the link between creativity wonder, awe, and wisdom. As Aristotle said, "It is owing to their wonder that men… first began to philosophize" (quoted in Ball, 2012, p. 2). Gordon (2003) stated that; "In awe, we put aside our willful need for certainty and allow ourselves to be humbled in the face of mystery" (p. 112). And "the uncertainty that lies at the core of reality can never be resolved but only, in awe and wonder, be experienced as a state of perpetual creative emergence. Awe opens us to the power and potential of uncertainty" (p. 115). According to Ball (2012), scientific curiosity grinds to a halt when deprived of wonder's fuel. For Heschel, "awe is the antithesis of fear" and "the beginning of awe is wonder, and the beginning of wisdom is awe" (quoted in Gordon, 2003, p. 112).

Most modern scientists, even those of a robustly secular persuasion, are comfortable with the intimate relationship between true curiosity and wonder: "a knowledge of science only adds to the excitement and mystery and awe of a flower," wrote the physicist Richard Feynman in 1988 (quoted in Ball, 2012). Finally, for

renowned astrophysicist Carl Sagan, “wonder is evidently not only an invitation to be curious, but a delight; it is wonderful” (quoted in Ball, 2012, p. 3).

Sternberg’s (2007) *Balance Theory of Wisdom* establishes successful intelligence and creativity as the basis of wisdom. Defined as the application of intelligence and creativity toward the achievement of a common good, wisdom demands an alchemy of careful consideration of various interests (both internal and external) and contexts. Sternberg (2007) argues that by striving for wisdom, we would prepare society to improve our quality of life and conduct, pointing out several compelling reasons for adopting this multifaceted approach:

1. Knowledge alone is insufficient for wisdom, and does not guarantee happiness.
2. Wisdom provides a mindful and considered way to enter into judgment.
3. Wisdom represents an avenue to creating a better, more harmonious world.
4. We are always part of a greater community and will benefit from learning to judge rightly, soundly, or justly on behalf of their community.

Although not a formal theory, a new philosophical perspective has recently emerged that would seem to possess a great deal of correlation with creative uncertainty. First presented by neuroscientist David Eagleman in relation to his collection of short stories *Sum*, possibilianism rejects the certainties of both traditional religion and fervent atheism in favor of an exploratory middle ground. Eagleman expanded on his definition:

> Our ignorance of the cosmos is too vast to commit to atheism, and yet we know too much to commit to a particular religion. … But with Possibilianism I'm hoping to define a new position -- one that emphasizes the exploration of new, unconsidered possibilities. Possibilianism is

> comfortable holding multiple ideas in mind; it is not interested in committing to any particular story. (Eagleman, 2012, p. 1)

Joy

As Robinson (2009, 2011) stated, people who work creatively usually have something in common, they love what they do; and added: being creative is not only about thinking, it's about feeling; it draws on all areas of human emotions, intuitions and playful imagination. Both these statements reinforce a theme that threads through much of the creativity literature: joy. Csikszentmihalyi (1996), defined the state of flow as an experience felt by those engaged in highly creative activities is so fascinating that the creators feel they are living more fully than during the rest of life: "most of the things that are interesting, important, and human are the results of creativity'' (p. 1). Moreover, Vallerand and Houlfort (2003) demonstrated evidence of a relationship between flow, passion, positive emotion, and creativity. They defined passion as "a strong inclination toward an activity that people like, that they find important, and in which they invest time and energy" (p. 175). Harmonious passion leads the individual to become engaged in his or her favorite activities and can facilitate a higher level of creative achievement (Luh & Lu, 2012). Maslow (1970) described the creative individual as a fulfilled one. As Robinson (2011) put it: "creativity is the greatest gift of human intelligence" (p. xiiv).

The Pleasure of Finding Things Out is replete with episodes of Feynman (1999) laughing at himself (and others) as he tackles hugely complex problems. "It isn't the philosophy that gets me, it's the pomposity. If they'd just laugh at themselves! If they'd just say, 'I think it's like this, but von Leipzig thought it was like that, and he's got a good shot at it too.' But so few of them do, instead, they…say you should stop work and ponder with great profundity" (p. 195). And finally, according to May (1975):

> …what the artist or creative scientist feels is not anxiety or fear; it is joy. I use the word in contrast to happiness or pleasure. The artist; at the moment of creating, does not experience gratification or satisfaction (though this may be the case later, after he or she has a highball or a pipe in the evening). Rather, it is joy, joy defined as the emotion that goes with heightened consciousness, the mood that accompanies the experience of actualizing one's own potentialities. (pp. 44-45)

Creative Uncertainty in Practice

Establishing an environment of creative uncertainty in the educational context is a demanding, ambitious and often tenuous enterprise. Instructors must balance the encouragement, support, and compassion for their students with the opportunity for creativity and the standards of academic rigor of their institutions (Heimstra & Sisco, 1990). Cremin (2006) found that teaching for creativity in writing requires not only knowledge, skills and understanding, but also the capacity to tolerate uncertainty, cultivate a culture of risk taking, and engage artistically. Cremin (2006) also observed that tension and affective discomfort resulting from ambiguity appeared to mobilize a kind of creative energy; a response that often generated imaginative resolutions. A study by DeRoma et al. (2003) indicated significant (negative) correlations between tolerance for ambiguity and importance of course structure, suggesting that tolerance for ambiguity may be an important variable to predict student success in unstructured course elements designed to promote critical thinking and parallel the complexities of the applied world (DeRoma et al., 2003). As Freire (1985) recognized: "Teaching kids to read and write should be an artistic event. Instead, many teachers transform these experiences into a technical event, into

something without emotions, without creativity—but with repetition. Many teachers work bureaucratically when they should work artistically" (p. 79).

Action research by Langer (1989) demonstrated the fragility of establishing an environment of creative uncertainty. Langer's work on conditional learning involved an experiment where students were asked to think of alternate uses for a common household item (in this case a rubber dog's chew toy). Langer found that the simple act of introducing (and thus defining) the item as a chew toy impeded students' ability to comprehend its use to fill an urgent need in a new, creative way (as a pencil eraser). By naming the item absolutely, the door to possibility was closed. Interestingly, students who were introduced to the item in a conditional way; "I'm not sure, but this could be a chew toy" (p.120) were unburdened of the certainty, and able to discern the possibility that the chew toy would make a serviceable eraser. This case provides a clear illustration of the challenges faced by both the facilitator and the learner who attempt to foster creative uncertainty in the instructional context.

Although it is a fairly incipient idea that is far from unanimously supported in the literature, the strong ties between ambiguity tolerance, creative uncertainty and the creative process are clearly apparent. What remains to be seen, however, is if the discrepancies between creative uncertainty and ambiguity tolerance as outlined above are judged by researchers and experts in the field to merit its distinction as a separate construct.

Conclusion, Other Creativity-related Constructs

The wide-ranging nature of the concepts explored in the previous two sections clearly illustrate the complexity and diversity of perspectives regarding creativity in the abstract, as well as issues surrounding and supporting the performance of creative action(s). Clearly, great care must be taken in the research design to mitigate the subtleties and intricacies inherent in the

creativity construct and ensure the collection of meaningful data from respondents who will not be expected to possess expertise in formal creativity theory.

Situated Creativity (Creativity in the Workforce)

The final section of this review of the literature will focus on considerations for operationalizing creativity in the context of the workplace. Though seemingly almost universally desired, the leadership, management, recruiting and retention of highly creative employees has been shown to require specific approaches and strategies. Included in this section is an investigation of topics related to situated creativity, including; the desire for a creative work force, environmental factors, team and leadership factors, potential unintended consequences of creativity, and finally, recruiting and hiring for creativity.

The Desire for Employee Creativity

In a poll of worldwide CEOs conducted in 2010 by IBM, creativity was identified as the single most important leadership trait for success in an increasingly complex business environment (cited in Enayati, 2012). Similarly, Zhang and Bartol (2010) asserted that employee creativity is the foundation for achieving sustained competitive advantage. Diliello, Houghton, and Dawley (2011) characterized creativity and innovation as the lifeblood of today's most successful organizations. This position is not new. For at least the last 20 years, innovation has been emerging as perhaps the single most important factor for success in an increasingly competitive and dynamic business environment (Udwadia, 1990).

In describing characteristics required for successful business leadership, Robert Rosen (2000) identified a need for the capacity to operate in ambiguous situations, to "…suspend our beliefs about what is true, because the facts of life alter daily. From simplicity to complexity, from clarity to ambiguity, from certainty to unpredictability, the chaos navigator quickly develops an entirely new mindset for change" (p. 137). Similarly, Huber (2003) and Kajs and

McCollum (2010) suggested that tolerance for ambiguity is an attribute that is increasing in value for leaders on both the educational and business contexts. Cheung (2011) proposed that the lack of creative and entrepreneurial abilities was a primary reason why less than 0.003% of all Chinese companies owned the patent for the core technology used in the products they produced in 2005.

It should be noted that in industry, the creative process is not only a generative one. With their construct of disruptive innovation Christensen, Johnson, and Horn, (2008) explored the effect of the creative simplification of products and services to better meet consumer needs, and create a competitive niche in contexts ranging from the airline industry to higher education. Christensen (1997) also stated that the creative innovator must often overcome the inertia of his or her organization's own internal structures that may affect the way he can and cannot implement new ideas.

Throughout the literature, it is becoming increasingly difficult to find examples where creativity is not listed as a core competency for success in the 21st century. As stated so eloquently in the *Global Education Initiative Report* for the 2009 World Economic Forum:

> The world needs more creators, innovators, makers, and entrepreneurs… because innovation and entrepreneurship provide a way forward for solving the global challenges of the 21st century, building sustainable development, creating jobs, generating renewed economic growth, and advancing human welfare. (Volkmann et al., 2009, p. 12)

Environmental Factors on Creativity in the Workplace

According to Udwadia (1990) not much attention has been paid to the situational context of creativity, possibly because of a general focus on the creative person rather than the creative

environment. Woodman, Sawyer, and Griffin (1993) concurred, stating that despite decades of theory development and research, researchers still know surprisingly little about how the creative process works, especially within the nuanced context of formal organizations. More recently, Richter, Hirst, van Knippenberg, and Baer (2012) proposed that creativity at work is contingent on individuals' willingness to proactively engage with creative challenges as well as to persist in attempts to meet these challenges in the face of obstacles or roadblocks. Hunter, Cushenberry, and Friedrich (2012) stated that most scholars agree that to increase innovative performance in work settings, organizations need both an environment that is supportive of creativity as well as employees with high levels of creative potential.

Earlier research on creativity situated in an organizational context focused on a more theoretical, model-building approach. In his multiple perspective model, Udwadia (1990) illustrated the high degree of interdependence between the creative individual and the work environment necessary for creativity to be expressed in formal work-related behavior. The model highlighted the interactive influence of the individual, the technical resource base, and the organization in determining creative outcomes. He called for organizations to engender environments that provide a balance between giving the creative mind freedom to conduct its work while maintaining operational constraints. Amabile's (1988) model of organizational innovation and creativity suggested organizational motivation, organizational resources, and supportive management practices as the three key elements that facilitate perceptions of creativity support in the workforce. The model indicated the importance of environmental stimulants to creativity including; autonomy, effective project management, sufficient resources, and mechanisms for new idea generation, appropriate rewards, and constructive feedback. Conversely, unhealthy competition, inequitable or inappropriate feedback and reward systems,

insufficient resources, and excessive focus on the status quo were identified as obstacles to creativity (Amabile, 1988).

Woodman, Sawyer, and Griffin, (1993) proposed the construct of organizational creativity as a complex, hierarchical interplay of influences where organizational characteristics create contextual influences that operate on both individuals and groups to impact their creativity.

Individual Characteristics

1. Cognitive abilities/style
2. Personality
3. Intrinsic motivation
4. Knowledge

Group Characteristics

5. Norms
6. Cohesiveness
7. Size
8. Diversity
9. Roles
10. Task
11. Problem-solving approaches

Organizational Characteristics

12. Culture
13. Resource
14. Rewards

15. Strategy

16. Structure

17. Technology

In the model, organizational creativity was shown to be hierarchical in that group creativity is a function of individual creative inputs augmented by the group dynamic; the individuals involved (e.g., group composition), group characteristics (e.g., norms, size, degree of cohesiveness), group processes (e.g., approaches to problem solving), and contextual influences (e.g., the larger organization, characteristics of group task). Organizational creativity then becomes a function of the creative outputs of its component groups integrating with organizational contextual influences (organizational culture, reward systems, resource constraints, etc.).

Ford's (1996) theory of organizational creativity introduced the constructs of *absorptive capacity* and *disposition toward risk* as the two primary factors that influence an organization's ability to support creativity. Ford defined absorptive capacity as the organization's ability to identify useful information as it flows across organizational units. Disposition toward risk was defined as a measure of the organization's willingness to pursue creative and risky ventures, and the level of risk they are willing to accept.

More recent research efforts have taken a less philosophical approach, and resulted in outcomes that are more directly applicable to the workplace context. A study by Jaskyte and Kisieliene (2006) showed that employees who have innovative cognitive styles, are intrinsically motivated, and work for the organizations that have cultural norms that support diversity, will be the most creative. Interestingly, the hypothesized correlations between employee creativity and leadership behaviors, job design, and work group relations were not substantiated by the data.

Diliello, Houghton, and Dawley (2011) found that while perceived support for creativity may play an important role in "unleash[ing] the creative potential" (p. 166) of their workforce, organizations should focus efforts to create creative work environments at the supervisor and peer level rather than on broader and more generalized organizational efforts to encourage creative processes.

The factors that foster creativity within an organization have been shown to be dynamic, manifold, and interrelated. At an organizational level, efforts toward the support and encouragement of creativity might therefore be applied in a general way; by increasing the motivations and removing the obstacles to support creativity and enhance organizational innovation.

The Effect of Teams on Creativity

According to George (2007), the importance of team creativity is widely recognized, yet our knowledge of how teams optimally use their resources for higher creativity is limited. Many approaches to team creativity focus on the synergistic aspect of the team context. This approach is typified by Woodman, Sawyer, and Griffin's (1993) model that stated that group creativity is not the simple aggregate of all group members' creativity. For Woodman, Sawyer, and Griffin, although group creativity is clearly a function of the creativity of individuals in the group, it is impacted by a variety of other influences such as; size, cohesiveness, diversity of composition, as well as problem solving strategies and processes.

Not unlike the creative work environment in general team-based creativity has been said to be supported and augmented when; the group is comprised of members from diverse backgrounds, group members provide open and honest critique, manage conflict, are open to new perspectives, trust one another, and share common commitment for the work to be achieved

(Amabile et al., 2004). Tushman and O'Reilly (1997) added that group creativity may also increase when group members like and respect one another and when they openly acknowledge the ideas of their colleagues. van Knippenberg, De Dreu, and Homan (2004) recognized that a creative advantage of team contexts lies in the cross-fertilization of ideas information, and perspectives that each team member brings. Richter, Hirst, van Knippenberg, and Baer (2012) added that creativity in the team context benefits through the use of the reservoir of team members' individual knowledge, expertise, and insights as either building blocks in creative solution development, or as inspiration for approaching issues from a different perspective. Barczak, Lassk, and Mulki (2010) explored the impact of communication and cognitive trust on a team-based work environment and found that both formal and informal communication must be cultivated among team members, and that team members' perceptions of the reliability and competence of their colleagues is crucial to the creative endeavor.

Other recent research efforts into the creative group dynamic have included Hoever, van Knippenber, van Ginkel, and Barkema (2012) who outlined the role of perspective taking in helping diverse teams to develop more creative solutions, and Richter et al. (2012) who examined how the "synergetic integration of information and insights" (p. 2) present in the social (team) work context facilitated the creative expression of individuals with higher creative self-efficacy. Finally, Diliello, Houghton, and Dawley (2011) demonstrated the importance of peer and group support for creativity through the encouragement of risk-taking and novel-idea generation to realize the full creative potential of the workforce.

Leadership Factors in the Creative Workplace

Leadership has been repeatedly identified as playing a critical role in fostering and supporting employee creativity (Jaskyte & Kisieliene, 2006). Throughout the literature, several

strategies have been identified for top-level leaders to use to establish organizational structures to support "networks of enterprise" (Wallace & Gruber, 1989, p. 11) and increase the creative output of their team(s). These include; serving as a role model, demonstrating confidence in the team, establishing a creativity-fostering climate, and instituting an appropriate and flexible organizational structure and appropriate hiring and firing practices (Jaskyte & Kisieliene, 2006). Also, leaders can employ a variety of techniques to positively affect employees' perceptions of their work environments and in doing so, influence their creative output (Amabile et al., 2004). These include demonstrating enthusiasm for the work at hand, encouraging employees to express their opinions, balancing employee's autonomy and accountability, and providing ample opportunities for skill development (Amabile, 1998; Amabile et al., 2004). In short, leaders can best facilitate the creativity of their employees by maintaining (or augmenting) their intrinsic motivation (Amabile, 1998).

Redmond, Mumford, and Teach (1993) found that leaders enhance creativity by welcoming diversity of opinion and encouraging dissent and challenging the status quo. Zhou (1998) showed that individuals were more creative when autonomy was high and the supervisor used an informational feedback style. Conversely, when leaders micromanage, creativity, even in highly creative workers, may be curtailed (George & Zhou, 2001).

Nanus (1990) envisioned a new age of leadership where leaders were required to balance the maintenance and support of internal organizational environments (as outlined above), as well as the possible, probable, and preferable futures that can evolve, as a result of creative intervention, from the present state. Sutton (2001) on the other hand, provides a more direct, if unconventional technique for creative leadership:

> If it's creativity you want, you should encourage people to ignore and defy superiors and peers—and while you're at it, get them to fight among themselves. You should reassign people who have settled into productive grooves in their jobs. And you should start rewarding failure, not just success; reserve punishment only for inaction. (p. 100)

Udwadia (1990) put it simply: managing creativity meant "controlling the chaos" (p. 74).

Creativity's Dark Side

Although positive associations with creativity are typically the focus of attention among both scholars and practitioners, there may be unintended and unsavory repercussions of unchecked creativity. Feist (1998) observed that social traits such as arrogance, hostility, overconfidence, need for autonomy, and introversion were significantly associated with the creative-minded. Udwadia (1990) asserted that creative individuals tended to be more intrinsically motivated and less organization oriented, irreverent and challenging toward widely accepted schema, dismissive of constraints of task, time, and resources, intensely fond and confident of the ideas they generate, and resistant of compromise. Most startlingly, Gino and Ariely (2012) demonstrated a robust relationship between creativity and dishonesty, citing that although greater creativity helps individuals solve tasks across many domains, that same creative spark may lead individuals to take unethical routes when searching for those solutions.

A recent body of work has also emerged addressing a paradoxical love-hate relationship many organizational leaders have with creativity. Staw (1995) noted that despite the overwhelming endorsement of creativity as a positive force, organizations, institutions, and decision makers routinely reject creative ideas, even when espousing creativity as an important goal. Weisberg (2006) identified a tension between creativity and expertise often based on the

association between expertise and an automatic way of responding to a situation, anchored in the past, while creativity intentionally breaks with past experience. Gaertner & Dovidio, (1986) cited a conflict between an explicit preference toward creativity and unacknowledged negative associations with the uncertainty inherent in creativity, which may, in fact result in lower evaluations of creative ideas. Recent work by Mueller, Melwani, and Goncalo (2012) further explored this apparent prejudice toward creativity, stating that even if the desire creative solutions is overtly stated, the motivation to avoid uncertainty coupled with a predilection to regard novelty and practicality as inversely related constructs has created an insidious and deeply rooted bias toward creativity.

Shane (1995) stated that organizations often resist new ideas and innovate only when there is some force that compels them. He suggested the existence of four primary innovation championing roles (the organizational maverick, the network facilitator, the transformational leader and the organizational buffer) that can serve as the force to overcome the inertia of resistance prevalent in organizations.

Recruiting and Hiring for Creativity

While there seems to be no shortage of published 'how-to' business management resources related to more effective hiring practices (e. g. Lombardo & Eichinger, 1995; Falcone, 2008), the segment of academic research that directly addressed proven techniques for hiring employees with creative potential is relatively small. Smaller still is the subset of research focused on the higher education context. According to Hunter, Cushenberry, and Friedrich (2012), substantial research effort has been aimed at understanding work contexts that facilitate creative thinking, yet little is known regarding how to most effectively recruit and hire creative talent.

Assessment. Perhaps one of the central challenges for hiring managers looking to hire candidates with creative potential is the fact that creativity has proven an elusive quality to quantify. For example, according to Clary, Brzuszek, and Fulford (2011), simple rubrics to assess creativity are insufficient and often fall victim to rater bias. Likewise, Diliello, Houghton, and Dawley (2011) proposed that the untapped creative potential of potential employees can be largely invisible when using external quantitative creativity indicators because they do not provide the opportunity to observe many aspects of an individual's creative processes.

To date, one of the most comprehensive sets of Knowledge, Skills and Abilities and other (KSAOs) that, in the aggregate, could successfully assess the creative potential of employment candidates has been proposed by Hunter, Cushenberry, and Friedrich (2012). They suggested that high creative potential candidates possess a combination of the following (p. 305):

Knowledge

1. Domain specific expertise
2. Broad knowledge base

Skills

3. Domain specific skills
4. Creative processing skills (based on Mumford's eight stage model)

Abilities

5. Intelligence
6. Divergent thinking
7. Associational ability
8. Analogical ability

Other

9. Dispositions (i. e. personality)

10. Motivation (intrinsic)

Other attempts to quantify creativity related attributes have largely been proposed on a more componential scale. Jaskyte and Kisieliene (2006) suggested that as cognitive abilities and motivational styles are strongly related to creativity, administrators may wish to make an assessment of these factors part of the hiring practices. Kuncel and Hezlett (2010) showed that while standardized measures of intelligence are insufficient as predictors of work performance, carefully selected and developed measures of personality, values, interests, and habits can be added to the admission or selection system to provide a nearer predicative measure of desired professional outcomes such as creativity or leadership. Barczak, Lassk, and Mulki (2010) contended that since trust is a critical construct for team creativity, and emotional intelligence is a predictor of team trust, hiring agents should assess candidates for their emotional intelligence, particularly those applying for positions which require substantial teamwork.

The effort to maintain generalizability across contexts is an inherent weakness in many standardized creativity assessment tools. Tools such as de Bono's (1992) Creative Hit List can be invaluable to establish an operationalized view of creativity; that is, creativity in terms of operational needs rather that creativity in terms of general aptitude. This operationalized view of creativity can directly inform competency-based hiring practices (Ahlrichs, 2000).

The hiring process. Hunter, Cushenberry, and Friedrich (2012) suggested that creative performance is a unique outcome that warrants special consideration in a selection context, and that an aggregate of approaches may be useful in establishing creative potential, these included; self-reporting of creative potential, peer reporting of creative potential, portfolio review,

situational judgment test, and simulations. Consideration of the multidimensional and longitudinal nature of creativity is also crucial. When possible, efforts should be made to assess candidates across all stages of the creative process to maximize the likelihood of assessing the full range of creative potential (Hunter, Cushenberry, & Friedrich, 2012). Ng and Feldman (2012) also advocated for the use of employee self-assessment is the most authentic measure of creative potential. Their research showed that the relationships between personality traits and employee creativity are stronger when self-ratings (vs. non-self-report measures) of creativity were used.

Hunter, Cushenberry, and Friedrich (2012) outlined several elements that could be included in recruiting materials that would be attractive to a creative workforce. They included; a description of the level of autonomy available on high-profile projects, organizational support for risk-taking, encouragement for a diversity of ideas, passion for the work being done, and a recognition and reward structure that supports creative activities.

Donnelly (2011) collected ten suggestions for hiring creative employees from a variety of industry sources. They included; looking for a flood of creative ideas when someone brainstorms, give an open-ended scenario that allows you to witness the creative process, looking for passion, throwing out a random "wild card" (p. 2) idea in the interview to see how the candidate responds, and crafting a specific and specialized job listing that makes the creative intent known. Curiously, recent research by Sugar et al. (2012) indicated that in 615 job postings for instructional designers and educational technologists, the 11 desirable skills common to at least 30% of the listings did not include creativity. If, as Cheung (2011) asserts; "creative abilities are often regarded as the paramount requirement for a design professional" (p. 845), one would hope that tools and approaches to assure that instructional designers possess the desired

creative potential would be readily available to hiring managers in higher education. Unfortunately, as the review of the literature has demonstrated, this is not currently the case.

Conclusion, Situated Creativity

In the workplace, specific approaches and strategies are required to successfully lead, manage, recruit and retain highly creative employees. Environmental factors, team and leadership factors, recruiting and hiring for creativity, and other factors have been shown by the literature to be key considerations for operationalizing creativity, and building a team of highly desired, highly creative employees.

Summary

The preceding review of the literature revealed that while there is still some disagreement as to the role that creative ability plays in the field of instructional design, there is mounting evidence suggesting that the rote, step-by-step adherence to systematic instructional design models are increasingly being supplanted by more creative, heuristic approaches, and as such, the competencies and job duties of instructional designers are evolving.

The literature also demonstrated and that while there may be specific approaches and strategies required to lead, manage, recruit and retain a highly creative workforce, there is scant material available regarding creativity-related knowledge, skills, and abilities specific to the higher education instructional design context.

Finally, the literature clearly established that creativity is a complex (and frankly, not entirely understood) construct with many interrelated components that is notoriously difficult to assess easily, quantifiably, or reliably (Clary, Brzuszek, & Fulford, 2011; Diliello, Houghton, & Dawley, 2011). However, while creativity as a whole was demonstrated to be “amazingly complex” and “multifactionally determined” (Ogoemeka, 2011, p. 595), several associated (and

interconnected) aspects emerged that can serve to facilitate an examination of creativity-related knowledge, skills, and abilities specific to the higher education instructional designers.

They are:

1. Problem Solving
2. Problem Finding
3. Boundary Awareness
4. The Creative Act (Ideation through Innovation)
5. Disposition(s)
6. The Ambiguity Tolerance Continuum
7. Motivations/ Intrinsic Rewards

These deconstructed perspectives of creativity provided a framework of conceptual lenses that facilitated the exploration of the various aspects of applied creativity in instructional design in the higher education context.

CHAPTER 3. METHODOLOGY

Introduction

This study utilized a modified three-phase Delphi process with additional quantitative and qualitative elements to explore the concept of applied creativity in instructional design in the higher education context. An expert panel was assembled and provided qualitative and quantitative data through responses to multiple rounds of Likert scale and open-ended prompts that addressed a variety of creativity-related constructs that emerged from the literature review. Delphi data analysis methodology and a modified Importance-Performance analysis was applied to the quantitative data, while open, focused, and axial coding techniques were applied to the qualitative data to explore and address the research questions.

Research Questions

Through this research effort, the following research questions were addressed:

1. What literature-based creativity related constructs are manifest in the context of practice of higher education instructional designers?
2. What specific competencies exemplify desired creativity-related knowledge, skills, and abilities for instructional designers in higher education?

Chapter Organization

This chapter provides a chronological outline of the research effort, including: the selection and modification of the research methodology, the design of the data collection instrument(s), the sampling process, the implementation of the data collection effort, and the analysis techniques used.

Research Design

A modified three-phase Delphi process was used to explore and address the research questions. Originally developed by the Rand Corporation to obtain reliable consensus of opinion of a group of military experts (Dalkey & Helmer, 1963), the Delphi technique is a mixed-methods approach consisting of a series of sequential questionnaire rounds interspersed by controlled feedback. One reason for the selection of the Delphi technique was its proven adaptability which allows for the incorporation of suitable applications and modifications of the process from other studies across a range of contexts. Since its first use, the Delphi technique has been adopted for use in a variety of disciplines, including healthcare (Powell, 2003), public policy (Rayens & Hahn, 2000), and education (e. g. York & Ertmer, 2011; Totossy, 2005; Boe, 2010), and used for over 400 journal articles (Skulmoski, Hartman, & Krahn, 2007). This wide-ranging adoption has been enabled by the inherent flexibility of the technique. According to Nworie (2011) a wide variety exists in the design of Delphi studies including the nature of the first round questionnaire and the threshold at which consensus is considered to have been achieved. Finally, and most critically, a Delphi design was chosen because, according to Powell (2003), it is an effective technique to reach expert consensus in situations where there is an incomplete state of knowledge. This attribute was extremely valuable to this study due to both the complexity and multifaceted nature of the concept of creativity as well as the continuing evolution of the role of the instructional designer in higher education.

Instrumentation

The four defining features of a Delphi study are; anonymity, iteration, controlled feedback, and the statistically analyzed aggregation of group response (Rowe & Wright, 1999). According to Brooks (1979) and Pfeiffer (1968), a Delphi study of three rounds or more can

effectively provide valid consensus. The following sections provide a chronological account of the implementation of this research effort.

Initial Survey Design

As established in the previous review of the literature, several conceptual lenses (Table 1) for the exploration of applied creativity in instructional design provided a framework for the round one survey. A total of 33 topic statements (APPENDIX D) suggested by the literature to be related to these conceptual lenses were created for the round one survey instrument to be presented to the panel for response.

Table 1. *Instructional Design Creativity Themes with Number of Round One Topic Statements*

Theme	Total # of Round One Topic Statements
Problem Solving	3
Problem Finding	3
Boundary Awareness	4
The Creative Act (Ideation through Innovation)	5
Disposition(s)	8
The Ambiguity Tolerance Continuum	4
Motivations/ Intrinsic Rewards	6

In accordance with Delphi methodology, the round one instrument was designed to provide sufficient framework to facilitate initial expert "discussion" via the Delphi. To initiate this discussion, panelists were prompted to respond to the 33 topic statements in both a quantitative as well as qualitative manner. Panelist provided quantitative response data by way of a 5-Point Likert scale (*Strongly Agree, Agree, Disagree, Strongly Disagree* and *No Judgment*) indication of their level of agreement with each of the topic statements. Qualitative date was gathered through panelist open-ended comments justifying their Likert responses. As the first round of a Delphi study generally also involves open-ended questions sent to a panel of knowledgeable experts in the context being examined (Okoli & Pawlowski, 2004), panelists

were provided opportunities to suggest additional topic statements related to each of the conceptual lenses that they felt would be informative or otherwise valuable to the study. Additionally, panelists were prompted for comments regarding the overall construct of creativity as it relates to the field of instructional design. Finally, panelists were asked to provide examples of specific Instructional Design tasks or duties that embody the traits related to the topic statements/ conceptual lenses.

In all, the round one instrument consisted of 82 response prompts: 33 Likert scale responses, 33 accompanying justification statements, eight open-ended opportunities to suggest additional topic sentences, and eight open-ended examples of instructional design tasks or duties. To protect against potential respondent fatigue resulting from the fairly robust length of the initial instrument and to minimize any unintended and unforeseen influences related to the order of the topic statements, three versions of the round one survey were disseminated. Each version presented the conceptual lenses in a different order (APPENDIX E), while the related topic sentences for each group remained unchanged. To aid in tracking and analysis, the 33 topic statements included in the round one survey were assigned a sequential reference number.

Data Collection

On August 12, 2014, the study was certified as exempt (category #2) in accordance with federal regulations (Code of Federal Regulations, Title 45, Part 46, Protection of Human Subjects) by the NDSU Institutional Review Board, and was granted approval to proceed (APPENDIX A).

Sampling Procedures

While Murphy et al. (1998) suggested that the reliability of the composite judgment increases as the number of expert respondents increases, they also conceded that very little

evidence exists regarding the effect of the number of participants has on the validity of consensus. Sample size in published Delphi studies have ranged from fewer than five to over 1000. Hsu and Sandford (2007) indicated (somewhat circularly) that the correct population size for a Delphi study is the minimum number necessary to achieve sufficient results. This, unfortunately, necessitates an educated guess on the part of the researcher. Because of the rather specific context of this research, an initial sample size of about 30 respondents was targeted. Although an attrition rate of no more than 10% was expected, it was hoped that an initial n=30 would allow for slightly larger attrition while remaining above the n=24 threshold.

A purposeful snowball procedure was used to establish the initial sample. According to Creswell (2003), the purposeful selection of participants in a Delphi study is necessary to ensure that the panel is both qualified and knowledgeable about the question being researched. A snowball sample is generated when participants who meet specific inclusion criteria for the study are asked to nominate others for participation who also meet the criteria. This process is continued until the desired initial sample size is reached. As indicated in Trochim and Donnelly (2007), one of the primary benefits of the snowball process is that it takes advantage of participants' professional networks and connections to establish a sample of participants who may otherwise be very difficult to reach. For this study, the initial sampling entailed the enlistment of suitable professional contacts of the author. This sample was augmented through a snowball process where willing initial participants nominated additional qualified participants based on required nominee attributes (below). Although this method was unlikely to provide a representative sample, one of the advantages of the Delphi technique is that it does not call for representative samples for statistical purposes. Rather, the "representativeness" is assured by the expert qualities of the panel (Powell, 2003, p. 378).

Nominee Criteria

The following nominee criteria were established to provide assurance that the participants in the study possessed expert knowledge in current trends in instructional design and to eliminate from consideration individuals who may not have the requisite expertise or experience to provide meaningful contribution.

1. Nominees are senior instructional designers, instructional design directors, distance education directors, or directors of centers for teaching and learning (or equivalents) who are directly responsible for managing, recruiting, and hiring instructional designers.
2. Nominees will have demonstrated experience (at least five years) and expertise in the field (as evidenced by membership/ participation in national professional organizations/ conferences, publications, academic research, etc.)

On August 15, 2014, an email invitation was sent to roughly half a dozen qualified professional contacts of the author along with an attached Letter of Invitation and Consent Form (APPENDIX B). Through a month-long snowball sampling and consent compilation process, over three dozen experts were nominated, and 28 agreed to serve. After consultation with the major professor, it was decided that this panel size was sufficiently near the hoped for sample size (*n*) of 30. An electronic mailing list was generated to include those panelists who agreed to participate and a copy of their consent form was received and filed.

Expert Panel

The following 28 panelists contributed their experience and expertise to the research effort. The credentials and positions listed reflect the time period of participation.

Sage Adams
Senior Instructional Designer
UC Berkeley
Berkeley, California

David Bentz, Ph.D.
Director of Distance Education
Central Wyoming College
Riverton, Wyoming

Dustin Berlin, M.B.A.
Director Aviation Online Education
Utah Valley University
Orem, Utah

Pegi Flynt, Ed.D.
Director of Online Learning
Southern Adventist University
Collegedale, Tennessee

Michael Frasciello, Ph.D. (ABD)
Director, Online Learning, College of Engineering and Computer Science
Syracuse University
Syracuse, NY

Mark Girod, Ph.D.
Dean, College of Education
Western Oregon University
Monmouth, Oregon

Seth Gurell, Ph.D.
(Interim)Senior Director of Distance Education
Utah Valley University
Orem, Utah

Beth Hale, M.A.
Learning Technologies Facilitator
Chemeketa Community College
Salem, Oregon

Patti Heisler, M.S.
Assistant Director, Advanced Learning Technologies
NDUS Core Technology Services
Fargo, North Dakota

Diane Kasselhut, M.S.
(former) Director of ID Services
Distance Education
Utah Valley University
Orem, Utah

Apostolos Koutropoulos, MBA, MSIT, MEd, MA
Online Program Manager
Applied Linguistics Program
UMass Boston
Boston, Massachusetts

Qin Li, Ph.D.
Instructional Designer
Teaching & Learning Technologies
University of Utah
Salt Lake City, Utah

Chris Lott, M.Ed.
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Round One Implementation

On September 12, 2014 an email message was sent to all members of the panel with the exception of three who had not yet submitted their consent form. This email included the appropriate link to the first round instrument (hosted in SurveyMonkey) as well as an attached Introductory Letter (APPENDIX C) intended to provide further context for the study and

facilitate successful participation in the process. The email also included a statement of expectation of a one week turnaround time for responses. On September 17, the above email was sent to the three remaining panelists, as their consent form had been received. Also on September 17, a reminder email was sent in an attempt to increase the first round response rate. In all, the round one instrument realized a 96% response rate, with responses from 27 of the 28 nominated panelists.

Response data from each round of the Delphi process was analyzed to ascertain if the panel responses exceeded the consensus threshold. In all, 25 topic statements (76%) from the round one instrument attained statistical consensus (see Chapter 4).

Consensus Metrics for Delphi Quantitative Data Analysis

The stated objective of this Delphi based research was to attempt to build expert consensus as to desirable context-specific creativity-related knowledge, skills, and abilities for higher education instructional designers. To arrive at this consensus, a panel of experts responded to a series of categorized topic statements presented over a three round process. A 5-Point Likert scale (*Strongly Agree, Agree, Disagree, Strongly Disagree*, and *No Judgment*) was used to indicate the level of agreement. Each of the points on the Likert scale was assigned a numerical value as follows: *Strongly Agree* = 4, *Agree* = 3, *Disagree* = 2, and *Strongly Disagree* = 1. The *No Judgment* option, which was provided to account for respondents who did not feel they could make an informed judgment to the topic statement and for those whom the topic statement was not applicable, was assigned a null value rather than zero to avoid influencing the value of the mean and standard deviation.

For this study, consensus was considered reached only when both statistical consensus and percentage of opinion to agree/disagree criteria were met. Statistical consensus of agreement

to a particular topic statement was established as a mean (*M*) response of 3.00 or greater and standard deviation (*SD*) of less than 1.00. Likewise, a consensus to disagree was established as a mean response of 2.00 or less and standard deviation of less than 1.00. The percentage of opinion threshold was set at 80%. That is, 80% of all respondents must agree or 80% must disagree with a particular topic statement to meet this criterion. It is important to note that while *No Judgment* responses did not influence the statistical consensus criteria, they were included in the percentage of opinion calculation. These criteria were set with the assumption that the final sample size would remain above 24.

Round Two Survey Design

Of the 25 topic statements that attained consensus in round one, five of these were considered to have attained relatively weak consensus and were included in the round two survey to collect additional response data. The other 20 topic statements that reached consensus were removed from the round two survey. Of the 13 topic statements that did not reach sufficient statistical consensus, nine were revised (with four additional clarifying sub-questions added) based on feedback received from round one. Additionally, nine new topic statements were added as a result of the suggestions made by the panel in round one of additional topics for exploration.

The remaining four non-consensus items from round one were presented again following the traditional Delphi method where upon completion of each round, quantitative and qualitative response data for non-consensus items is summarized and included in the subsequent survey round to provide an opportunity for the panel to review areas of consensus and divergence of the group, reflect on their responses, and change their response if desired. The non-consensus items from round one were included in the round two survey along with the percentage of *Strongly Agree* and *Agree* indications from round one as well as summarized response data. To protect

panel confidentiality while preserving the underling meaning of responses, response data was compiled and summarized with all identifiable material redacted or generalized. In all, the round two instrument consisted of 58 response prompts: 25 Likert scale responses, 25 accompanying justification statements, and eight opportunities to provide open-ended input.

Round Two Implementation

On September 30, 2014, an email message was sent to all members of the panel that included information on the structure and composition of the round two instrument, a message of motivation and thanks, and a link to the second round instrument (again hosted in SurveyMonkey). The email also included a statement of expectation of an eight day turnaround time for responses, establishing the response deadline as October 8. On October 3, 6, 8, and 9, brief reminder emails were sent. These efforts realized an excellent response rate of 100%.

Again, response data was analyzed to ascertain if the panel responses exceeded the consensus threshold. In all, 17 topic statements (68%) from the round two instrument attained statistical consensus (see Chapter 4).

Round Three, Part One Survey Design

The 17 topic statements from the round two instrument that attained statistical consensus were removed from the round three survey. Of the eight topic statements that did not reach sufficient statistical consensus, two were revised based on feedback received from round two open-ended responses and six were presented again following the traditional Delphi method. These statements were included in the round three survey along with the percentage of *Strongly Agree* and *Agree* indications from round two as well as summarized response data. In all, part one of the round three survey was comprised of a total of eight topic statements.

Round Three, Parts Two and Three Survey Design

In parallel with the formal three round Delphi process, open, focused (Charmaz, 1983), and axial (Strauss & Corbin, 1998) coding techniques were applied to both the examples of specific instructional design tasks or duties explicitly provided in round one as well as all other qualitative response data provided in rounds one and two. Described by Strauss and Corbin (1998) as "a conceptual analytic device for organizing data and integrating structure with process" (p. 142), the application of elements of this technique facilitated the identification of several emergent themes (termed *Navigations*) associated with creativity-related job performance for instructional designers. These themes (Table 2) were further disaggregated into 27 explicit core competencies (APPENDIX H) for higher education instructional designers.

Table 2. *Instructional Design Creativity-related Competency Themes*

Theme	# of Competencies
Navigating Projects	5
Navigating Problems and Solutions	9
Navigating Collaborations	7
Navigating Context	3
Navigating Professional and Personal Development	3

The competencies were then used to develop survey questions based on a modified version of a policy research Delphi study completed by Rayens and Hahn (2000). In that study, respondents were provided with a specialized rubric to be used to evaluate the overall soundness of a topic statement. The Rayens and Hahn rubric featured a 4-Point Likert scale for each of three categories:

1. Desirability - the measure of how attractive an element is
2. Feasibility - how practical it would be to implement that element
3. Reliability – a judgment of predicted consensus for that element

For this study, the approach was simplified to facilitate expert response to the:

1. Desirability of instructional designers that possess the competency indicated.
2. Face Validity of the tasks or duties as a measure of creative potential.

Trochim and Donnelly (2007) defined face validity as an assurance "that 'on its face' the operationalization seems like a good translation of the construct" (p. 57). In the context of this study, Face Validity is intended to measure consensus on whether or not the indicated task or duty is a reasonably valid exemplar of a creativity-related competency.

Rather than create specialized rubrics, the Desirability and Face Validity constructs were carefully worded into topic statements where the established 5-Point Likert scale (*Strongly Agree, Agree, Disagree, Strongly Disagree, No Judgment*) could be retained. This was accomplished by grounding the constructs to the hiring and selection process. For example, desirability data was captured in part two of the third round instrument through panelist indication of their level of agreement with each of the 27 topic statements in the context of "When I add an Instructional Designer to my team, it is essential that he or she be able to …." Likewise, face validity data was captured in part three of the through panelist indication of their level of agreement with the topic statement in the context of "I consider an Instructional Designer's ability to _____ a key indicator of their overall creativity." As with other elements of this study, a No Judgment option was provided to serve as a statistical null. Panelists were also provided several opportunities for open-ended response and feedback, which brought the total composition of the round three instrument to 73 items.

Round Three Implementation

On October 21, 2014, an email message was sent to all members of the panel that included information on the structure and composition of the round three instrument, a message

of motivation and thanks, and a link to the third round instrument (again hosted in SurveyMonkey). The email also included a statement of expectation of an eight day turnaround time for responses, establishing the response deadline as October 29, 2014. On October 24 and 28, brief reminder emails were sent. To capture as many responses as possible, an additional reminder email was sent on the 30, and the deadline for participation was extended to the 31st. Despite these efforts, response rate was slightly lower than rounds one and two, with an initial response rate of 89%. Additionally, an initial review of the data revealed a double entry from one of the respondents (based on unique identifier and i.p. address). To preserve data quality, quantitative data submitted by this respondent from the earlier entry (dated October 23) was removed in favor of the data from a later entry (dated October 30). Qualitative feedback from both responses was preserved. The elimination of this duplicate response resulted in a final response rate of 86% for round three, with 24 unique responses received from the 28 member panel. Although the response rate for this round was disappointingly low relative to other rounds, the desired threshold of 24 respondents was achieved.

Analysis of response data for part one of round three revealed that panelist responses to only one of the eight topic statements (13%) exceeded the consensus threshold. Although a full Delphi process was not completed on the competencies portion of the survey (parts two and three of round three), an initial statistical analysis of the respondent data was performed. A detailed summary and description of aggregated survey response data from all three rounds is provided in Chapter 4.

Quantitative Data Analysis, Round Three Parts Two and Three

While a full Delphi process was not completed on panel responses for parts two and three of round three, a simple statistical analysis, based on Martilla and James' (1977) Importance-

Performance Analysis Model, was performed. Originally conceived for use in the Marketing and Management contexts, the Importance-Performance model provides a simple, effective way to combine and interpret respondent ratings across two dimensions of an element. Typically, the model is used to illustrate the combination of respondent rating of an item's importance and performance. For this study, the same approach was used to perform an initial analysis of respondent rating of the desirability and face validity of each of the creativity-related competencies explored in round three. As part of this analysis, the overall response mean, median, and standard deviation was computed, as was the mean and z-score (*z*) for each item. The z-score, which indicates how many standard deviations an element is from the mean, was calculated by dividing the difference between the item mean score and the response mean by the response standard deviation. Although not typically included in an Importance-Performance Analysis, a z-score comparison was included to mitigate against any potential issues related to the inconsistent item mean distributions in the two data sets.

Summary

To address the research questions, a purposeful sampling augmented by a snowball process created an expert panel (n=28) that participated in a modified three-phase Delphi study. Round one of the Delphi consisted of 33 topic statements grouped into seven conceptual lenses suggested by the literature. As facilitated by the Delphi process, the round two instrument was reduced to 25 topic statements, and round three was comprised of eight. An additional process, carried out in parallel with the Delphi procedure, provided initial consensus data as well as qualitative data regarding important creativity-related tasks and duties expected of higher education instructional designers. Presented in Chapters 4 and 5, the results of this twofold approach, which was chosen in an attempt to operationalize the concept of instructional design

creativity by exploring it both in terms of creativity-related knowledge, skills, and abilities defined by the literature as well as real-world creativity-related performance expectations, begin to paint a compelling picture regarding both the present state and future need for creativity-related competencies for higher education instructional designers.

CHAPTER 4. FINDINGS

Introduction

The implementation of the modified Delphi methodology outlined in the previous chapter produced extensive qualitative and quantitative data to inform the research effort. Through the three rounds of the study, an expert panel of 28 higher education instructional design managers provided responses and feedback that directly addressed the concept of applied creativity in instructional design in the higher education context.

Research Questions

Specifically, the research effort was designed to address the following research questions:

1. What literature-based creativity related constructs are manifest in the context of practice of higher education instructional designers?
2. What specific competencies exemplify desired creativity-related knowledge, skills, and abilities for instructional designers in higher education?

Chapter Organization

This chapter presents summarized aggregate data resulting from the implementation of the research effort. Data set one represents the results from the three-phase Delphi process in its entirety. Data set two presents the results of part two of the round three survey, which was developed to collect the panel's overall appraisal of each of 27 creativity-related instructional designer competencies established through panel responses in rounds one and two.

Data Set One: Delphi Process Detailed Findings

Of the panel of 28, 27 responded to the round one instrument, 28 responded to the round two survey, and 24 imparted their experience and expertise to round three. In all, the panel responded to 66 topic statement iterations in the Delphi portion of the research, with consensus

attained on 44 (66%). Across the 66 overall topic statement iterations, 41 discrete constructs were addressed, while the remaining 25 iterations were comprised of repeated and clarified topic statements. Through the course of the Delphi, the panel reached consensus on 35 of the 41 represented constructs (85%). Upon completion of the three rounds of the Delphi, quantitative data from all 66 topic statements was analyzed as a single data set and is presented below grouped by the conceptual lenses (hereafter denoted as themes) indicated for applied creativity in instructional design that were established through the literature review (Table 3).

Table 3. *Instructional Design Creativity Themes with Overall Number of Topic Statements*

Theme	Total # of Topic Statement Iterations
Problem Solving	7
Problem Finding	3
Boundary Awareness	12
The Creative Act (Ideation through Innovation)	11
Disposition(s)	12
The Ambiguity Tolerance Continuum	6
Motivations/ Intrinsic Rewards	15

Within each theme, items are presented in three categories: items that reached panel consensus to agree, items that reached panel consensus to disagree, and items that did not reach panel consensus. Within each category, responses are presented in order of the distance of the item mean from the Likert midpoint (2.5). Panelist responses were converted to numerical data using a 5-Point Likert scale: *Strongly Agree* = 4, *Agree* = 3, *Disagree* = 2, and *Strongly Disagree* = 1. The *No Judgment* option was assigned a null value rather than zero to avoid influencing the value of the mean and standard deviation. Consensus was considered reached for a topic statement only when both percentage of opinion to agree/disagree and statistical consensus criteria were met. The percentage of opinion threshold was set at 80%. That is, 80% of all respondents (including those who indicated *No Judgment*) must agree or 80% must disagree with

a particular topic statement to meet this criterion. Statistical consensus of agreement to a particular topic statement was established as a mean response of 3.00 or greater and standard deviation of less than 1.00. Likewise, a consensus of disagreement was established as a mean response of 2.00 or less and standard deviation of less than 1.00.

Theme 1: Problem Solving

Panelist responses to a total of 7 topic statement iterations related to Problem Solving were collected in the study. A summary of the data for this theme is provided in Table 4 categorized by: items that reached panel consensus to agree, items that reached panel consensus to disagree, and items that did not reach panel consensus. Within each category, responses are presented in order of the distance of the item mean from the Likert midpoint (2.5). More detailed response information, including selected qualitative data, is presented in APPENDIX F. Topic statement numbers 1, 1A, 1B, 1C, 2, 2A, and 3 explored issues and constructs related to the Problem Solving theme.

Topic statement 3, "To be successful, Higher Education Instructional Designers must successfully navigate complex, ill-defined problems," was developed to explore the "wicked problems" construct that was evident in the literature (e.g. Valentine & Ivey, 2008). Panel consensus to agree with topic statement 3 was reached in round one with a mean response of 3.70 and a standard deviation of .465. Of the 27 panelists who responded, 100% of the group either agreed or strongly agreed with the statement. Panelist open-ended comments for this item suggested that this was an essential skill for instructional designers, especially in the context of helping faculty develop learning experiences, and that although not all problems a designer faces are necessarily complex and ill-defined, it is expected that they be fully capable defining, navigating, and ultimately solving them.

Table 4. *Summary of Responses to Topic Statements in the Problem Solving Theme*

#	Round	Topic Statement *To be successful, Higher Education Instructional Designers must…*	*n*	*M*	*SD*	%
		Items That Reached Panel Consensus to Agree				
3	1	successfully navigate complex, ill-defined problems.	27	3.70	.465	100
1B	2	be fully cognizant of the "flex points" (i.e. opportunities for creativity) in any prescribed, systematic, design process.	28	3.68	.612	93
2A	2	engage in Rapid Prototyping to "sketch out" possible solutions to a problem (i.e. storyboarding, mock-ups).	28	3.54	.637	93
1C	2	utilize a systematic process as a design framework rather than a prescriptive, step-by-step recipe.	28	3.46	.706	89
2	1	generate multiple possible solutions to a problem.	27	3.36	.739	81
		Items That Reached Panel Consensus to Disagree				
1A	2	work ONLY within the bounds of a prescribed, systematic, design process.	28	1.64	.826	93
		Items That Did Not Reach Panel Consensus				
1	1	work systematically through a prescribed design process.	27	2.70	.775	67

Panel consensus to agree with topic statement 1B, "To be successful, Higher Education Instructional Designers must be fully cognizant of the 'flex points' (i.e. opportunities for creativity) in any prescribed, systematic, design process," was reached within one round of inclusion in the Delphi. This topic statement was developed for the round two survey as a clarification of topic statement 1 in an effort to alleviate the divergence indicated in panelist open-ended response data. Responses to topic statement 1B exhibited a mean of 3.68 and a standard deviation of .612. Of the 28 panelists who responded, 93% of the group either agreed or strongly agreed with the statement. Panelist open-ended statements of rationale to agree with this item focused largely on the opportunity for creativity and "craftsmanship" provided by the deviation from a prescribed template, and the importance of knowing "when" as well as "where"

to deviate. Dissenting voices suggested that knowledge of "all" of the flex points may be too high an expectation, while one respondent indicated unfamiliarity with the term.

Panel consensus to agree with topic statement 2A, "To be successful, Higher Education Instructional Designers must engage in Rapid Prototyping to 'sketch out' possible solutions to a problem (i.e. storyboarding, mock-ups)," was reached within one round of inclusion in the Delphi. This topic statement was developed for the round two survey as a result of panelist suggestions for additional topic statements provided in round one. Responses to topic statement 2A exhibited a mean of 3.54, and a standard deviation of .637. Of the 28 panelists who responded, 93% of the group either agreed or strongly agreed with the statement. Themes that emerged from the qualitative data for this item included: the importance of rapid prototyping/ storyboarding in communicating ideas to collaborators, the context-dependent nature of these tasks (some respondents worked in environments that required storyboarding, while it was rarely if ever done in others), and the efficiencies gained from getting faculty approval at the mock up stage, rather than waiting until materials are more fully developed. Finally, some panelists indicated that while this ability was clearly a "nice to have," they didn't consider it a crucial skill.

Panel consensus to agree with topic statement 1C, "To be successful, Higher Education Instructional Designers must utilize a systematic process as a design framework rather than a prescriptive, step-by-step recipe," was reached within one round of inclusion in the Delphi. This topic statement was developed for the round two survey as a clarification of topic statement 1 in an effort to alleviate the divergence and confusion indicated in panelist open-ended response data. Responses to topic statement 1C exhibited a mean of 3.46, and a standard deviation of .706. Of the 28 panelists who responded, 93% of the group either agreed or strongly agreed with the

statement, while two indicated *No Judgment.* Respondents who agreed with this item concurred on the importance of flexibility within process to facilitate agility in problem solving and ultimately, creative solutions. However, other respondents indicated the usefulness of recipes in some contexts (e.g. novice IDs), and the importance of faculty preference in the selection of process.

Topic statement 2, "To be successful, Higher Education Instructional Designers must generate multiple possible solutions to a problem," was developed to explore the "heuristics" construct that appeared in the literature (e.g. York & Ertmer, 2011). Panel consensus to agree with topic statement 2 was reached in round one with a mean response of 3.36 and a standard deviation of .739. Of the 27 panelists who responded, 81% of the group either agreed or strongly agreed with the statement, while one indicated *No Judgment.* Although this item reached panel consensus to agree, the open-ended responses almost universally included cautionary language that the development of multiple solutions was most useful in the early collaborative problem solving phase, and the risk of project "scope creep" in exploring those possible outcomes too deeply could deleteriously affect the production timeline and budget.

Panel consensus to disagree with topic statement 1A, "To be successful, Higher Education Instructional Designers must work ONLY within the bounds of a prescribed, systematic, design process," was reached within one round of inclusion in the Delphi. This topic statement was developed for the round two survey as a clarification of topic statement 1 in an effort to alleviate the divergence indicated in panelist open-ended response data. Responses to topic statement 1A exhibited a mean of 1.64, and a standard deviation of .826. Of the 28 panelists who responded, 93% of the group either disagreed or strongly disagreed with the statement. Panelist open-ended statements of rationale to disagree with this item were fairly

unified around themes of the limiting nature of prescribed processes not allowing for designer innovation. Several respondents, however, expressed the more pragmatic viewpoint that systematic processes were often good enough "most of the time," and that the viability of a systematic process was largely dependent on the context of operation (i.e. faculty preference, University practices/ policies).

Topic statement 1, "To be successful, Higher Education Instructional Designers must work systematically through a prescribed design process," was developed to explore the "systems approach" construct that was evident in the literature (e.g. Gordon & Zemke, 2000). In the first round topic statement 1 exhibited a mean response of 2.7, a standard deviation of .775, and thereby failed to reach consensus. Of the 27 panelists who responded to topic statement 1, two-thirds of the group either agreed or strongly agreed. Response themes that illustrated this item with a positive connotation included: the usefulness of prescriptive processes for "quick and dirty" projects, the efficiencies inherent in standardized processes, and the benefits of using a standardized paradigm or framework as a "jumping off point." Noted themes that demonstrated a negative connotation included the limiting nature of formal processes and the risk of lost opportunity (in terms of solving the problem at hand) due to a focus on a process "checklist." Topic statement 1 was replaced in the round two survey with items 1A, 1B, and 1C to facilitate more refined panelist response.

In all, five topic statements (1B, 1C, 2, 2A, and 3) reached panel consensus to agree, one topic statement (1A) reached panel consensus to disagree, and one topic statement (1) did not reach panel consensus. As a group the Problem Solving theme demonstrated an average Distance from the Midpoint (DM) of .90. The DM indicates the average distance of all response means of the group from midpoint of the Likert scale (2.5).

Theme 2: Problem Finding

Panelist responses to a total of 3 topic statement iterations related to Problem Finding were collected in the study. A summary of the data for this theme is provided in Table 5 categorized by: items that reached panel consensus to agree, items that reached panel consensus to disagree, and items that did not reach panel consensus. Within each category, responses are presented in order of the distance of the item mean from the Likert midpoint (2.5). More detailed response information, including selected qualitative data, is presented in APPENDIX F. Topic statement numbers 4, 5, and 6 explored issues and constructs related to the Problem Finding theme.

Table 5. *Summary of Responses to Topic Statements in the Problem Finding Theme*

#	Round	Topic Statement *To be successful, Higher Education Instructional Designers must…*	*n*	*M*	*SD*	%
		Items That Reached Panel Consensus to Agree				
4	1	identify problems, deficiencies, gaps in knowledge, and omissions in a given situation.	27	3.59	.572	96
5	1	be able to distinguish between actual constraints and perceived constraints of a problem.	27	3.38	.571	93
6	1	project potential outcomes of a course of action and intervene appropriately.	27	3.31	.679	93

Topic statement 4, "To be successful, Higher Education Instructional Designers must identify problems, deficiencies, gaps in knowledge, and omissions in a given situation," was developed to explore the "problem finding" construct that appeared in the literature (e.g. Torrance, 1993). The panel reached consensus to agree with topic statement 4 in round one with a mean response of 3.59 and a standard deviation of .572. Of the 27 panelists who responded, 96% of the group either agreed or strongly agreed with the statement. The panel's qualitative responses to this item clearly reflected the importance placed on an instructional designer's

ability to perform gap analyses, however, the danger of an instructional designer moving too far into the realm of curricular decisions was also expressed. Additionally, responses suggested that this may be a skill that evolves in an ID as they gain experience, and that ultimately, a successful ID could discern not only "that" the gaps exist, but "why" they exist as well.

Topic statement 5, "To be successful, Higher Education Instructional Designers must be able to distinguish between actual constraints and perceived constraints of a problem," was developed to explore the "escaping assumptions" construct that appeared in the literature (e.g. Mitchell, Inouye, & Blumenthal , 2003). Panel consensus to agree with topic statement 5 was reached in round one with a mean response of 3.38 and a standard deviation of .571. Of the 27 panelists who responded, 93% of the group either agreed or strongly agreed with the statement, while one indicated *No Judgment.* Panelist open-ended responses to this item indicated that although this is an essential skill, it should be considered a master-level skill demonstrated by experienced instructional designers. Additionally, responses characterized this item as highly dependent on context and workplace culture, and often related to the ID's ability to recognize the "constraints" extant in their own thinking.

Topic statement 6, "To be successful, Higher Education Instructional Designers must project potential outcomes of a course of action and intervene appropriately," was developed to further explore the "problem finding" construct that was evident in the literature (e.g. Ericsson, Roaring, & Nandagopal, 2007). Panel consensus to agree with topic statement 6 was reached in round one with a mean response of 3.31 and a standard deviation of .679. Of the 27 panelists who responded, 93% of the group either agreed or strongly agreed with the statement, while one indicated *No Judgment.* Response themes for this item suggest that the ability to extrapolate past experiences into current problems is an essential, mastery-level skill for instructional designers.

Panelist responses also cautioned that in practice, the instructional designer's ability to affect the outcome is highly context-based, and designers may be reduced to "sounding the alarm" and communicating their concerns to those who ultimately control the quality of the product.

All three of the topic statements in the Problem Finding theme (4, 5, and 6) achieved statistical consensus. As a group, the Problem Finding theme demonstrated an average DM of .93.

Theme 3: Boundary Awareness

Panelist responses to a total of 12 topic statement iterations related to Boundary Awareness were collected in the study. A summary of the data for this theme is provided in Table 6 categorized by: items that reached panel consensus to agree, items that reached panel consensus to disagree, and items that did not reach panel consensus. Within each category, responses are presented in order of the distance of the item mean from the Likert midpoint (2.5). More detailed response information, including selected qualitative data, is presented in APPENDIX F. Topic statement numbers 7, 7A, 8, 8(R2), 8A, 9, 9A,9B, 9C, 9D, 10, and 10A explored issues and constructs related to the Boundary Awareness theme.

Panel consensus to agree with topic statement 8A, "To be successful, Higher Education Instructional Designers must establish a personal "culture of creativity" through relationships, communication, and comportment (e.g. honesty, patience, resilience)," was reached within one round of inclusion in the Delphi. This topic statement was developed for the round two survey as a result of panelist suggestions for additional topic statements provided in round one. Responses to topic statement 8A exhibited a mean of 3.74 and a standard deviation of .526. Of the 28 panelists who responded, 93% of the group either agreed or strongly agreed with the statement, while one indicated *No Judgment.* Panelist open-ended responses to this item overwhelmingly

illustrated the importance placed on the "soft skills" of instructional designers. Dissenting comments were focused on the perceived inexactness or inappropriateness of the terminology used in the topic statement.

Table 6. *Summary of Responses to Topic Statements in the Boundary Awareness Theme*

#	Round	Topic Statement *To be successful, Higher Education Instructional Designers must…*	*n*	*M*	*SD*	%
		Items That Reached Panel Consensus to Agree				
8A	2	establish a personal "culture of creativity" through relationships, communication, and comportment (e.g. honesty, patience, resilience).	28	3.74	.526	93
10A	2	balance creative activities with the constraints of a given project.	28	3.57	.634	93
8	2	recognize their role within the organization.	28	3.43	.690	96
7A	2	recognize their operational boundaries (e.g. context, constraints, and accountabilities).	28	3.36	.621	93
9A	2	Within the context of a project, Higher Education Instructional Designers must recognize when creative activities are appropriate (i.e. warranted, practicable) and when they are not.	28	3.36	.488	100
8	1	recognize their role within the organization.	27	3.30	.609	93
9C	2	Successful Higher Education Instructional Designers demonstrate elements of creativity in their communication and collaboration with stakeholders. (e.g. creative "sales" in persuading faculty/ advocating for students).	28	3.29	.600	93
10	1	recognize how much creativity is appropriate for a given situation	27	3.16	.746	81
		Items That Did Not Reach Panel Consensus				
7	1	recognize their organizational and operational boundaries	27	3.22	.800	78
9	1	recognize when it is appropriate to be creative.	27	3.19	.849	78
9B	2	appropriately advocate for more elegant solutions (i.e. within project context/ constraints; time, money, etc.).	28	3.16	.800	68
9D	3	appropriately (i.e. within project context/ constraints; time, money, etc.) advocate for more elegant (i.e. relevant, ingenious, simple, novel, and effective) solutions.	24	3.13	.850	79

Panel consensus to agree with topic statement 10A, "To be successful, Higher Education Instructional Designers must balance creative activities with the constraints of a given project," was reached within one round of inclusion in the Delphi. This topic statement was developed for the round two survey as a clarification of topic statement 10 in an effort to alleviate the divergence indicated in panelist open-ended response data. Responses to topic statement 10A exhibited a mean of 3.57 and a standard deviation of .634. Of the 28 panelists who responded, 93% of the group either agreed or strongly agreed with the statement. Themes that emerged from the qualitative response data for this item included: the importance of an instructional designers "fit" within his or her team, the dangers of "hyperfocus" (on either creativity or productivity), and the responsibility of an instructional designer to operate within the accountabilities inherent to the constraints of a project. The importance of operational context was once again highlighted as an important consideration for this item.

Topic statement 8, "To be successful, Higher Education Instructional Designers must recognize their role within the organization," was developed from the literature to explore the construct of "contextual awareness" (Amabile et al., 2004). Although the topic statement achieved marginal consensus in round one, it was also included in round two to gather additional response data. Panel consensus to agree with topic statement 8 was reached after two rounds of the Delphi process. Round two responses carried a mean of 3.43and a standard deviation of .690. Of the 28 panelists who responded in round two, 96% of the group either agreed or strongly agreed with the statement. Round one responses demonstrated a mean of 3.30 and a standard deviation of .609. Of the 27 panelists who responded in round one, 93% of the group either agreed or strongly agreed with the statement. Themes that emerged from the qualitative data for these items included: the particular importance of understanding ones role in relation to faculty,

and maintaining the balance between obligations related to change agency, and the risks inherent in "pushing too far."As with many other survey item responses, the importance of organizational context was clearly expressed, specifically in terms of having a clear understanding of the mission and vision of the organization.

Panel consensus to agree with topic statement 7A, "To be successful, Higher Education Instructional Designers must recognize their operational boundaries (e.g. context, constraints, and accountabilities)," was reached within one round of inclusion in the Delphi. This topic statement was developed for the round two survey as a clarification of topic statement 7 in response to panelist open-ended response data. Topic statement 7A exhibited a mean response of 3.36 and a standard deviation of .621. Of the 28 panelists who responded, 93% of the group either agreed or strongly agreed with the statement. Panelist open-ended responses suggested that this ability was crucial for instructional designers (at the very least for preserving job security), and that part of the analysis phase of instructional design was in fact not only recognizing the operational boundaries of a situation, but also to discern which boundaries are "push-able" and which are not.

Panel consensus to agree with topic statement 9A, "Within the context of a project, Higher Education Instructional Designers must recognize when creative activities are appropriate (i.e. warranted, practicable) and when they are not," was reached within one round of inclusion in the Delphi. This topic statement was developed for the round two survey as a clarification of topic statement 9 in response to panelist open-ended comments. Topic statement 9A exhibited a mean response of 3.36 and a standard deviation of .488. Of the 28 panelists who responded, 100% of the group either agreed or strongly agreed with the statement. Themes that emerged

from the qualitative data for this item included the necessity for instructional designers to adhere to the project context and the inexactness of terms such as "appropriate" and "warranted."

Statistical consensus to agree with topic statement 9C, "Successful Higher Education Instructional Designers demonstrate elements of creativity in their communication and collaboration with stakeholders (e.g. creative 'sales' in persuading faculty/ advocating for students)," was reached within one round of inclusion in the Delphi. This topic statement was developed for the round two survey as a result of panelist suggestions for additional topic statements provided in round one. Topic statement 9C exhibited a mean response of 3.29 and a standard deviation of .600. Of the 28 panelists who responded, 93% of the group either agreed or strongly agreed with the statement. The concept that "sales" is a distasteful, but often necessary, part of an instructional designer's job was clearly evident in panelist responses, as was the importance of soft skills, listening skills, and the ability to normalize language to communicate with faculty in their preferred manner.

Topic statement 7, "To be successful, Higher Education Instructional Designers must recognize their organizational and operational boundaries," was developed from the literature to explore the "contextual awareness," (e.g. Csikszentmihalyi, in Sternberg, 1999) construct. Although 78% of the 27 panelists who responded to topic statement 7 either agreed or strongly agreed, the statement did not attain statistical consensus and was replaced in the second round with the clarified topic statement 7A. In the first round topic statement 7 exhibited a mean response of 3.22 and a standard deviation of .800. Themes that emerged from the qualitative item 7 response data included: the importance of recognizing that organizational and operational context inform and define course-level design activities, and balancing the instructional

designer's obligation to advocate for improved outcomes with the potential "political" ramifications of stepping out of one's place.

Topic statement 9, "To be successful, Higher Education Instructional Designers must recognize when it is appropriate to be creative," was developed to further explore the "navigating the (timing) risk/ reward dynamic" construct that appeared in the literature (e.g. Schön, 1987). Although 78% of the 27 panelists who responded to topic statement 9 either agreed or strongly agreed, the statement did not attain consensus and was replaced in the second round with the clarified topic statement 9A. In the first round, responses to topic statement 9 exhibited a mean of 3.19 and a standard deviation of .849. Open-ended panelist response to this item illustrated the importance of recognizing the instructional designer's relationship with the faculty member (particularly the faculty member's comfort level with creative approaches), the ID's willingness to perform non-creative tasks when necessary, and scaling creative activity to a level appropriate to the project. Additionally, comments related to the nature of creativity itself appeared in panelist responses to this item, most notably, the assertion that creativity is a constant habit, not an "on/off switch."

Topic statement 9B, "To be successful, Higher Education Instructional Designers must appropriately advocate for more elegant solutions (i.e. within project context/ constraints; time, money, etc.)," was developed for the round two survey as a result of panelist suggestions for additional topic statements provided in round one. Although 68% of the 28 panelists who responded to topic statement 9B either agreed or strongly agreed, the statement did not attain consensus and was replaced in the third round with clarified version (topic statement 9D). Round two responses to topic statement 9B exhibited a mean of 3.16 and a standard deviation of .800. Panelist open-ended responses to this item generally reflected a neutral-to-negative tone, with the

inexactness of the terms “elegant” and “advocate” indicated as problematic. The importance of an instructional designer to demonstrate delicacy and tact, their obligation to adhere to the “iron triangle” of project management, as well as their responsibility to seek the simplest solution that will meet project requirements were also evident in panelist responses.

Topic statement 10, “To be successful, Higher Education Instructional Designers must recognize how much creativity is appropriate for a given situation,” was developed from the literature to explore the “navigating the (volume) risk/ reward dynamic” construct that was evident in the literature (e.g. Udwadia, 1990) construct. Although the topic statement achieved marginal consensus in round one, a clarified topic statement (10A) was included in round two in response to panelist round one open-ended comments. Responses to topic statement 10 exhibited a mean of 3.16 and a standard deviation of .746. Of the 27 panelists who responded, 81% of the group either agreed or strongly agreed with the statement. Open-ended panelist response to this item illustrated the importance of recognizing the ID’s relationship with the faculty member (particularly the faculty member’s comfort level with creative approaches). While some panelists questioned the implication that such a thing as “too much creativity” even exists, others held strongly to the obligation of an instructional designer to hold to project constraints and avoid cost overruns.

Topic statement 9D, “To be successful, Higher Education Instructional Designers must appropriately (i.e. within project context/ constraints; time, money, etc.) advocate for more elegant (i.e. relevant, ingenious, simple, novel, and effective) solutions,” was developed for the round three survey in an effort to alleviate the confusion indicated in panelist open-ended response data for topic statement 9B. Although 79% of the 24 panelists who responded to topic statement 9D either agreed or strongly agreed, consensus was not reached regarding the item.

Responses to topic statement 9D exhibited a mean of 3.13 and a standard deviation of .850. Themes that emerged from the qualitative data for this item demonstrated a discomfort with the term "elegant," specifically if the project context is exceeded in the pursuit of "elegance."

In all, eight topic statements (7A, 8, 8(R2), 8A, 9A, 9C, 10, and 10A) addressing the Boundary Awareness theme reached panel consensus to agree and four topic statements (7, 9, 9B, and 9D) did not reach panel consensus. As a group, the Boundary Awareness theme demonstrated an average DM of .82.

Theme 4: The Creative Act

Panelist responses to a total of 11 topic statement iterations related to The Creative Act were collected in the study. A summary of the data for this theme is provided in Table 7 categorized by: items that reached panel consensus to agree, items that reached panel consensus to disagree, and items that did not reach panel consensus. Within each category, responses are presented in order of the distance of the item mean from the Likert midpoint (2.5). More detailed response information, including selected qualitative data, is presented in APPENDIX F. Topic statement numbers 11, 11A, 11A(R3), 12, 12A, 12A(R3), 12B, 13, 14, 14A, and 15 addressed issues constructs related to the Creative Act theme.

Topic statement 13, "To be successful, Higher Education Instructional Designers must effectively remix/ repurpose old materials into new materials," was developed to explore the "remixing" construct that appeared in the literature (e.g. York & Ertmer, 2011). Panel consensus to agree with topic statement 13 was reached in round one with a mean response of 3.65 and a standard deviation of .485. Of the 27 panelists who responded, 96% of the group either agreed or strongly agreed with the statement, while one indicated *No Judgment.* Panelist open-ended responses clearly illustrated the desirability of efficiencies gained in the reuse of older materials,

but also suggested that this reuse may be limited in some cases to the instructional designer's subject matter expertise.

Table 7. *Summary of Responses to Topic Statements in the The Creative Act Theme*

#	Round	Topic Statement *To be successful, Higher Education Instructional Designers must…*	*n*	*M*	*SD*	%
		Items That Reached Panel Consensus to Agree				
13	1	effectively remix/ repurpose old materials into new materials.	27	3.65	.485	96
12B	2	be capable of creating original (novel) models, strategies, or approaches to solve instructional problems.	28	3.50	.638	93
15	1	engage in creative acts specifically to solve problems.	27	3.5	.510	96
14	1	identify connections between elements previously considered disparate.	27	3.41	.636	93
14A	2	establish "Dynamic Expertise" by continuously integrating emerging trends with a strong historical perspective (i.e. be fully conversant in a variety of educational theories, practices, and approaches, both old and new).	28	3.17	.669	86
		Items That Reached Panel Consensus to Disagree				
12A	3	always create original (novel) models, strategies, or approaches to solve instructional problems.	24	1.70	.470	96
		Items That Did Not Reach Panel Consensus				
12	1	create original (novel) models, strategies, or approaches to solve instructional problems.	27	3.15	.784	74
11	1	engage in free-form (abstract, unapplied) creative acts.	27	2.83	.834	48
11A	2	engage in free-form (abstract, unapplied) creative acts that are unrelated to any current projects.	28	2.60	.816	50
11A	3	engage in free-form (abstract, unapplied) creative acts that are unrelated to any current projects.	24	2.48	.912	77
12A	2	always create original (novel) models, strategies, or approaches to solve instructional problems.	28	2.04	.508	86

Panel consensus to agree with topic statement 12B, "To be successful, Higher Education Instructional Designers must be capable of creating original (novel) models, strategies, or approaches to solve instructional problems," was reached within one round of inclusion in the

Delphi. This topic statement was developed for the round two survey as a clarification of topic statement 12 in response to panelist round one open-ended comments. Responses to topic statement 12B exhibited a mean of 3.50 and a standard deviation of .638. Of the 28 panelists who responded, 93% of the group either agreed or strongly agreed with the statement. Open-ended responses clearly illustrated an appreciably higher panel comfort level with the necessity for an ID to "be able" to create novel solutions rather than "always" create them (topic statement 12A, below).

Topic statement 15, "To be successful, Higher Education Instructional Designers must engage in creative acts specifically to solve problems," was developed to explore the "innovation" construct that was evident in the literature (e.g. Weisberg, 2006). Panel consensus to agree with topic statement 15 was reached in round one with a mean response of 3.50 and a standard deviation of .510. Of the 27 panelists who responded, 96% of the group either agreed or strongly agreed with the statement, while one indicated *No Judgment.* While open-ended panelist response to this item generally expressed a positive connotation to this topic statement, there was some question as to the inexactness of the term "creative acts," as well as concern that such acts may stress the constraints on the project (i.e. cost, timeline).

Topic statement 14, "To be successful, Higher Education Instructional Designers must identify connections between elements previously considered disparate," was developed to explore the "connections" construct that appeared in the literature (e.g. Valentine & Ivey, 2008). Panel consensus to agree with topic statement 14 was reached in round one with a mean response of 3.41 and a standard deviation of .636. Of the 27 panelists who responded, 93% of the group either agreed or strongly agreed with the statement. Panelist comments toward this item were generally quite positive, with one respondent going so far as to assert that this statement was

"essentially a definition of creativity." However, characterization of this ability as "nice to have" but "not always necessary" was also evident.

Topic statement 14A, "To be successful, Higher Education Instructional Designers must establish "Dynamic Expertise" by continuously integrating emerging trends with a strong historical perspective (i.e. be fully conversant in a variety of educational theories, practices, and approaches, both old and new)," was developed for the round two survey as a result of panelist suggestions for additional topic statements provided in round one. Panelist consensus to agree with topic statement 14A was reached within one round of inclusion in the Delphi. Responses to topic statement 14A exhibited a mean of 3.17 and a standard deviation of .669. Of the 28 panelists who responded, 86% of the group either agreed or strongly agreed with the statement. Although open-ended response data generally characterized this statement as a desirable capability that "separates good from great," responses indicated that it may not always be necessary (particularly in team environments) and could potentially be exhausting to the ID. Other comments outlined the potential danger of an instructional designer always becoming enamored with the "new" at the expense of the "tried and true," and the necessity of maintaining positive, functional relationships with faculty collaborators. Although, the terminology "Dynamic Expertise" was reused exactly from a suggestion for a new topic statement made by a panelist in round one, one respondent took exception to the inaccurate use of the term in this topic statement, another example of the panel's apparent struggles with the lack of unified industry-standard terminology.

Panel consensus to disagree with topic statement 12A, "To be successful, Higher Education Instructional Designers must always create original (novel) models, strategies, or approaches to solve instructional problems," was reached after two rounds of the Delphi process.

This topic statement was developed for the round two survey as a clarification of topic statement 12 in response to panelist open-ended comments in round one. Round three responses exhibited a mean of 1.70 and a standard deviation of .470. Of the 24 panelists who responded in round 3, 96% of the group either disagreed or strongly disagreed with the statement while one indicated *No Judgment.* Round two responses indicated non-consensus with a mean of 2.04 and a standard deviation of .508. Of the 28 panelists who responded in round two, 86% of the group either disagreed or strongly disagreed with the statement. The impracticality inherent in always "reinventing the wheel" was clearly suggested by panelist open-ended response to this item, while some responses addressed the missed opportunities that result from relying too heavily on existing models and approaches.

Topic statement 12, "To be successful, Higher Education Instructional Designers must create original (novel) models, strategies, or approaches to solve instructional problems," was developed to explore the construct of "invention" that was evident in the literature (e.g. Dasgupta, 1996). Since only 74% of the 27 panelists who responded to topic statement 12 either agreed or strongly agreed, the statement did not attain consensus and was replaced in the second round with clarified topic statements 12A and 12B. In the first round, responses to topic statement 12 exhibited a mean of 3.15 and a standard deviation of .784. Themes that emerged from the qualitative data for this item in round one included the importance of usefulness over novelty, and discomfort with the implied absence of practical application.

Topic statement 11, "To be successful, Higher Education Instructional Designers must engage in free-form (abstract, unapplied) creative acts," was developed to explore the construct of "ideation" that appeared in the literature (e.g. Akinboye, in Ogoemeka, 2011). Only a plurality of 48% of the 27 panelists who responded to topic statement 11 either agreed or strongly agreed,

and the item was replaced in the second round with the refined topic statement 11A. In the first round, responses to topic statement 11 exhibited a mean of 2.83 and a standard deviation of .834. Through their open-ended comments, panelists seemed to concur with this statement in the abstract as a creativity-building exercise (one went so far as to implore managers to reserve time in the schedule to allow for these activities), however, many expressed reservations as to the ambiguity of the statement in terms of the apparent lack of immediate application of these activities.

Topic statement 11A, "To be successful, Higher Education Instructional Designers must engage in free-form (abstract, unapplied) creative acts that are unrelated to any current projects," was developed for the round two survey in response to the divergence indicated in panelist open-ended comments for topic statement 11. In round two, topic statement 11A did not reach consensus with a mean response of 2.6, a standard deviation of .816 and a 50% tendency to agree or strongly agree. Topic statement 11A moved further away from consensus in round three with a mean response of 2.48, a standard deviation of .912, and a 77% tendency to disagree or strongly disagree. Positive comments related to this item suggested the usefulness of creating a catalog of "unrelated" or "brainstormed" ideas for later use, the benefits in terms of professional development, and the positive effect on workplace culture. However the discomfort of some panelists with engaging in activities that are not directly tied to current projects was also clearly evident.

In all, five topic statements (12B, 13, 14, 14A and 15) addressing the Creative Act theme reached panel consensus to agree, one topic statement (12A(R3)) reached panel consensus to disagree, and five topic statements (11, 11A(R2), 11A(R3), 12, and 12A(R2)) did not reach panel consensus. As a group, the Creative Act theme demonstrated an average DM of .55.

Theme 5: Creative Dispositions

Panelist responses to a total of 12 topic statement iterations related to Creative Dispositions were collected in the study. A summary of the data for this theme is provided in Table 8 categorized by: items that reached panel consensus to agree, items that reached panel consensus to disagree, and items that did not reach panel consensus. Within each category, responses are presented in order of the distance of the item mean from the Likert midpoint (2.5). More detailed response information, including selected qualitative data, is presented in APPENDIX F. Topic statement numbers 16, 17, 18, 19, 19A, 19A(R3), 20, 21, 22, 23, 23A, and 23B addressed constructs related to Creative Dispositions.

Topic statement 16, "Successful Higher Education Instructional Designers are comfortable engaging with a variety of tasks and interactions," was developed to explore the construct of "flexibility that was evident in the literature (e.g. Baum and Newbill, 2010). Panel consensus to agree with topic statement 16 was reached in round one with a mean response of 3.89 and a standard deviation of .321. Of the 27 panelists who responded, 100% of the group either agreed or strongly agreed with the statement. Panelist comments to this item were universally positive and outlined the need for ID flexibility and adaptability in terms of their roles within the organization, the variety of subject matter, faculty needs and teaching styles, and the variety of other stakeholders they must interact with. The panel also suggested that successful instructional designers take advantage of these interactions to continue to learn new things and broaden their personal and professional perspectives.

Topic statement 23, "Successful Higher Education Instructional Designers are empathetic to multiple perspectives," was developed to explore the "diversity/ democracy of thought" construct that appeared in the literature (e.g. Manke, 1999). Panel consensus to agree with topic statement 23 was reached in round one with a mean response of 3.70 and a standard deviation of

.541. Of the 27 panelists who responded, 96% of the group either agreed or strongly agreed with the statement. Although the Likert responses for this item were undeniably positive, the panelist comments were decidedly more mixed. The term "empathetic" was cause for a fairly evident division among panelists. Some indicated it was absolutely crucial, and would, in fact, "make [the instructional designer] one of the best designers at [their] institution." Other panelists suggested that empathy was not necessarily required for effective collaboration.

Topic statement 22, "Successful Higher Education Instructional Designers are willing to suppress their ego for the good of the endeavor," was developed to explore the construct of "pragmatism" that appeared in the literature (e.g. James, 1907). Panel consensus to agree with topic statement 22 was reached in round one with a mean response of 3.65 and a standard deviation of .562. Of the 27 panelists who responded, 93% of the group either agreed or strongly agreed with the statement. Panelist open-ended response to topic statement 22 clearly illustrated an operational reality for the higher education instructional designer; the best way they can facilitate the design of quality learning experiences (and in doing so, advocate for students), is to do whatever necessary to build effective collaborations with faculty members.

Topic statement 23B, "To be successful, Higher Education Instructional Designers must integrate suggestions and feedback from others," was developed for the round two survey as a result of panelist suggestions for additional topic statements provided in round one. Consensus to agree with topic statement 23B was reached in round one with a mean response of 3.59 and a standard deviation of .508. Of the 28 panelists who responded, 100% of the group either agreed or strongly agreed with the statement. Panelist open-ended response to topic statement 23B addressed the collaborative nature of most design endeavors, and suggested that an effective ID

learns to balance the suppression of their ego necessary to seek other perspectives with the confidence in their own abilities to discard feedback that "misses the mark."

Table 8. *Summary of Responses to Topic Statements in the Creative Dispositions Theme*

#	Round	Topic Statement *Successful Higher Education Instructional Designers are…*	*n*	*M*	*SD*	%
		Items That Reached Panel Consensus to Agree				
16	1	comfortable engaging with a variety of tasks and interactions.	27	3.89	.321	100
23	1	are empathetic to multiple perspectives.	27	3.70	.541	96
22	1	willing to suppress their ego for the good of the endeavor.	27	3.65	.562	93
23B	2	To be successful, Higher Education Instructional Designers must integrate suggestions and feedback from others.	28	3.59	.508	100
17	1	confident in their abilities.	27	3.52	.580	96
23A	2	To be successful, Higher Education Instructional Designers must actively seek multiple viewpoints (when appropriate relative to the constraints of a project).	28	3.36	.621	93
19	1	willing to continuously question underlying assumptions of established practice.	27	3.33	.620	93
18	1	willing to risk exposure embarrassment or censure to propose new ideas.	27	3.24	.579	85
21	1	comfortable surrendering ownership of creative works.	27	3.19	.567	89
		Items That Reached Panel Consensus to Disagree				
20	1	devotees to current industry best practices only.	27	1.85	.718	89
		Items That Did Not Reach Panel Consensus				
19A	2	able to restrain from implementing initial (or prescribed) responses while considering alternates (when appropriate relative to the constraints of a project).	28	3.00	.690	60
19A	3	able to restrain from implementing initial (or prescribed) responses while considering alternates (when appropriate relative to the constraints of a project).	24	2.87	.548	75

Topic statement 17, "Successful Higher Education Instructional Designers are confident in their abilities," was developed to explore the construct of "confidence" that appeared in the literature (e.g. Baum and Newbill, 2010). Consensus to agree with topic statement 17 was reached in round one with a mean response of 3.52 and a standard deviation of .580. Of the 27 panelists who responded, 96% of the group either agreed or strongly agreed with the statement. Panelist open-ended responses were generally unified across several themes: An instructional designer's confidence in what they do well can go a long way toward building faculty trust, overconfidence, on the other hand, can not only damage collaborations but it could also have a negative effect on the instructional designer's responsibility of continuous, life-long learning.

Topic statement 23A, "To be successful, Higher Education Instructional Designers must actively seek multiple viewpoints (when appropriate relative to the constraints of a project)," was developed for the round two survey as a result of panelist suggestions for additional topic statements provided in round one. Consensus to agree with topic statement 23A was reached within one round of inclusion in the survey, with a mean of 3.36 and a standard deviation of .621. Of the 28 panelists who responded, 93% of the group either agreed or strongly agreed with the statement. Panelist open-ended responses to this topic statement generally presented the perspective that although desirable in the abstract, this activity is not always necessary (or possible) within the context of a project.

Topic statement 19, "Successful Higher Education Instructional Designers are willing to continuously question underlying assumptions of established practice," was developed to explore the construct of "iconoclasm" that was evident in the literature (e.g. Hokanson, Miller, & Hooper, 2008). Consensus to agree with topic statement 19 was reached in round one with a mean response of 3.33 and a standard deviation of .620. Of the 27 panelists who responded, 93%

of the group either agreed or strongly agreed with the statement. Comments for this item that demonstrated relative panelist unity on the importance of critical thinking in higher education as a whole, and the instructional designer's obligation to continuously seek to improve his or her craft, were tempered with a clear indication that too much iconoclasm can be disruptive; as one respondent put it: "yes, without being 'that one person.'"

Topic statement 18, "Successful Higher Education Instructional Designers are willing to risk exposure embarrassment or censure to propose new ideas," was developed to explore the "overcoming fear" construct that was suggested by the literature (e.g. Fields, 2012). Consensus to agree with topic statement 18 was reached in round one with a mean response of 3.24 and a standard deviation of .579. Of the 27 panelists who responded, 85% of the group either agreed or strongly agreed with the statement, while two indicated *No Judgment.* Panelist comments on this item reflected that ideally, an instructional designer should feel obligated to take this risk, but clearly, this willingness depends as much on the work environment as the designers themselves.

Topic statement 21, "Successful Higher Education Instructional Designers are comfortable surrendering ownership of creative works," was developed to explore the "cooperative" construct that appeared in the literature (e.g. Amabile, 1988). Consensus to agree with topic statement 21 was reached in round one with a mean response of 3.19 and a standard deviation of .567. Of the 27 panelists who responded, 89% of the group either agreed or strongly agreed with the statement, while one indicated *No Judgment.* In the open-ended comments for this item, one respondent called this topic the "unfortunate truth" of higher education instructional design. Most respondents, however, were decidedly softer, suggesting that designers were "stewards of process" in a service industry "designed to make instructors look good." Other comments suggested that suppression of individual ego was beneficial to the team

approach to creation, and that the open educational resources (OER) movement was, in fact, redefining the very notion of "surrender."

Topic statement 20, "Successful Higher Education Instructional Designers are devotees to current industry best practices only," was developed to explore the construct of "post-modernism" that appeared in the literature (e.g. Visscher-Voerman & Gustafson , 2004). Statistical consensus to disagree with topic statement 20 was reached in round one with a mean response of 1.85 and a standard deviation of .718. Of the 27 panelists who responded, 89% of the group either disagreed or strongly disagreed with the statement. Panelist comments to this item illustrated a clear preference for an instructional designer who felt an obligation to move the industry forward through the redefinition of best practices while maintaining a critical eye to the successes of the past. An instructional designer's ability to translate principles of good practice from one context to another was also identified as a desirable skill.

Topic statement 19A, "Successful Higher Education Instructional Designers are able to restrain from implementing initial (or prescribed) responses while considering alternates (when appropriate relative to the constraints of a project)," was developed for the round two survey as a result of panelist suggestions for additional topic statements provided in round one. In round two, topic statement 19A did not reach consensus with a mean response of 3.0, a standard deviation of .690, and a 60% tendency to agree or strongly agree. Topic statement 19A moved further away from consensus in round three with a mean response of 2.87, a standard deviation of .548, and a 75% tendency to disagree or strongly disagree. Panelist open-ended statements of rationale to agree with this item were focused largely on avoiding reliance on a limited set of preferred solutions, and allowing for time for better solutions to emerge. Dissenting responses highlighted the value of quick decision making as well as the possible threat to project deadlines as a result

of too much time being spent searching for alternatives. Contextual awareness (in terms of role, project, and environment) was also indicated as a key consideration.

In all, nine of the 12 topic statements (16, 17, 18, 19, 21, 22, 23, 23A, and 23B) addressing the Creative Dispositions theme reached panel consensus to agree, one topic statement (20) reached panel consensus to disagree, and two topic statements (19A(R2) and 19A(R3)) did not reach panel consensus. The average DM of the Creative Dispositions theme was .87.

Theme 6: The Ambiguity Tolerance Continuum

Panelist responses to a total of 6 topic statement iterations related to The Ambiguity Tolerance Continuum were collected in the study. A summary of the data for this theme is provided in Table 9 categorized by: items that reached panel consensus to agree, items that reached panel consensus to disagree, and items that did not reach panel consensus. Within each category, responses are presented in order of the distance of the item mean from the Likert midpoint (2.5). More detailed response information, including selected qualitative data, is presented in APPENDIX F. Topic statement numbers 24, 25, 25A, 25B, 26, and 27 addressed issues related to the Ambiguity Tolerance Continuum.

Topic statement 27, "Successful Higher Education Instructional Designers embrace ambiguity as an empowering opportunity," was developed to explore the construct of "creative uncertainty" that appeared in the literature (e.g. Langer, 1990). Statistical consensus to agree with topic statement 27 was reached in round one with a mean response of 3.54 and a standard deviation of .581. Of the 27 panelists who responded, 93% of the group either agreed or strongly agreed with the statement, while one indicated *No Judgment.* Through their comments, many of the panel demonstrated favorable reception of a strong relationship between ambiguity and

opportunity for creativity, while some indicated that "tolerance" for ambiguity was enough, and that the team leadership should provide enabling constraints as needed to facilitate completion of projects that contain high levels of ambiguity.

Table 9. *Summary of Responses to Topic Statements in the The Ambiguity Tolerance Continuum Theme*

#	Round	Topic Statement *Successful Higher Education Instructional Designers are…*	*n*	*M*	*SD*	%
		Items That Reached Panel Consensus to Agree				
27	1	embrace ambiguity as an empowering opportunity.	27	3.54	.581	93
26	1	can operate effectively despite unspecific or incomplete direction.	27	3.48	.643	93
25	1	tolerate ill-defined problems.	27	3.19	.981	81
		Items That Reached Panel Consensus to Disagree				
24	1	completely avoid ill-defined problems.	27	1.38	.571	96
		Items That Did Not Reach Panel Consensus				
25A	2	are only comfortable engaging with ill-defined problems or situations for a limited time or to a limited extent.	28	1.84	.674	79
25B	3	Higher Education Instructional Designers can be successful even if they are only comfortable engaging with ill-defined problems or situations for a limited time or to a limited extent.	24	2.28	.813	67

Topic statement 26, "Successful Higher Education Instructional Designers can operate effectively despite unspecific or incomplete direction," was developed to explore the "ambiguity tolerance/ tasks" construct that was evident in the literature (e.g. Furnham & Ribchester, 1995). Statistical consensus to agree with topic statement 26 was reached in round one with a mean response of 3.48 and a standard deviation of .643. Of the 27 panelists who responded, 93% of the group either agreed or strongly agreed with the statement. Panelist comments on this item clearly indicated that although it is very important that instructional designers can be trusted to lay out

an "initial roadmap" of strategies for approaching ill-defined projects, this ability is usually the result of experience, and team leaders may be called upon to provide at least some framework for more novice IDs.

Topic statement 25, "Successful Higher Education Instructional Designers tolerate ill-defined problems," was developed to explore the "ambiguity tolerance/ problems" construct that appeared in the literature (e.g MacDonald,1970). Although the topic statement achieved marginal consensus in round one, a refined topic statement (25A) was included in round two in an effort to improve the clarity of panelist open-ended response data. In round one, topic statement 25 exhibited a mean response of 3.19 and a standard deviation of .981. Of the 27 panelists who responded, 81% of the group either agreed or strongly agreed with the statement, while one indicated *No Judgment.* While panel responses to this item tended to be generally positive, there was an obvious discomfort with the rather pedestrian implication of the term "tolerate."

Topic statement 24, "Successful Higher Education Instructional Designers completely avoid ill-defined problems," was developed to explore the construct of "ambiguity intolerance" that was evident in the literature (e.g. McClary, 2009). Consensus to disagree with topic statement 24 was reached in round one with a mean response of 1.38 and a standard deviation of .571. Of the 27 panelists who responded, 96% of the group either disagreed or strongly disagreed with the statement, while one indicated *No Judgment.* Panelist tendency to disagree with this statement can be summed up with one open-ended response: "Ill-defined problems are the essence of the instructional design field."

Topic statement 25A, "Successful Higher Education Instructional Designers are only comfortable engaging with ill-defined problems or situations for a limited time or to a limited extent," was developed for the round two survey as a clarification of topic statement 25 in

response panelist open-ended comments. In round two, topic statement 25A did not reach consensus (to disagree) with a mean response of 1.84 and a standard deviation of .674. Of the 26 panelists who responded in round two, 79% of the group either disagreed or strongly disagreed with the statement while two indicated *No Judgment.* Although comments generally reflected the tendency to disagree with item 25A (in similar fashion to item 25), panelists' discomfort with the vagueness of the statement was still evident. Additionally, the potential for mounting frustration in dealing with ambiguous situations for more than a short period of time was expressed by the panel.

Topic statement 25B, "Higher Education Instructional Designers can be successful even if they are only comfortable engaging with ill-defined problems or situations for a limited time or to a limited extent," was developed as a final effort to clarify and refine the language of questions 25 and 25A. However, responses for 25B moved further away from consensus in round three with a mean response of 2.28, a standard deviation of .813, and a 67% tendency to disagree or strongly disagree. After three rounds of Delphi process on this question, panel comments unfortunately became overly focused on the semantics of the statement rather than the concept being examined.

In all, 3 of the 6 topic statements (25, 26, and 27) addressing the Ambiguity Tolerance Continuum theme reached panel consensus to agree, one topic statement (24) reached panel consensus to disagree, and two topic statements (25A and 25B) did not reach panel consensus. As a group, the Ambiguity Tolerance Continuum theme demonstrated an average DM of .79.

Theme 7: Intrinsic Motivations and Rewards

Panelist responses to a total of 15 topic statement iterations related to Intrinsic Motivations and Rewards were collected in the study. A summary of the data for this theme is

provided in Table 10 categorized by: items that reached panel consensus to agree, items that reached panel consensus to disagree, and items that did not reach panel consensus. Within each category, responses are presented in order of the distance of the item mean from the Likert midpoint (2.5). More detailed response information, including selected qualitative data, is presented in APPENDIX F. Topic statement numbers 28, 29, 29(R2), 29(RD3), 30, 30(R2), 31, 31(R2), 31(R3), 32, 32A, 32A(R3), 33, 33A, and 34 addressed issues related to Intrinsic Motivations and Rewards.

Topic statement 34, "Successful Higher Education Instructional Designers are life-long learners," was developed for the round two survey as a result of panelist suggestions for additional topic statements provided in round one. Topic statement 34 achieved statistical consensus after one round with a mean response of 3.73 and a standard deviation of .452. Of the 28 panelists who responded, 93% of the group either agreed or strongly agreed with the statement, while one indicated *No Judgment.* Panelist comments on this topic were nearly entirely positive, key themes included: engaging in education as an expected activity in an educationally centered field, IDs placing themselves in the role of learner to experience education from the student perspective, and the life-long learning as professional development to guard against obsolescence in a quickly evolving field.

Topic statement 28, "Successful Higher Education Instructional Designers believe that their creative efforts are making a difference," was developed to explore the construct of "intrinsic motivation" that was evident in the literature (e.g. Jaskyte & Kisieliene, 2006). Statistical consensus to agree with topic statement 28 was reached in round one with a mean response of 3.37 and a standard deviation of .688. Of the 27 panelists who responded, 89% of the group either agreed or strongly agreed with the statement. Open-ended comments in response to

this statement were again generally positive, focusing on the intrinsic motivation necessary to help instructional designers overcome the less desirable aspects of the job and the morale-building recognition that the designer is part of an interdependent team that is making a difference.

Topic statement 30, "Successful Higher Education Instructional Designers are passionate about their work," was developed to explore the construct of "passion" that appeared in the literature (e.g. Vallerand & Houlfort, 2003). Although the topic statement achieved marginal consensus in round one, it was included in round two to gather additional response data. Statistical consensus to agree with topic statement 30 was reached after two rounds of the Delphi process. Round two responses carried a mean of 3.11 and a standard deviation of .578. The round two response mean for this item was the lowest of any topic statement that achieved consensus. Of the 28 panelists who responded in round two, 96% of the group either agreed or strongly agreed with the statement, while one indicated *No Judgment.* Round one responses exhibited a mean of 3.31 and a standard deviation of .788. Of the 27 panelists who responded in round one, 85% of the group either agreed or strongly agreed with the statement, while one indicated *No Judgment.* Panelist open-ended statements of rationale to agree with topic statement 30 were similar to that of item 28, with themes including: the relationship between passion and devotion, caring and ambiguity tolerance, and passion as contagion when attempting to motivate reluctant faculty. Comments that reflected disagreement with the topic statement suggested that passion, while potentially a value-add, can also lead to frustration when dealing with less passionate collaborators. Finally, the notion that more practical motivators such as salary and job security are at least as powerful as passion was also expressed.

Table 10. *Summary of Responses to Topic Statements in the Intrinsic Motivations and Rewards Theme*

#	Round	Topic Statement *Successful Higher Education Instructional Designers…*	*n*	*M*	*SD*	%
		Items That Reached Panel Consensus to Agree				
34	2	are life-long learners.	28	3.73	.452	93
28	1	believe that their creative efforts are making a difference.	27	3.37	.688	89
30	1	Are passionate about their work.	27	3.31	.788	85
33	1	view difficult tasks as something to be mastered rather than something to be avoided.	27	3.27	.778	85
33A	2	view engaging with difficult tasks as something to be embraced rather than something to be avoided.	28	3.26	.585	93
30	2	Are passionate about their work.	28	3.11	.578	96
		Items That Did Not Reach Panel Consensus				
29	1	feel professionally fulfilled.	27	3.25	.830	70
31	2	engage in playful experimentation.	28	3.04	.662	75
29	2	feel professionally fulfilled.	28	3.00	.707	68
31	1	engage in playful experimentation.	27	3.00	.748	77
31	3	engage in playful experimentation.	24	3.04	.662	75
32A	2	demonstrate a single-minded immersion to creative or problem solving tasks (when appropriate relative to the constraints of a project).	28	2.62	.637	50
32A	3	demonstrate a single-minded immersion to creative or problem solving tasks (when appropriate relative to the constraints of a project).	24	2.58	.653	50
29	3	feel professionally fulfilled.	24	2.57	.746	50
32	1	demonstrate a single-minded immersion to creative or problem solving tasks.	27	2.44	.821	54

Topic statement 33, "Successful Higher Education Instructional Designers view difficult tasks as something to be mastered rather than something to be avoided," was developed to

explore the "self-efficacy" construct that was evident in the literature (e.g. Bandura , 1977). Although the topic statement achieved marginal consensus in round one, a clarified topic statement (33A) was included in round two in an effort to alleviate the confusion indicated in panelist open-ended response data. In round one, topic statement 33 exhibited a mean response of 3.27 and a standard deviation of .778. Of the 27 panelists who responded, 85% of the group either agreed or strongly agreed with the statement, while one indicated *No Judgment.* Since panelist open-ended comments clearly reflected some unease with the possible unintended connotation of the term "mastered," topic statement 33A was created to clarify the meaning.

Statistical consensus to agree with topic statement 33A, "Successful Higher Education Instructional Designers view engaging with difficult tasks as something to be embraced rather than something to be avoided," was reached within one round of inclusion in the Delphi. This topic statement was developed for the round two survey as a clarification of topic statement 33 in an effort to alleviate the concern indicated in panelist open-ended response data. Topic statement 33A exhibited a mean response of 3.26 and a standard deviation of .585. Of the 28 panelists who responded, 93% of the group either agreed or strongly agreed with the statement. While Likert response to this topic statement was clearly positive, the open-ended comments of the panelists in round two reflected a much more pragmatic perspective on engaging with difficult tasks: that it is simply an unavoidable reality of the job.

Topic statement 29, "Successful Higher Education Instructional Designers feel professionally fulfilled," was developed to explore the constructs of "autonomy and challenge" that appeared in the literature (e.g. Zhou, 1998). This statement was one of only two in the study that were submitted to the Delphi process for all three rounds in their original form and yet failed to attain consensus. In round one, topic statement 29 exhibited a mean response of 3.24 and a

standard deviation of .830 with 68% of panelists either agreeing or strongly agreeing and three *No Judgment* responses. The round one mean response was the highest attained by any topic statement that did not reach consensus. In round two, topic statement 29 also did not reach consensus with a mean response of 3.0, a standard deviation of .707and a 68% tendency to agree or strongly agree (with three *No Judgment* responses). Topic statement 29 moved further away from consensus in round three with a mean response of 2.57, a standard deviation of .746, and a 50% tendency to disagree or strongly disagree (with three *No Judgment* responses). Panelist statements of rationale to agree with this item were generally focused on themes of: the importance of long-term fulfillment in any vocation, fulfillment as a motivation, perceived correlation between fulfillment and success, and intrinsic fulfillment as a necessity (due to the rarity of monetary fulfillment in higher education). Comments with a negative connotation suggested that the menial tasks often necessary in instructional design are inherently unfulfilling, and questioned not only the existence of a correlation between instructional designer success and fulfillment, but also the ambiguity of the "success" construct as a whole.

The second topic in the study that in the study that failed to attain consensus despite being submitted to the Delphi process for all three rounds in its original form was topic statement 31; "Successful Higher Education Instructional Designers engage in playful experimentation." Developed from the literature to explore the construct of "play" (e.g. Hokanson, Miller, & Hooper, 2008), topic statement 31 exhibited a round one mean response of 3.0 and a standard deviation of .748. 77% of panelists either agreed or strongly agreed with the statement in the first round, while one indicated *No Judgment.* Round two responses remained virtually unchanged with a mean response of 3.04, a standard deviation of .662, and a 75% tendency to agree or strongly agree (with two *No Judgment* responses). Topic statement 31 moved further away from

consensus in round three with a mean response of 2.87, a standard deviation of .626, and a 71% tendency to disagree or strongly disagree (with one *No Judgment* response).

Panelist statements of rationale to agree with this item suggested that playfulness as a manifestation of interest, creativity, and problem-solving, and proposed that all experimentation should have elements of play, and finally, that company culture should provide instructional designers with opportunities to blend play (enjoying accomplishing things that are personally meaningful) and experimentation (the disciplined practice of hypothesizing and testing). Panelist comments that reflected disagreement with the topic statement suggested that experimentation should be purposeful not playful, that company culture dictates opportunities for play more that the personal traits of the instructional designer, and finally, questioned the necessity of "play" for success in general.

Topic statement 32, "Successful Higher Education Instructional Designers demonstrate a single-minded immersion to creative or problem solving tasks," was developed to explore the construct of "flow" that appeared in the literature (e.g. Csikszentmihalyi, 1996). 54% of the 27 panelists who responded to topic statement 32 in round one either disagreed or strongly disagreed (with two *No Judgment* responses) and the statement was replaced in the second round with topic statement 32A. In the first round, topic statement 32 exhibited a mean response of 2.44, and standard deviation of .821. Panelist comments for topic statement 32 were generally negative and reflected concern over the perceived lack of "big picture" view that immersion could cause as well as the potential exclusion of external interactions and collaborations as potential sources for possible solutions. The panel also expressed concerns about the potentially negative connotation of the term "single-minded."

Topic statement 32A, "Successful Higher Education Instructional Designers demonstrate a single-minded immersion to creative or problem solving tasks (when appropriate relative to the constraints of a project)," was developed for the round two survey in an effort to alleviate the concern indicated in panelist open-ended response data for topic statement 32. In round two, topic statement 32A did not reach consensus with a mean response of 2.62, a standard deviation of .637, and 50% tendency to agree or strongly agree. Topic statement 32A moved slightly further away from consensus in round three with a mean response of 2.58, a standard deviation of .653, and a 50% tendency to disagree or strongly disagree. Open-ended comments from two rounds of Delphi process demonstrated continued disagreement as to the perceived relevance and importance of Csikszentmihalyi's "flow" in instructional design. Themes that emerged from the qualitative data in rounds two and three suggested that while an instructional designer's ability to focus and immerse in a task where appropriate may be a desired capability, it should always be tempered by practical considerations. Finally, it was suggested that an instructional designers ability to multi-task and remain aware of external sources for ideas and opportunities was at least an important as single-minded immersion.

In all, only six of the 15 topic statement iterations (28, 30, 30(R2), 33, 33A, and 34) addressing Intrinsic Motivations and Rewards reached panel consensus to agree and nine topic statements (29, 29(R2), 29(R3), 31, 31(R2), 31(R3), 32, 32A, and 32A(R3)) did not reach panel consensus. As a group, the Intrinsic Motivations theme exhibited an average DM of .53.

Data Set Two: Initial Response to Creativity-related Competencies

In addition to participating in the formal Delphi process in round one, panelists were asked to contribute qualitative data through open-ended responses related to context-specific instructional design duties or activities that could be considered exemplars of creativity-related

knowledge, skills, and abilities. This qualitative data was used to create a list of 27 explicit competencies across five themes (Table 2).

In parts two and three of the third round survey, panelists were prompted to indicate their assessment of desirability and face validity of each of the competencies using the previously established 5-point Likert scale (*Strongly Agree, Agree, Disagree, Strongly Disagree, No Judgment*). Likert responses were again quantified by assigning a numerical value to each response: *Strongly Agree* = 4, *Agree* = 3, *Disagree* = 2, and *Strongly Disagree* = 1. The *No Judgment* option was again assigned a null value rather than zero to avoid influencing the value of the mean and standard deviation.

Initial statistical analysis of the quantitative response data is presented below grouped by competency themes. Note: although these topic statements did not undergo a full three round Delphi process, and rationale comments were not collected for each item, the data in this section are first presented in the same format to preserve consistency with Data Set One. Finally, the data from parts two and three of round three are presented in the aggregate to inform a combined analysis of the panel's assessments of the desirability and face validity of each of the competencies.

Desirability

In part two of the round three survey, Panelists were asked to indicate their level of desirability of a list of 27 creativity-related instructional design competencies developed from round one and two qualitative data in the context of the following: "When I add an Instructional Designer to my team, it is essential that he or she be able to …" A summary of response data is provided below. In all, 24 of the 28 panelists (86%) responded to part two of the round three instrument.

Competency theme 1: Navigating projects. Panelists responded to a total of 5 topic statements addressing desirability of competencies related to Navigating Projects. A summary of the data for this theme is provided in Table 11 categorized by: items that reached panel consensus to agree and items that did not reach panel consensus. Within each category, responses are presented in order of the distance of the item mean from the Likert midpoint (2.5). More detailed response information is presented in APPENDIX F. In all, topic statement numbers D1, D2, D3, D4, and D5 explored issues related to Navigating Projects.

Topic statement D2, "When I add an Instructional Designer to my team, it is essential that he or she be able to tailor their planned creative activities to the scope and constraints of a project," reached statistical consensus to agree with a mean response of 3.70 and a standard deviation of .470. Of the 24 panelists who responded, 96% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

Table 11. *Summary of Desirability Responses to Topic Statements in the Navigating Projects Theme*

#	Topic Statement *"When I add an Instructional Designer to my team, it is essential that he or she be able to …"*	*n*	*M*	*SD*	%
	Items That Reached Panel Consensus to Agree				
D2	tailor their planned creative activities to the scope and constraints of a project.	24	3.70	.470	96
D5	maximize efficiency through creative use/ reuse of available resources..	24	3.64	.492	92
D3	engage in continuous reflection and assessment and exploit new creative opportunities that arise as the project evolves.	24	3.57	.590	92
D1	identify opportunities for creativity (i.e. existing constraints and empowering ambiguity) within the overall scope of a project or problem assigned to them.	24	3.5	.512	92
D4	demonstrate a complete understanding of process; recognize inherent "flex points."	24	3.5	.673	83

The panel reached statistical consensus to agree with topic statement D5: "When I add an Instructional Designer to my team, it is essential that he or she be able to maximize efficiency through creative use/ reuse of available resources." Responses to topic statement D5 exhibited a mean of 3.64 and a standard deviation of .492. Of the 24 panelists who responded, 92% of the group either agreed or strongly agreed with the statement, while two respondents indicated *No Judgment.*

Topic statement D3, "When I add an Instructional Designer to my team, it is essential that he or she be able to engage in continuous reflection and assessment and exploit new creative opportunities that arise as the project evolves," reached statistical consensus to agree with a mean response of 3.57 and a standard deviation of .590. Of the 24 panelists who responded, 92% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

The panel reached statistical consensus to agree with topic statement D1: "When I add an Instructional Designer to my team, it is essential that he or she be able to identify opportunities for creativity (i.e. existing constraints and empowering ambiguity) within the overall scope of a project or problem assigned to them." Responses to topic statement D1 exhibited a mean of 3.5 and a standard deviation of .512. Of the 24 panelists who responded, 92% of the group either agreed or strongly agreed with the statement, while two respondents indicated *No Judgment.*

Topic statement D4, "When I add an Instructional Designer to my team, it is essential that he or she be able to demonstrate a complete understanding of process; recognize inherent "flex points," reached statistical consensus to agree with a mean response of 3.5 and a standard deviation of .673. Of the 24 panelists who responded, 83% of the group either agreed or strongly agreed with the statement, while two respondents indicated *No Judgment.*

After one round of responses all five topic statements (D1, D2, D3, D4, and d5) addressing desirability of competencies related to Navigating Projects achieved statistical consensus, and as a group, desirability responses to this theme demonstrated an average DM of 1.08.

Competency theme 2: Navigating problems and solutions. Panelists responded to a total of 9 topic statements addressing desirability of competencies related to Navigating Problems and Solutions. A summary of the data for this theme is provided in Table 12 categorized by: items that reached panel consensus to agree and items that did not reach panel consensus. Within each category, responses are presented in order of the distance of the item mean from the Likert midpoint (2.5). More detailed response information is presented in APPENDIX F. In all, topic statement numbers D7, D8, D9, D10, D11, D12, D13, and D14 explored issues related to Navigating Problems and Solutions.

Topic statement D13, "When I add an Instructional Designer to my team, it is essential that he or she be able to prioritize creative effort based on projected outcomes; focus effort toward serving the identified need/gap," reached statistical consensus to agree with a mean response of 3.57and a standard deviation of .507. Of the 24 panelists who responded, 96% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment*.

The panel reached statistical consensus to agree with topic statement D7: "When I add an Instructional Designer to my team, it is essential that he or she be able to actively seek, and seek to understand, input from multiple sources." Responses to topic statement D7 exhibited a mean of 3.50 and a standard deviation of .598. Of the 24 panelists who responded, 88% of the group

either agreed or strongly agreed with the statement, while two respondents indicated *No Judgment.*

Table 12. *Summary of Desirability Responses to Topic Statements in the Navigating Problems and Solutions Theme*

#	Topic Statement *"When I add an Instructional Designer to my team, it is essential that he or she be able to …"*	*n*	*M*	*SD*	%
	Items That Reached Panel Consensus to Agree				
D13	prioritize creative effort based on projected outcomes; focus effort toward serving the identified need/gap.	24	3.57	.507	96
D7	actively seek, and seek to understand, input from multiple sources.	24	3.50	.598	88
D12	set and uphold targets for the iteration/ creation cycle that are accountable to extant resources and timelines.	24	3.43	.507	96
D6	initially explore a problem "as it is" (mitigate any personal bias/ assumption/ preference).	24	3.41	.666	83
D11	Remix/Reuse/Recycle ("Bricolage"), and create as needed to fill extant gaps.	24	3.33	.577	83
D9	ascertain the essence of a problem by prioritizing initial information and eliminating the non-critical.	24	3.32	.646	83
D8	explore and consider the atypical.	24	3.17	.650	83
D14	seek elegant (i.e. relevant, ingenious, simple, and effective) solutions.	24	3.09	.596	83
	Items That Did Not Reach Panel Consensus				
D10	pattern-match problem needs/requirements with historical information and previous successes.	24	3.27	.767	75

Topic statement D12, "When I add an Instructional Designer to my team, it is essential that he or she be able to set and uphold targets for the iteration/ creation cycle that are accountable to extant resources and timelines," reached statistical consensus to agree with a mean response of 3.43 and a standard deviation of .507. Of the 24 panelists who responded, 96% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

The panel reached statistical consensus to agree with topic statement D6: "When I add an Instructional Designer to my team, it is essential that he or she be able to initially explore a problem "as it is" (mitigate any personal bias/ assumption/ preference)." Responses to topic statement D6 exhibited a mean of 3.41and a standard deviation of .666. Of the 24 panelists who responded, 83% of the group either agreed or strongly agreed with the statement, while two respondents indicated *No Judgment.*

Topic statement D11, "When I add an Instructional Designer to my team, it is essential that he or she be able to remix/Reuse/Recycle ("Bricolage"), and create as needed to fill extant gaps," reached statistical consensus to agree with a mean response of 3.33 and a standard deviation of .577. Of the 24 panelists who responded, 83% of the group either agreed or strongly agreed with the statement, while three respondents indicated *No Judgment.*

The panel reached statistical consensus to agree with topic statement D9: "When I add an Instructional Designer to my team, it is essential that he or she be able to ascertain the essence of a problem by prioritizing initial information and eliminating the non-critical." Responses to topic statement D9 exhibited a mean of 3.32 and a standard deviation of .646. Of the 24 panelists who responded, 83% of the group either agreed or strongly agreed with the statement, while two respondents indicated *No Judgment*.

Topic statement D8, "When I add an Instructional Designer to my team, it is essential that he or she be able to explore and consider the atypical," reached statistical consensus to agree with a mean response of 3.17 and a standard deviation of .650. Of the 24 panelists who responded, 83% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment*.

The panel reached statistical consensus to agree with topic statement D14: "When I add an Instructional Designer to my team, it is essential that he or she be able to seek elegant (i.e. relevant, ingenious, simple, and effective) solutions." Responses to topic statement D14 exhibited a mean of 3.09 and a standard deviation of .596. The response mean for this item was the lowest of any topic statement that achieved consensus. Of the 24 panelists who responded, 83% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

The panel did not come to initial consensus regarding topic statement D10: "When I add an Instructional Designer to my team, it is essential that he or she be able to pattern-match problem needs/requirements with historical information and previous successes." Responses to topic statement D10 exhibited a mean of 3.27and a standard deviation of .767. Of the 24 panelists who responded, only 75% of the group either agreed or strongly agreed with the statement, while two respondents indicated *No Judgment.*

After one round of responses, 8 of 9 topic statements (D6, D7, D8, D9, D11, D12, D13, and D14) addressing desirability of competencies related to Navigating Problems and Solutions reached panel consensus to agree and one topic statement (S10) did not reach panel consensus. As a group, desirability responses in the Navigating Problems and Solutions theme demonstrated an average DM of.84.

Competency theme 3: Navigating collaborations. Panelists responded to a total of 7 topic statements addressing desirability of competencies related to Navigating Collaborations. A summary of the data for this theme is provided in Table 13 categorized by: items that reached panel consensus to agree and items that did not reach panel consensus. Within each category, responses are presented in order of the distance of the item mean from the Likert midpoint (2.5).

More detailed response information is presented in APPENDIX F. In all, topic statement numbers D15, D16, D17, D18, D19, D20, and D21 explored issues related to Navigating Collaborations.

Table 13. *Summary of Desirability Responses to Topic Statements in the Navigating Collaborations Theme*

#	Topic Statement *"When I add an Instructional Designer to my team, it is essential that he or she be able to …"*	*n*	*M*	*SD*	%
	Items That Reached Panel Consensus to Agree				
D18	demonstrate a demeanor supportive of collaborative creativity (e.g. flexibility, honesty, patience, resilience, modesty, diplomacy, tact).	24	3.68	.476	92
D19	engage in active listening: find value in other's ideas.	24	3.68	.477	92
D15	ascertain client disposition toward creativity and communication/ interaction preferences, and adjust one's collaboration strategies accordingly.	24	3.61	.499	96
D16	effectively communicate/ articulate creative/atypical ideas.	24	3.52	.730	83
D21	provide "pedagogical leadership": Take ownership of an endeavor without having ownership of the outcome.	24	3.35	.714	83
D20	preserve productive relationships while encouraging needed change.	24	3.32	.568	88
	Items That Did Not Reach Panel Consensus				
D17	demonstrate ability to develop "rapid prototypes", sketches, or storyboards to convey information and ideas to stakeholders.	24	3.30	.822	75

Topic statement D18, "When I add an Instructional Designer to my team, it is essential that he or she be able to demonstrate a demeanor supportive of collaborative creativity (e.g. flexibility, honesty, patience, resilience, modesty, diplomacy, tact)," reached statistical consensus to agree with a mean response of 3.68 and a standard deviation of .476. Of the 24 panelists who responded, 92% of the group either agreed or strongly agreed with the statement, while two respondents indicated *No Judgment.*

The panel reached statistical consensus to agree with topic statement D19: "When I add an Instructional Designer to my team, it is essential that he or she be able to engage in active listening: find value in other's ideas." Responses to topic statement D19 exhibited a mean of 3.68 and a standard deviation of .477. Of the 24 panelists who responded, 92% of the group either agreed or strongly agreed with the statement, while two respondents indicated *No Judgment.*

Topic statement D15, "When I add an Instructional Designer to my team, it is essential that he or she be able to ascertain client disposition toward creativity and communication/ interaction preferences, and adjust one's collaboration strategies accordingly," reached statistical consensus to agree with a mean response of 3.61 and a standard deviation of .499. Of the 24 panelists who responded, 96% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

The panel reached statistical consensus to agree with topic statement D16: "When I add an Instructional Designer to my team, it is essential that he or she be able to effectively communicate/ articulate creative/atypical ideas." Responses to topic statement D16 exhibited a mean of 3.52and a standard deviation of .730. Of the 24 panelists who responded, 83% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

Topic statement D21, "When I add an Instructional Designer to my team, it is essential that he or she be able to provide "pedagogical leadership": Take ownership of an endeavor without having ownership of the outcome," reached statistical consensus to agree with a mean response of 3.35 and a standard deviation of .714. Of the 24 panelists who responded, 83% of

the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

The panel reached statistical consensus to agree with topic statement D20: "When I add an Instructional Designer to my team, it is essential that he or she be able to preserve productive relationships while encouraging needed change." Responses to topic statement D20 exhibited a mean of 3.32and a standard deviation of .568. Of the 24 panelists who responded, 88% of the group either agreed or strongly agreed with the statement, while two respondents indicated *No Judgment.*

The panel did not come to initial consensus regarding topic statement D17: "When I add an Instructional Designer to my team, it is essential that he or she be able to demonstrate ability to develop "rapid prototypes," sketches, or storyboards to convey information and ideas to stakeholders." Responses to topic statement D17 exhibited a mean of 3.30 and a standard deviation of .822. The response mean for this item was the highest of any topic statement that did not achieve consensus. Of the 24 panelists who responded, 75% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

After one round of responses, six of 7 topic statements (D15, D16, D18, D19, D20, D21) addressing desirability of competencies related to Navigating Collaborations reached panel consensus to agree and one topic statement (D17) did not reach panel consensus. As a group, desirability responses in the Navigating Collaborations theme demonstrated an average DM of .99.

Competency theme 4: Navigating context. Panelists responded to a total of 3 topic statements addressing desirability of competencies related to Navigating Context. A summary of the data for this theme is provided in Table 14 categorized by: items that reached panel

consensus to agree and items that did not reach panel consensus. Within each category, responses are presented in order of the distance of the item mean from the Likert midpoint (2.5). More detailed response information is presented in APPENDIX F. In all, topic statement numbers D22, D23, and D24 explored issues related to Navigating Context.

Table 14. *Summary of Desirability Responses to Topic Statements in the Navigating Context Theme*

#	Topic Statement *"When I add an Instructional Designer to my team, it is essential that he or she be able to …"*	*n*	*M*	*SD*	%
	Items That Reached Panel Consensus to Agree				
D24	recognize how one's work affects others. (e. g. balance proactive autonomy and the collaborative team dynamic).	24	3.61	.499	92
D22	recognize creative opportunities inherent to one's role within the organization.	24	3.30	.559	92
	Items That Did Not Reach Panel Consensus				
D23	tailor creative disposition to meet the requirements of one's role within the organization.	24	3.09	.733	75

Topic statement D24, "When I add an Instructional Designer to my team, it is essential that he or she be able to recognize how one's work affects others. (e. g. balance proactive autonomy and the collaborative team dynamic)," reached statistical consensus to agree with a mean response of 3.61and a standard deviation of .499. Of the 24 panelists who responded, 96% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

The panel reached statistical consensus to agree with topic statement D22: "When I add an Instructional Designer to my team, it is essential that he or she be able to recognize creative opportunities inherent to one's role within the organization." Responses to topic statement D22 exhibited a mean of 3.30 and a standard deviation of .559. Of the 24 panelists who responded,

92% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

The panel did not come to initial consensus regarding topic statement D23: "When I add an Instructional Designer to my team, it is essential that he or she be able tailor creative disposition to meet the requirements of one's role within the organization." Responses to topic statement D23 exhibited a mean of 3.09 and a standard deviation of .733. Of the 24 panelists who responded, 75% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

After one round of responses, two of three topic statements (D22 and D24) addressing desirability of competencies related to Navigating Context reached panel consensus to agree and one topic statement (23) did not reach panel consensus. As a group, desirability responses in the Navigating Context theme demonstrated an average DM of .83.

Competency theme 5: Navigating professional/ personal development. Panelists responded to a total of 3 topic statements addressing desirability of competencies related Navigating Professional/ Personal Development. A summary of the data for this theme is provided in Table 15 categorized by: items that reached panel consensus to agree and items that did not reach panel consensus. Within each category, responses are presented in order of the distance of the item mean from the Likert midpoint (2.5). More detailed response information is presented in APPENDIX F. In all, topic statement numbers D25, D26, and D27 explored issues related to Navigating Professional/ Personal Development.

Topic statement D27, "When I add an Instructional Designer to my team, it is essential that he or she be able to recognize / leverage "affordances" related to new technologies; seek opportunities to align instructional theories/ practices with new technologies," reached statistical

consensus to agree with a mean response of 3.48 and a standard deviation of .511. Of the 24 panelists who responded, 96% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

Table 15. *Summary of Desirability Responses to Topic Statements in the Navigating Professional/ Personal Development Theme*

#	Topic Statement *"When I add an Instructional Designer to my team, it is essential that he or she be able to …"*	*n*	*M*	*SD*	%
	Items That Reached Panel Consensus to Agree				
D27	recognize / leverage "affordances" related to new technologies; seek opportunities to align instructional theories/ practices with new technologies.	24	3.48	.511	96
D26	seek to continuously integrate new knowledge and new approaches with personal practices.	24	3.45	.510	92
	Items That Did Not Reach Panel Consensus				
D25	be fully conversant in a variety of educational theories, practices, and approaches, both old and new.	24	3.26	.864	79

The panel reached statistical consensus to agree with topic statement D26: "When I add an Instructional Designer to my team, it is essential that he or she be able to seek to continuously integrate new knowledge and new approaches with personal practices." Responses to topic statement D26 exhibited a mean of 3.45and a standard deviation of .510. Of the 24 panelists who responded, 92% of the group either agreed or strongly agreed with the statement, while two respondents indicated *No Judgment.*

The panel did not come to initial consensus regarding topic statement D25: "When I add an Instructional Designer to my team, it is essential that he or she be fully conversant in a variety of educational theories, practices, and approaches, both old and new." Responses to topic statement D25 exhibited a mean of 3.26 and a standard deviation of .864. Of the 24 panelists

who responded, 79% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

After one round of responses, two of three topic statements (D26 and D27) addressing desirability of competencies related to Navigating Personal and Professional Development reached panel consensus to agree and one topic statement (D25) did not reach panel consensus. As a group, desirability responses in the Navigating Personal and Professional Development theme demonstrated an average DM of .90.

Face Validity

In part three of the round three survey, panelists were asked to assess the face validity of the same list of 27 instructional design competencies in terms of its relationship to creativity. For this round, panelists were provided the contextual statement: "I consider an Instructional Designer's ability to _____ a key indicator of their overall creativity," and asked to respond via the established 5-point Likert scale. In all, 24 of the 28 panelists (86%) responded to part two of the round three instrument. A summary of response data is provided below.

Competency theme 1: Navigating projects. Panelists responded to a total of 5 topic statements related to the face validity of Navigating Projects competencies. Items in this group included V1, V2, V3, V4, and V5. A summary of the data for this theme is provided in Table 16 categorized by: items that reached panel consensus to agree and items that did not reach panel consensus. Within each category, responses are presented in order of the distance of the item mean from the Likert midpoint (2.5). More detailed response information is presented in APPENDIX F.

The panel reached statistical consensus to agree with topic statement V1: "I consider an Instructional Designer's ability to identify opportunities for creativity (i.e. existing constraints

and empowering ambiguity) within the overall scope of a project or problem assigned to them a key indicator of their overall creativity." Responses to topic statement V1 exhibited a mean of 3.54 and a standard deviation of .509. Of the 24 panelists who responded, 100% of the group either agreed or strongly agreed with the statement.

Table 16. *Summary of Face Validity Responses to Topic Statements in the Navigating Projects Theme*

#	Topic Statement *"I consider an Instructional Designer's ability to _____ a key indicator of their overall creativity."*	*n*	*M*	*SD*	%
	Items That Reached Panel Consensus to Agree				
V1	identify opportunities for creativity (i.e. existing constraints and empowering ambiguity) within the overall scope of a project or problem assigned to them.	24	3.54	.509	100
V2	tailor their planned creative activities to the scope and constraints of a project.	24	3.43	.590	92
V5	maximize efficiency through creative use/ reuse of available resources..	24	3.43	.788	88
V3	engage in continuous reflection and assessment and exploit new creative opportunities that arise as the project evolves.	24	3.30	.635	88
	Items That Did Not Reach Panel Consensus				
V4	demonstrate a complete understanding of process; recognize inherent "flex points."	24	3.09	.900	63

Topic statement V2, "I consider an Instructional Designer's ability to tailor their planned creative activities to the scope and constraints of a project a key indicator of their overall creativity," reached statistical consensus to agree with a mean response of 3.43 and a standard deviation of .590. Of the 24 panelists who responded, 92% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

The panel reached statistical consensus to agree with topic statement V5: "I consider an Instructional Designer's ability to maximize efficiency through creative use/ reuse of available resources a key indicator of their overall creativity." Responses to topic statement V5 exhibited a

mean of 3.43 and a standard deviation of .788. Of the 24 panelists who responded, 88% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

Topic statement V3, "I consider an Instructional Designer's ability to engage in continuous reflection and assessment and exploit new creative opportunities that arise as the project evolves a key indicator of their overall creativity," reached statistical consensus to agree with a mean response of 3.30 and a standard deviation of .635. Of the 24 panelists who responded, 88% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

The panel did not come to initial consensus regarding topic statement V4: "I consider an Instructional Designer's ability to demonstrate a complete understanding of process; recognize inherent "flex points" a key indicator of their overall creativity." Responses to topic statement V4 exhibited a mean of 3.09 and a standard deviation of .900. Of the 24 panelists who responded, only 63% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

After one round of responses four of five topic statements (V1, V2, V3, and V5) addressing face validity of competencies related to Navigating Projects reached panel consensus to agree, and one topic statement (V4) did not reach panel consensus. As a group, face validity responses to the Navigating Projects theme demonstrated an average DM of .86.

Competency theme 2: Navigating problems and solutions. Panelists responded to a total of 9 topic statements related to the face validity of Navigating Problems and Solutions competencies. Items in this group included V7, V8, V9, V10, V11, V12, V13, and V14. A summary of the data for this theme is provided in Table 17 categorized by: items that reached

panel consensus to agree and items that did not reach panel consensus. Within each category, responses are presented in order of the distance of the item mean from the Likert midpoint (2.5). More detailed response information is presented in APPENDIX F.

Table 17. *Summary of Face Validity Responses to Topic Statements in the Navigating Problems and Solutions Theme*

#	Topic Statement *"I consider an Instructional Designer's ability to _____ a key indicator of their overall creativity."*	*n*	*M*	*SD*	%
	Items That Reached Panel Consensus to Agree				
V8	explore and consider the atypical.	24	3.21	.659	92
V7	actively seek, and seek to understand, input from multiple sources.	24	3.21	.779	88
	Items That Did Not Reach Panel Consensus				
V9	ascertain the essence of a problem by prioritizing initial information and eliminating the non-critical.	24	3.17	.717	79
V11	Remix/Reuse/Recycle ("Bricolage"), and create as needed to fill extant gaps.	24	3.17	.717	79
V13	prioritize creative effort based on projected outcomes; focus effort toward serving the identified need/gap.	24	3.17	.834	71
V14	seek elegant (i.e. relevant, ingenious, simple, and effective) solutions.	24	3.17	.717	79
V6	initially explore a problem "as it is" (mitigate any personal bias/ assumption/ preference).	24	3.00	.834	66
V10	pattern-match problem needs/requirements with historical information and previous successes.	24	3.00	.873	66
V12	set and uphold targets for the iteration/ creation cycle that are accountable to extant resources and timelines.	24	2.83	.834	63

Topic statement V8, "I consider an Instructional Designer's ability to explore and consider the atypical a key indicator of their overall creativity," reached statistical consensus to agree with a mean response of 3.21 and a standard deviation of .659. Of the 24 panelists who responded, 92% of the group either agreed or strongly agreed with the statement.

The panel reached statistical consensus to agree with topic statement V7: ""I consider an Instructional Designer's ability to actively seek, and seek to understand, input from multiple

sources a key indicator of their overall creativity." Responses to topic statement V7 exhibited a mean of 3.21and a standard deviation of .779. The mean response for this item was the lowest of any topic statement that achieved consensus. Of the 24 panelists who responded, 88% of the group either agreed or strongly agreed with the statement.

The panel did not come to consensus regarding topic statement V9: "I consider an Instructional Designer's ability to ascertain the essence of a problem by prioritizing initial information and eliminating the non-critical a key indicator of their overall creativity." Responses to topic statement V9 exhibited a mean of 3.17 and a standard deviation of .717. Of the 24 panelists who responded, 79% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

The panel also did not come to consensus regarding topic statement V11: "I consider an Instructional Designer's ability to Remix/Reuse/Recycle ("Bricolage"), and create as needed to fill extant gaps a key indicator of their overall creativity." Responses to topic statement V11 exhibited a mean of 3.17 and a standard deviation of .717. Of the 24 panelists who responded, 79% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

The panel did not come to consensus regarding topic statement V13: "I consider an Instructional Designer's ability to prioritize creative effort based on projected outcomes; focus effort toward serving the identified need/gap a key indicator of their overall creativity." Responses to topic statement V13 exhibited a mean of 3.17 and a standard deviation of .834. Of the 24 panelists who responded, 71% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

Likewise, the panel did not come to consensus regarding topic statement V14: “I consider an Instructional Designer's ability to seek elegant (i.e. relevant, ingenious, simple, and effective) solutions a key indicator of their overall creativity.” Responses to topic statement V14 exhibited a mean of 3.17 and a standard deviation of .717. Of the 24 panelists who responded, 79% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

The panel also did not come to consensus regarding topic statement V6: “I consider an Instructional Designer's ability to initially explore a problem “as it is” (mitigate any personal bias/ assumption/ preference) a key indicator of their overall creativity.” Responses to topic statement C6 exhibited a mean of 3.00 and a standard deviation of .834. Of the 24 panelists who responded, 66% of the group either agreed or strongly agreed with the statement.

Likewise, the panel did not come to consensus regarding topic statement V10: “I consider an Instructional Designer's ability to pattern-match problem needs/requirements with historical information and previous successes a key indicator of their overall creativity.” Responses to topic statement V10 exhibited a mean of 3.00 and a standard deviation of .873. Of the 24 panelists who responded, 66% of the group either agreed or strongly agreed with the statement, while two respondents indicated *No Judgment.*

Finally, the panel did not come to consensus regarding topic statement V12: “I consider an Instructional Designer's ability to set and uphold targets for the iteration/ creation cycle that are accountable to extant resources and timelines a key indicator of their overall creativity.” Responses to topic statement V12 exhibited a mean of 2.83 and a standard deviation of .834. Of the 24 panelists who responded, 63% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

After one round of responses, only two of 9 topic statements (V7 and V8) addressing face validity of competencies related to Navigating Problems and Solutions reached panel consensus to agree and seven topic statements (V6, V9, V10, V11, V12, V13, V14) did not reach panel consensus. As a group, face validity responses to the Navigating Problems and Solutions theme demonstrated an average DM of .64.

Competency theme 3: Navigating collaborations. Panelists responded to a total of 7 topic statements related to the face validity of Navigating Collaborations competencies. Items in this group included V15, V16, V17, V18, V19, V20, and V21. A summary of the data for this theme is provided in Table 18 categorized by: items that reached panel consensus to agree and items that did not reach panel consensus. Within each category, responses are presented in order of the distance of the item mean from the Likert midpoint (2.5). More detailed response information is presented in APPENDIX F.

Topic statement V16, "I consider an Instructional Designer's ability to effectively communicate/ articulate creative/atypical ideas a key indicator of their overall creativity," reached statistical consensus to agree with a mean response of 3.48 and a standard deviation of .730. Of the 24 panelists who responded, 83% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

The panel reached statistical consensus to agree with topic statement V19: "I consider an Instructional Designer's ability to engage in active listening: find value in other's ideas a key indicator of their overall creativity." Responses to topic statement V19 exhibited a mean of 3.43 and a standard deviation of .728. Of the 24 panelists who responded, 83% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

Table 18. *Summary of Face Validity Responses to Topic Statements in the Navigating Collaborations Theme*

#	Topic Statement *"I consider an Instructional Designer's ability to _____ a key indicator of their overall creativity."*	*n*	*M*	*SD*	%
	Items That Reached Panel Consensus to Agree				
V16	effectively communicate/ articulate creative/atypical ideas.	24	3.48	.730	83
V19	engage in active listening: find value in other's ideas.	24	3.43	.728	83
V17	demonstrate ability to develop "rapid prototypes", sketches, or storyboards to convey information and ideas to stakeholders.	24	3.35	.647	88
V15	ascertain client disposition toward creativity and communication/ interaction preferences, and adjust one's collaboration strategies accordingly.	24	3.30	.703	83
	Items That Did Not Reach Panel Consensus				
V18	demonstrate a demeanor supportive of collaborative creativity (e.g. flexibility, honesty, patience, resilience, modesty, diplomacy, tact).	24	3.35	.775	79
V21	provide "pedagogical leadership": Take ownership of an endeavor without having ownership of the outcome.	24	3.04	.767	71
V20	preserve productive relationships while encouraging needed change.	24	2.95	.898	63

Topic statement V16, "I consider an Instructional Designer's ability to develop "rapid prototypes", sketches, or storyboards to convey information and ideas to stakeholders a key indicator of their overall creativity," reached statistical consensus to agree with a mean response of 3.35 and a standard deviation of .647. Of the 24 panelists who responded, 88% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

Topic statement V15, "I consider an Instructional Designer's ability to ascertain client disposition toward creativity and communication/ interaction preferences, and adjust one's collaboration strategies accordingly a key indicator of their overall creativity," reached statistical consensus to agree with a mean response of 3.30 and a standard deviation of .703. Of the 24

panelists who responded, 83% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

The panel did not come to initial consensus regarding topic statement V18: "I consider an Instructional Designer's ability to demonstrate a demeanor supportive of collaborative creativity (e.g. flexibility, honesty, patience, resilience, modesty, diplomacy, tact) a key indicator of their overall creativity." Responses to topic statement V18 exhibited a mean of 3.35 and a standard deviation of .775. The mean response value for this item was tied for the highest of any topic statement that did not achieve consensus. Of the 24 panelists who responded, 79% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

The panel also did not come to initial consensus regarding topic statement V21: "I consider an Instructional Designer's ability to provide "pedagogical leadership": Take ownership of an endeavor without having ownership of the outcome a key indicator of their overall creativity." Responses to topic statement V21 exhibited a mean of 3.04 and a standard deviation of .767. Of the 24 panelists who responded, 71% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

Finally, panel failed to come to initial consensus regarding topic statement V20: "I consider an Instructional Designer's ability to preserve productive relationships while encouraging needed change a key indicator of their overall creativity." Responses to topic statement V20 exhibited a mean of 2.95 and a standard deviation of .898. Of the 24 panelists who responded, 63% of the group either agreed or strongly agreed with the statement, while two respondents indicated *No Judgment.*

After one round of responses, four of 7 topic statements (V15, V16, V17, and V20) addressing face validity of competencies related to Navigating Collaborations reached panel consensus to agree and three topic statements (V18, V20, and V21) did not reach panel consensus. As a group, face validity responses to the Navigating Collaborations demonstrated an average DM of .77.

Competency theme 4: Navigating context. Panelists responded to a total of 3 topic statements related to the face validity of Navigating Context competencies. Items in this group included V22, V23, and V24. A summary of the data for this theme is provided in Table 19 categorized by: items that reached panel consensus to agree and items that did not reach panel consensus. Within each category, responses are presented in order of the distance of the item mean from the Likert midpoint (2.5). More detailed response information is presented in APPENDIX F.

The panel reached statistical consensus to agree with topic statement V22: "I consider an Instructional Designer's ability to recognize creative opportunities inherent to one's role within the organization a key indicator of their overall creativity." Responses to topic statement V22 exhibited a mean of 3.29 and a standard deviation of .690. Of the 24 panelists who responded, 88% of the group either agreed or strongly agreed with the statement.

The panel did not come to initial consensus regarding topic statement V24: "I consider an Instructional Designer's ability to recognize how one's work affects others (e.g. balance proactive autonomy and the collaborative team dynamic) a key indicator of their overall creativity." Responses to topic statement V24 exhibited a mean of 3.35 and a standard deviation of .775. The mean response value for this item was tied for the highest of any topic statement

that did not achieve consensus. Of the 24 panelists who responded, 79% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

Table 19. *Summary of Face Validity Responses to Topic Statements in the Navigating Context Theme*

#	Topic Statement *"I consider an Instructional Designer's ability to _____ a key indicator of their overall creativity."*	*n*	*M*	*SD*	%
	Items That Reached Panel Consensus to Agree				
V22	recognize creative opportunities inherent to one's role within the organization.	24	3.29	.690	88
	Items That Did Not Reach Panel Consensus				
V24	recognize how one's work affects others. (e. g. balance proactive autonomy and the collaborative team dynamic).	24	3.35	.775	79
V23	tailor creative disposition to meet the requirements of one's role within the organization.	24	3.17	.834	79

The panel also did not come to initial consensus regarding topic statement V23: "I consider an Instructional Designer's ability to tailor creative disposition to meet the requirements of one's role within the organization a key indicator of their overall creativity." Responses to topic statement V23 exhibited a mean of 3.17 and a standard deviation of .834. Of the 24 panelists who responded, 79% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

After one round of responses, only one of three topic statements (V22) addressing face validity of competencies related to Navigating Collaborations reached panel consensus to agree and two topic statements (V23 and V24) did not reach panel consensus. As a group, face validity responses to the Navigating Context theme demonstrated an average DM of .77.

Competency theme 5: Navigating professional/ personal development. Panelists responded to a total of 3 topic statements related to the face validity of Navigating Professional/ Personal Development competencies. Items in this group included V25, V26, and V27. A

summary of the data for this theme is provided in Table 20 categorized by: items that reached panel consensus to agree and items that did not reach panel consensus. Within each category, responses are presented in order of the distance of the item mean from the Likert midpoint (2.5). More detailed response information is presented in APPENDIX F.

Table 20. *Summary of Face Validity Responses to Topic Statements in the Navigating Professional/ Personal Development Theme*

#	Topic Statement *"I consider an Instructional Designer's ability to _____ a key indicator of their overall creativity."*	*n*	*M*	*SD*	%
	Items That Reached Panel Consensus to Agree				
V27	recognize / leverage "affordances" related to new technologies; seek opportunities to align instructional theories/ practices with new technologies.	24	3.54	.509	100
V26	seek to continuously integrate new knowledge and new approaches with personal practices.	24	3.46	.509	100
	Items That Did Not Reach Panel Consensus				
V25	be fully conversant in a variety of educational theories, practices, and approaches, both old and new.	24	3.04	.878	71

Topic statement V27, "I consider an Instructional Designer's ability to recognize / leverage "affordances" related to new technologies; seek opportunities to align instructional theories/ practices with new technologies a key indicator of their overall creativity," reached statistical consensus to agree with a mean response of 3.54 and a standard deviation of .509. Of the 24 panelists who responded, 100% of the group either agreed or strongly agreed with the statement.

The panel reached statistical consensus to agree with topic statement V26: "I consider an Instructional Designer's ability to seek to continuously integrate new knowledge and new approaches with personal practices a key indicator of their overall creativity." Responses to topic

statement V26 exhibited a mean of 3.46 and a standard deviation of .509. Of the 24 panelists who responded, 100% of the group either agreed or strongly agreed with the statement.

The panel did not come to initial consensus regarding topic statement V25: "I consider an Instructional Designer's ability to be fully conversant in a variety of educational theories, practices, and approaches, both old and new a key indicator of their overall creativity." Responses to topic statement V25 exhibited a mean of 3.04 and a standard deviation of .878. Of the 24 panelists who responded, 71% of the group either agreed or strongly agreed with the statement, while one respondent indicated *No Judgment.*

After one round of responses, two of three topic statements (V26, V27) addressing face validity of competencies related to Navigating Personal and Professional Development reached panel consensus to agree and one topic statement (V25) did not reach panel consensus. As a group, face validity responses to the Navigating Personal and Professional Development theme exhibited an average DM of .85.

Combined Desirability/ Face Validity Analysis

As described in Chapter 3, an additional statistical analysis, modeled after Martilla and James' Importance-Performance Analysis, was undertaken in an attempt to illustrate the expert panel's overall appraisal of each of the creativity-related competencies. As part of this analysis, the overall response mean, median, and standard deviation was computed, as was the mean and z-score (*z*) for each item. The z-score, which indicates how many standard deviations an element is from the mean, was calculated by dividing the difference between the item mean score and the response mean by the response standard deviation. Although not typically included in an Importance-Performance Analysis, a z-score comparison was included to mitigate against any potential issues related to the inconsistent item mean distributions in the two data sets. Tables 21,

22, and 23 presented below present response data used in this analysis. Table 21 presents the mean panelist response as to the desirability of the competencies in order of mean value, with the overall response mean and median (+1) indicated.

Table 21. *Summary of Competency Desirability Mean Response*

#	Topic Statement *"When I add an Instructional Designer to my team, it is essential that he or she be able to …"*	*M*
D2	Tailor their planned creative activities to the scope and constraints of a project.	3.70
D18	Demonstrate a demeanor supportive of collaborative creativity (e.g. flexibility, honesty, patience, resilience, modesty, diplomacy, tact).	3.68
D19	Engage in active listening: find value in other's ideas.	3.68
D5	Maximize efficiency through creative use/ reuse of available resources.	3.64
D15	Ascertain client disposition toward creativity and communication/ interaction preferences, and adjust one's collaboration strategies accordingly.	3.61
D24	Recognize how one's work affects others. (e. g. balance proactive autonomy and the collaborative team dynamic).	3.61
D3	Engage in continuous reflection and assessment and exploit new creative opportunities that arise as the project evolves.	3.57
D13	Prioritize creative effort based on projected outcomes; focus effort toward serving the identified need/gap.	3.57
D16	Effectively communicate/ articulate creative/atypical ideas.	3.52
D1	Identify opportunities for creativity (i.e. existing constraints and empowering ambiguity) within the overall scope of a project or problem assigned to them.	3.50
D4	Demonstrate a complete understanding of process; recognize inherent "flex points."	3.50
D7	Actively seek, and seek to understand, input from multiple sources.	3.50
D27	Recognize/ leverage "affordances" related to new technologies; seek opportunities to align instructional theories/ practices with new technologies	3.48
D26	Seek to continuously integrate new knowledge and new approaches with personal practices.	3.45
	Data Set Median (+1)	
D12	Set and uphold targets for the iteration/ creation cycle that are accountable to extant resources and timelines.	3.43
	Response Average: 3.43	
D6	Initially explore a problem "as it is" (mitigate any personal bias/ assumption/ preference).	3.41
D21	Provide "pedagogical leadership": Take ownership of an endeavor without having ownership of the outcome.	3.35
D11	Remix/Reuse/Recycle ("Bricolage"), and create as needed to fill extant gaps.	3.33

Table 21. *Summary of Competency Desirability Mean Response (continued)*

#	Topic Statement *"When I add an Instructional Designer to my team, it is essential that he or she be able to …"*	*M*
D9	Ascertain the essence of a problem by prioritizing initial information and eliminating the non-critical.	3.32
D20	Preserve productive relationships while encouraging needed change.	3.32
D17	Demonstrate ability to develop "rapid prototypes", sketches, or storyboards to convey information and ideas to stakeholders.	3.30
D22	Recognize creative opportunities inherent to one's role within the organization.	3.30
D10	Pattern-match problem needs/requirements with historical information and previous successes.	3.27
D25	Be fully conversant in a variety of educational theories, practices, and approaches, both old and new.	3.26
D8	Explore and consider the atypical.	3.17
D14	Seek elegant (i.e. relevant, ingenious, simple, and effective) solutions.	3.09
D23	Tailor creative disposition to meet the requirements of one's role within the organization.	3.09

Table 22 presents the mean panelist response as to the face validity of the competencies in order of mean value, with the overall response mean and median indicated. Table 23 presents a z-score comparison of the data sets, which may provide further evidence for the panelist overall rating of each creativity-related competency. Table 23 presents a z-score comparison of the data sets, which may provide further evidence for the panelist overall rating of each creativity-related competency.

Table 22. *Summary of Competency Face Validity Mean Response*

#	Topic Statement *"I consider an Instructional Designer's ability to _____ a key indicator of their overall creativity."*	*M*
V1	Identify opportunities for creativity (i.e. existing constraints and empowering ambiguity) within the overall scope of a project or problem assigned to them.	3.54
V27	Recognize/ leverage "affordances" related to new technologies; seek opportunities to align instructional theories/ practices with new technologies	3.54
V8	Explore and consider the atypical.	3.50
V16	Effectively communicate/ articulate creative/atypical ideas.	3.48
V26	Seek to continuously integrate new knowledge and new approaches with personal practices.	3.46
V2	Tailor their planned creative activities to the scope and constraints of a project.	3.43

Table 22. *Summary of Competency Face Validity Mean Response (continued)*

#	Topic Statement *"I consider an Instructional Designer's ability to _____ a key indicator of their overall creativity."*	*M*
V5	Maximize efficiency through creative use/ reuse of available resources.	3.43
V19	Engage in active listening: find value in other's ideas.	3.43
V17	Demonstrate ability to develop "rapid prototypes", sketches, or storyboards to convey information and ideas to stakeholders.	3.35
V18	Demonstrate a demeanor supportive of collaborative creativity (e.g. flexibility, honesty, patience, resilience, modesty, diplomacy, tact).	3.35
V24	Recognize how one's work affects others. (e. g. balance proactive autonomy and the collaborative team dynamic).	3.35
V3	Engage in continuous reflection and assessment and exploit new creative opportunities that arise as the project evolves.	3.30
V15	Ascertain client disposition toward creativity and communication/ interaction preferences, and adjust one's collaboration strategies accordingly.	3.30
V22	Recognize creative opportunities inherent to one's role within the organization.	3.29
	Data Set Median (+1) *Response Average: 3.25*	
V7	Actively seek, and seek to understand, input from multiple sources.	3.21
V9	Ascertain the essence of a problem by prioritizing initial information and eliminating the non-critical.	3.17
V11	Remix/Reuse/Recycle ("Bricolage"), and create as needed to fill extant gaps.	3.17
V13	Prioritize creative effort based on projected outcomes; focus effort toward serving the identified need/gap.	3.17
V14	Seek elegant (i.e. relevant, ingenious, simple, and effective) solutions.	3.17
V23	Tailor creative disposition to meet the requirements of one's role within the organization.	3.17
V4	Demonstrate a complete understanding of process; recognize inherent "flex points."	3.09
V21	Provide "pedagogical leadership": Take ownership of an endeavor without having ownership of the outcome.	3.04
V25	Be fully conversant in a variety of educational theories, practices, and approaches, both old and new.	3.04
V6	Initially explore a problem "as it is" (mitigate any personal bias/ assumption/ preference).	3.00
V10	Pattern-match problem needs/requirements with historical information and previous successes.	3.00
V20	Preserve productive relationships while encouraging needed change.	2.95
V12	Set and uphold targets for the iteration/ creation cycle that are accountable to extant resources and timelines.	2.83

Table 23. *Summary of Competency Z-Scores and Z-Sum*

#	Competency	*z(D)*	*z(V)*	*zSum*
C2	Tailor their planned creative activities to the scope and constraints of a project.	1.51	0.93	2.44
C19	Engage in active listening: find value in other's ideas.	1.43	0.93	2.36
C5	Maximize efficiency through creative use/ reuse of available resources.	1.17	0.93	2.10
C18	Demonstrate a demeanor supportive of collaborative creativity (e.g. flexibility, honesty, patience, resilience, modesty, diplomacy, tact).	1.43	0.49	1.92
C1	Identify opportunities for creativity (i.e. existing constraints and empowering ambiguity) within the overall scope of a project or problem assigned to them.	0.39	1.48	1.87
C27	Recognize/ leverage "affordances" related to new technologies; seek opportunities to align instructional theories/ practices with new technologies	0.27	1.48	1.74
C16	Effectively communicate/ articulate creative/atypical ideas.	0.52	1.15	1.67
C24	Recognize how one's work affects others. (e. g. balance proactive autonomy and the collaborative team dynamic).	1.01	0.49	1.50
C15	Ascertain client disposition toward creativity and communication/ interaction preferences, and adjust one's collaboration strategies accordingly.	1.01	0.27	1.28
C26	Seek to continuously integrate new knowledge and new approaches with personal practices.	0.13	1.05	1.18
C3	Engage in continuous reflection and assessment and exploit new creative opportunities that arise as the project evolves.	0.77	0.27	1.03
C13	Prioritize creative effort based on projected outcomes; focus effort toward serving the identified need/gap.	0.77	-0.40	0.37
C7	Actively seek, and seek to understand, input from multiple sources.	0.39	-0.22	0.17
C8	Explore and consider the atypical.	-1.47	1.26	-0.21
C17	Demonstrate ability to develop "rapid prototypes", sketches, or storyboards to convey information and ideas to stakeholders.	-0.73	0.49	-0.24
C4	Demonstrate a complete understanding of process; recognize inherent "flex points."	0.39	-0.84	-0.45
C22	Recognize creative opportunities inherent to one's role within the organization.	-0.73	0.20	-0.52
C11	Remix/Reuse/Recycle ("Bricolage"), and create as needed to fill extant gaps.	-0.56	-0.40	-0.96
C9	Ascertain the essence of a problem by prioritizing initial information and eliminating the non-critical.	-0.65	-0.40	-1.05
C6	Initially explore a problem "as it is" (mitigate any personal bias/ assumption/ preference).	-0.13	-1.28	-1.41

Table 23. *Summary of Competency Z-Scores and Z-Sum (continued)*

#	Competency	*z(D)*	*z(V)*	*zSum*
C21	Provide "pedagogical leadership": Take ownership of an endeavor without having ownership of the outcome.	-0.48	-1.06	-1.54
C25	Be fully conversant in a variety of educational theories, practices, and approaches, both old and new.	-0.98	-1.06	-2.04
C12	Set and uphold targets for the iteration/ creation cycle that are accountable to extant resources and timelines.	0.02	-2.17	-2.15
C20	Preserve productive relationships while encouraging needed change.	-0.65	-1.52	-2.16
C10	Pattern-match problem needs/requirements with historical information and previous successes.	-0.91	-1.28	-2.19
C14	Seek elegant (i.e. relevant, ingenious, simple, and effective) solutions.	-1.97	-0.40	-2.37
C23	Tailor creative disposition to meet the requirements of one's role within the organization.	-1.97	-0.40	-2.37

Importance-performance analysis. Typically, an Importance-Performance analysis is performed by plotting the two values of each item on a graph with axes set at the mean (or median) value of the dataset. Figure 3 (below) illustrates a plot of each competency (c) using the mean item response for desirability and face validity as coordinates. Figure 4 is the same graph using the dataset median (+1) as the axes. For the purposes of this study, competencies represented in the upper right quadrant (those with both above average/ median desirability and above average/ median face validity) were considered to have been shown as key context-specific instructional design competencies that exemplify creativity-related knowledge, skill, and ability.

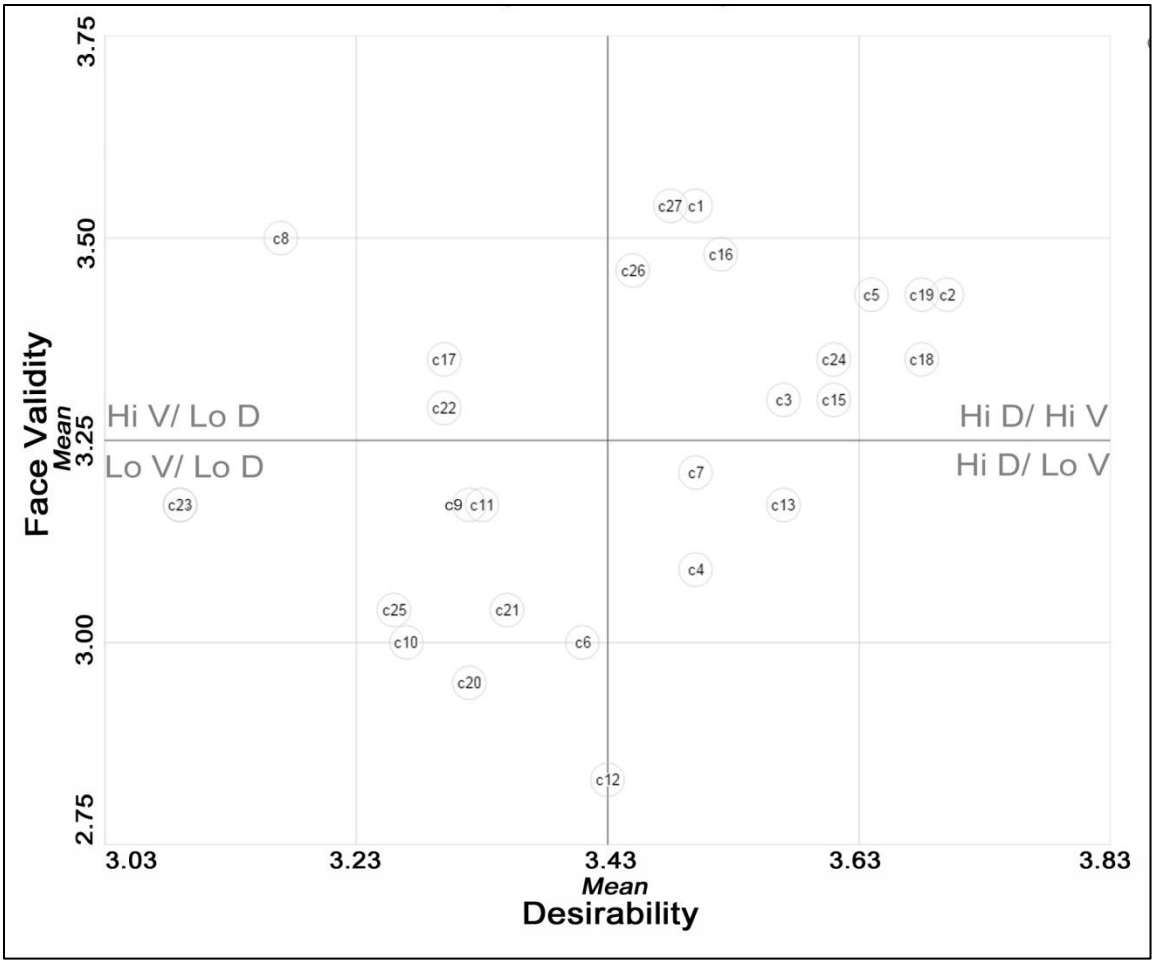

Figure 2. Desirability-Face Validity Matrix with Mean Axes

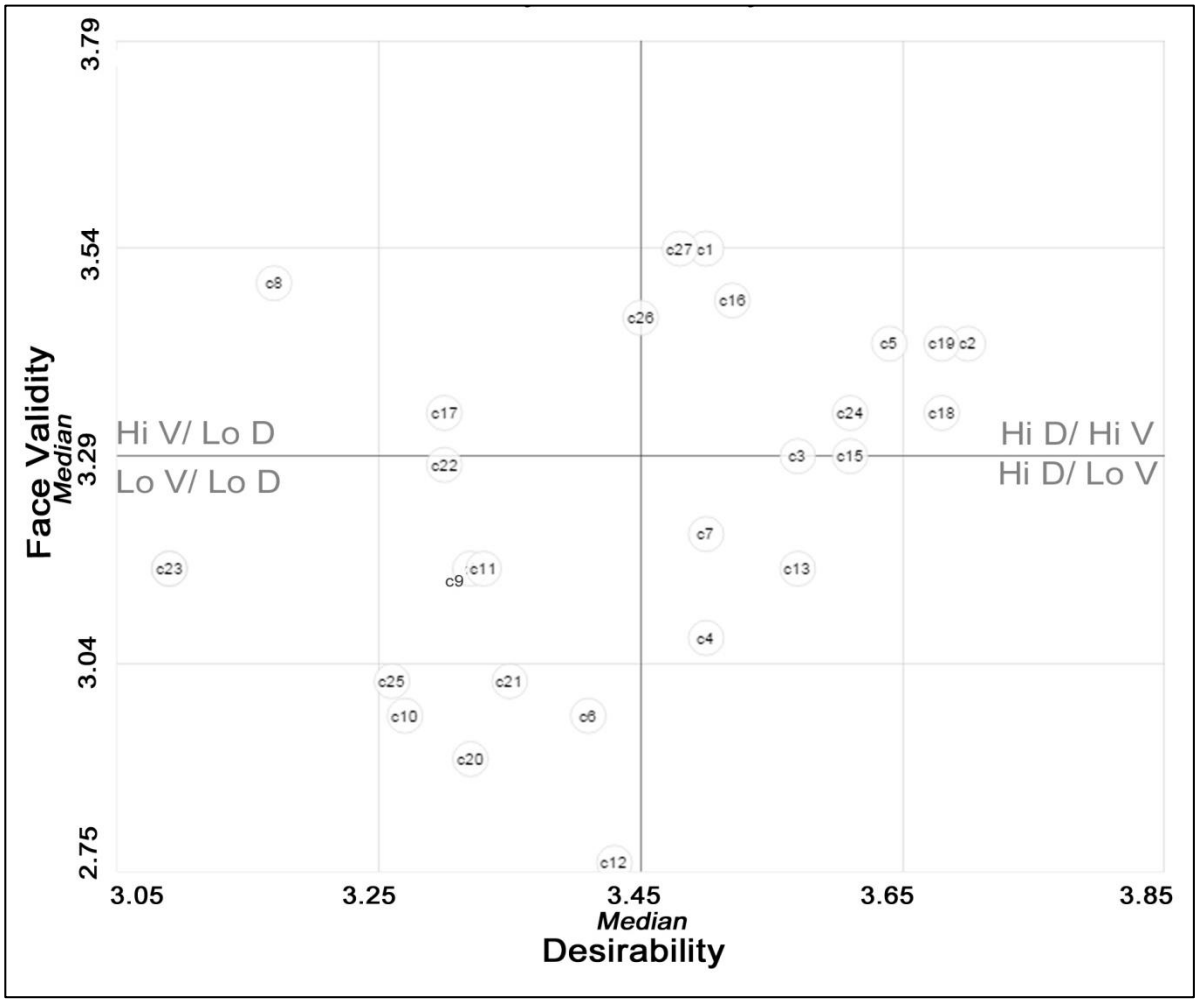

Figure 3. Desirability-Face Validity Matrix with Median Axes

Conclusion

In all, over 3000 points of quantitative data and nearly 1000 open-ended responses were collected, organized, and analyzed in an effort to address the research questions. When considered in the aggregate, these data paint a compelling picture of the current and desired state of the evolving role of the Instructional Designer in the Higher Education context. Findings and recommendations resulting from this research effort are presented in Chapter 5.

CHAPTER 5. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

This chapter provides a brief reintroduction to the purpose, design, and methodology of the study along with a summary of the major findings and recommendations resulting from the research effort.

Restatement of Study Purpose

As technology-enhanced, flexible-delivery instruction continues to redefine the learning space, the job requirements of the instructional designer are evolving to encompass the creative, problem solving process inherent in the effective alignment of emerging pedagogies and new teaching and learning models specifically tailored to this new environment. These new creativity-related competencies, however, remain ill-defined. The purpose of this study was to explore the ways that creativity manifests itself in the field of higher education instructional design and to identify specific core competencies that could be considered desirable in this context.

Design of the Study

This research effort was designed to explore the following research questions:

1. What literature-based creativity related constructs are manifest in the context of practice of higher education instructional designers?
2. What specific competencies exemplify desired creativity-related knowledge, skills, and abilities for instructional designers in higher education?

Literature Review

To inform the research, an extensive literature review was completed to ascertain the current state of knowledge regarding the evolution of job requirements for instructional designers

in the higher education context, the role that creative ability plays in the field of instructional design, and finally, the nature of creativity itself. This review of the literature clearly demonstrated that although there is clear evidence that job duties and expectations of higher education instructional designers have changed considerably in recent years, there is relatively little extant literature on creativity-related knowledge, skills, and abilities specific to the higher education instructional design context. An exploration of the literature regarding the nature of creativity revealed that while the construct creativity as a whole was remarkably complex and ill-understood, several associated, interconnected perspectives on creativity emerged that proved useful in deconstructing the creativity construct and provided a framework of conceptual lenses through which the various aspects of applied creativity in instructional design could be explored.

Research Methodology

An expert panel of higher education instructional design leaders, established through a selective snowball sampling process, agreed to participate in a modified three-round Delphi study designed to address the research questions. Round one of the Delphi consisted of panelists indicating their level of agreement, using a 5-point Likert scale, to 33 topic statements suggested by the literature as being related to creativity in the higher education instructional design context. Panelists were also requested to provide justifications for their Likert choices via open-ended responses, given the opportunity to suggest additional related topic statements, and asked to provide examples of specific instructional design tasks or duties that embodied creativity-related traits associated with the topic statements. Round two of the Delphi was comprised of 25 topic statements that included new statements suggested for inclusion, topic statements that were revised or clarified to alleviate the respondent confusion expressed in round one open-ended responses, and non-consensus topic statements that were resubmitted for response per established

Delphi methodology. Respondents were again encouraged to provide relevant qualitative data via open-ended response. The round three survey instrument was structured in three parts. Part one, which consisted of eight topic statements that failed to reach consensus in the first two rounds, signified the completion of the formal Delphi process. Parts two and three elicited panelist response to 27 creativity-related competencies developed through the analysis of both the examples of specific instructional design tasks or duties explicitly provided in round one as well as all other qualitative response data provided in rounds one and two. In part two panelists were asked to indicate the desirability that their instructional designers possess the indicated competency, while part three captured panelist opinion as to the relationship between the competency and creative potential in general. With apologies to Justice Potter Stewart, this approach was designed to increase the construct validity of the study despite the complexity inherent in the creativity construct by facilitating the capture of critical perspectives and data from respondents who know [creativity] when they see it.

In all, over 3000 points of quantitative data and nearly 1000 open-ended responses were collected, organized, and analyzed in an effort to address the research questions. Findings and recommendations are summarized below.

Conclusions

Suggested by Quantitative Delphi Response Data

As stated previously, the intent of the Delphi technique is to provide the framework necessary to facilitate the discussion of a group of experts regarding situations where there is an emerging state of knowledge. According to von der Gracht (2012) and others (e.g. Yousef, 2007), however, caution is warranted in the examination of quantitative response data due to the limitations inherent to the technique. Specifically, since this research utilized a Likert *Strongly*

agree- Strongly disagree scale rather than an actual ranking process for the topic statements, no rank order of individual items should be inferred based solely on their mean response. Rather, topic statements should be considered on an individual basis simply as having met the established criteria for panel consensus or not. Similarly, although distance from the median (DM) data was calculated, it is included only as a potential illustration of panel consensus at the theme level. Notwithstanding these limitations, several conclusions were evidenced by the quantitative response data.

Evidence of relationship between creativity and instructional design. Through the three rounds of the Delphi, the panel came to consensus on just over 85% of the 41 discrete creativity-related concepts presented in the topic statements (APPENDIX G). From a thematic perspective, all of the creativity-related concepts explored in the Problem Solving, Problem Finding, and Ambiguity Tolerance themes eventually demonstrated panel consensus. The relative strength of the DM values for the Problem Solving (.90) and Problem Finding (.93) themes in relation to the others may also serve as additional evidence of strength of panel consensus regarding these themes.

In terms of non-consensus items, The Boundary Awareness, Creative Act, and Dispositions themes each had one non-consensus concept, while the Intrinsic Motivations and Rewards theme had three. It is notable that the six non-consensus concepts (9B, 11, 19A, 29, 31, 32) shared a commonality in their lack of a sense of practical application, a notion that was supported in the open-ended panel responses.

The noteworthy rate of overall consensus demonstrated in the quantitative response data would seem to provide evidence of a clear relationship between creativity and instructional design. At the very least, it is evidence that many of the same constructs that have been

suggested by the literature as being related to creativity are also clearly present in the field of instructional design in the higher education context.

Suggested by Qualitative Delphi Data

Coined by Alfred Hitchcock, the term "McGuffin" is defined by dictionary.com as "a plot device that has no specific meaning or purpose other than to advance the story." It is, in other words, a means to an end. Perhaps somewhat counter intuitively, in the Delphi process, the quantitative Likert scale panel response process can be considered the McGuffin; a means to facilitating an expert panel discussion through the open-ended responses. Although the consensus-building through the Likert responses plays a critical role in shaping the process, and the resulting quantitative data can provide evidence for general conclusions as stated above, it is the depth and nuance of the qualitative responses that begin to paint the clearest picture of the expert panel's agreement on the concepts being explored. Through a careful analysis of the panel responses to over 100 open-ended prompts, several themes regarding role of creativity in higher education instructional design clearly emerged.

The evolution of instructional design. One prominent theme that emerged was the sense that in the higher education context, instructional design is clearly a field in evolution. This theme, which resonated with many of the resources explored in the literature review (e.g. Groves, 2009; Bates, 2011; Tillander, 2011) suggested (in the words of panelist responses) that instructional design is "still in [its] infancy," and a "field/ discipline/ vocation" that is "not necessarily well respected (or understood) by many faculty or, indeed, much of academia." While the panelist responses presented a reasonably unified view of the notion that the field of instructional design is changing, there was a strikingly passionate divergence on exactly what should be expected of instructional designers in the face of that change. For example, the

reliance on systems approaches (e. g. ADDIE) was an area of contention among the panelists. Some panelists strongly advocated for the "tried and true" safety of "proven" checklists, models, and other systematic approaches that "allow for efficiencies and standardization" and questioned if "new models, strategies, or approaches are [even] required to solve instructional problems." Conversely, other panelist responses illustrated a strident call for abandoning the "cookie cutter", "paint by numbers" approach implied by traditional systems methods, calling it "a rat-maze of design process steps" and "the biggest mistake most instructional designers make." Finally, one panelist suggested: "If people weren't willing to question established practices, we'd still be painting on cave walls."

Similarly, the concept of adherence best practices was another prominent example of dissent among the panel. Responses on this topic ranged from the ID's obligation "to champion the best research and theory we have about instruction," to the risks inherent in a best practices perspective:

> This is perhaps the biggest failing in my experience with 'traditional' instructional designers...they've had best practices and established practices so inculcated into their experience and understanding that they don't have an intellectual interior open or broad enough to have new ideas, question assumptions, or consider how contextually dependent 'best practices' are.

As evidenced by their passionate responses, the evolution of the roles and responsibilities of instructional designers is a challenge that is front and center for higher education ID leaders. Frustration with "old school" thinking tempered with caution against the rise of unbound creativity and the loss of production is compelling evidence of instructional design leaders being forced to come to grips with the fairly rapid evolution of their field. As one panelist put it: "I

think higher education is shifting, and we need instructional designers to not think what has been done typically, but what *should* be done---sometimes to solve a problem and sometimes to create better opportunities for learning not typically considered…" and in the words of another: "we are just scratching the surface of what is possible and what can be envisioned for the future of learning."

Importance of context. Another theme that emerged from panel responses was the importance of organizational context to the creativity debate. From their responses, it was evident that respondents worked in a variety of different operational contexts, and were accountable to numerous organizational influences. From an institutional perspective, the relative strength of alignment to the university mission, support from upper administration, size of institution, variability of reporting structures (e.g. Academic Affairs, Library, Information Technology), funding model(s), faculty compensation structures, intellectual property policies, and the extent to which the ID "owns the development process" were all suggested by respondents as potential influencers on the specific roles, duties, and professional fulfillment higher education IDs.

Panelist responses such as; "in a faculty driven context where course design is owned by faculty an ID role is very different from a context where IDs are driving the process." and "In a smaller institution in which the ID does more than just design an individual lesson, they must see the bigger picture. This may not be as critical in large universities, but is absolutely essential for survival within a smaller school" underscored the potential effects of contextual variability on an ID's role. In particular, this fittingly lengthy response from one panelist detailed some of the potential organizational variables that could directly influence the role of the instructional designer:

> Yes, the organization may have different needs for instructional designers (are they project managers? are they instructional problem-solvers/consultants? are the truly instructional designers leading the creation of activities and content? are they faculty trainers? are they graphic designers? media creators?), and different levels of sophistication for the teams IDs operate within.

In addition to institutional context, the creative culture established within the instructional designer's home unit or department plays a crucial role in influencing creative output. Echoing the work of Amabile (1988), Hunter, Cushenberry, and Friedrich (2012), Woodman, Sawyer, and Griffin, (1993), and others, the panel suggested that designers who might otherwise follow the "relevant, ingenious, simple, novel, effective path" or other more creative approaches to their design may be limited (or, in fact, completely blocked) by the unit culture as well as the "criteria placed on the instructional design process" by their department or team. While these prescriptive practices will clearly have a detrimental effect on an ID's ability to be creative in the abstract, it is important to note that these organizations may provide a desirable environment for IDs who are generally less creative because "[they] can be successful without higher-level skills [since] they will rarely be demanded of them." Regardless of circumstance, it is essential for an ID in higher education to "be willing to challenge themselves to think deeper" and "be as creative as one can be" while remaining accountable to the demands of the job, the structure of the institution, and the specific project constraints in a effort to "balance of innovation, exploration, and simply getting the job done."

Practicality and applied creativity. Another theme that resonated throughout the qualitative response data was the ID's obligation to remain accountable to "real world" project constraints and realities. Although not unanimous, respondents who advocated for strict

adherence to project constraints and the importance of avoiding "scope creep" far outnumbered those who supported a more free-form, discovery-based approach to design.

For many respondents: "Creativity can eat up time and resources, you need to know how much is *creative enough,*" and "Spending time in abstraction has its limits. Getting the work done trumps spending an inordinate amount of time in abstraction and creativity. At some point a product needs to be developed and occur." Although lengthened project timelines and associated costs were indicated as the primary dangers related to a "wouldn't it be cool if" design mentality, the potential for intra-team member tension resulting from the "extra work" created when one team member fails to maintain the project timeline as a result of "[going] off on their own to do creative [things]" was also mentioned. While some dissenting voices suggested that free (creative) play was "one way to undertake professional development and to improve an instructional designer's future efficiency, creativity, and project know-how," and that by viewing them as "cogs in [a production] machine," we are in fact devaluing IDs as education professionals, one panelist who maintained the importance of focusing on "the work at hand" stated simply: "I'm not swayed by the opinions of those that clearly don't have experience with [instructional design] in the real world."

Although an initial review of responses as outlined above would seem to indicate a bi-modal difference of opinion regarding free-form creativity, a closer analysis revealed a far more nuanced perspective that advocated for an ID being able to maintain "creative balance." Reaffirming the importance of functional creativity (as defined by Cropley & Cropley, 2010) and innovation (e. g. Weisberg, 2006) in instructional design, panel responses clearly suggested a need for balance between creative efforts and practical ones. That is, instructional designers must learn to focus their creative efforts where both opportunity (e. g. early in the design process) and

appropriateness (e. g. aligning high-level creative effort with high-level problems or tasks) exist. While IDs should always strive for the most elegant (as defined by Grudin , 1990) solutions practicable, when project constraints necessitate a "quick and dirty" approach, IDs should be willing to (and capable of) developing these solutions as needed. As one panelist succinctly put it: "We can't always innovate, we also have to produce. This is always the creative dilemma."

Creative interactions and collaborations. A final major theme that emerged from the qualitative response data was the direct influence that creativity has on collaboration, and vice versa. This theme, which is clearly aligned with Visscher-Voerman and Gustafson's (2004) Communicative Paradigm, Clinton and Hokanson's (2012) Creativity and Social Context, and even Sternberg's (2007) Investment Theory of Creative Contributions, outlines the delicate symbiosis that must be established and maintained between stakeholders in the creative design process.

In higher education, IDs have the uniquely challenging role of being largely accountable for a design process or product that they often don't own. In most higher education contexts, instructional design is a "service oriented profession," and successful IDs must be comfortable with playing a supporting role and often surrendering ownership of work to "make instructors look good." As such, it is crucial that IDs be "politically sensitive to the organizational and operational boundaries in order to work effectively within them without burning bridges or having to fall on their own sword." However, even as some boundaries (e. g. the pedagogy/ content divide) are usually fairly inflexible, many other aspects of the collaboration are negotiable, and it is the IDs "creative mind and resourceful[ness]" that can come into play to ensure a positive and productive partnership.

Instructional designers must not only be adept at recognizing the comfort level and preferences of their faculty partners, but they must be flexible enough to tailor their approach to meet the needs of both the faculty member and the overall success of the effort. Empathy, appropriate risk-taking, and a "constant striving to take instructors to the next level," are key components to building a relationship of trust that can facilitate a positive collaborative outcome. The panel also suggested that other related qualities such as a design perspective informed by strong theoretical background as well as keen sense of self, confidence (without overconfidence) in one's abilities, and a willingness to suppress ego could not only facilitate an effective relationship, but also help encourage the faculty partner to "think about being creative and try new things." Finally, in the words of one panelist: "The most satisfying ID/instructor relationships are the ones where there's true collaboration, where the form and content are a marriage, where the ID and faculty member both feel they are important and valuable contributors and partners."

Suggested by Creativity-related Competencies Response Data

As outlined in Chapter 4, a modified Importance-Perfomance analysis was performed on panel assessment of the desirability and face validity of each of 27 proposed creativity-related instructional design competencies. This, along with an additional z-score sum process, generated a list of 11 competencies that were identified as both desirable and creativity related by the expert panel. These are:

1. Identify opportunities for creativity (i.e. existing constraints and empowering ambiguity) within the overall scope of a project or problem assigned to them.
2. Tailor their planned creative activities to the scope and constraints of a project.

3. Engage in continuous reflection and assessment and exploit new creative opportunities that arise as the project evolves.
4. Maximize efficiency through creative use/ reuse of available resources.
5. Ascertain client disposition toward creativity and communication/ interaction preferences, and adjust one's collaboration strategies accordingly.
6. Effectively communicate/ articulate creative/atypical ideas.
7. Demonstrate a demeanor supportive of collaborative creativity (e.g. flexibility, honesty, patience, resilience, modesty, diplomacy, tact).
8. Engage in active listening: find value in other's ideas.
9. Recognize how one's work affects others. (e. g. balance proactive autonomy and the collaborative team dynamic).
10. Seek to continuously integrate new knowledge and new approaches with personal practices.
11. Recognize/ leverage "affordances" related to new technologies; seek opportunities to align instructional theories/ practices with new technologies.

These competencies, which represent all seven of the original conceptual lenses of creativity (APPENDIX I), exemplify important desirable creativity-related core competencies for higher education instructional designers.

Response to the Research Questions and Significance of the Results

The 11 competencies outlined above, in combination with the conclusions reached through the analysis of the Delphi responses, demonstrate how creativity is manifested in the context of practice of higher education instructional designers and present a set of practical, context-specific, instructional design knowledge, skills and abilities that are tied directly to the

broad-based creativity literature. In sum, these elements provide an informed response to the study research questions. Also, in addition to adding to the creativity-related instructional design literature, the proposed competencies could prove useful for higher education ID managers and leaders for hiring, recruitment, assessment/ performance review, and professional development purposes.

Limitations

Although the implementation of this study was closely aligned with the initial research design and every effort was made to mitigate anticipated threats to validity, two issues that may have had the potential to affect overall results must be addressed.

Transformation of Literature Constructs to Context of Practice

While not a threat to the validity of the research per se, a review of the qualitative response data revealed a fairly distinct evolution of terminology as the constructs and themes being explored were transformed from terminology extant in the literature to more context specific instructional design language. This effect was clearly evident in responses to the round 2 survey, which were much more applied and less theoretical. Additionally, several topic statements had to be refined to alleviate the panelist confusion and misunderstanding of terms evident in the open-ended comment responses. Specifically, panelist responses did not indicate a uniform understanding of terms like "elegance," "ambiguity tolerance," and "dynamic expertise." Finally, concerns over the multifaceted (e. g. as a trait, a state of being, or a habit) nature of the term "creativity" itself were evident in panelist responses.

Ramifications of Potential Desirability Bias.

Phillips and Clancy (1972) defined *trait desirability bias* as a survey respondent's "tendency to endorse statements on the basis of their implicit social desirability rather than on their actual explicit content" (p. 924). In the context of this research, both the overall panel

consensus (85% of the 41 discrete creativity-related concepts presented in the Delphi portion of the study reached panel consensus) as well as the rapidity with which the panel came to consensus (89% of the 41 discrete creativity-related concepts reached consensus in the first round they were presented) may suggest the results were influenced by desirability bias. In the words of one panelist: "This [list of competencies] is like a wish list for a child who wants all his/her desired dream toys." Additionally, since the traditional statistical methods for Likert-scale Delphi studies are ineffective in discriminating between consensus items, there is no readily available way to establish a rank order or any other relational information regarding the large number of consensus items. Finally, the rapidity of panel consensus also led to a lack of peer discussion regarding those items. All told, the panel only had opportunity to directly respond to summarized peer comments on a fewer than a dozen non-consensus items.

Recommendations for Further Study

As is the case with almost all research, the process of investigation of the initial research questions revealed several related topics worthy of further exploration.

The targeted context for this research was instructional design in higher education. The importance and variety of organizational and operational contexts indicated by panel responses that exist within the broader higher education milieu clearly suggested the potential for further research. Specific context variables identified included: size of institution, public or private charter, for-profit or not-for-profit status, variability of reporting structures (e.g. academic affairs, library, information technology), funding model(s) (self-sustaining vs. general funding), faculty compensation structures, intellectual property policies, and many others. Valuable information may be gleaned from studies with more specific context delineation in any one of these areas.

The concept of collaborative creativity and the cumulative effect of teams on the creative process is another related area that would merit further study. Although this research focused on competencies for individual instructional designers, several panelists echoed a call for discussion regarding the "whole of the [ID] team" being "greater than the sum of its parts" and suggested that since it was probably not realistic for any one instructional designer to possess expertise in all of the competencies, they made every effort to assemble teams of IDs with complementary knowledge, skills, and abilities. Research exploring specific ID to ID collaborative techniques, or aligning the identified competencies with some of the recent team-based creativity literature (e.g. Barczak, Lassk, & Mulki, 2010; Richter, Hirst, van Knippenberg, & Baer, 2012; Diliello, Houghton, & Dawley, 2011) could prove enlightening,

Finally, a further examination of the effect leadership, management, and organizational culture has on creativity in the instructional design process is recommended. The expert panel that so clearly identified desirable creativity-related ID competencies as part of this study would no doubt benefit from further research on strategies for recruiting, hiring, or professionally developing employees with high levels of creative potential, as well creating an environment that is supportive of the types of creativity they so evidently desire.

Conclusion: The Exemplar Instructional Designer

The emerging pedagogies and disruptive innovations of 21st century higher education have created a new landscape of instructional design. Rote adherents to step-by-step systems-based models are increasingly giving way to a new breed of instructional designer. This new ID is a resourceful creative thinker who is keenly aware of shifting boundaries of context and role and continuously seeks out appropriate opportunities for creativity within the scope of the project or problem assigned to them. An active listener, effective communicator, and provocateur, the

ideal ID demonstrates a demeanor supportive of collaborative creativity (e.g. flexibility, empathy, diplomacy) while passionately advocating for the development of effective, innovative, and enriching learning experiences. An introspective life-long learner, and explorer of possibilities, the ID possesses a clear sense of the theoretical foundations that underpin assumptions about teaching and learning and seeks to continuously integrate new knowledge and new approaches with personal practices. While demonstrating sensitivity to the balance between creativity and costs of development, the exemplar instructional designer "should always pose the question, *what if*..."

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APPENDIX A. NORTH DAKOTA STATE UNIVERSITY INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL

NDSU NORTH DAKOTA STATE UNIVERSITY

August 12, 2014

Myron Eighmy
School of Education

Re: IRB Certification of Exempt Human Subjects Research:
Protocol #HE15021, "Operationalizing Creativity: Desired Characteristics for Instructional Designers"

Co-investigator(s) and research team: Dan Clark

Certification Date: 8/12/14 Expiration Date: 8/11/17
Study site(s): varied
Sponsor: n/a

The above referenced human subjects research project has been certified as exempt (category # 2) in accordance with federal regulations (Code of Federal Regulations, Title 45, Part 46, Protection of Human Subjects). This determination is based on the protocol (received 8/4/14), revised consent (received 8/6/2014).

Please also note the following:
- If you wish to continue the research after the expiration, submit a request for recertification several weeks prior to the expiration.
- The study must be conducted as described in the approved protocol. Changes to this protocol must be approved prior to initiating, unless the changes are necessary to eliminate an immediate hazard to subjects.
- Notify the IRB promptly of any adverse events, complaints, or unanticipated problems involving risks to subjects or others related to this project.
- Report any significant new findings that may affect the risks and benefits to the participants and the IRB.

Research records may be subject to a random or directed audit at any time to verify compliance with IRB standard operating procedures.

Thank you for your cooperation with NDSU IRB procedures. Best wishes for a successful study.
Sincerely,

Kristy Shirley Digitally signed by Kristy Shirley
DN: cn=Kristy Shirley, o=NDSU, ou=SPA, email=kristy.shirley@ndsu.edu, c=US
Date: 2014.08.12 08:23:51 -05'00'

Kristy Shirley, CIP, Research Compliance Administrator

For more information regarding IRB Office submissions and guidelines, please consult www.ndsu.edu/irb. This Institution has an approved FederalWide Assurance with the Department of Health and Human Services: FWA00002439.

INSTITUTIONAL REVIEW BOARD
NDSU Dept 4000 | PO Box 6050 | Fargo ND 58108-6050 | 701.231.8995 | Fax 701.231.8098 | ndsu.edu/irb
Shipping address: Research 1, 1735 NDSU Research Park Drive, Fargo ND 58102

APPENDIX B. LETTER OF INVITATION/ CONSENT FORM

North Dakota State University
School of Education
Department of Occupational and Adult Education
FLC 210
Fargo, ND 58108-6050
701-231-7921

LETTER OF INVITATION/ CONSENT FORM

Operationalizing Creativity: Desired Characteristics for Instructional Designers

Colleague,

You have been invited to serve on a panel of experts and participate in this research study because of your experience and expertise in instructional design in higher education. Please read this document fully and ask any questions you may have before agreeing to participate. This study is being conducted by: Daniel Clark, doctoral candidate in the School of Education at the North Dakota State University.

Purpose of the Study

The purpose of this study is to explore the emerging role of instructional designers in higher education and to establish an inventory of creativity-related knowledge, skills, and abilities that would be considered desirable professional competencies.

Time Commitment

The Delphi process consists of a series of surveys that are comprised of a mix of Likert scale and open-ended response opportunities. The first round instrument contains 33 Likert scale and 49 accompanying open-ended comment opportunities. It is expected that completion of the first-round survey will take between 45 and 90 minutes. The second and third round of the Delphi will likely contain fewer questions, and therefore require less time to complete. After the completion of the three round Delphi, a final follow-up survey will be provided containing only

Likert responses. Completion of this follow-up should take no more than 20 minutes. The total time commitment for this project should amount to roughly 3-4 hours over the course of 4 months.

Voluntary Participation

Participation in this study is purely voluntary; you may choose not to participate or discontinue participation at any time. However, should you choose to participate, we would ask you to participate in all rounds to provide the most accurate data for the study.

Procedures

Your participation in this research will entail service on an expert panel tasked with providing insights, opinions, and ideas about creativity in higher education instructional design via a three-round Delphi process. In the first round, you will be asked to respond to 33 topic statements using a Likert scale for levels of agreement. You will also have the opportunity to include comments and responses to 16 open-ended questions. The online survey can be completed in more than one session and respondents will have one week to complete to each round. Items that demonstrate consensus of the panel will be removed from the next round survey, and additional topics suggested by the panel may be added. Topic statements that did not attain consensus will be presented in the next round survey along with the mean response, response distribution and a summary of panelist comments for that topic statement. After the completion of the three round Delphi, a final follow-up survey will be provided containing only Likert responses. The period for each round of the survey will be roughly one month.

If you choose to participate, you will receive an introductory letter explaining the nature of the study and a link to the electronic survey.

Confidentiality

Responses provided to this study will be kept strictly confidential. Although names and titles of the expert panel of participants will be included in the final report, no connections between participants and responses provided will be discernible in any portion of the study process or the final report. Identifiable records will be destroyed upon completion of the study.

Potential benefits and risks

All reasonable precautions have been taken to minimize potential risks for the study participants. Should you choose to serve as an expert panelist, your responses and active participation in the Delphi process could help lead to a fuller understanding of creativity as it relates to instructional design. No monetary compensation will be provided for participation.

Contact information for questions or concerns

The researcher conducting this study is Daniel Clark. If you have questions regarding this study, please contact him at the Western Oregon University Center for Teaching and Learning, 345 Monmouth Ave, Monmouth, OR 97361. Phone: 503.838.8361, email: clarkdan@wou.edu. Dr. Myron Eighmy, professor of education at North Dakota State University, is the faculty advisor for this study. If necessary, Dr. Eighmy can be reached at: 701-231-5775.

Research subjects' rights

All questions regarding research subjects' rights or to file a complaint regarding this research study can be directed to the NDSU Human Research Protection Office:

Telephone: 701.231.8908 or toll-free 1.855.800.6717
Email: ndsu.irb@ndsu.edu
Mail: NDSU HRPP Office,
NDSU Dept. 4000,
PO Box 6050,
Fargo, ND 58108-6050.

Statement of Consent

I have read the above information and consent to participate in this study

Signature _____ **Date** _____

Signature of Investigator _____ **Date** _____

APPENDIX C. LETTER OF INTRODUCTION TO THE STUDY

North Dakota State University
School of Education
Department of Occupational and Adult Education
FLC 210
Fargo, ND 58108-6050
701-231-7921

Letter of introduction to the Delphi study: *Operationalizing Creativity: Desired Characteristics for Instructional Designers*

Panelist>

Thank you again for your willingness to contribute your expertise to this research. Through this effort, we hope to explore the emerging role of instructional designers in higher education and to establish an inventory of creativity-related knowledge, skills, and abilities that would be considered desirable professional competencies for instructional designers in the field. I encourage you to review the rest of this document as the background and contextual information it provides should help prepare you for productive (and hopefully, rewarding) participation in the study.

About this study (problem and background):

As technology-enhanced, flexible-delivery instruction continues to redefine the learning space, the job requirements of the instructional designer are evolving to encompass the creative, problem solving process inherent in the effective alignment of emerging pedagogies and new teaching and learning models specifically tailored to this new environment. These new creativity-related competencies, however, remain ill-defined. The purpose of this study is to begin to fill in the gap in the research literature related to the emerging role(s) of higher

education instructional designers, specifically through the lens of operationalized creativity and creative potential.

Conceptual Framework:

Through the extensive literature review undertaken for this study, two key themes emerged:

- *First:* there is significant indication that in the higher education context, the role of the instructional designer is evolving to incorporate more creative, heuristic approaches to design and as such, creative potential may be becoming an increasingly desirable competency for instructional designers.
- *Second:* creativity is a complex (and frankly, not entirely understood) construct with many interrelated components that is notoriously difficult to assess as a whole easily, quantifiably, or reliably (Clary, Brzuszek, & Fulford, 2011; Diliello, Houghton, & Dawley, 2011).

Informed by these two themes, the conceptual framework for the study outlines a 'deconstructed' approach to creativity, utilizing the following ssociated (and interconnected) aspects to facilitate an effective examination of operationalized creativity specific to the higher education instructional design context:

- *Problem Solving*
- *Problem Finding*
- *Boundary Awareness*
- *Applied Creativity/ Creation*
- *Disposition(s)*
- *The Ambiguity Tolerance Continuum*
- *Motivations/ Intrinsic Rewards*
- *Social Elements of Creativity*

It is hoped that these deconstructed perspectives of creativity will provide a framework of conceptual lenses through which creativity-related knowledge, skills, and abilities specific to higher education instructional designers can be identified.

Delphi Process:

The goal of the Delphi process is to provide a framework to facilitate an 'expert discussion' related to the research question(s). The process consists of a series of surveys where the panel is asked to provide a Likert scale response ('strongly agree' to 'strongly disagree') to roughly three dozen topic statements related to creativity in instructional design. *For each response, it is critical that panelists provide a rationale for their rating in the provided comment box.* In the aggregate, these rationale comments will comprise the expert discussion of the process; the opportunity for the sharing and comparing the similarities and differences between the views of our expert panel.

Responses to topic statements that demonstrate consensus of the panel will be removed from the next round survey, and additional topics suggested by the panel may be added. Topic statements that did not attain consensus will be presented in the next round survey along with the mean response, response distribution and a summary of panelist comments and rationale for their responses. As consensus builds in each round, the length of the instrument will likely decrease. It is expected that completion of the first-round survey will take between 45 and 90 minutes. The total time commitment for this project should amount to 3-4 hours over the course of 4 survey rounds. The period for each round of the survey is expected to be roughly one month.

Names and titles of the expert panel as well as grouped data will be included in the final report, but all responses will be kept strictly confidential and names will not be linked to individual responses. Please keep in mind that is not possible to indentify all potential risks in

research procedures, but every reasonable precaution has been taken to minimize any known risks. Participation in this study is purely voluntary; you may choose not to participate or discontinue participation at any time. However, should you choose to participate, we would ask you to participate in all rounds to provide the most accurate data for the study.

Thank you in advance for you efforts.

Dan Clark
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APPENDIX D. TOPIC STATEMENT MAP

Table D1. *Problem Solving: Topic Statement Map*

R1	R2	R3	*To be successful, Higher Education Instructional Designers must…*
1			work systematically through a prescribed design process. [*systems approach*, Gordon & Zemke (2000)]
	1A		work ONLY within the bounds of a prescribed, systematic, design process.[*Clarification of topic statement 1*]
	1B		be fully cognizant of the "flex points" (i.e. opportunities for creativity) in any prescribed, systematic, design process. [*Clarification of topic statement 1*]
	1C		utilize a systematic process as a design framework rather than a prescriptive, step-by-step recipe. [*Clarification of topic statement 1*]
2			generate multiple possible solutions to a problem. [*heuristics*, York & Ertmer (2011)]
	2A		engage in Rapid Prototyping to "sketch out" possible solutions to a problem (i.e. storyboarding, mock-ups). [*New topic statement*]
3			successfully navigate complex, ill-defined problems. [*wicked problems*, Valentine & Ivey (2008)]

Table D2. *Problem Finding: Topic Statement Map*

R1	R2	R3	*To be successful, Higher Education Instructional Designers must…*
4			identify problems, deficiencies, gaps in knowledge, and omissions in a given situation [*problem finding*, Torrance (1993)]
5			be able to distinguish between actual constraints and perceived constraints of a problem [*escaping assumptions*, Mitchell, Inouye, & Blumenthal (2003)]
6			project potential outcomes of a course of action and intervene appropriately [*problem finding*, Ericsson, Roaring, & Nandagopal (2007)]

Table D3. *Boundary Awareness: Topic Statement Map*

R1	R2	R3	*To be successful, Higher Education Instructional Designers must…*
7			recognize their organizational and operational boundaries [*contextual awareness*, Csikszentmihalyi, in Sternberg (1999)]
	7A		recognize their operational boundaries (e.g. context, constraints, and accountabilities). [*Clarification of topic statement 7*]
8			recognize their role within the organization [*contextual awareness*, Amabile et al. (2004)]
	8		recognize their role within the organization
	8A		establish a personal "culture of creativity" through relationships, communication, and comportment (e.g. honesty, patience, resilience). [*New topic statement*]
9			recognize when it is appropriate to be creative [*navigate the [timing] risk/ reward dynamic*, Schön (1987)]
	9A		Within the context of a project, Higher Education Instructional Designers must recognize when creative activities are appropriate (i.e. warranted, practicable) and when they are not. [*Clarification of topic statement 9*]
	9B		appropriately advocate for more elegant solutions (i.e. within project context/ constraints; time, money, etc.). [*New topic statement*]
		9D	appropriately (i.e. within project context/ constraints; time, money, etc.) advocate for more elegant (i.e. relevant, ingenious, simple, novel, and effective) solutions. [*Clarification of topic statement 9B*]
	9C		demonstrate elements of creativity in their communication and collaboration with stakeholders. (e.g. creative "sales" in persuading faculty/ advocating for students). [*New topic statement*]
10			recognize how much creativity is appropriate for a given situation [*navigate the [volume] risk/ reward dynamic*, Udwadia (1990)]
	10A		balance creative activities with the constraints of a given project. [*Clarification of topic statement 10*]

Table D4. *The Creative Act: Topic Statement Map*

R1	R2	R3	*To be successful, Higher Education Instructional Designers must…*
11			engage in free-form (abstract, unapplied) creative acts. [*ideation*, Akinboye (in Ogoemeka (2011)]
	11A		engage in free-form (abstract, unapplied) creative acts that are unrelated to any current projects. [*Clarification of topic statement 11*]
		11A	engage in free-form (abstract, unapplied) creative acts that are unrelated to any current projects.
12			create original (novel) models, strategies, or approaches to solve instructional problems. [*invention,* Dasgupta (1996)]
	12A		always create original (novel) models, strategies, or approaches to solve instructional problems. [*Clarification of topic statement 12*]
		12A	Always create original (novel) models, strategies, or approaches to solve instructional problems.
	12B		be capable of creating original (novel) models, strategies, or approaches to solve instructional problems. [*Clarification of topic statement 12*]
13			effectively remix/ repurpose old materials into new materials [*remixing*, York & Ertmer (2011)]
14			identify connections between elements previously considered disparate [*connections*, Valentine & Ivey, (2008)]
	14A		establish "Dynamic Expertise" by continuously integrating emerging trends with a strong historical perspective (i.e. be fully conversant in a variety of educational theories, practices, and approaches, both old and new). [*New topic statement*]
15			engage in creative acts specifically to solve problems [*innovation,* Weisberg (2006)]

Table D5. *Dispositions: Topic Statement Map*

R1	R2	R3	*Successful Higher Education Instructional Designers are…*
16			comfortable engaging with a variety of tasks and interactions [*flexibility*, Baum and Newbill (2010)]
17			confident in their abilities [*confidence*, Baum and Newbill (2010)]
18			willing to risk exposure embarrassment or censure to propose new ideas [*overcoming fear*, Fields (2012)]
19			willing to continuously question underlying assumptions of established practice [*iconoclasm*, Hokanson, Miller, & Hooper (2008)]
	19A		able to restrain from implementing initial (or prescribed) responses while considering alternates (when appropriate relative to the constraints of a project). [*New topic statement*]
		19A	able to restrain from implementing initial (or prescribed) responses while considering alternates (when appropriate relative to the constraints of a project).
20			devotees to current industry best practices only [*post-modernism*, Visscher-Voerman & Gustafson (2004)]
21			comfortable surrendering ownership of creative works [*cooperative*, Amabile (1988)]
22			willing to suppress their ego for the good of the endeavor [*pragmatism*, James (1907)]
23			empathetic to multiple perspectives [*diversity/ democracy of thought*, Manke (1999)]
	23A		To be successful, Higher Education Instructional Designers must actively seek multiple viewpoints (when appropriate relative to the constraints of a project). [*New topic statement*]
	23B		To be successful, Higher Education Instructional Designers must integrate suggestions and feedback from others. [*New topic statement*]

Table D6. *The Ambiguity Tolerance Continuum: Topic Statement Map*

R1	R2	R3	*Successful Higher Education Instructional Designers…*
24			completely avoid ill-defined problems [*ambiguity intolerance*, McClary (2009)]
25			tolerate ill-defined problems [*ambiguity tolerance/ problems*, MacDonald (1970)]
	25A		are only comfortable engaging with ill-defined problems or situations for a limited time or to a limited extent. [*Clarification of topic statement 25*]
		25B	Higher Education Instructional Designers can be successful even if they are only comfortable engaging with ill-defined problems or situations for a limited time or to a limited extent. [*Clarification of topic statement 25A*]
26			can operate effectively despite unspecific or incomplete direction [*ambiguity tolerance/ tasks*, Furnham & Ribchester (1995)]
27			embrace ambiguity as an empowering opportunity [*creative uncertainty*, Langer (1990)]

Table D7. *Intrinsic Motivations and Rewards: Topic Statement Map*

R1	R2	R3	*Successful Higher Education Instructional Designers…*
28			believe that their creative efforts are making a difference [*intrinsic motivation*, Jaskyte and Kisieliene (2006)]
29			feel professionally fulfilled [*autonomy/ challenge*, Zhou (1998)]
	29		feel professionally fulfilled
		29	feel professionally fulfilled
30			are passionate about their work [*passion*, Vallerand & Houlfort (2003)]
	30		are passionate about their work
31			engage in playful experimentation [*play*, Hokanson, Miller, & Hooper (2008)]
	31		engage in playful experimentation
		31	engage in playful experimentation
32			demonstrate a single-minded immersion to creative or problem solving tasks [*flow*, Csikszentmihalyi (1996)]
	32A		demonstrate a single-minded immersion to creative or problem solving tasks (when appropriate relative to the constraints of a project). [*Clarification of topic statement 32*]
		32A	demonstrate a single-minded immersion to creative or problem solving tasks (when appropriate relative to the constraints of a project).
33			view difficult tasks as something to be mastered rather than something to be avoided. [*self-efficacy*, Bandura (1977)]
	33A		view engaging with difficult tasks as something to be embraced rather than something to be avoided. [*Clarification of topic statement 33*]
	34		are life-long learners. [*New topic statement*]

APPENDIX E. ROUND ONE SURVEY THEME ORDER VERSIONS

Round One Version **A** Topic Order (Panelist 1-10)

1. Problem Solving
2. Problem Finding
3. Boundary Awareness
4. The Creative Act: Ideation Through Innovation
5. Creative Dispositions
6. The Ambiguity Tolerance Continuum
7. Intrinsic Motivations and Rewards

Round One Version **B** Topic Order (Panelist 11-19)

1. Creative Dispositions
2. The Ambiguity Tolerance Continuum
3. Intrinsic Motivations and Rewards
4. Problem Solving
5. Problem Finding
6. Boundary Awareness
7. The Creative Act: Ideation Through Innovation

Round One Version **C** Topic Order (Panelist 20-28)

1. The Creative Act: Ideation Through Innovation
2. Boundary Awareness
3. Creative Dispositions
4. The Ambiguity Tolerance Continuum
5. Intrinsic Motivations and Rewards
6. Problem Solving
7. Problem Finding

APPENDIX F. AGGREGATE/ SUMMARIZED DELPHI RESPONSE DATA

Table F1. *Topic Statement 1 Response Detail*

To be successful, Higher Education Instructional Designers must work systematically through a prescribed design process.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
1	1	27	2.70	.775	67	3	15	7	2	0

Response Themes:

- Benefit of fundamental paradigm/ framework as "jumping off point"
- Efficiencies and standardization inherent in prescribed processes
- Risk of focus on process "checklist" rather than problem at hand
- Proscriptive/ limiting nature of formal process
- Prescriptive process' usefulness in "quick and dirty" projects

Table F2. *Topic Statement 1A Response Detail*

To be successful, Higher Education Instructional Designers must work ONLY within the bounds of a prescribed, systematic, design process.										
Source: Clarified topic statement developed (informed by round one open-ended responses) to alleviate respondent confusion.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
1A	2	28	1.64	.826	93	2	0	12	14	0

Noteworthy/ Illustrative comments:

- *This is ridiculous and one of the biggest mistakes of instructional designers.*
- *This would severely compromise the IDer's ability to transfer knowledge from previous projects to the current project.*
- *Exceptions are often needed. Problem solving is more important than rigid procedure*
- *Prescriptions work best with predictable inputs, which good teaching and learning activities aren't.*
- *This is a sure way to fall into "cookie cutter" instructional design. this doesn't help anyone because each instructional intervention is unique in some way. Following prescribed processes to the letter, without thinking about it, is problematic*
- *I think it depends on the institution. Some are highly prescribed and some more free flowing. My institution is somewhere in the middle. We have a design process but there is flexibility to adapt depending on the curriculum and the technology comfort level of the faculty.*
- *Moving outside the prescribed, systematic, design process may cause adverse effects in terms of how long it might take to develop and how much it costs.*

Table F3. *Topic Statement 1B Response Detail*

To be successful, Higher Education Instructional Designers must be fully cognizant of the "flex points" (i.e. opportunities for creativity) in any prescribed, systematic, design process.

Source: Clarified topic statement developed (informed by round one open-ended responses) to alleviate respondent confusion.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
1B	2	28	3.68	.612	93	21	5	2	0	0

Noteworthy/ Illustrative comments:

- *A prescribed process is like an origami diagram or a cooking recipe: you can follow it to the letter, which might create something passable, but the opportunities for creativity allow you to create fine craftsmanship and even art, which is again what authentic teaching and learning are about,*
- *checking things off a to-do list is not the way to be an effective designer! look for opportunity to improve engagement, retention of information, and opportunities to increase knowledge development.*
- *Flex points should be considered and utilized when necessary. This type of creativity will allow instructional designers to come up with potential solutions to educational interventions that keep the learners engaged. This will also break people from the notion that an instructional design process is static and one way, rather than iterative and ever-improving*
- *In some cases this may not be true. Often times the demand of the job and the structure of the institution do not allow for creativity. With this being the case, being as creative as one can be while designing is an asset.*
- *Opportunities for creativity come up often, and designers should be aware of when they may be allowed to depart from any prescribed process in order to take advantage of opportunities to be more creative.*
- *Without this full cognition, you've reduced the IDer to a monkey following a template.*
- *Arguably any point within a prescribed, systematic process is a place for flexibility. The trick is recognizing when to deviate.*

Table F4. *Topic Statement 1C Response Detail*

To be successful, Higher Education Instructional Designers must utilize a systematic process as a design framework rather than a prescriptive, step-by-step recipe.										
Source: Clarified topic statement developed (informed by round one open-ended responses) to alleviate respondent confusion.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
1C	2	26	3.46	.706	89	14	11	0	1	2

Noteworthy/ Illustrative comments:

- *Ultimately most systematic processes are simply design frameworks that have been given some room to breathe*
- *Using a process that is more flexible and iterative will generally lead to more creative and effective results.*
- *I believe a prescriptive, step-by-step recipe might be useful for a fledgling instructional designer who needs more direction but is limiting for an experienced ID. This would be like giving all gifted artists charcoal and a sketchpad as their only tools and expecting amazing, original works of art to be the end result; while these tools would allow some artists to produce impressive results, those gifted in other media might be stifled in their ability to create something of artistic value.*
- *Some faculty like step-by-step so there is a place for that as well. It boils down to the ability to read the faculty and interpret the best way to get them through the design process.*
- *some ID work may require the prescriptive approach even though it seems counter-intuitive to supporting creativity in design and implementation.*
- *A framework is useful though a designer shouldn't be bounded too tightly by a framework. The needs of the learners should drive all.*

Table F5. *Topic Statement 2 Response Detail*

To be successful, Higher Education Instructional Designers must generate multiple possible solutions to a problem.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
2	1	26	3.36	.739	81	12	10	4	0	1

Noteworthy/ Illustrative comments:

- *Creative thinking that results in multiple possible solutions is a must.*
- *Multiple solutions generally lead to the better solution. ID's who rely on what they think is the best single solution may be doing a disservice to the project and minimizing the potential creativity of the team.*
- *Multiple participants, stakeholders and representatives mean multiple perspectives, so multiple solutions are in order if only to facilitate discussions and decisions about single solutions that might finally be adopted.*
- *Creativity should be a part of the development process; however, scope creep tends to be an issue when multiple possible solutions must be represented.*
- *To an extent. As long as pros/cons are included so that informed decisions can be made.*

Table F6. *Topic Statement 2A Response Detail*

To be successful, Higher Education Instructional Designers must engage in Rapid Prototyping to "sketch out" possible solutions to a problem (i.e. storyboarding, mock-ups).										
Source: New topic statement developed from coding of panelist suggestions for additional topic statements.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
2A	2	28	3.54	.637	93	17	9	2	0	0

Noteworthy/ Illustrative comments:

- *It always helps to storyboard, visualize what the thought process is so that everyone involved in the design understands.*
- *They do need to be able to communicate their ideas.*
- *it may help to gain approval for ideas from the SME, faculty or program director. also aids in more rapid project development when working with multiple content developers (ie graphics, multimedia, assessment specialists)*
- *IDer need to be agile and understand that not everything they suggest or build will work. Faculty need to see and respond to tangibles, not theories.*
- *Very important. This provides clues for development time frames and costs. This might be implied, but just in case... I believe this should only occur after first establishing course goals and objectives*
- *This may be more important at institutions where IDers develop the entire course. At institutions where we assist faculty with development, I haven't heard this term used. It's sometimes done, but we do balance the effort/time invested in mocking up solutions vs. the probability the faculty will actually use them.*

Table F7. *Topic Statement 3 Response Detail*

To be successful, Higher Education Instructional Designers must successfully navigate complex, ill-defined problems.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
3	1	27	3.70	.465	100	19	8	0	0	0

Noteworthy/ Illustrative comments:

- *Absolutely! This is the essential issue! We have tools we can apply like frameworks and design processes but... the flexible application of these to accomplish authentic tasks is the trick.*
- *Troubleshooting and critical thinking are skills most institutions want to instill in their students.*
- *Difficult but ESSENTIAL*
- *The most self-aware instructional designers not only navigate complex problems but respect why they are complex to students*
- *Most problems and situations are "ill-defined." This is a key skill.*
- *Most of the time problems or challenges are ill-defined. The more experience the instructional designer has the more easily he/she can navigate. A new designer needs to have a tolerance and enthusiasm for solving problems from day 1.*
- *It's true that many of the problems we face are ill-defined but they aren't always that complex, and sometimes they're complex but well-defined. But yes, in general, this is a beneficial skill.*

Table F8. *Topic Statement 4 Response Detail*

To be successful, Higher Education Instructional Designers must identify problems, deficiencies, gaps in knowledge, and omissions in a given situation.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
4	1	27	3.59	.572	96	17	9	1	0	0

Noteworthy/ Illustrative comments:

- *Bridging the gap between the current state and desired state of what students need to be able to do as a result of their education or training is key.*
- *Making unknown unknowns into known unknowns is a critical part of the foundation of any development process. Some of this may happen at a higher level than the individual designer, but it is critical. However, even MORE critical sometimes is the ability to know how to deal with such gaps and problems without upsetting egos in, causing divisions within, or derailing a project.*
- *The center of an instructional designer's role is problem-solving. Problem solving begins with analysis, and analysis is informed by broad knowledge and experience.*
- *Very important. Anytime you're in a situation where you are designing a course is a fruitful opportunity to think new thoughts, to look at the ideas in a new way, and to think of new ways in which things can be presented to and used by students. Current methods often have gaps in them that are not well-understood or unseen.*
- *Experience weighs heavily in this skill. A more experienced designer may be able to more quickly assess a situation and identify problems or gaps whereas a less experienced ID may take a project proposal at face value.*

Table F9. *Topic Statement 5 Response Detail*

To be successful, Higher Education Instructional Designers must be able to distinguish between actual constraints and perceived constraints of a problem.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
5	1	26	3.38	.571	93	11	14	1	0	1

Noteworthy/ Illustrative comments:

- *Perception on the part of the ID or the SME/Faculty member? The course of action differs significantly depending on the answer.*
- *A very good/great instructional designer might be able to do this, but I've rarely seen someone with this skill.*
- *This is an important indicator of a designer who is able to set personal preferences and ideas aside to view the whole picture.*
- *The flip side of embracing ambiguity, the unknown and the difficult is artificially limiting oneself or one's approaches by perceived constraints (which are often simply inherited/assumed). For good or ill purposes, academic institutions have an inordinate number of perceived constraints and inherited-but-wrong knowledge embedded in their frameworks.*

Table F10. *Topic Statement 6 Response Detail*

To be successful, Higher Education Instructional Designers must project potential outcomes of a course of action and intervene appropriately.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
6	1	26	3.31	.679	93	10	15	0	1	1

Noteworthy/ Illustrative comments:

- *Forecasting is essential!*
- *This skill is part of being able to grasp the bigger picture that comes with implementing a course of action. I don't expect my instructional designers to be 100% accurate in their projections but they must be willing to monitor and take corrective action if needed.*
- *having a plan is important, and also important to know when to step in, and when to step back and see what happens*
- *Apply past experiences and possibilities to suggest designs before you begin building them.*
- *Much depends on the managerial and administrative context...the biggest questions involving potential outcomes often happen at a managerial level so this is somewhat de-emphasized with some designers.*
- *Without this, has instructional design actually occurred?*

Table F11. *Topic Statement 7 Response Detail*

To be successful, Higher Education Instructional Designers must recognize their organizational and operational boundaries.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
7	1	27	3.22	.800	78	12	9	6	0	0

Response Themes:

- Inexact terminology
- Boundaries as enabling constraints (opportunities)
- Advocating for appropriate challenge of boundaries
- Organizational structures informing course-level design activities
- Political sensitivity/ awareness

Action: Developed clarified topic statement (7A) for round two survey (informed by panel responses) to alleviate respondent confusion.

Table F12. *Topic Statement 7A Response Detail*

To be successful, Higher Education Instructional Designers must recognize their operational boundaries (e.g. context, constraints, and accountabilities).										
Source: Clarified question developed (informed by round one open-ended responses) to alleviate respondent confusion.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
7A	2	28	3.36	.621	93	12	14	2	0	0

Noteworthy/ Illustrative comments:

- *The best instructional designers know how to work within the system and recognize which operational boundaries are flexible.*
- *As with all jobs, context, constraints and accountabilities are always present*
- *I believe this is part of the analysis stage of instructional design. IDs need to know what they're working with.*
- *Yes, if for any reason that they avoid complicating their work by thinking they're more important than the project, course, instructional event, etc.*
- *To some extent I disagree. I think it's important to know where those boundaries are, but also how to tactfully cross them from time to time to achieve ones goals*
- *If you don't you'll be out of a job.*

Table F13. *Topic Statement 8 Response Detail*

To be successful, Higher Education Instructional Designers must recognize their role within the organization.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
8*	1	27	3.30	.609	93	10	15	2	0	0

Summarized "Agree" position statements:

- Especially in relation to the partnership dynamic with the Faculty
- It's important for instructional designers to have a good understanding of role delineation
- Roles and responsibilities can vary widely between jobs (e.g. project management, content development, pedagogical consultants, graphic design, technical support)
- IDs need to know how much they can 'push the boundaries' in advocating for change.

Summarized "Disagree" position statements:

- Roles are Ultimately negotiable and self-defined
- "Big Picture" alignment knowledge doesn't seem to be a necessity for front-line IDs

Noteworthy/ Illustrative comments:

- *Yes, the organization may have different needs for instructional designers (are they project managers? are they instructional problem-solvers/consultants? are the truly instructional designers leading the creation of activities and content? are they faculty trainers? are they graphic designers? media creators?), and different levels of sophistication for the teams IDs operate within.*
- *It's important for instructional designers to have a good understanding of role delineation, the role they plays in the big picture.*
- *Yes, especially in relation to the faculty.*
- *Very important. In doing so, the ID can help the organization move forward in a productive manner. Trying to go too far too quick could be a problem.*
- *It's possible to break out of your role a little bit and dabble into other areas. This requires time, experience, and a bit of charisma.*

*Action: topic statement reached statistical consensus, but was included in round two survey as a Delphi question to accrue additional response data.

Table F14. *Topic Statement 8(RD2) Response Detail*

To be successful, Higher Education Instructional Designers must recognize their role within the organization.										
Source: Delphi Process										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
8	2	28	3.43	.690	96	14	13	0	1	0

Noteworthy/ Illustrative comments:

- *When a person becomes a part of an organization, it is important to advocate for the common mission and vision. Being innovative and creative is good, but must lead to the goals of the organization.*
- *It is important for IDs to have a good understanding in regard to how their work affects others within their educational system. It is also important for IDs to know what kind of leeway they have in making design decisions that might affect school policies. If this ID strongly believes a change is necessary, it is then important for the ID to know who to approach and how to go about advocating for the change.*
- *Instructional designers in HE can push so far before their efforts become counterproductive. The power relationships in HE are such that faculty have a lot of power over what happens in their classes. The faculty member will often have the final say, even if it is pedagogically poor.*
- *In general I think this can be taken too far causing self-fulfilling prophecies, perpetuation of myths, etc. Again, most designers are, in my experience, already aware and many need to be de-programmed of the assumptions they make because they are (too/inaccurately) aware.*
- *institutional context is very important - in a faculty driven context where course design is owned by faculty an ID role is very different from a context where IDs are driving the process*
- *The role of the instructional designer can be subject to change dependent upon project needs.*
- *An instructional designer cannot be expected to improve if there is no understanding of what is or is not their job.*
- *If you don't know what you bring to the table, how will others value it?*

Table F15. *Topic Statement 8A Response Detail*

To be successful, Higher Education Instructional Designers must establish a personal "culture of creativity" through relationships, communication, and comportment (e.g. honesty, patience, resilience).

Source: New topic statement developed from coding of panelist suggestions for additional topic statements.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
8A	2	27	3.74	.526	93	21	5	1	0	1

Noteworthy/ Illustrative comments:

- *Critical! Content can always be taught, social/soft skills can't be taught. The Instructional Designer must have these already. If there is only one attribute to decide on for employment, I always choose this.*
- *This would be the ideal instructional designer. Someone who can "read" people and situations and know when to move forward or show restraint with the design process.*
- *With an emphasis on the word "personal" --- this is a thread that runs through a productive creative's life at work, home and play.*
- *Patience and resilience are HUGE. Not all faculty care about having a quality class developed. They want to teach from home in their pajamas. Some want quality but are afraid of the technology. The successful designer has to be able to establish relationships first and foremost.*
- *soft skills compliment the technical and practical skills of ID work*
- *Smart people get smarter when they hang out with and work with smart people.*
- *From the description, it sounds like the IDS must come up with new things all the time. I don't think that its necessary to have a culture of creativity as long as it meets the desired outcomes. I would think most things don't require creativity (meaning something new) but rather using the right tools to accomplish the educational goal.*

Table F16. *Topic Statement 9 Response Detail*

To be successful, Higher Education Instructional Designers must recognize when it is appropriate to be creative.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
9	1	26	3.19	.849	78	11	10	4	1	1

Response Themes:

- Relationship with the instructor/ Design team
- Pragmatism/ willingness to do the dirty work when necessary
- Scaling creativity to the subject matter/ course level
- Creativity is not an on/off switch.

Noteworthy/ Illustrative comments:

- *Yes, and also know who their advocates are so they can push their creative agenda in an appropriate manner.*
- *Recognizing your relationship with the instructor, their comfort level, and how they will teach, helps you to know when you can push the creative limits.*
- *Creativity can be found even within boundaries.*
- *This suggests "be creative" as an on/off switch; I think it's more of a habit of problem-solving.*
- *Creative people don't "...recognize when they need to be creative" - they just constantly use creativity.*

Action: Developed clarified topic statement (9A) for round two survey (informed by panel responses) to alleviate respondent confusion.

Table F17. *Topic Statement 9A Response Detail*

Within the context of a project, Higher Education Instructional Designers must recognize when creative activities are appropriate (i.e. warranted, practicable) and when they are not.										
Source: Clarified topic statement developed (informed by round one open-ended responses) to alleviate respondent confusion.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
9A	2	28	3.36	.488	100	10	18	0	0	0

Noteworthy/ Illustrative comments:

- *Hard to argue that it isn't good, generally, to act appropriately. That said, creative activities often depend on audacity, nerve and the willingness to engage the unpredictable.*
- *Each project has its own personality. IDs should always be open to opportunities to be more creative, but they must also be aware of the expectations of other team members.*
- *Gets to the issue of being efficient and effective. Some might feel being creative means adding bells and whistles when it actually does not positively enhance the teaching and learning process. Another way of saying it... technology should be used to enhance the teaching and learning process... and not just added because it looks cool or is fun.*
- *I think this depends on the SME and who is teaching. Having an ID create something REALLY creative, that ultimately won't be applied as intended will have adverse consequences. It's important to know all of the ID-to-teaching stream to be able to know when to be creative.*
- *Creativity can eat up time and resources. You need to know how much is "creative enough."*

Table F18. *Topic Statement 9B Response Detail*

To be successful, Higher Education Instructional Designers must appropriately advocate for more elegant solutions (i.e. within project context/ constraints; time, money, etc.).

Source: New topic statement developed from coding of panelist suggestions for additional topic statements.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
9B	2	25	3.16	.8	68	10	9	6	0	3

Noteworthy/ Illustrative comments:

- *There is a fine line here. "Advocating" is a strong word. I would say "suggest" or "discuss" but realize that you may push faculty to a point that can damage the relationship.*
- *I don't know that I would use the term "elegant" it evokes a feeling of bells and whistles that don't contribute to the product, only make it look pretty. I may be misunderstanding the term.*
- *Well... There's elegant, and there is functional. Thinking of the Golden Triangle (aka Iron Triangle, aka Project Management triangle), it's important to note that sometimes elegant might not be attainable, but workable is!*
- *Education technology (as opposed to instructional design) often rewards complexity when it should be seeking simplicity.*
- *I am not sure I would say they should look for "elegant" solutions; they should look for the most appropriate solution. It may be something that is very simple.*

Action: Developed clarified topic statement (9D) for round three survey (informed by panel responses) to alleviate respondent confusion.

Table F19. *Topic Statement 9C Response Detail*

Successful Higher Education Instructional Designers demonstrate elements of creativity in their communication and collaboration with stakeholders. (e.g. creative "sales" in persuading faculty/ advocating for students).

Source: New topic statement developed from coding of panelist suggestions for additional topic statements.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
9C	2	28	3.29	.600	93	10	16	2	0	0

Noteworthy/ Illustrative comments:

- *Faculty can be stuck in their ways, like most human beings. I think a good ID is a successful communicator to communicate the appropriate message to the appropriate stakeholders.*
- *Soft skills are what separate weak IDs from strong IDs. An ID with excellent abilities to read their clients is highly desirable.*
- *They always listen for that "crack in the door" to make connections and extensions.*
- *To a point...they can be creative when selling ideas to team members however when reporting to the stakeholders and perhaps others outside the organization they should use restraint.*
- *there is a fine line in persuading the faculty. IDs need to recognize that faculty are the content experts and know more about the product. Listening to the faculty member and designing creative ways design the lesson is primary. I don't like the words "persuade" or "sell" they have a tendency to give more authority to the designer and the faculty member feels pressured into doing something they are not comfortable with. Research works, not sales.*
- *Unfortunately. I think this is the least appealing part of an instructional designer's work.*

Table F20. *Topic Statement 9D Response Detail*

To be successful, Higher Education Instructional Designers must appropriately (i.e. within project context/ constraints; time, money, etc.) advocate for more elegant (i.e. relevant, ingenious, simple, novel, and effective) solutions.										
Source: Clarified Topic Statement developed (informed by round two open-ended responses) to alleviate respondent confusion.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
9D	3	24	3.13	.850	79	9	10	4	1	0

Response Themes:

- *Yes, this is what they should be expected to do, otherwise, why would they be needed?*
- *I am not sure about the word "elegant" - maybe meaningful, or refined, or just effective.*
- *Ideally this is so, but sometimes, just getting the work done and completed can be as important as all of these objectives too.*
- *I agree with the overall goal of this item. However, I think the item could be framed a little more clearly. Does "advocate for more elegant..." imply some kind of force or default that an instructional designer must fight against. Complexity? I also disagree that "ingenious" is always a part of elegance. If it is it's probably a by-product of the other items working together.*

Table F21. *Topic Statement 10 Response Detail*

To be successful, Higher Education Instructional Designers must recognize how much creativity is appropriate for a given situation.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
10*	1	25	3.16	.746	81	8	14	2	1	2

Noteworthy/ Illustrative comments:

- *Like anything... knowing when to use which tool is essential.*
- *Keep the end result in mind so you create the right level of information, motivation for the learner. Need to recognize your budget limitations of time, resources, and user interaction.*
- *It is more important to be sensitive to the comfort-level of the faculty than the institutional boundaries, particularly with creative solutions. The tougher sell is the faculty member, and IDs must be sensitive to teaching styles when pushing creative solutions.*
- *This strikes me as an odd question. I mean, yes, ok, ...its true that ID's should know when enough is enough...but overall I think TOO much creativity is rarely the problem in our profession.*
- *Here I see "creativity" as drawing outside the lines. I don't think that there are limits to creativity, but there probably be a limit on the tolerance of a system as to how far out of the lines you paint.*
- *...I don't think "recognizing" creativity and when to use it is important. I don't ever see anyone saying, "Hey, let's be creative now." Creativity isn't something you conjure up like a spell.*

*Action: topic statement reached statistical consensus, but developed clarified topic statement (10A) for round two survey (informed by panel responses) to alleviate respondent confusion and to accrue additional response data.

Table F22. *Topic Statement 10A Response Detail*

To be successful, Higher Education Instructional Designers must balance creative activities with the constraints of a given project.

Source: Clarified topic statement developed (informed by round one open-ended responses) to alleviate respondent confusion and to accrue additional response data.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
10A	2	28	3.57	.634	93	18	8	2	0	0

Noteworthy/ Illustrative comments:

- *It is important for IDs to see see how their efforts fit together to make the end result.*
- *Sometimes a desire to be creative can distract a team or individual from the best and obvious path given the current constraints. It's "The Road Not Taken" syndrome.*
- *Hyperfocus on productivity can wring creativity out of tasks...hyperfocus on creativity ignores the reality that there are legitimate and necessary but mundane tasks.*
- *I think the term balance suggest that its important to have creative activities... it might be that such activities are simply not needed. No sense adding if not needed.*
- *Very important. We don't have a large staff or lots of funding. Designers need to be mindful of what they can do well in the time and space allotted.*
- *It's all about Zen and the art of course maintenance.*

Table F23. *Topic Statement 11 Response Detail*

To be successful, Higher Education Instructional Designers must engage in free-form (abstract, unapplied) creative acts.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
11	1	23	2.83	.834	48	6	7	10	0	4

Response Themes:

- Positive effect on workplace/culture
- Implied absence of practical application
- Impracticality of "chasing shiny objects"

Action: Developed clarified topic statement (11A) for round two survey (informed by panel responses) to alleviate respondent confusion.

Table F24. *Topic Statement 11A Response Detail*

To be successful, Higher Education Instructional Designers must engage in free-form (abstract, unapplied) creative acts that are unrelated to any current projects.

Source: Clarified Topic Statement developed (informed by round two open-ended responses) to alleviate respondent confusion.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
11A	2	25	2.6	.816	50	3	11	9	2	3

Summarized "Agree" position statements:

- It's amazing how often the "unrelated" activities find their way to current (and future) projects.
- Items that come from free-form brainstorming can be cataloged and used for later projects. This is a good way to use creative ideas when pressed for time.
- These activities are crucial to ID Professional Develpment; taking the opportunity to do these things helps gain experience with new methods, techniques, and technologies while being unconstrained by any specific project requirements.
- Free-form creative acts can help IDs relax and free their mind to be more engaged and creative, and often leads to cognitive "breakthroughs."

Summarized "Disagree" position statements:

- Operating fully within the constraints of a project or problem is is much more effective than free "play".
- "Play" that is not guaranteed to generate results that are transferable to a specific project or problem is a waste of resources.
- Although this activity may set very successful IDers apart from average ones, it's not necessarily critical to the job.

Action: Topic statement included in round three survey to undergo Delphi Process.

Table F25. *Topic Statement 11A(RD3) Response Detail*

To be successful, Higher Education Instructional Designers must engage in free-form (abstract, unapplied) creative acts that are unrelated to any current projects.

Source: Delphi Process

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
11A	3	22	2.48	.912	77	5	2	14	1	2

Response Themes:

- *This might help... might not. I find art helpful... but perhaps not all concur.*
- *While these things are good ways to enhance creativity, they aren't required to be successful.*
- *The issue for me... if it's unrelated to any project then why do it? It could be of no value.. ever... just a waste of time. I think free-form engagement is good but should be linked to a project.*
- *While I both agree and disagree with the summarized responses, I selected agree as my response. This is because when hiring and ID, I am going to more likely select a candidate who exhibits interests and creativity beyond what their professional experience indicates. Does this mean I believe they should pursue those creative interests during the workday when they are expected to be working on a specific project? No, at least not as a regular part of their workday.*
- *Instructional design is a creative process which requires the designer to draw upon creative acts both inside and outside the current project.*
- *I respectfully disagree with my colleagues work are concerned with efficiency and wasting resources. I see free play as one way to undertake professional development and to improve an instructional designer's future efficiency, creativity, and project know-how. Also, by not having be "critical to the job" I think that we are devaluing instructional designers and seeing them as cogs in the machine (leading to potential cookie cutter approaches to ID). If you want cookie cutter get a content developer and give them the cookie cutter :)*
- *...Thinking in abstraction is an asset to nearly any profession. Constituting that abstract thought and applying it where and when appropriate is a critical skill for an ID, however, this is situational. IDs "must" know when free-form creative acts should be applied.*
- *As a supervisor, i need my IDs to focus on their work and apply creative thought to assigned projects. When one goes off on their own to do "Creative work" it causes tension between us because they expect to be rewarded/recognized for the unsanctioned work. Another ID may keep their head down and focus only on assigned tasks, not picking up extra work that needs to be done but is unassigned. If I could get ID #1 to recognize & pick up the tasks that need to be done rather than creating new work, I'd be a happier ID supervisor. As it is now, I find it difficult to be supportive of ID creativity when its far outside the scope of current workload (assigned & unassigned projects).*

Table F26. *Topic Statement 12 Response Detail*

To be successful, Higher Education Instructional Designers must create original (novel) models, strategies, or approaches to solve instructional problems.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
12	1	26	3.15	.784	74	10	10	6	0	1

Response Themes:

- Importance usefulness over novelty
- Implied absence of practical application

Action: Developed clarified topic statements (12A, 12B) for round two survey (informed by panel responses) to alleviate respondent confusion.

Table F27. *Topic Statement 12A Response Detail*

To be successful, Higher Education Instructional Designers must always create original (novel) models, strategies, or approaches to solve instructional problems.										
Source: Clarified topic statement developed (informed by round two open-ended responses) to alleviate respondent confusion.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
12A	2	28	2.04	.508	86	0	4	21	3	0

Summarized “Agree” position statements:

- IDs who rely too much on existing models miss out on opportunities to be creative.

Summarized “Disagree” position statements:

- Sometimes? Absolutely. Often? Maybe. Always? Nope.
- Original models, strategies, or approaches aren't always needed.
- Constantly reinventing the wheel wastes time and resources that could be applied to more important innovative activities.

Action: Topic statement included in round three survey to undergo Delphi Process..

Table F28. *Topic Statement 12A(RD3) Response Detail*

To be successful, Higher Education Instructional Designers must always create original (novel) models, strategies, or approaches to solve instructional problems.										
Source: Delphi Process										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
12A	3	23	1.70	.470	96	0	0	16	7	1

Noteworthy/ Illustrative comments::

- *Always? Nope.*
- *Not always, not every project calls for novel approaches*
- *Repurposing models and approaches is an effective strategy as well.*
- *Sometimes the tried and true strategies are the best way to go.*
- *[It] isn't always a necessity, but it's important to know WHEN you need to be original.*
- *Finding the nuances within the parameters of any given job or task and when to apply "novelty" is a much greater skill for an ID.*
- *This approach creates a "not invented here" mentality that blocks an ID from building on existing practices and research.*

Table F29. *Topic Statement 12B Response Detail*

To be successful, Higher Education Instructional Designers must be capable of creating original (novel) models, strategies, or approaches to solve instructional problems.										
Source: Clarified topic statement developed (informed by round two open-ended responses) to alleviate respondent confusion.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
12B	2	28	3.5	.638	93	16	10	2	0	0

Noteworthy/ Illustrative comments:

- *The capability to experiment with original ideas is important in terms of finding new solutions.*
- *Capable of creating novel approaches is key because as stated in prior responses, the approach is dictated by that particular faculty and his/her curriculum.*
- *This goes toward stemming the tide of the cookie cutter ID.*
- *Even though they don't always need to use creative ideas, they should be capable of generating them or generating them from team members.*
- *Most generally novel-ness needs to occur not in the product realm, but in how the ID deals with the client (faculty/SME).*
- *Yes. Otherwise the work could be done by machines or at least semi-professional staff.*

Table F30. *Topic Statement 13 Response Detail*

To be successful, Higher Education Instructional Designers must effectively remix/ repurpose old materials into new materials.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
13	1	26	3.65	.485	96	17	9	0	0	1

Noteworthy/ Illustrative comments:

- *Remixing is critical for efficiently using materials in a way that saves resources and time. Plus, rethinking and reconsidering possibilities from past instructional designs is a kind of reflective practice that can lead to better designs, or reintroduction of formerly tested and proven designs.*
- *My feeling is that creativity is too often misunderstood as true novelty when such is, in fact, only one kind of creativity (whether one considers it lesser or greater is another question)*
- *With the caveat of doing so based on performance data. Don't change for change sake. Also, remix/repurpose old material just to come up with new material... should be a reason or purpose for doing so. I think the link to objectives needs to be strengthened.*
- *There are no new ideas... educators know this.*

Table F31. *Topic Statement 14 Response Detail*

To be successful, Higher Education Instructional Designers must identify connections between elements previously considered disparate.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
14	1	27	3.41	.636	93	13	12	2	0	0

Noteworthy/ Illustrative comments:

- *Remixing is critical for efficiently using materials in a way that saves resources and time. Plus, rethinking and reconsidering possibilities from past instructional designs is a kind of reflective practice that can lead to better designs, or reintroduction of formerly tested and proven designs.*
- *My feeling is that creativity is too often misunderstood as true novelty when such is, in fact, only one kind of creativity (whether one considers it lesser or greater is another question)*
- *With the caveat of doing so based on performance data. Don't change for change sake. Also, remix/repurpose old material just to come up with new material... should be a reason or purpose for doing so. I think the link to objectives needs to be strengthened.*
- *There are no new ideas... educators know this.*

Table F32. *Topic Statement 14A Response Detail*

To be successful, Higher Education Instructional Designers must establish "Dynamic Expertise" by continuously integrating emerging trends with a strong historical perspective (i.e. be fully conversant in a variety of educational theories, practices, and approaches, both old and new).

Source: New topic statement developed from coding of panelist suggestions for additional topic statements.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
14A	2	28	3.17	.669	86	9	15	4	0	0

Noteworthy/ Illustrative comments:

- *This would be an ideal ID. Someone who knows where the creativity points lie among the necessary structural components.*
- *Heck yes! Instructional designers need to be able to continually develop their skills, and dive into new and existing literature, and "best practices" in order to be able to be ready for those un-expected ill formed problems*
- *This apparently isn't critical, based on the hiring I've seen in the field. But I personally value industry knowledge, historical perspective, and knowledge of research & theory. I find IDers with this background better able to recommend the correct solution for the situation. They tend to have more experience and realistic expectations about implementation in an educational setting.*
- *I'm going to agree, but we have found at my university that many faculty do not want to be informed of educational theories. In fact, some feel that it is not the place of the ID to bring this into the process. We hold workshops on these topics and they are fairly well attended, but I've been told by faculty that ID are to work with logistics and not the teaching side.*
- *This isn't what Dynamic Expertise is. Dynamic Expertise is the ability to continuously learn new things and be comfortable with living on the edge of one's competence, never comfortable, always learning and growing.*
- *I think doing this too much can cause overload and fatigue to both instructors and students. Need to have a balance and it might not be continuous integration... perhaps it could be worded... when assessment determines issues and challenges... ID should be able to integrate emerging trends as a means to help resolve the identified issue/challenge.*
- *And although we sometimes think of them as opposing, a healthy skepticism of both emerging trends and history is helpful.*
- *Obviously this isn't NECESSARY to be successful, but it is one of the things that separates the good from the great.*

Table F33. *Topic Statement 15 Response Detail*

To be successful, Higher Education Instructional Designers must engage in creative acts specifically to solve problems.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
15	1	26	3.50	.510	96	13	13	0	0	1

Noteworthy/ Illustrative comments:

- *Excellent, creative problem solving techniques are critical in development and design process.*
- *Yes, as long as the problems are areas of a course that students have challenges with and not just the professor or IDS thinking it's a problem.*
- *In the beginning of the process of development things should be wide open for the ID to be creative, but then need to be pared back to not cause scope creep and to nail down final costs of development.*
- *This is true sometimes, but if a tried and true act leads to an appropriate solution it is not necessary to spend further time conducting creative acts.*
- *Sometimes just arranging "elements" can be a creative act.*

Table F34. *Topic Statement 16 Response Detail*

Successful Higher Education Instructional Designers are comfortable engaging with a variety of tasks and interactions.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
16	1	27	3.89	.321	100	24	3	0	0	0

Noteworthy/ Illustrative comments:

- *In most cases, Higher Education IDs are expected to be able to work with experts in many different subject matter areas and different teaching styles. This means they need to be able to work with a variety of tools and to be able to address different learning objectives in a variety of ways.*
- *[IDs often work on projects that] involve multiple stakeholders with different and sometimes competing interests representing different constituencies and levels of the institution.*
- *Instructional designers can't be locked in an office or cubicle just "designing" (which usually means content creating), but rather they need to be engaged with various SMEs and with the technical people who make things happen on their end. In a sense, the instructional designer is an intermediary between the various people in the process.*
- *IDs in HE are often jacks-of-all-trades. Also, interpersonal interactions with faculty, administrators, and other designers are not always straight-forward and pleasant.*
- *Faculty arrive with all sorts of experiences, biases, predilections ... IDs must be able to adapt and move the ball forward, no matter where they begin.*
- *I Agree with "comfortable"; would Strongly Ageree with "disciplined"*

Table F35. *Topic Statement 17 Response Detail*

Successful Higher Education Instructional Designers are confident in their abilities.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
17	1	27	3.52	.580	96	15	11	1	0	0

Noteworthy/ Illustrative comments:

- *Instructional Design is, as a field/discipline/vocation, not necessarily well-respected (or understood) by many faculty or, indeed, much of academia. Confidence goes a long way toward creating the time and space needed to establish sound working relationships and counter skepticism.*
- *Confidence is important as it makes subject matter experts feel more at ease with them*
- *As a change agent, you must be motivating and encouraging.*
- *Confidence is important, but overconfidence may result in an ID setting forth design parameters that ignore an SME's teaching style or learning objectives.*
- *It helps - but not too much confidence, then you get into the blindness of knowing too much.*

Table F36. *Topic Statement 18 Response Detail*

Successful Higher Education Instructional Designers are willing to risk exposure embarrassment or censure to propose new ideas.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
18	1	25	3.24	.579	85	8	15	2	0	2

Noteworthy/ Illustrative comments:

- *This is a tough one. While an ID should feel comfortable in proposing new ideas, if the culture is such that new ideas are met with ridicule or censure, I'd suggest the ID find a new place to work. I believe it is the responsibility of the IDs' manager to ensure IDs are encouraged to bring forth new ideas and feel safe and comfortable in doing so.*
- *An ID's job is to champion the best research and theory that we have about instruction. Sometimes those are contrary to commonsense or conventional wisdom; sometimes they require that others change, or that an organization take risks.*
- *Academia is not, like most institutions, particularly known for being open to new ideas, so if they are going to appear at all it takes some willingness to take a risk.*
- *I would expect a safe working environment where the team player have a mutual respect and handle different opinions in a respectful and constructive way rather than attacking each other's opinions*
- *It really depends how safe your environment is. At the end of the day you still need to pay your bills and put bread on the table.*

Table F37. *Topic Statement 19 Response Detail*

Successful Higher Education Instructional Designers are willing to continuously question underlying assumptions of established practice.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
19	1	27	3.33	.620	93	11	14	2	0	0

Noteworthy/ Illustrative comments:

- *Yes, this is important. Questioning established practice goes back to the importance of having a culture where an ID is encouraged to present new ideas.*
- *If people weren't willing to question established practices, we'd still be painting on cave walls.*
- *Respectfully question established practice is best. The designer must acknowledge that there could be good reasons for the status quo that some folks are unable to let go.*
- *At times, this can be a hindrance if not kept in check. I've seen designers challenge practices to the point of failing to produce a deliverable.*
- *If you're an instructional designer who just "paints by numbers," you're not really doing instructional design.*

Table F38. *Topic Statement 19A Response Detail*

To be successful, Higher Education Instructional Designers must be able to restrain from implementing initial (or prescribed) responses while considering alternates (when appropriate relative to the constraints of a project).

Source: New topic statement developed from coding of panelist suggestions for additional topic statements.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
19A	2	22	3	.690	60	5	12	5	0	6

Summarized "Agree" position statements:

- The first solution that comes to mind may not be the best solution, it's important to "keep digging" to see if better solutions emerge.
- This approach challenges IDs to take a "fresh" look at their own methodology, and keeps them from getting "stuck in a rut."
- This is effective so long as the first solution is not dismissed outright. IDs may find that their first idea was the best idea after all.

Summarized "Disagree" position statements:

- The IDs role in the organization is crucial: Sometimes IDs are expected to produce the work as prescribed.
- IDs should be aware of the "weight" of various solutions: if the manager's (or SME's) suggestion comes first, IDs must be sure to at least vet that idea before they move forward.
- Quick, effective decision-making should not be underrated.

Action: Topic statement included in round three survey to undergo Delphi Process.

Table F39. *Topic Statement 19A Response Detail*

To be successful, Higher Education Instructional Designers must be able to restrain from implementing initial (or prescribed) responses while considering alternates (when appropriate relative to the constraints of a project).

Source: Delphi Process

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
19A	3	23	2.87	.548	75	2	16	5	0	1

Response Themes:

- *Personally, I think initial restraint is a good idea when working with most faculty members. It's easy to blurt out every idea you've ever had that worked. It's best to sit back and take things in like a counselor. Once you've heard everything, make a range of suggestions.*
- *I disagree that IDers must do this, but I do see the importance of IDer's considering alternates.*
- *If an ID is good, they will have initial ideas that should help move things along. If everyone is good with the idea... why not move quickly to get the course developed. I don't think they should restrain themselves... but should and could consider alternatives should questions arise.*
- *Measured judgment matters.*
- *IDs must be thoughtful and not always go for the same model as used in other courses.*
- *This is highly contextual and depends on where one is at in the balance of innovation, exploration and simply getting the job done.*

Table F40. *Topic Statement 20 Response Detail*

Successful Higher Education Instructional Designers are devotees to current industry best practices only.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
20	1	27	1.85	.718	89	1	2	16	8	0

Noteworthy/ Illustrative comments:

- *This is perhaps the biggest failing in my experience with "traditional" instructional designers...they;'ve had best practices and established practices so inculcated into their experience and understanding that they don't have an intellectual interior open or broad enough to have new ideas, question assumptions, or consider how contextually dependent "best practices" are.*
- *Current "best practices" may lack the critical gaze that instructional designers need to keep on any practices they have.*
- *It's important to be aware of best practices, but not be a slave to them. Sometimes innovation comes from taking a different path.*
- *IDs should be familiar with the rich history of instructional design and research around learning.*
- *NO__NO__NO__! we are just scratching the surface of what is possible and what can be envisioned for the future of learning.*

Table F41. *Topic Statement 21 Response Detail*

Successful Higher Education Instructional Designers are comfortable surrendering ownership of creative works.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
21	1	26	3.19	.567	89	7	17	2	0	1

Noteworthy/ Illustrative comments:

- *An unfortunate truth, but that doesn't mean I think it's always right.*
- *Often, in higher education, IDs play a supporting role to faculty. Ideally they work as partners but that is not always the case therefore an ID must be comfortable surrendering ownership of work.*
- *The ID profession is a service oriented profession -- we make instructors look good.*
- *ID's are the stewards of the work, not the owners.*
- *Understanding the virtuous circle and open education can reframe the very notion of "surrender"*
- *I believe that IDs work with faculty best when they are humble and devoted to the success of students.*

Table F42. *Topic Statement 22 Response Detail*

Successful Higher Education Instructional Designers are willing to suppress their ego for the good of the endeavor.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
22	1	26	3.65	.562	93	18	7	1	0	1

Noteworthy/ Illustrative comments:

- *Totally agree on this one. Instructional Design is a collaborative endeavor. Meet the expectations of the good quality work is the goal. Individual contributions should be recognized.*
- *Suppress completely? No. Suppress some? Sure...academia is replete with delicate flowers who must be handled gently so they don't have to suppress their own egos. It is also a reality that good relationships between designers and content experts depends on making allowances for egos while not giving one's own up completely.*
- *Faculty can be difficult and very ego involved. If you have a designer approaching the project with the same amount of ego, the results could be disastrous.*
- *If (IDs) have an ego... then I feel they are in the wrong line of work.*
- *Yes, well, of course. I mean, if you can't let go of your ego a little bit you're never going to work successfully and collaboratively with others. That's what fine arts are for.*

Table F43. *Topic Statement 23 Response Detail*

Successful Higher Education Instructional Designers are empathetic to multiple perspectives.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
23	1	27	3.70	.541	96	20	6	1	0	0

Noteworthy/ Illustrative comments:

- *It is a very rare exception, in my experience, that the relationships involved in development projects involve only people with perspectives so similar that willing empathy isn't required for success.*
- *This skill will make you one of the best designers at your institution - teachers and entire departments will seek you out, because of your empathy and willingness to understand multiple perspectives. It's probably one of the most important skills.*
- *Empathy is critical when working with faculty who have different priorities and responsibilities. But empathy is also critical because the results of instructional design work is then laden on students, who are challenged with succeeding.*
- *The word "empathetic" is important as it implies that an instructional designer can maintain their own perspective.*

Table F44. *Topic Statement 23A Response Detail*

To be successful, Higher Education Instructional Designers must actively seek multiple viewpoints (when appropriate relative to the constraints of a project).										
Source: New topic statement developed from coding of panelist suggestions for additional topic statements.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
23A	2	28	3.36	.621	93	12	14	2	0	0
Noteworthy/ Illustrative comments: • *Not only can actively seeking multiple viewpoints provide new ideas to instructional problems, gaining insight from users early on is a hallmark of agile development, suggested in a rapid prototyping approach.* • *The more perspectives you can apply to the project, especially from end users, the better the fit.* • *Seeking advice outside of one's sphere is an asset not many IDs are comfortable doing, but should do. Design in a vacuum limits the potential for positive outcomes.* • *And able to recognize why those viewpoints may differ.* • *Many ID's feel they should be the ones to create the novel ideas, they should instead feel they are the facilitators of the process.*										

Table F45. *Topic Statement 23B Response Detail*

To be successful, Higher Education Instructional Designers must integrate suggestions and feedback from others.										
Source: New topic statement developed from coding of panelist suggestions for additional topic statements.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
23B	2	28	3.59	.508	100	15	13	0	0	0
Noteworthy/ Illustrative comments: • *This should happen, but rarely does. Not sure why, most places have time constraints or it is not valued enough to make time in the process to occur.* • *Yes, but with confidence so they don't become a weather-vane turning according to every person's (and theory's) whim.* • *And recognize when a suggestion misses the mark.* • *The design process is a collaborative venture. Suggestions are made, negotiation takes place and the final product is born.*										

Table F46. *Topic Statement 24 Response Detail*

Successful Higher Education Instructional Designers completely avoid ill-defined problems.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
24	1	26	1.38	.571	96	0	1	8	17	1

Noteworthy/ Illustrative comments:

- *Ill-defined problems are the essence of the instructional designers' field.*
- *In fact, this is the area they should dwell in. Ill-defined problems lead to ill-defined content. Part of the ID role would be to move from ill-defined to well-defined.*
- *Learning is complex and not well-understood. Different disciplines and content areas introduce more complexity and distinct variables. Oftentime humans enter the picture with preconceived notions or assumptions that further complicate the problems or challenges of ID.*
- *Yikes, I wouldn't want to work with any of those.*

Table F47. *Topic Statement 25 Response Detail*

Successful Higher Education Instructional Designers tolerate ill-defined problems.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
25*	1	26	3.19	.981	81	12	10	1	3	1

Noteworthy/ Illustrative comments:

- *"tolerate" is an interesting word choice; I agree with this statement in the context of an ID needing to be able to work in an environment where problems vary in degree and scale and may occur unexpectedly.*
- *Many problems or requests are ill-defined so the ability to not become frustrated is important.*
- *While an ID needs to be able to work with ill-defined problems, they can also work to create structure for SMEs to better define problems.*
- *Just because most problems are ill-defined, it doesn't mean one should just "tolerate" them. It's your job as the designer to help clarify the problem. When clarified, the instructional designer needs to help set a plan in motion to solve the problem. It's part of the job.*

*Action: topic statement reached statistical consensus, but developed clarified topic statement (25A) for round two survey (informed by panel responses) to alleviate respondent confusion and to accrue additional response data.

Table F48. *Topic Statement 25A Response Detail*

Successful Higher Education Instructional Designers are only comfortable engaging with ill-defined problems or situations for a limited time or to a limited extent.

Source: Clarified topic statement developed (informed by round two open-ended responses) to alleviate respondent confusion.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
25A	2	26	1.84	.674	79	0	4	14	8	2

Noteworthy/ Illustrative comments (Round ONE):

- *"tolerate" is an interesting word choice; I agree with this statement in the context of an ID needing to be able to work in an environment where problems vary in degree and scale and may occur unexpectedly.*
- *Many problems or requests are ill-defined so the ability to not become frustrated is important.*
- *Just because most problems are ill-defined, it doesn't mean one should just "tolerate" them. It's your job as the designer to help clarify the problem. When clarified, the instructional designer needs to help set a plan in motion to solve the problem. It's part of the job.*

Noteworthy/ Illustrative comments (Round TWO):

- *Instructional design IS an ill-defined problem. Good IDers understand this and accept it.*
- *It's important for instructional designers to be able to work thought long-term solution implementations and through the day-to-day "slog" of the work. There is a fine balance between the daily slog and the more exciting limited term project.*
- *I guess it depends on the shop/institution...if one isn't routinely faced with the unknown they probably work in a less than interesting place.*
- *If an "ill defined problem" sticks around too long, the course might not get built.*

Action: Developed clarified topic statement (25B) for round three survey (informed by panel responses) to alleviate respondent confusion.

Table F49. *Topic Statement 25B Response Detail*

Higher Education Instructional Designers can be successful even if they are only comfortable engaging with ill-defined problems or situations for a limited time or to a limited extent.

Source: Clarified topic statement developed (informed by round two open-ended responses) to alleviate respondent confusion.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
25B	3	22	2.28	.813	67	3	13	4	2	2

Noteworthy/ Illustrative comments:

- *I don't see there are always ill-defined problems. It's great for instructional designers to be able to feel comfortable engaging with ill-defined problems, but I don't see that instructional designers need to be comfortable engaging with ill-defined problems in order to successful.*
- *Defining an ill-defined problem involves the faculty/staff as well as the ID. Both parties should contribute to the definition and there is a point of diminishing returns when it drags on too long.*
- *Agreement here = ambivalence...there are plenty of institutions where IDs can be successful without these higher-level skills because they will rarely be demanded of them.*
- *Engaging with ill-defined problems isn't always the case, unless you are working for a start-up, so some degree of day-to-dayness is to be expected, embraced, and used as a use case to figure out how new and novel solutions can be used for existing well defined problems.*
- *Yes, this is so. The operative terms here are "limited time" and/or "limited extent." Ill-defined problems or situations that continue in and IDs job are likely the biggest cause of "burn out".*
- *One would hope that their capacity to do so would grow over time.*

Table F50. *Topic Statement 26 Response Detail*

Successful Higher Education Instructional Designers can operate effectively despite unspecific or incomplete direction.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
26	1	27	3.48	.643	93	15	10	2	0	0

Noteworthy/ Illustrative comments:

- *ID's need to be able to take non-specific information and at least initially lay out a roadmap. Even if it's initially wrong, any map should allow the team the opportunity to begin to focus and hone in on the actual goal.*
- *Like a good reference librarian, a good instructional designer has his own version of the "reference interview". Most clients seem to come with incomplete information. It's up to the designer to suss things out.*
- *Many times the focus is not clearly defined. One of the tasks of a designer is to listen, actively, and help to bring a focus and direction to the project.*
- *IDs need to have experience and confidence to tackle instructional design challenges on their own, but should also always have a trusted circle of peers and mentors to help guide them toward best results.*

Table F51. *Topic Statement 27 Response Detail*

Successful Higher Education Instructional Designers embrace ambiguity as an empowering opportunity.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
27	1	26	3.54	.581	93	15	10	1	0	1

Noteworthy/ Illustrative comments:

- *Absolutely! Most projects will have an element of ambiguity interwoven throughout various phases. If you cannot see that as opportunity, instructional design will be a difficult exercise for you.*
- *Certainly ambiguity can be an "open lane" for creativity and empowerment. A chance to show skills, leadership abilities, as well as, knowledge regarding content construction.*
- *Ambiguity often comes from instructors' inability to define how learning happens or to create new ways of teaching. An ID's greatest asset is their knowledge of theory and practice for teaching and learning which they use to fill those gaps and replace ambiguity with clarity and creative construct.*
- *Sometimes ambiguity allows the ID to exercise a little more creative license as a trial for instructors to preview and consider before adopting ... "Let me mock something up and I'll show you what I'm thinking" is a helpful phrase for the ID to use in these cases.*
- *This is perhaps the most important *intentional* need on the part of an instructional designer: whether one wants to use the slowly-deprecated terms of disruption and innovation or drill down to questions of technological determinism and agency, it is in ambiguity that creative and new ideas and works thrive and are produced. It starts with choice, not a sufficient but certainly a necessary condition.*
- *It would be nice if the instructional designer embraced ambiguity, but I am happy with a tolerance of ambiguity.*

Table F52. *Topic Statement 28 Response Detail*

Successful Higher Education Instructional Designers believe that their creative efforts are making a difference.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
28	1	27	3.37	.688	89	13	11	3	0	0

Noteworthy/ Illustrative comments:

- *The more ID's know how their work impacts learners the more (potentially) motivation they should have to create meaningful work.*
- *It's important to believe in oneself, however we must also realize that we are not the end-all-be-all of the process. Institutional culture is also important in this process.*
- *No reason that ID should not be intrinsically motivating like anything else.*

Table F53. *Topic Statement 29 Response Detail*

Successful Higher Education Instructional Designers feel professionally fulfilled.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
29	1	25	3.24	.830	70	12	7	6	0	2

Summarized "Agree" position statements:

- This is particularly important for long-term success.
- Feeling that you are doing a good job can be motivational.
- It seems impossible to be really good or great without feeling like one is making a difference.
- IDs need to be fulfilled to get past the naysayers, the challenges, and the (often boring) routine.
- Fulfillment, yes, comfort with the status quo (i.e. complacency), no.

Summarized "Disagree" position statements:

- A creative ID would be searching for new ways to solve new problems which may mean dissatisfaction to some degree.
- I think ID's should feel intrinsically fulfilled, individually that may or may not equate to professional fulfillment.

Action: Topic statement included in round two survey to undergo Delphi Process.

Table F54. *Topic Statement 29(RD2) Response Detail*

Successful Higher Education Instructional Designers feel professionally fulfilled.

Source: Delphi Process

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
29	2	25	3	.707	68	6	13	6	0	3

Summarized "Agree" position statements:

- This is particularly true of the long-term. In the short-term IDs may be able to be successful without professional fulfillment but after awhile it will get very difficult.
- ID inherently requires levels diligence, effort, and creative energy that are simply not maintainable without personal and professional fulfillment.
- IDs that are not feeling professionally fulfilled are probably in the wrong work environment or the wrong profession.

Summarized "Disagree" position statements:

- This statement suggests a correlation that I don't know is actually there or even needs to be considered.
- Some IDs may feel fulfilled creating temlpated courses in a very structured fashion.
- This is sort of a lame question. There are a lot of things that go into professional fulfillment, work activities being just one of them.

Action: Topic statement included in round three survey to undergo Delphi Process.

Table F55. *Topic Statement 29(RD3) Response Detail*

Successful Higher Education Instructional Designers feel professionally fulfilled.

Source: Delphi Process

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
29	3	21	2.57	.746	50	3	6	12	0	3

Noteworthy/ Illustrative comments:

- *I tend to agree that success follows fulfillment but... they could be completely unrelated as well.*
- *As with most jobs, a certain level of fulfillment is important for productivity. Someone who is unhappy in their job may not do as good of a job.*
- *Considering the statements above I tend to feel that professional fulfillment may be more than just success. I could also feel successful when professionally respected but that is not all I would need to be fulfilled.*
- *While I would hope a successful ID would feel professionally fulfilled, it might not necessarily be true since it is possible to be considered a success without feeling fulfilled.*
- *I had a chuckle when I read that IDs feel fulfilled by creating template-based courses. This is so preposterous that I don't even know what to do with this (at this moment). Why have instructional designers when all you do is work from templates? It's a waste of an education (and money used to attain it) if you ask me. Professional fulfillment is important in any profession. You can certainly pay your bills with any job, but at the end of the day if you don't feel fulfilled it's a jail. To address the other point, about being intrinsically fulfilled, this sounds like someone who is a bad manager, throwing the responsibility for to the employee to be fulfilled. While the IDer has a responsibility in his/her fulfillment, the environment is also an huge important factor in being fulfilled.*
- *"Successful" can be interpreted differently by different people; the IDs and their supervisors may measure "success" differently. For example, as an ID I felt unsuccessful when I worked for a university that did little to help employees grown in the organization. I gave 100% effort and was very creative in my work but it went unrecognized/unrewarded by my supervisor who was unable to craft a professional development plan with me. I left because I felt I couldn't be successful there - there were no indicators that they wanted me to grow and increase my responsibility. When I left they didn't understand why, considering how much work i produced and the positive feedback I received from peers and faculty I supported. Conversely, I supervise an ID who is working full time and taking night classes in ID. She wants to focus on school right now so is not ready to take on more work responsibility. When she is ready, we'll craft a development plan for her based on her interests, aptitude, and organizational needs.*

Table F56. *Topic Statement 30 Response Detail*

Successful Higher Education Instructional Designers are passionate about their work.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
30*	1	26	3.31	.788	85	12	11	2	1	1

Summarized "Agree" position statements:

- There seems to be a correlation between passion and quality of work.
- Passion leads to devotion, caring, and ambiguity tolerance.
- If one defines "success" as more than just adequacy, then passion is essential for any sustained success.
- Obvious passion in an ID helps "sell' the importance of effective pedagogies to the Faculty.

Summarized "Disagree" position statements:

- Other motivators such as job security are at least as important as passion.
- Passion for your work is a 'nice to have', but not necessarily a 'must have '

Noteworthy/ Illustrative comments:

- *A combination of creative and professional fulfillment through recognition, implementation and difference-making allows for---might even demand---passion. If one is defining "success" as more than just adequacy, then passion is essential for any sustained success.*
- *Agree if the passion results in an enthusiasm that comes across to faculty. Sometimes too much passion can lead to frustration when faculty don't buy-into the dream.*
- *You're a salesman to people who have been doing the same thing for years, so you better believe in it!*

*Action: topic statement reached statistical consensus, but was included in round two survey as a Delphi question to accrue additional response data.

Table F57. *Topic Statement 30(RD2) Response Detail*

Successful Higher Education Instructional Designers are passionate about their work.										
Source: Delphi Process										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
30	2	27	3.11	.578	96	6	18	3	0	1

Noteworthy/ Illustrative comments:

- *Lack of passion can be difficult as an IDer because you are often working with faculty and other stakeholders. This puts a lot of pressure on the engagement that the IDer appears to have. A IDer who is not passionate about their work may come across as insincere.*
- *We all sometimes work without passion, but creativity rarely will come without passion.*
- *Passion seems to lead to a greater tolerance for risk, more creativity, and more success.*
- *I do think you need passion for your work. This doesn't mean that you will be bright eyed and bushy tailed each and every day at work. You will have those moments where you want people to get the heck out and leave you alone. The question about passion for me comes down to this: Do you think about ID when you leave work? Or do you not? If you get excited about that new ATD magazine in the mail, or the new ISTE journal coming out, or that notification for your local educause event, then you are passionate. If you switch off your mind from everything ID when 5pm hits...well, there is something wrong in my view.*
- *I think there needs to be passion - but too much passion sometimes makes it difficult for designers to realize that not everyone is as committed to quality online education and sometimes we need to settle for a good product as opposed to a quality product.*
- *A successful ID does not necessarily mean they are passionate. Would be nice, but not required.*

Table F58. *Topic Statement 31 Response Detail*

Successful Higher Education Instructional Designers engage in playful experimentation.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
31	1	26	3	.748	77	6	15	4	1	1

Summarized "Agree" position statements:

- Continuous experimentation is important; it leads to innovation.
- All good experimentation has elements of play.
- IDs should have opportunities to blend Play (enjoying accomplishing things that are personally meaningful) and Experimentation (the disciplined practice of hypothesizing and testing).

Summarized "Disagree" position statements:

- Experimentation at work should be purposeful, not playful.
- Opportunities for 'play' depend more on the work culture than the ID him/herself.

Noteworthy/ Illustrative comments:

- *There is no creativity and little serendipity without experimentation and good experimentation will mostly be playful or at least have elements of play.*
- *Play is one way to enjoy and still accomplish things that are personally meaningful. Experimentation is a more disciplined practice that consists of hypothesizing and testing. I like seeing the two together, and believe IDs should have opportunities to engage in this.*
- *I don't know if it has to be "playful" but definitely a willingness to experiment is needed.*
- *Experimentation is important, but it also hinges a lot on the environment and company culture.*

Action: Topic statement included in round two survey to undergo Delphi Process.

Table F59. *Topic Statement 31(RD2) Response Detail*

Successful Higher Education Instructional Designers engage in playful experimentation.

Source: Delphi Process

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
31	2	26	3.04	.662	75	6	15	5	0	2

Summarized "Agree" position statements:

- Playful experimentation is the only real creative experimentation. The purpose IS the play.
- Despite negative connotations of the word "play", it is not counter to purpose or productivity. Rather, playfulness is a manifestation of interest, curiosity, creativity, and problem-solving, which seems to pair well with experimentation.
- The best ideas come from playful experimentation and creative organizations give employees some space and time to do this.
- The playful element is important in keeping up motivation.

Summarized "Disagree" position statements:

- Not unless the play relates directly to the work at hand.
- As time allows and monies are made available for professional development activities.
- Playfulness and creativity go hand in hand, but a balance between "no play" and "all play" is necessary.
- Should they, yes. Is it a requirement for success, I don't think so.

Action: Topic statement included in round three survey to undergo Delphi Process.

Table F60. *Topic Statement 31(RD3) Response Detail*

Successful Higher Education Instructional Designers engage in playful experimentation.										
Source: Delphi Process										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
31	3	23	2.87	.626	71	3	14	6	0	1

Noteworthy/ Illustrative comments:

- *There are varying degrees of experimentation, so I would say that some playful experimentation can be utilized on most every project*
- *I think unsuccessful IDS could engage in playful experimentation. I think successful IDS do not have to engage in playful experimentation. I think IDS should engage in playful experimentation when appropriate, money, time, content...*
- *While I don't believe play is "required" to be successful, I believe an ID is more likely to be successful if he/she engages in playful experimentation.*
- *I still agree. I also disagree with my colleagues that focus on the "as relates to work" aspect and "if money and time allows". These views, to me, show stagnant organizations and this stagnancy translates to IDers too.*
- *Yes, this is a critical aspect of their position. Thinking outside of the box in abstraction, paying attention to emergent trends, and trying new approaches in their work is vital.*
- *Playful may be the wrong word. It's more about the willingness to experiment without fear of consequences.*
- *As an ID, I got to where I am today by playing with social media which, at the time, did not have direct connections to teaching & learning. by playing i was able to master skills and subsequently could apply that knowledge to teaching & learning. being an early adopter of social media and on the cutting edge of read/write web tech in education I made a name for myself = successful*

Table F61. *Topic Statement 32 Response Detail*

Successful Higher Education Instructional Designers demonstrate a single-minded immersion to creative or problem solving tasks.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
32	1	25	2.44	.821	44	2	10	10	3	2

Response Themes:

- Passion/ "Laser focus"/ uninterrupted thought
- Positive connotation of Csíkszentmihályi's "flow"
- Inexact terminology
- Implied exclusion of external sources of possible solutions (e.g. group interaction/ multitasking)
- Lack of big-picture/ holistic view
- Over thinking a problem and losing sight of pragmatism.

Action: Developed clarified topic statement (32A) for round two survey (informed by panel responses) to alleviate respondent confusion.

Table F62. *Topic Statement 32A Response Detail*

Successful Higher Education Instructional Designers demonstrate a single-minded immersion to creative or problem solving tasks (when appropriate relative to the constraints of a project).

Source: Clarified Topic Statement developed (informed by round two open-ended responses) to alleviate respondent confusion.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
32A	2	26	2.62	.637	50	2	12	12	0	2

Summarized "Agree" position statements:

- Csíkszentmihályi's concept of "flow" comes to mind here. Immersed in the work, singularly focused on results. Teese are desired traits in team members.
- Focus is critical. Knowing when to go from abstraction to focusing on completion is vital to getting the job done.
- Yes, and this is why I'm inclined to say that successful instructional designers have to be passionate. It's difficult to imagine frequent, single-minded immersion without passion.

Summarized "Disagree" position statements:

- This statement suggests tunnel vision which would tend to ignore opportunities not readily in the field of vision.
- Should be able to multi-task and keep project requirements in mind. Doing so might actually help with creativity.
- There are always practical considerations that get in the way of single-minded immersion. I think this is nice to have, but ultimately unrealistic.

Action: Topic statement included in round three survey to undergo Delphi Process.

Table F63. *Topic Statement 32A(RD3) Response Detail*

Successful Higher Education Instructional Designers demonstrate a single-minded immersion to creative or problem solving tasks (when appropriate relative to the constraints of a project).

Source: Delphi Process

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
32A	3	24	2.58	.653	50	2	10	12	0	0

Noteworthy/ Illustrative comments:

- *I think the successful ones feel this way often, although perhaps not always.*
- *To me this statement suggests tunnel vision which is the antithesis of creativity.*
- *Single-minded immersion may or may not work for some people. I suspect some IDS could achieve the same or better results by balancing several projects. Sometimes I simply need to put down a project and focus on something else for awhile... when I come back I seem to have a better feel and/or can see things more clearly.*
- *While some IDs may work well working this way, other successful IDs may approach their work in a different manner - working on several projects at once and switching their focus between tasks.*
- *IDers need to be able to immerse themselves in a problem. They should also be able to pull back and take a break to let things sink in. That said. I disagree with the colleague that wrote about multitasking. We are serial single-task organisms (as recent research has shown), and we switch from one task to another rapidly. This has been shown to be detrimental to the overall effectiveness we have.*

Table F64. *Topic Statement 33 Response Detail*

Successful Higher Education Instructional Designers view difficult tasks as something to be mastered rather than something to be avoided.

TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
33*	1	26	3.27	.778	85	11	12	2	1	1

Noteworthy/ Illustrative comments:

- *An ID who avoids difficult tasks is likely in the wrong field.*
- *Without a perspective of embracing difficult tasks, nothing interesting will happen and, consciously or not, designers will find ways to make the question of difficult tasks come up less and less, in a negative feedback cycle.*
- *I think mastered is the wrong word here; I'd use 'understood' or some more vague, soft term like that. Mastered implies there is always only one way of doing things.*

*Action: topic statement reached statistical consensus, but developed clarified topic statement (33A) for round three survey (informed by panel responses) to alleviate respondent confusion and to accrue additional response data.

Table F65. *Topic Statement 33A Response Detail*

Successful Higher Education Instructional Designers view engaging with difficult tasks as something to be embraced rather than something to be avoided.										
Source: Clarified question developed (informed by round one open-ended responses) to alleviate respondent confusion.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
33A	2	28	3.26	.585	93	9	17	2	0	0

Noteworthy/ Illustrative comments:

- *I don't know if I would go so far as to say "embrace" but certainly difficult tasks can't be avoided*
- *There are many aspects of ID work that are vague and/or difficult. ID's who find much displeasure in these will likely not be as effective as others who more readily embrace the challange.*
- *Nope, all IDs like anyone else, like it when things go smooth and easy. However, given that, most IDs know at times a level of creativity may solve a difficult problem and employ it.*
- *This is a tough one, because if you're doing things the right way, nothing has to be "difficult." And, to view things as "difficult," just puts a bad title on a task.*

Table F66. *Topic Statement 34 Response Detail*

Successful Higher Education Instructional Designers are life-long learners.										
Source: Clarified question developed (informed by round one open-ended responses) to alleviate respondent confusion.										
Q	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
34	2	26	3.73	.452	93	19	7	0	0	2

Noteworthy/ Illustrative comments:

- *Being a life-long learner helps an IDer to have a better perspective on what learning really is and what it is not (e.g., traditional lecture style classes with interspersed exams)*
- *Instructional designers are successful in part because they can imagine the learning experience themselves as if they were the learner. This requires that IDs are in-touch with the learner experience.*
- *As members of an educationally centered career, most tend to want to learn more as they progress. I'd even venture to say, that the longer the ID has been an instructional designer their thirst for new knowledge and novel approaches increases with time.*
- *ID is a rapidly changing field, especially in terms of elearning. This is a field where one can quickly become obsolete.*

Summarized Response Data for Round Three, Part Two: Creativity-Related Skills

When I add an Instructional Designer to my team, it is essential that he or she be able to …

Table F67. *Competency 1 Response Detail (Desirability)*

Identify opportunities for creativity (i.e. existing constraints and empowering ambiguity) within the overall scope of a project or problem assigned to them.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D1	3	22	3.5	.512	92	11	11	0	0	2

Table F68. *Competency 2 Response Detail (Desirability)*

Tailor their planned creative activities to the scope and constraints of a project.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D2	3	23	3.70	.470	96	16	7	0	0	1

Table F69. *Competency 3 Response Detail (Desirability)*

Engage in continuous reflection and assessment and exploit new creative opportunities that arise as the project evolves.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D3	3	23	3.57	.590	92	14	8	1	0	1

Table F70. *Competency 4 Response Detail (Desirability)*

Demonstrate a complete understanding of process; recognize inherent "flex points."										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D4	3	22	3.5	.673	83	13	7	2	0	2

Table F71. *Competency 5 Response Detail (Desirability)*

Maximize efficiency through creative use/ reuse of available resources.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D5	3	22	3.64	.492	92	14	8	0	0	2

Table F72. *Competency 6 Response Detail (Desirability)*

Initially explore a problem "as it is" (mitigate any personal bias/ assumption/ preference).										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D6	3	22	3.41	.666	83	11	9	2	0	2

Table F73. *Competency 7 Response Detail (Desirability)*

Actively seek, and seek to understand, input from multiple sources.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D7	3	22	3.50	.598	88	12	9	1	0	2

Table F74. *Competency 8 Response Detail (Desirability)*

Explore and consider the atypical.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D8	3	23	3.17	.650	83	7	13	3	0	1

Table F75. *Competency 9 Response Detail (Desirability)*

Ascertain the essence of a problem by prioritizing initial information and eliminating the non-critical.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D9	3	22	3.32	.646	83	9	11	2	0	2

Table F76. *Competency 10 Response Detail (Desirability)*

Pattern-match problem needs/requirements with historical information and previous successes.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D10	3	22	3.27	.767	75	10	8	4	0	2

Table F77. *Competency 11 Response Detail (Desirability)*

Remix/Reuse/Recycle ("Bricolage"), and create as needed to fill extant gaps.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D11	3	21	3.33	.577	83	8	12	1	0	3

Table F78. *Competency 12 Response Detail (Desirability)*

Set and uphold targets for the iteration/ creation cycle that are accountable to extant resources and timelines.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D12	3	23	3.43	.507	96	10	13	0	0	1

Table F79. *Competency 13 Response Detail (Desirability)*

Prioritize creative effort based on projected outcomes; focus effort toward serving the identified need/gap.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D13	3	23	3.57	.507	96	13	10	0	0	1

Table F80. *Competency 14 Response Detail (Desirability)*

Seek elegant (i.e. relevant, ingenious, simple, and effective) solutions.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D14	3	23	3.09	.596	83	5	15	3	0	1

Table F81. *Competency 15 Response Detail (Desirability)*

Ascertain client disposition toward creativity and communication/ interaction preferences, and adjust one's collaboration strategies accordingly.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D15	3	23	3.61	.499	96	14	9	0	0	1

Table F82. *Competency 16 Response Detail (Desirability)*

Effectively communicate/ articulate creative/atypical ideas.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D16	3	23	3.52	.730	83	15	5	3	0	1

Table F83. *Competency 17 Response Detail (Desirability)*

Demonstrate ability to develop "rapid prototypes", sketches, or storyboards to convey information and ideas to stakeholders.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D17	3	23	3.30	.822	75	12	6	5	0	1

Table F84. *Competency 18 Response Detail (Desirability)*

Demonstrate a demeanor supportive of collaborative creativity (e.g. flexibility, honesty, patience, resilience, modesty, diplomacy, tact).										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D18	3	22	3.68	.476	92	15	7	0	0	2

Table F85. *Competency 19 Response Detail (Desirability)*

Engage in active listening: find value in other's ideas.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D19	3	22	3.68	.477	92	15	7	0	0	2

Table F86. *Competency 20 Response Detail (Desirability)*

Preserve productive relationships while encouraging needed change.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D20	3	22	3.32	.568	88	8	13	1	0	2

Table F87. *Competency 21 Response Detail (Desirability)*

Provide "pedagogical leadership": Take ownership of an endeavor without having ownership of the outcome.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D21	3	23	3.35	.714	83	11	9	3	0	1

Table F88. *Competency 22 Response Detail (Desirability)*

Recognize creative opportunities inherent to one's role within the organization.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D22	3	23	3.30	.559	92	8	14	1	0	1

Table F89. *Competency 23 Response Detail (Desirability)*

Tailor creative disposition to meet the requirements of one's role within the organization.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D23	3	23	3.09	.733	75	7	11	5	0	1

Table F90. *Competency 24 Response Detail (Desirability)*

Recognize how one's work affects others. (e. g. balance proactive autonomy and the collaborative team dynamic).										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D24	3	23	3.61	.499	96	14	9	0	0	1

Table 91. *Competency 25 Response Detail (Desirability)*

Be fully conversant in a variety of educational theories, practices, and approaches, both old and new.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D25	3	23	3.26	.864	79	11	8	3	1	1

Table F92. *Competency 26 Response Detail (Desirability)*

Seek to continuously integrate new knowledge and new approaches with personal practices.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D26	3	22	3.45	.510	92	12	10	0	0	2

Table F93. *Competency 27 Response Detail (Desirability)*

Recognize/ leverage "affordances" related to new technologies; seek opportunities to align instructional theories/ practices with new technologies.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
D27	3	23	3.48	.511	96	11	12	0	0	1

Summarized Response Data for Round Three, Part Two: Skills-Creativity Relationship

I consider an Instructional Designer's ability to _____ a key indicator of their overall creativity.

Table F94. *Competency 1 Response Detail (Face Validity)*

Identify opportunities for creativity (i.e. existing constraints and empowering ambiguity) within the overall scope of a project or problem assigned to them.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V1	3	24	3.54	.509	100	11	13	0	0	0

Table F95. *Competency 2 Response Detail (Face Validity)*

Tailor their planned creative activities to the scope and constraints of a project.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V2	3	23	3.43	.590	92	11	11	1	0	1

Table F96. *Competency 3 Response Detail (Face Validity)*

Engage in continuous reflection and assessment and exploit new creative opportunities that arise as the project evolves.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V3	3	23	3.30	.635	88	9	12	2	0	1

Table F97. *Competency 4 Response Detail (Face Validity)*

Demonstrate a complete understanding of process; recognize inherent "flex points."										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V4	3	23	3.09	.900	63	10	5	8	0	1

Table F98. *Competency 5 Response Detail (Face Validity)*

Maximize efficiency through creative use/ reuse of available resources.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V5	3	23	3.43	.788	88	13	8	1	1	1

Table F99. *Competency 6 Response Detail (Face Validity)*

Initially explore a problem "as it is" (mitigate any personal bias/ assumption/ preference).										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V6	3	24	3	.834	66	8	8	8	0	0

Table F100. *Competency 7 Response Detail (Face Validity)*

Actively seek, and seek to understand, input from multiple sources.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V7	3	24	3.21	.779	88	9	12	2	1	0

Table F101. *Competency 8 Response Detail (Face Validity)*

Explore and consider the atypical.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V8	3	24	3.21	.659	92	14	8	2	0	0

Table F102. *Competency 9 Response Detail (Face Validity)*

Ascertain the essence of a problem by prioritizing initial information and eliminating the non-critical.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V9	3	23	3.17	.717	79	8	11	4	0	1

Table F103. *Competency 10 Response Detail (Face Validity)*

Pattern-match problem needs/requirements with historical information and previous successes.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V10	3	22	3	.873	66	7	9	5	1	2

Table F104. *Competency 11 Response Detail (Face Validity)*

Remix/Reuse/Recycle ("Bricolage"), and create as needed to fill extant gaps.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V11	3	23	3.17	.717	79	8	11	4	0	1

Table F105. *Competency 12 Response Detail (Face Validity)*

Set and uphold targets for the iteration/ creation cycle that are accountable to extant resources and timelines.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V12	3	23	2.83	.834	63	5	10	7	1	1

Table F106. *Competency 13 Response Detail (Face Validity)*

Prioritize creative effort based on projected outcomes; focus effort toward serving the identified need/gap.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V13	3	23	3.17	.834	71	10	7	6	0	1

Table F107. *Competency 14 Response Detail (Face Validity)*

Seek elegant (i.e. relevant, ingenious, simple, and effective) solutions.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V14	3	23	3.17	.717	79	8	11	4	0	1

Table F108. *Competency 15 Response Detail (Face Validity)*

Ascertain client disposition toward creativity and communication/ interaction preferences, and adjust one's collaboration strategies accordingly.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V15	3	23	3.30	.703	83	10	10	3	0	1

Table F109. *Competency 16 Response Detail (Face Validity)*

Effectively communicate/ articulate creative/atypical ideas.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V16	3	23	3.48	.730	83	14	6	3	0	1

Table F110. *Competency 17 Response Detail (Face Validity)*

Demonstrate ability to develop "rapid prototypes", sketches, or storyboards to convey information and ideas to stakeholders.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V17	3	23	3.35	.647	88	10	11	2	0	1

Table F111. *Competency 18 Response Detail (Face Validity)*

Demonstrate a demeanor supportive of collaborative creativity (e.g. flexibility, honesty, patience, resilience, modesty, diplomacy, tact).										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V18	3	23	3.35	.775	79	12	7	4	0	1

Table F112. *Competency 19 Response Detail (Face Validity)*

Engage in active listening: find value in other's ideas.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V19	3	23	3.43	.728	83	13	7	3	0	1

Table F113. *Competency 20 Response Detail (Face Validity)*

Preserve productive relationships while encouraging needed change.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V20	3	22	2.95	.898	63	7	8	6	1	2

Table F114. *Competency 21 Response Detail (Face Validity)*

Provide "pedagogical leadership": Take ownership of an endeavor without having ownership of the outcome.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V21	3	23	3.04	.767	71	7	10	6	0	1

Table F115. *Competency 22 Response Detail (Face Validity)*

Recognize creative opportunities inherent to one's role within the organization.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V22	3	24	3.29	.690	88	10	11	3	0	0

Table F116. *Competency 23 Response Detail (Face Validity)*

Tailor creative disposition to meet the requirements of one's role within the organization.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V23	3	23	3.17	.834	79	9	10	3	1	1

Table F117. *Competency 24 Response Detail (Face Validity)*

Recognize how one's work affects others. (e. g. balance proactive autonomy and the collaborative team dynamic).										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V24	3	23	3.35	.775	79	12	7	4	0	1

Table F118. *Competency 25 Response Detail (Face Validity)*

Be fully conversant in a variety of educational theories, practices, and approaches, both old and new.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V25	3	23	3.04	.878	71	8	9	5	1	1

Table F119. *Competency 26 Response Detail (Face Validity)*

Seek to continuously integrate new knowledge and new approaches with personal practices.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V26	3	24	3.46	.509	100	11	13	0	0	0

Table F120. *Competency 27 Response Detail (Face Validity)*

Recognize/ leverage "affordances" related to new technologies; seek opportunities to align instructional theories/ practices with new technologies.										
TS	Round	*n*	*M*	*SD*	%	Strongly Agree	Agree	Disagree	Strongly Disagree	No Judgment
V27	3	24	3.54	.509	100	13	11	0	0	0

APPENDIX G. CONSENSUS ITEMS (UNIQUE CONCEPTS)

Problem Solving

To be successful, Higher Education Instructional Designers must…

[1A] work ONLY within the bounds of a prescribed, systematic, design process *(consensus to disagree).*

[2] generate multiple possible solutions to a problem.

[3] successfully navigate complex, ill-defined problems.

Problem Finding

[4] identify problems, deficiencies, gaps in knowledge, and omissions in a given situation.

[5] be able to distinguish between actual constraints and perceived constraints of a problem.

[6] project potential outcomes of a course of action and intervene appropriately.

Boundary Awareness

[7A] recognize their operational boundaries (e.g. context, constraints, and accountabilities).

[8] recognize their role within the organization.

[8A] establish a personal "culture of creativity" through relationships, communication, and comportment (e.g. honesty, patience, resilience).

[9A] Within the context of a project, Higher Education Instructional Designers must recognize when creative activities are appropriate (i.e. warranted, practicable) and when they are not.

[9C] demonstrate elements of creativity in their communication and collaboration with stakeholders. (e.g. creative "sales" in persuading faculty/ advocating for students).

[10A] balance creative activities with the constraints of a given project.

The Creative Act

[12B] be capable of creating original (novel) models, strategies, or approaches to solve instructional problems.

[13] effectively remix/ repurpose old materials into new materials.

[14] identify connections between elements previously considered disparate.

[14A] establish "Dynamic Expertise" by continuously integrating emerging trends with a strong historical perspective (i.e. be fully conversant in a variety of educational theories, practices, and approaches, both old and new).

[15] engage in creative acts specifically to solve problems.

Dispositions

Successful Higher Education Instructional Designers are…

[16] comfortable engaging with a variety of tasks and interactions.

[17] confident in their abilities.

[18] willing to risk exposure embarrassment or censure to propose new ideas.

[19] willing to continuously question underlying assumptions of established practice.

[20] devotees to current industry best practices only *(consensus to disagree).*

[21] comfortable surrendering ownership of creative works.

[22] willing to suppress their ego for the good of the endeavor.

[23] empathetic to multiple perspectives.

[23A] To be successful, Higher Education Instructional Designers must actively seek multiple viewpoints (when appropriate relative to the constraints of a project).

[23B] To be successful, Higher Education Instructional Designers must integrate suggestions and feedback from others.

The Ambiguity Tolerance Continuum

Successful Higher Education Instructional Designers…

[24] completely avoid ill-defined problems *(consensus to disagree).*

[25] tolerate ill-defined problems.

[26] can operate effectively despite unspecific or incomplete direction.

[27] embrace ambiguity as an empowering opportunity.

Intrinsic Motivations and Rewards

[28] believe that their creative efforts are making a difference.

[30] are passionate about their work .

[33A] view engaging with difficult tasks as something to be embraced rather than something to be avoided.

[34] are life-long learners.

APPENDIX H. CREATIVITY-RELATED ID COMPETENCIES

Navigating Projects

[C1] Identify opportunities for creativity (i.e. existing constraints and empowering ambiguity) within the overall scope of a project or problem assigned to them.

[C2] Tailor their planned creative activities to the scope and constraints of a project.

[C3] Engage in continuous reflection and assessment and exploit new creative opportunities that arise as the project evolves.

[C4] Demonstrate a complete understanding of process; recognize inherent "flex points."

[C5] Maximize efficiency through creative use/ reuse of available resources.

Navigating Problems/ Solutions

[C6] Initially explore a problem "as it is" (mitigate any personal bias/ assumption/ preference).

[C7] Actively seek, and seek to understand, input from multiple sources.

[C8] Explore and consider the atypical.

[C9] Ascertain the essence of a problem by prioritizing initial information and eliminating the non-critical.

[C10] Pattern-match problem needs/requirements with historical information and previous successes.

[C11] Remix/Reuse/Recycle ("Bricolage"), and create as needed to fill extant gaps.

[C12] Set and uphold targets for the iteration/ creation cycle that are accountable to extant resources and timelines.

[C13] Prioritize creative effort based on projected outcomes; focus effort toward serving the identified need/gap.

[C14] Seek elegant (i.e. relevant, ingenious, simple, and effective) solutions.

Navigating Collaborations

[C15] Ascertain client disposition toward creativity and communication/ interaction preferences, and adjust one's collaboration strategies accordingly.

[C16] Effectively communicate/ articulate creative/atypical ideas.

[C17] Demonstrate ability to develop "rapid prototypes", sketches, or storyboards to convey information and ideas to stakeholders.

[C18] Demonstrate a demeanor supportive of collaborative creativity (e.g. flexibility, honesty, patience, resilience, modesty, diplomacy, tact).

[C19] Engage in active listening: find value in other's ideas.

[C20] Preserve productive relationships while encouraging needed change.

[C21] Provide "pedagogical leadership": Take ownership of an endeavor without having ownership of the outcome.

Navigating Context

[C22] Recognize creative opportunities inherent to one's role within the organization.

[C23] Tailor creative disposition to meet the requirements of one's role within the organization.

[C24] Recognize how one's work affects others. (e. g. balance proactive autonomy and the collaborative team dynamic).

Navigating Professional/ Personal Development

[C25] Be fully conversant in a variety of educational theories, practices, and approaches, both old and new.

[C26] Seek to continuously integrate new knowledge and new approaches with personal practices.

[C27] Recognize/ leverage "affordances" related to new technologies; seek opportunities to align instructional theories/ practices with new technologies

APPENDIX I. IDENTIFIED COMPETENCIES MAPPED TO LITERATURE-BASED CREATIVITY THEMES

Problem Solving

[C5] Maximize efficiency through creative use/ reuse of available resources. (Navigating Projects)

Problem Finding

[C3] Engage in continuous reflection and assessment and exploit new creative opportunities that arise as the project evolves. (Navigating Projects)

[C27] Recognize/ leverage "affordances" related to new technologies; seek opportunities to align instructional theories/ practices with new technologies. (Navigating Professional and Personal Development)

Boundary Awareness

[C2] Tailor their planned creative activities to the scope and constraints of a project. (Navigating Projects)

[C24] Recognize how one's work affects others. (e. g. balance proactive autonomy and the collaborative team dynamic). (Navigating Context)

The Creative Act

[C26] Seek to continuously integrate new knowledge and new approaches with personal practices. (Navigating Professional and Personal Development)

Disposition(s)

[C15] Ascertain client disposition toward creativity and communication/ interaction preferences, and adjust one's collaboration strategies accordingly. (Navigating Collaborations)

[C16] Effectively communicate/ articulate creative/atypical ideas. (Navigating Collaborations)

[C18] Demonstrate a demeanor supportive of collaborative creativity (e.g. flexibility, honesty, patience, resilience, modesty, diplomacy, tact). (Navigating Collaborations)

[C19] Engage in active listening: find value in other's ideas. (Navigating Collaborations)

Ambiguity Tolerance Continuum

[C1] Identify opportunities for creativity (i.e. existing constraints and empowering ambiguity) within the overall scope of a project or problem assigned to them. (Navigating Projects)

Motivations/ Intrinsic Rewards

[C25] Be fully conversant in a variety of educational theories, practices, and approaches, both old and new. (Navigating Professional and Personal Development)