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The Design Discourse of Professional Instructional Designers

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To the Graduate Council:

I am submitting herewith a dissertation written by Katherine L. Bevins entitled "The Design Discourse of Professional Instructional Designers." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Instructional Technology and Educational Studies.

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The Design Discourse of Professional Instructional Designers

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Dedication

This dissertation is dedicated to my husband, David Bevins. You are my support, my love, and my life. Thank you for your unconditional support in everything I do!

I love you!

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Abstract

The design discourse of professional instructional designers (IDs) exposes the inner workings of instructional design because collaboration is integral to instructional design practice. Despite the importance of collaboration, there has been little examination of the collaboration in Instructional Design and Technology (IDT). To examine IDs' collaboration, I examined the design discourse of IDs in design meetings with clients through a content analysis of their discourse. Analysis revealed areas of design expertise that frequented those discussions. I collected audio recordings of five discussions between one or more IDs and a client. Overall, six IDs and five clients participated in this study. A codebook of 16 codes provided ten codes of design discourse that appeared in the data and six subsequent codes that emerged as discourse management strategies.

Among IDs, the most prominent type of design discourse was problem solving. When aggregating design discourse types, discussions surrounding problems, users, and tools were the three most frequent types and accounted for almost three-fourths of the design discourse of these designers in these discussions. Further analysis of the design discourse types revealed that precedent and user experience were the most complex areas of design discourse, suggesting that expressing precedent and user experience are advanced design skills. An analysis by gender revealed that male and female IDs focused on different areas of design discourse in practice. Female IDs focused on user experience and problem solving while male IDs concentrated on problem solving and tools. These findings have implications for how learners in IDT are trained, how design expertise is recognized, and how the design process is understood.

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Chapter One: Introduction

In the book *The Job*, Ellen Ruppel Shell describes the nature of work in America and explains that the relationships made at work, and the collaborative nature of work, are what make life meaningful (2018). Collaborations are realized in discourse, and discourse provides the window through which people can access meaning making (Gee, 2014). Furthermore, collaboration is the most sought-after design skill in instructional design practice (Howard & Benedicks, 2019). This study is about how instructional designers (IDs) make meaning in their collaborations, and it uses discourse as the means to study those meanings.

This analytical approach is atypical in instructional design and technology (IDT) research. In IDT, collaboration has often been examined via the skills IDs use to interact with colleagues and clients. Scholars have found that IDs use interpersonal skills (Van Leusen & Millard, 2013), communication skills (York & Ertmer, 2011), and people skills (Liu, Kishi, & Rhodes, 2007) when at their place of work. These studies focused on the context of IDs in practice, but they examined only the skills necessary to negotiate with people rather than the negotiations themselves. They did not study evidence of design expertise, including the use of models in the design process or the use of judgment, that can be drawn out of designers' talk. There seems to be a scarcity of research examining the discourse used by IDs during design collaborations.

Instead of looking at real meaning making in the practice of IDs, IDT research has focused on how IDs use, or follow, process models that they have been taught (Ertmer, York, & Gedik, 2009). Training in IDT focuses on the models developed based on what scholars think IDs should do (Gray et al., 2015; Smith & Boling, 2009; Winer &

Vásquez-Abad, 1995). This examination has led to the conclusion that either IDs do not typically use the procedures outlined in models in the textbooks (Ertmer et al., 2009) or that these models do not align with the actual practice of IDT (Kirschner, Carr, Merriënboer, & Sloep, 2002; Rowland, 1992; Wedman & Tessmer, 1993). With these findings, in the field of IDT there is an understanding that the design models are limited in the way they portray design activity (Smith & Boling, 2009). There are now calls for a shift of foci away from these models and toward a greater understanding of the design process and the designer.

The shift to studying the design process and the designer has led to new theoretical positions that contextualize this study. Smith and Boling (2009) argue that design "has been cast as a highly systematic, problem-solving process" (p. 13), and there is still a huge emphasis placed on the use of instructional design models in the learning process, despite little empirical research supporting the assumption that practicing IDs actually use the models. Smith and Boling (2009) noted that relatively little attention has been paid to the practice of design and to how IDs work outside of the instructional design models. This lack of focus on the real lived practice of instructional design has been noted by other scholars (Gray et al., 2015; Rowland, 1992), but as of this year, only two studies by Gray et al. (2015) and Rowland (1992) have examined what it is IDs actually do. Thus, the methods used by scholars to study the design process in IDT so far have been limited and should be expanded.

In particular, IDT studies have used think-aloud and direct observation of IDs, but not analysis of the way IDs make meaning via their talk. Rowland (1992) employed a

think-aloud protocol in order to observe IDs at work. Rowland (1992) investigated what it is IDs *actually* do in order to assist and train future IDs. He argued that the field of IDT has opinions about how IDs do instructional design "but little systematically-gathered evidence regarding the nature of instructional designing" (p. 66). Gray et al. (2015) examined IDs in the context of their professional work using observations of work and workspaces. While the study by Rowland (1992) focused on examining the practice of instructional design as a whole to determine what happens during the practice of design, Gray et al. (2015) focused more specifically on the use of design judgment by IDs in practice by observing their work and what tools the designers selected and used. Overall, the results of these studies suggest that design practice is much more complex than a prescribed model could ever detail. With so much to know about IDs evident in their talk, it is surprising that no one has used discourse to better understand real instructional design.

Statement of the Problem

The number of IDs working in higher education is increasing (Intentional Futures, 2016), but little is known about their process of negotiating and discourse strategies employed when they work. Researchers have found that IDs forgo models and use precedent and trial and error in their work (Boling & Gray, 2018; Gray et al., 2015; Rowland, 1992), but none of these scholars looked closely at how those practices are manifested in their talk. There has been little examination of ID discourse in practice. While the broader workplace is becoming more collaborative (Shell, 2018), there has been little investigation into what that collaboration looks like in the field of IDT. Simply

put, little is known about what discursive practices make up IDT. An examination into instructional designers' discourse of collaborative project meetings could make great strides toward providing insight into the practices of collaboration.

Purpose of the Study

I explored how IDs make meaning in their work via their communications in their process of collaboration with others. This study aimed to examine the design discourse of IDs while they were actively participating and collaborating on design projects. I investigated the many types of design discourse that emerged via a content analysis of their discourse. Examining the design discourse of professional IDs lends insight into how designers make meaning through their communications. Collaborations taken from the process of design revealed the types of design discourse that were used by IDs.

Keywords

The following glossary clarifies nuanced meanings of key terms I used in this study. Specialized terms provide precision in describing discourse and the contexts in which I studied it.

Client – In IDT, IDs work with and for professors, directors, and those who serve a learning community in designing or helping them design instruction. In the context of higher education, clients of IDs are typically faculty members who work at the university. In this context, IDs are helping faculty members design new instructional aids or courses, redesign existing instructional materials, and integrate technology into their courses. In the context of this study, the term *clients* refers to the faculty members who were part of

the *Office of Instructional Technology (OIT) JumpStart* program (a program for faculty members to design online courses) and were working with IDs.

Collaborative project meetings (CPM) – This is the term used to describe the context and setting in which I collected data. A collaborative project meeting was a meeting between an ID and a client who were working on a design project. These meetings took place within one of the conference rooms at OIT at UTK (the University of Tennessee at Knoxville) and varied in length and in the number of participants.

Design discourse: Design discourse is an important part of design and can help influence and advance the field. Discourse includes both the language-in-use and the established practices within a society (Gee & Handford, 2012). Our language-in-use is simply the words and vocabulary used to say something. The established practices of a society could include gestures like giving someone the middle finger when angry or the unspoken rules of a certain society such as shaking someone's hand upon first meeting them – particularly in professional contexts. Design discourse then refers to the language-in-use and the established practices of IDs.

In practice: By *in practice*, I mean that IDs are currently working on a design project. They are explicitly and overtly working on that project either by themselves or with other designers and/or clients. The *in practice* context in this study refers to the collaborative project meetings between IDs and clients.

Instructional designer (ID) – An ID is someone who creates designs for learning in methodical ways. However, this type of job can be labeled by other titles such as instructional technologist, instructional support, online learning consultant, instructional

support specialist, etc. (Intentional Futures, 2016). According to the 2016 report, the responsibilities of an ID fall under four main categories: design, manage, train, and support. No matter the title of the job description, the responsibilities of those jobs still fall under the four main categories of responsibilities as reported in 2016 (Intentional Futures, 2016).

Office of Information Technology (OIT) – At the University of Tennessee (UTK), OIT has four main branches that provide communications and network services, technological and instructional development support, applications support, and systems management and support. This proposal will concentrate on the branch of technological and instructional development, specifically focusing on the Course Design and Delivery section of this branch. The Course Design and Delivery section focuses on helping faculty with course design, relevant technologies, and creating "quality instruction, positive learner experiences and student success" ("Instructional Design and Support"). A brief look at other informational technology offices at other large research universities shows that while named differently (*Division of Information Technology* at Virginia Tech, *Information Technology Services* at the University of Virginia, *Office of Information Technology* at the University of Alabama), their intent is to provide instructional support for faculty members, technological support for faculty and students, and maintain and improve telephone, network, and systems support. Offices of Information Technology, Instructional Support or Instructional Consulting typically house ID teams.

Summary

Despite the profession's significance and size, little is known about how IDs negotiate their design work. There are 13,000 IDs working in higher education and countless others who identify as IDs but do not carry the title (Intentional Futures, 2016), yet studies of how these professionals accomplish their work are actually few in number. In fact, despite the increasing numbers of professional IDs in all arenas, not just in higher education, little information is available on professional IDs. This lack of examination of collaboration within the field of IDT is critical. I focused on the discursive practices of IDs in this study because design expertise is embodied and observable in discourse.

Chapter Two: Literature Review

I address the current state of research into instructional design practice and how IDs work. Outside of the field of IDT, but germane to the topic, are the different types of design expertise found in the literature on design theory. I then focus on previous examinations of design discourse in IDT. Finally, I discuss the gaps found in the literature relative to the practice of IDT and conclude with my research questions that targeted those gaps.

IDs in Practice

Examination of ID practice has focused more on asking IDs what they do via interviews and surveys instead of observing them in practice. However, there are two studies that investigated professional IDs' work directly. Rowland (1992) addressed the discrepancy between design theories in IDT and his first-hand observations in the field. One difference he found was that there were two distinct phases in the design process: a problem understanding phase and a solution-generation phase (Rowland, 1992). The experts in his study spent an extended amount of time analyzing the problem, relating their problems to previous cases, and inferring characteristics of the problem that they were unable to attain by asking the clients, the stakeholders, or other designers. Part of this problem analysis phase also included the experts considering solutions very early in the process, which Rowland (1992) mentioned went against some recommendations of IDT literature. Overall, Rowland (1992) found differences between the literature that spells out the processes of instructional design and the practice of the IDs that he observed.

A second study observed IDs directly by analyzing IDs' design judgments during their normal work activities via direct observations. The study by Gray et al. (2015) focused on IDs in practice and their use of design judgment. Overall, they found that IDs make design judgments quite frequently, with framing, or the judgment to create "a working area for design activities to occur" (Gray et al., 2015, p. 33), being the most frequent type of judgment used. Gray et al. (2015) also found that designers are making design judgments concurrently, and that these judgments are interrelated. Gray et al. (2015) found that the judgments made by designers were also affected by situational factors, i.e. the design context, the roles of the designers, and the type of project. These two studies are the only studies I found that examined IDs in practice.

Implications of both of these studies suggest that the actual practice of IDT is more complex and robust than what is captured in the process models often taught in IDT programs. Gray et al. (2015) found that the judgments made by designers could not be extracted from the design context and were not elements that have often been reported on by designers themselves. The four expert designers examined by Rowland (1992) all approached the design problem differently and, thus, created different solutions to the same problem. Rowland (1992) attributed this variance to the previous experience each expert brought to the design, placing more emphasis holistically on the designer rather than on models the designers followed.

A robust understanding of IDT practice would include empirical studies from multiple perspectives. Later, I argue that a discourse perspective is missing and potentially advantageous. However, first I will address the types of design expertise the

literature predicts might be embodied in that discourse. This guided the design discourse I endeavored to find in IDT practice.

Design expertise in IDT

IDT literature focuses on different types of design expertise that are useful and necessary for IDs. Design scholars have found that designers use certain constructs when designing (Stolterman, 2008). Some of these concepts have found their way into the scholarship of instructional design, and others have not emerged to a point where the IDT literature addresses the concepts directly. Gray et al. (2015) see design expertise as a conceptual lens for understanding instructional design practice. In order to understand how IDs use design expertise in their practice, and how design expertise manifests itself in instructional design practice, I first address how the scholars in the design disciplines define design expertise.

Design expertise describes both the design constructs that scholars say are an integral part of the design process and the different skill levels of IDs. Dorst (2015) lays out the different levels of design expertise within the field of IDT in order to gain a better understanding of what design practice looks like at each of those levels. In this study, I examined the design discourse of IDs who were rated at the competent or expert levels of design expertise. In this study I define design expertise by the design concepts and constructs that designers use.

The literature surrounding design expertise both in the field of IDT and in the larger design disciplines breaks design expertise into nine different types: 1) problem solving, 2) problem framing, 3) precedent, 4) usability, 5) user experience, 6) aesthetics,

7) external representations, 8) tools, and 9) design tensions. I define each of these types of design expertise in the paragraphs that follow.

Design Expertise Types

Problem solving. The very nature of design is to solve a problem (be it architectural, instructional, etc.) of some kind. Lawson and Dorst (2009) refer to design problem solving as the process of posing a problem, searching for solutions via the generation of possible next moves, exploring the consequences of said moves, evaluating these consequences and moves, and then choosing which solution fits based on the evaluation of the consequences. If referring to the different design models that have been so important in design programs, this definition of problem solving covers the whole process of designing. When examining designer discourse, I will assume that any discourse referencing the design problem, the possible solutions for said problem, and the exploration/evaluation of consequences of those solutions is problem-solving discourse.

In the field of IDT, problem solving has been examined by creating a typology of IDT problems that designers might come across (Jonassen, 2000). This typology can help IDs address how to deal with the problems they may face in generating frames and solutions. This focus on problem solving will help us in "developing elaborate, multiple representations of problems along with learning to regulate different kinds of problem performance" (Jonassen, 2000, p. 82). Explicitly teaching students how to deal with different types of problems can help strengthen this skill of problem solving.

Problem framing. Problem framing is how IDs view, how IDs see, or how IDs approach the problem they are faced with. The idea of problem framing can be traced

back to Schön (1983) in his protocol analysis of Quist and Petra's work with an architectural design problem. In that study, Schön (1983) saw problem framing as problem setting or viewing the problem or situation in a particular way. Problem framing is imposing our own constructs on a problem in order to better understand and find a solution to the problem.

Dorst (2015) covers this idea of imposing our own constructs on a problem by defining a problem frame as "the proposal through which, by applying a particular pattern of relationships, we can create a desired outcome" (p. 53). An example of this type of problem framing would be to consider that teachers at a school do not know how to use their learning management system (LMS). There are several ways to frame this problem, and both lead to different solutions to the problem. The first way I could frame this problem is via a training problem. If I frame the problem in this way, then one potential solution would be to offer some type of training to the teachers in order to help them learn how to use the LMS. However, another way to frame this problem is as a design problem. If I approach the problem in this way, then a potential solution would be to either re-design the LMS I am currently using or to find a different LMS with a better design. Problem framing is a way to think around the problem rather than confronting it head on (Dorst, 2015). For example, if I were to approach the LMS problem above head-on, I would most likely have assumed that it was simply that the teachers did not know how to use the LMS. I would have assumed that the LMS was a great design and that it was the lack of education of the teachers that caused the problem. However, it could be

that the LMS is in fact poorly designed and not worth our time in trying to train teachers to use it.

By attempting to frame the problem above in a different light rather than confronting it head-on, I am attempting to look beyond the stated problem to "understand what the real issues are" (Norman, 2013, p. 218). There are always other issues surrounding design problems that may not be explicitly stated or seen. This can lead to designers attempting to solve the incorrect problem. At the core of designing, designers are attempting to discover what the real problem is, regardless of what the stated problem is that has been given to them (Norman, 2013).

Problem framing is deeply connected to problem solving. Problem solving is the process of posing a problem, searching for solutions, exploring and evaluating the consequences, and choosing a solution (Lawson & Dorst, 2009). Problem framing is how a designer approaches the process of problem solving (Dorst, 2015). How a designer sees a problem determines the design solutions available to the designer. Problem framing is the beginning step in the problem-solving process.

Precedent. Precedent in design is the use of knowledge of a previous design to help frame or make decisions on a current design project (Oxman, 1994). The act of collecting precedent knowledge is not realized as such until that knowledge is used (Lawson, 2004). Once a designer uses a prior experience to help solve a current design problem, it becomes precedent knowledge. Precedent is "a recognized, specific design in which the unique conceptual points and ideas are denoted as distinct knowledge chunks" (Oxman, 1994, p. 142). Designers store and use these knowledge chunks in future design

projects that they believe share similar characteristics as those they have experienced in the past.

An example of precedent would be a museum that wants to eliminate paying a tour guide to take groups of people through their museum. They want to allow people the freedom to move at their own pace. They could do this in many ways. One example would be to post descriptions of what it is they are exhibiting near the object it is describing. However, if they have lots of information they wish to get across, this idea might not be the best. If someone working on this project had visited Alcatraz and the walking audio tour they use or if they had read an article about this design (Boling, 2014), then they may use that idea as a possible solution at their museum. The use of this previous experience in the new design project is precedent. Thus, precedent is a designer's reference to other similar experiences or related solutions (Schön, 1983).

The use of precedent in IDT has been catalogued as design cases. Design cases are "a vehicle for dissemination of precedent" (Boling, 2010, p. 2). The central concern of a design case is to describe the designed product or the design process (Howard, Boling, Rowland, & Smith, 2012) in a way that the reader can "store vicarious, episodic memory of it" (Smith, 2010, p. 17). By creating design cases, designers are able to better distribute precedent knowledge, which could help advance the field of instructional design.

Negative precedent is the foreknowledge of designers not to make a specific design move when the result is negative and already known (Smith, 2010). Negative precedent is the use of prior knowledge of design failures or the starts and stops of design

moves that helped shape the final product. An example of negative precedent would be a museum choosing not to post descriptions of its exhibitions close to the exhibits because they know from previous experience that visitors will not read those descriptions because they have tried this before either at the same museum or at a different museum.

Usability. This term refers to the usability of a product. How to use a product should be inherent in an object that has been designed. An example used by Norman (2013) is that of a door. A door should intuitively tell me how to use it. If I am to push a door to open it, then a metal plate should be placed on the side where I should push. If I am to pull a door to open it, then a handle should be placed on the side I am to pull. Usability for Norman (2013) is the discoverability and the understanding that should be inherent in every designed product.

User experience. The user of a designed product is one of the most important aspects of design. How the user experiences the product defines the quality of that product. For Norman (2013) "experience is critical, for it determines how fondly people remember their interactions" (p. 10). User experience is now often referred to as UX design (Buley, 2013). In design, a focus on user experience has become its own professional practice or type of design method. However, in general, the user experience of a product refers to "the overall effect created by the interactions and perceptions that someone has when using a product or service" (Buley, 2013, p. 5). Considering how a user interacts with and perceives a designed product is a type of design expertise that is essential to the design process.

User experience and usability are two types of design expertise that are difficult to separate from one another. If a product is not usable by a user, then their experience is not going to be good. Designed objects "are a form of knowledge about how to satisfy certain requirements, about how to perform certain tasks" (Cross, 1982, p. 225). How to use a product should be inherent in an object that has been designed in order to improve the user experience.

Aesthetics. In the field of IDT, the experience of the user has been described as empathy for the learner and the aesthetics of a design (Parrish, 2006; 2009). The ability to see a product through a user's perspective has been noted as one of the most critical skills in IDT (Parrish, 2006). Through empathy for the learner, an ID is able to understand how a designed product would be experienced, including how text may be understood, how the interface of the design is being navigated, and how other factors of the instructional design may help or hinder learners. The aesthetics of a design include empathy for the learner in considering the holistic and meaningful qualities of a learning experience. Through an evaluation of these aspects, IDs are able to improve the instructional design. Aesthetics, then, pushes past the surface qualities of a design (Was it easy to navigate? Was the user able to find everything they needed? Was it pretty?) to consider the engaging, meaningful, and immersive aspects of a design.

External representations. Designers work via sketches, illustrations, and text explanations. Schön (1983) refers to external representations as design representations. Design representations are the drawings and sketches that are created during the design process. These representations allow the designers to visualize the solutions they are

working on. Cross (2011) sees these external representations as a way to deal with the complexity of the design process. There is a limit to the complexity that a designer can struggle with internally. External representations help designers to deal with that complexity.

Tools. A tool could be a software program the designers were using to work on/complete their design or a specific feature of a particular tool. Tools could include learning management systems (Canvas, Blackboard, etc.), third party publishing platforms (Cengage WebAssign, MindTap, etc.) and other software programs to help in creating materials for online classes (Captivate, Micrsoft Word, Microsoft PowerPoint, Quicktime, Zoom, etc.) Tools play a large role in the design process. Tools in design are both a means of creating instruction and also delivering instruction (Clark, 1994). The conversation surrounding tools in design has centered around whether media influences learning (Clark, 1994; Kozma, 1994). Clark (1983; 1994) posits that the type of media used to deliver instruction does not influence student learning. Clark (1994) argues that a design problem can be solved using many different tools, not just one specific tool. How you frame the problem and the solutions you decide to pursue are more important than the particular type of media. Kozma (1994) argues that the tools used to deliver instruction should not be separated from the instructional method. The way the two work together can only enhance the design. Separating them limits the design. There are then two different views of the role of tools in the design process. Clark (1994) argues that tools are not integral to the design process; instead it is the instructional method employed that is the most important. Kozma (1994), however, argues that both tools and

methods should be used equally in the design process as how they work together is what drives the design process and the learning that happens with the designed instruction.

Design tensions. In the design process, there are constraints and tensions that can arise that can end up driving the design process. Design tensions can be explained via a framework developed by Tatar (2007). This framework focuses on four levels of design tensions. The first level of the design tension framework deals with the tension inherent in the *vision* of the design project, i.e. the tension between what is and what ought to be. The second level of the framework focuses on the tension inherent in the way the designer *approaches* the design problem. The third level of the framework deals with the *project tensions.* This is where there are conflicts via the means, ways, and values to complete the project. The final level of the framework is the "*as created*" situations. These situations are the consequences that arise from the new designed product. Design tensions in a project could fall under any of these levels and can affect the design decisions made by the ID.

There has been a focus in the literature in IDT on the expertise or skills that an ID *should* have (Gray et al., 2015). In these instances, scholars are focusing on types of expertise they have found to be useful in design. They organize these types of expertise into a model for designers to use in the practice of designing. The problem is that there has been little examination of the design expertise that is actually being used by IDs in the practice of designing.

How the concepts of design are embodied in the language of design

Anyone working in a certain profession develops over time a language or vocabulary that is used in that context (Gibbons, 2014). For example, every barista knows the difference between an espresso, Americano, and drip coffee. (The first is concentrated coffee made via pressure pushing hot water through fine coffee grounds. The second is a shot of espresso that is diluted with hot water. The third is your typical American coffee made with a filter via a regular drip coffee machine or a percolator.) Just like baristas, designers also acquire a vocabulary for "discussing and criticizing design" (Dorst, 2015, p. 58). For example, when logging into an instant messaging account, like Facebook Messenger or Skype, there is a little green dot that will appear next to your name. For people outside of design, they might call this the *little green light*. But IDs would call this little green dot the *presence indicator* (Howard & Bevins, 2020). Designers develop this language for use in discussing design with colleagues, stakeholders, and clients.

Designers learn this language in order to communicate about design. Designers "learn to detect multiple references, distinguish particular meanings in context, and use multiple references as an aid to vision across design domains" (Schön, 1983, p. 98). The language of design is what ties IDs to their work (Dong, 2009). This language of design is also a representation of their expertise. It is an externalization of design thinking (Cross, 1982). Through their design language, designers are able to both acquire expertise and represent the expertise they have acquired and use in their practice of design.

Language holds a foundational position in the design process. Dannels and Martin (2008) examined the oral feedback given by design faculty and professionals to design

students in different levels of a design studio. Through the discourse of the critique, they found nine different types of feedback in these design critiques that differ across the levels of a design studio (freshman, undergraduate, and graduate). The two most frequent types of feedback, process oriented and brainstorming, were found to occur in the upper-division design studios and not in the freshman studio. Through the feedback found in these design critiques[1], Dannels and Martin (2008) found that feedback contributes to the pedagogical spaces where students are learning "to speak, listen, respond, and interact within social settings that affect civic life" (p. 156). Discourse in the design process, even in academic settings, prepares design students to thrive in professional contexts.

Design languages influence and advance the field. "As design languages evolve and we become fluent in using them, the result is advances in design sophistication, effectiveness, productivity, and quality of designs" (Gibbons & Rogers, 2009, p. 306). Design languages help evolve our practice of design as they are a shared community language that have both theoretical and practical bases (Gibbons & Rogers, 2009). Within IDT, the language of design has also been examined by Gray and Howard (2014) as *designerly talk* and by Bevins and Howard (2020) as *design discourse.*

Design Discourse in IDT

Our examination of the practice of instructional design has centered on asking IDs what it is they do rather than on observing what they do. Rowland (1992) identified a problem with this. There are several studies that have focused on asking IDs what it is

[1] In a design critique, a design student presents their work and receives feedback from other students, professionals in their design field, from their professor, or a combination of these (Dannels & Martin, 2008).

they do or how they design (Christensen & Osguthorpe, 2004; Ritzhaupt & Kumar, 2015; Wedman & Tessmer, 1993; Williams, South, Yanchar, Wilson, & Allen, 2011; Yanchar & Hawkley, 2014). Scholars in the field have focused on asking IDs to explain the decisions they made and the expertise they used after the design project is completed. However, this gives us limited insight into what is actually happening in design practice.

I use the term *design discourse* as operationalized by Bevins and Howard (2020). Design discourse refers to the language that surrounds acts of designing (Bevins & Howard, 2020). It is important to study design discourse because design conversations are "full of references which in turn point to huge chunks of information" (Lawson, 2004, p. 445). By examining the discourse used in design, scholars in IDT are able to learn more about the nature of design and how expertise is negotiated (Lawson, 2004). In IDT, Gibbons and Rogers (2009) label this design discourse as design languages, which are "centered in tools, processes, technologies, theories, or best practices of a domain" (p. 23). Design discourse offers a glimpse into the expertise and the processes inherent in design.

There are two studies in IDT that have examined language in design. Designer discourse in IDT has been examined via the *designerly talk* used by instructional design students in a context outside of the classroom (Gray & Howard, 2014) and the design expertise found in the discourse of novice IDs in a studio design project[2] (Bevins &

[2] A design studio is an apprenticeship-type learning experience in which design students can develop their design skills and identities (Cennamo, 2016). These contexts typically include students working on a design project in conjunction with or under the supervision of a professor.

Howard, 2020). Both of these studies give insight to how these learning environments can be improved to better teach IDT students in designing.

The discourse of a design field cannot be drawn out of literature or textbooks because it must be language in use, rather than language that has been prepared. Studies that have drawn on authentic language in use find curious insights about the language of design. Examining the discourse of design students in contexts outside of a structured design program can help us gain a more holistic view of the designer. Gray and Howard (2014) found that in a non-academic context, designerly talk also manifested itself in an online social group. This designerly talk ranged from topics about the best tools to use to advice about coursework to core issues in the field. These discussions that happened naturally in this non-academic setting would have been difficult to create in an academic setting. They also may not have happened at all if not given the space. The results of this study by Gray and Howard (2014) also lends itself to the larger discussion of teaching students the value and importance of learning communities, which students may be a part of in the professional world.

Authentic examples of discourse within a certain field are necessary in order to build the understanding of design expertise within that field. Examining the discourse of design students in a studio context can show teachers and scholars of design the types of expertise and subjects that design students tend to focus on when working on a design project. Bevins and Howard (2020) found that novice design students focused the majority of their time on the tools they were using to design the project. The results of this study suggest that examining the different areas of design expertise, be it precedent,

tools, design tensions, etc., as distinct areas might be valuable in order to better support these areas of expertise in our students. The results of this study imply that spending some time in these design studio contexts on the discussion of and the training with tools might not be time wasted when working with novice design students (Bevins & Howard, 2020).

Previous studies in authentic language in use of design students held utility for learning, but they cannot tell us the discourse of actual practitioners. Both of the studies mentioned in this section have only focused on the design discourse of students. The results from both of these studies suggest that examining the discourse of students in learning communities, be it a design studio or a group on social media, can provide us with insights into what types of design expertise students are using in these contexts. These studies are helpful in providing insight into these learning experiences; however, research has previously focused on design students instead of professional IDs (Lawson, 2004). More research needs to be done on the design discourse of professional IDs in order to determine if what is happening in these design studios and other academic, and non-academic, contexts will help prepare our design students for the professional world.

Gaps in the Literature

At the time of writing, there are only two studies that examine professional IDs in practice. Only Rowland (1992) and Gray et al. (2015) have examined professional IDs at work. It is important to also note that Rowland (1992) examined a think-aloud protocol that he created; these IDs were not in real-world situations at their workplaces. Gray et al. (2015) was the only study I found that examined professional IDs in the context of their

workplace, working on official design projects for their employer, via observations and interviews.

I found no research that addressed the discourse of professional IDs. There are only two studies that have examined design discourse (Bevins & Howard, 2020; Gray & Howard, 2014) in IDT. Neither of these studies have examined the design discourse of professional IDs in practice. Instead, both studies focused on the design discourse of instructional design students. Through the discourse of professional IDs, I gained a fuller picture of what it means to be an ID and what types of design expertise they use in practice. This will in turn help us to better train our IDT students.

Conclusion from the review of the literature

In this chapter, I have examined the literature surrounding the practice of IDs, the design expertise in IDT, and the design discourse in IDT. In my survey of the literature surrounding IDs at practice, I only found two studies that examined IDs while actually designing (Gray et al., 2015; Rowland, 1992). The results of both of these studies suggest that the literature surrounding design expertise and the models used to teach students how to design do not align with the actual practice of instructional design. This implies that more research needs to be done in order to determine what IDs actually do and how, or if, the training of IDs manifests in their authentic design practice. This gap in the literature suggests that investigating the types of design discourse that are evidenced in authentic expert-client discussions might provide insight into design expertise in IDT.

In surveying the literature surrounding design expertise in IDT, I organized the literature into nine core concepts of design expertise: problem solving, problem framing,

precedent, usability, user experience, aesthetics, external representations, tools, and design tensions. These core concepts can be found in the larger design discipline as well as in the field of IDT; although, within the field of IDT, scholars have not yet focused enough on how these core concepts manifest themselves in the practice of both novice/student and professional IDs.

In surveying the literature, I found some of the design expertise types to be related and intricately tied to one another. Problem solving is the process of finding a problem and exploring solutions for that problem (Lawson & Dorst, 2009). Problem framing is the beginning of the problem-solving process; it is the approach to the problem (Dorst, 2015). User experience and usability are also deeply connected. Usability is an aspect that can dictate how a user experiences the design; usability then could be considered one piece of user experience. These design expertise types are connected and may be difficult to distinguish from one another.

Gaps in the literature also point to dissecting design discourse in order to further our understanding of these design expertise types in IDT. The design professions have their own linguistic routines, just like other professions, that can be examined in order to better understand the design process (Dannels, 2005; Gibbons, 2014). IDT needs a more formal understanding of what design language actually is. "[The field of IDT] has failed to develop a robust theoretical vocabulary for discussing designs and the act of designing" (Gibbons, 2014, p. 151). The field of IDT can continue to advance through the recognition and understanding of the professional vocabulary that is used in the practice of professional IDs. Examining the linguistic routines of these design expertise types will

aid in the development of an IDT vocabulary and in our understanding of the practice of IDT.

Gaps in the literature presented in this literature review show an opportunity to examine the design discourse of professional IDs in practice. Specifically, it presents an opportunity to examine the externalized design expertise that manifests itself in the discourse of these IDs. These gaps and the review of this literature lead to the following research questions (RQs):

1. What types of design discourse are evidenced in the discussions of these IDs and clients?
2. How do aggregated categories represent design discussions in these design sessions?
3. How are the design discourse types found in the data represented in terms of complexity and time?

The following chapter discusses the means by which these research questions were answered.

Chapter Three: Methods

Theoretical Frame

The foundation of design in discourse

The methods described in this chapter were selected because they expose how design is supported and maintained through language. “Our conjecture is that design partially subsists in language; the substrate is the language of design” (Dong, 2009, p. viii). To understand how designers make meaning, scholars must study their language because direct examination of thinking is impossible. Furthermore, design language helps scholars understand the foundation of a design discipline. In the field of IDT, literature that prescribes professional design behaviors is abundant. There is no shortage of process models that tell us how to do instructional design, prescribed guidelines, and discussions of lessons learned through the act of designing. Scholars may see design as problem solving (Jonassen, 2000), or following nine steps (Gagne, 1987). These models emerged out of schools of thought that did not base their prescriptions on empirical research analyzing discourse, which may reveal processes that differ from the models used to train IDT students currently.

What we say, who we are, and what we do is all embodied within our discourse. The role of language within the design process has been generally overlooked (Krippendorff, 2006). In order to determine the types of design expertise necessary to do instructional design and do it well, we must examine the language used by IDs in order to get a more complete picture at what it means to say, do, and be (Gee, 2014) instructional design. We must examine the substrate of design via the discussions of IDs.

Designs are realized through discussion. An important part of the design process lies within the conversations teams have surrounding a project (Lawson, 2005). If we examine the discourse of IDs, we can get a better idea of the instructional design process. Design is a lived experience rather than a set of directions to follow. “Language use is an embodied phenomenon. The ability to use language entails the ability to articulate, listen, learn, and conceptualize experiences, including feelings” (Krippendorff, 2006, p. 152). All of these processes are evident in the design discourse of a designer at work.

This theoretical frame of design being embodied in language leads to discourse analysis. Discourse analysis uncovers how people make meaning (Dunn & Neumann, 2016). Designers make meaning in their work by adapting their discourse to that of the community of IDs. “Language produces a common sense that anchors designers and their work to a body of knowledge and practice” (Dong, 2009, p. viii). This shared understanding of the discourse of instructional design among IDs allows its participants to recognize each other and participate within that particular community (Krippendorff, 2006). A discourse analysis of the language of designers in practice describes IDT through the lens of language in use.

A Brief description of Discourse Analysis

Discourse analysis examines the meaning-making process of language via language-in-use (Dunn & Neumann, 2016). Language-in-use is the naturally occurring interactions that happen among participants. Discourse can be analyzed in different ways, but in general discourse analysts “interrogate the ways in which specific systems of meaning-production have been generated, circulated, internalized, and/or resisted” (Dunn

& Neumann, 2016, p. 4). Discourse analysis examines the meaning-making process of both language and the practices within a society (Gee & Handford, 2012). It is a way to understand the different social, political, and cultural phenomena (Gee, 2014). By using this method, scholars understand the ways in which participants within a society make meaning of their world, their work, their lives, etc. It is through this meaning-making process that participants created their social identities as designers.

Discourse analysis provides analytical procedures that facilitate the study of social identities as designers. By studying discourse, we can understand how people make meaning about who they are within any group. If we want to know how someone is a designer, discourse can tell us that. Discourse not only allows us to inform ourselves, "but it also allows us to do things and to be things" (Dunn & Neumann, 2016). It allows us to identify ourselves socially in different contexts. We must understand and be proficient in the language and practices of our communities to be our different selves, whether we are in a professional domain as a doctor or a lawyer or an ID, or if we are at home with our families. For example, a dentist would say to the dental hygienist, "Mark on his chart that he needs #1, 16, and 32 surgically extracted." But to the patient, the dentist would say, "I have bad news. You're going to need your wisdom teeth pulled." The dentist understands that these conversations happen within two different social contexts, and, therefore, she must use different language within each context in order to identify herself and be understood within each community.

Discourse contextualizes a community and how members make meaning within it. For Dunn and Neumann (2016), "discourses are systems of meaning-production that

fix meaning, however temporarily, and enable actors to make sense of the world and to act within it" (p. 4). Discourses are the meaning-making processes of communications. Discourses can be structured and relational, both open-ended and incomplete – emergent, a link between knowledge and power, and able to prescribe what actions can be taken (Dunn & Neumann, 2016). Discourse contextualizes itself. By viewing discursive substance in relation to other discursive substance types in the same sample, I catalogued uses of different discursive types in relation to others in order to provide a more nuanced understanding of IDs' language in use. I have recorded, transcribed, and analyzed interactions to determine how these interactions embody design.

Data Collection

Data Collection Procedure

After meeting with my committee, it was decided that I would spend two weeks in an exploratory phase attending, observing, and recording different types of meetings at OIT in order to determine the types of meetings that I wanted to use in my study. In this exploratory phase, I recorded four meetings. After the exploratory phase, I collected four more meeting recordings. After collecting these meeting recordings, I had secured enough data to feel confident that I had plenty of targeted data to enable me to speak to the design discourse of these IDs.

In total, I audio-recorded six different client meetings, or CPMs (collaborative project meetings) and two administrative reviews. I was invited to all of these meetings by either the ID who was working with the client or by the administrator who had scheduled the administrative review. The IDs and the administrator gained permission

from the clients and the other IDs before inviting me. At the beginning of each session, each participant signed IRB approved informed consent forms (Appendix A: IRB Informed Consent). I also answered any questions that they may have had about the study.

After transcribing the data, I determined that the data from the administrative reviews did not align with my research questions. These meetings were more informational and focused on reporting the status of the project rather than focusing on designing a product. For this reason, I have removed them from my corpus. The first five CPMs were part of the OIT Jumpstart program and consisted of discussions surrounding the design and development of new online courses. More information about this program can be found on the OIT webpage *Instructional design & support: Developing an online course* (Appendix B: OIT JumpStart Program). The sixth CPM was between an ID and a GTA (Graduate Teaching Assistant) who were looking at a specific problem that students were having in gaining access to certain materials used in a graduate level course. This discussion focused more on reporting the steps that had already been taken to resolve this problem. Also, this meeting was not part of the OIT Jumpstart program and was set in a different context from the Jumpstart program. For these reasons, I did not include this meeting in my corpus of data for this study. In the end, this exclusion process resulted in five CPMs that were then analyzed using my observation system, explained under *Development of the codebook* in this chapter.

I audio recorded each meeting using an audio recording software (*QuickTime*) on my computer and an external microphone. These audio recordings are saved on my

password protected external hard drive and, on my university-owned, password-protected computer. I transcribed each audio recording and transferred those transcripts into Excel files. I also took a few observation notes during these meetings. Most of my notes refer to some turns that I thought may be too quiet to hear on the recording. I also noted beginning and ending times for each recording. These meetings lasted anywhere from 30 minutes to 70 minutes.

Context

The context of these data were CPMs between IDs and clients. These meetings took place in the offices of the IDs or in their conference rooms (see Figure 1) in OIT. One of the meetings took place in the office of one of the IDs. The other four meetings took place in one of the OIT Conference rooms (Figure 1). These conference rooms all have one central table with five to six chairs around the table. There is also a whiteboard and an external screen / monitor that can be used to project documents, websites, and other materials for everyone in the room. In all of the meetings, I sat at the end of the table with the participants. I set up the microphone in the middle of the table.

Meetings were among one to three IDs and a client. All data used in this study were from meetings that were part of the OIT Jumpstart program. This program helps faculty members at UTK to design and develop online courses. Faculty are assigned a lead ID, and sometimes a secondary ID, to assist them with the development of online materials and teaching strategies. The program consists of four different stages 1) asynchronous online training via Canvas, 2) course development consisting of in-person meetings between the faculty member designing the online course and the assigned ID(s),

Figure 1: Pictures of a conference room where the client meetings were held at OIT in which the data used in this study was generated.

3) a quality assurance check before implementing the developed course, and 4) the course implementation. I recorded five of the course development meetings between the faculty members and the assigned ID(s). These meetings were at the beginning of the course development phase. At this point in the project, the faculty members had completed asynchronous training on developing online courses and had been asked to complete some initial course development tasks, i.e. design the syllabus, create the course schedule, and rethink assignments and assessments. The clients may have also already met with a graphic artist to work on the visual design of their online course. The five meetings I recorded were in an early phase of the design process.

Participants

There were 11 total participants in this study. They included six IDs (3 females and 3 males) who work for the Office of Informational Technology (OIT) at UTK and five clients (2 females and 3 males) who are faculty members at UTK and were part of the OIT Jumpstart program (see Appendix B: OIT JumpStart Program). The IDs in OIT are all employed full time at the university in a professional ID capacity.

I wanted to examine the discourse of IDs in practice. For this reason, I used a purposive sample of convenience. I actively found participants that met the characteristics necessary for this study, i.e. formally trained IDs at practice. Participants signed an IRB informed consent form (Appendix A: IRB Informed Consent) if they agreed to participate in the study. The participant groups consisted of six IDs and five clients. The breakdown of the participants information by each meeting can be seen in Table 1.

Table 1: Breakdown of the number and gender of participants, showing in total there were 11 participants.

Meeting	Number of IDs present	Number of clients present	Gender of IDs	Gender of clients
Meeting 1	1	1	F	F
Meeting 2	3	1	2 M, 1 F	M
Meeting 3	2	1	2 M	M
Meeting 4	1	1	F	M
Meeting 5	2	1	2 F	F

Table 1 shows the breakdown of the participants in the study. There were 11 total participants in this study, five females and six males. Three of the IDs were female and three of the IDs were male. Two of the clients were female and three of the clients were male. There were three IDs who were present at more than one meeting, thus the difference in total participants versus the number of IDs present that is reported in Table 1. Sarah[3], the ID present in Meeting 1, was also present in Meeting 2. Patrick, the third ID present in Meeting 2, was the multimedia consultant that would be working on that particular project. Frank, the lead ID present in Meeting 2, was present in Meeting 3. Colleen, the lead ID present in Meeting 4, was also present in Meeting 5. Each client was assigned two IDs, a primary ID and a secondary ID. Therefore, there should have been two IDs present at each meeting; however, there were two meetings that only had one ID present.

Data Preparation

I used a transcription tool, *Otter,* to transcribe the meeting recordings. After machine transcription was completed, I reviewed the transcripts for any errors. The transcripts of each of the five meetings were transferred to an Excel spreadsheet from Otter. At first, each meeting transcript was copied into its own spreadsheet to aid in the analysis. Figure 2 shows the data after preparation. At the beginning three columns were transferred in from the transcripts: a time stamp, a speaker, and the utterance. Other columns were added to help in the analysis of the data: the utterance ID, the role of the speaker, and the gender of the speaker. The speaker name was replaced with a

[3] The names used are all pseudonyms.

designation of D (designer) or C (client) plus a number to distinguish the different speakers in each meeting and their role. C or a D was added in the *Role of the speaker* column to aid in analyzing the discourse of IDs versus clients. Signed informed consent forms were stored for each participant in each meeting. All the data collected in this study followed collection procedures outlined by the UTK IRB review board. The outcome letter is provided in Appendix C. Figure 2 shows a sample section of the spreadsheet that I developed.

The *Time speaking* column was added to determine the amount of time each speaker, or each role, held the floor. I used an algorithm to subtract the time stamp of the current utterance from the following utterance. I had to scrub the data for this column because if two speakers started speaking at the same time, which was quite frequent, it would give them a time speaking of zero seconds. Because the utterances could also be separated by codes, some utterances did not have a time stamp. The formula used in the following utterances had to be modified to skip the separated utterance. The words per utterance column was added in order to get a more accurate representation of the discourse.

Development of the Codebook

After the data was prepared, I conducted a content analysis of the discourse of IDs and clients. In order to provide the maximum amount of transparency for the analytical procedures I used, I describe the development of my observation system. This includes how the codebook was created, detailed explanation of how the codes of substance were created from the design literature for the content analysis, and how the codebook was

	A	B	C	D	E	F	G	H	I
1	Utterance ID	Time Stamp	Time Speaking	Speaker	Gender	Role	Utterance	Words per utterance	Average Word Length
2	1001	0:01	0:38	C1	F	C	Okay. Okay, so English 360 is Technical and Professior	81	4.16
3	1002	0:39	0:03	D1	F	D	No, that's good to know.	5	4.00
4	1003	0:42	0:03	C1	F	C	And because they're only five weeks, and	7	4.86
5	1004	0:45	0:02	D1	F	D	which two were the ones that you were thinking of?	10	4.10
6	1005	0:47	0:02	C1	F	C	the report and the executive summary.	6	5.33
7	1006	0:49	0:01	D1	F	D	Okay	1	4.00
8	1007	0:49	0:01	C1	F	C	Like I said, I just break out the	8	3.25
9	1008	0:50	0:01	D1	F	D	Oh yeah that sounds good	5	4.00
10	1009	0:51	0:19	C1	F	C	memory for emphasis on how important it is so comb	50	4.30
11	1010	1:10	0:01	D1	F	D	Okay, so that's Yeah,	4	4.50
12	1011	1:11	0:05	C1	F	C	but I'm not I'm not sure yet just I need to sort of think	17	3.65
13	1012	1:16	0:04	D1	F	D	Did you make a decision yet on like, which would be g	14	4.29
14	1013	1:20	0:19	C1	F	C	Yes, it would be the instructions or a group project an	57	3.89
15	1014	1:39	0:01	D1	F	D	Okay	1	4.00
16	1015	1:39	0:18	C1	F	C	um, because I do a lot of group in class work where I h	50	4.38
17	1016	1:57	0:01	D1	F	D	Mmhmm	1	5.00
18	1017	1:57	0:13	C1	F	C	And then, you know, they do that in class and then w	39	4.13
19	1018	2:10	0:01	D1	F	D	RIght	1	5.00
20	1019	2:11	0:10	C1	F	C	and I've used discussion boards and other online class	25	5.12
21	1020	2:21	0:07	D1	F	D	Right. Now we was this the one where you were you	21	4.24
22	1021	2:28	0:01	C1	F	C	Yeah.	1	5.00
23	1022	2:28	0:08	D1	F	D	And and then so then that's the thing like and with th	22	4.09

Figure 2: A screen capture of the data after preparation for analysis, including columns for speaker name, role, gender, word count and average word length

further developed for the content analysis via a grounded approach. Finally, this section closes with a discussion of the unit of analysis and the inter-rater agreement.

Finalized Code Book

I developed the final codebook from a study that offered an initial codebook (Bevins & Howard, 2020). The initial codebook is reproduced in Appendix D. I coded each utterance into one of nine content areas of design discourse. For each content area, I used the taxonomy from Bevins and Howard (2020) that analyzed the design discourse of students designing an instructional mobile game. This taxonomy was developed based on the core concepts of design expertise that I found in the literature. These core concepts included not only the design expertise inherent in the process of design, but also those taught and discussed in the design literature used in ID programs.

In order to have mutually exclusive codes, I needed to code for discourse management strategies as well. In Bevins and Howard (2020), we generated an initial taxonomy that did not include discourse management strategies. Design discussions, like all discussions, require various discourse management strategies to enable a discussion to take place. For example, backchanneling enables speakers to recognize that an interlocutor is still listening (Yngve, 1970). These discourse strategies are not part of design discourse, but they are important to recognize, because strategies differ among contexts (Howard, 2012). In my final codebook (Table 2), I have 16 total codes that I used in my analysis of the data. An expanded codebook, including examples, can be found in Appendix E.

Table 2: The codebook showing mutually exclusive codes of two different types: Codes of design expertise drawn from the literature and operationalized in the context of this study, and codes of discourse management (denoted by).*

Discourse Codes	Definition
Tools	Discourse regarding the tool employed in the design process.
Design Tensions	Discourse surrounding issues related to the vision of the project, the initial focus, the project limitations or competing constraints, or the consequences of the designed product.
Problem Framing	Discourse surrounding how the designers see or view the problem or that identifies the subject of the design as an example of a specific design genre.
Problem Solving	Discourse surrounding the establishment of the problem or a comparative analysis of multiple design solutions; characterized by hypothetical and conditional statements. A gambit.
Precedent	Discourse about any previous experience both as a designer or a user.
Aesthetics	Discourse surrounding the holistic experience of the design (the emotional, physical, and/or spiritual experience of the designed product.
User Experience	Discourse surrounding what the user sees, hears, and does while using the designed product.
Usability	Discourse surrounding the usability of the designed product, including problems or positive aspects of using the designed product.
External Representations	Discourse about sketches, written notes, pictures – anything that represents the design.
Inquiry	Discussion used to elicit information from the other speaker (could be in question or statement form)
Procedural*	Discourse surrounding procedural, logistical, or organizational tasks related to the design project.
Backchannel*	Discourse intending to convey the interest and/or comprehension of the listener (Yngve, 1970).
Positive reaction*	Discourse intending to convey a positive reaction of the listener to the idea expressed by the speaker (Howard, Barrett, & Frick, 2010).
Tangential*	Discourse that is tangential to the design project. It is not about the current project but is a result of discussion about current project.
Off topic*	Discourse that is off topic and is not associated with the project or anything tangential to the project.
Null*	Discourse that is incomprehensible and does not relate to a previous utterance.

After the data was prepared, I used iterative coding to fine-tune the observation system. Several sessions of coding and three joint sessions with my director developed the observation system. I began an initial round of coding using the nine codes from the Bevins and Howard (2020) codebook. I coded a set of 50 utterances on this initial pass. I found examples of several of the different types of design expertise in the codebook. I coded any utterance that did not represent design expertise as null. Null utterances identified discourse that was off topic, incomprehensible, or organizational. I coded utterances that indicated the listener was understanding or interested as backchannel.

After the first session of coding, I began to see that the non-design discourse coded as null held a lot of variation. Because of this, I decided to further break out and define the null category. For this second round of coding I again coded 50 utterances different from the group used in the first round. Through this round I created two more codes based on content that I noticed within the data: procedural and positive reaction. The procedural code counted for the organizational and task-oriented discourse associated with the design project. During this second round of coding, a heuristic emerged where false starts were coded with the design expertise type that they proposed even if the speaker backtracked in the next utterance.

I began a third and final round of coding. During this session, I noticed that the null category still held some variation. The variation consisted of discourse that was completely off topic from the design project, discourse that was tangential to the discussion, and discourse that was incomprehensible. Because these differences could be distinguished, three more codes were created and used to show the variation in non-

design discourse. There are six total codes that were used to code the non-design discourse. These six final codes that were added refer to different discourse management strategies that are often used to move the conversation along or that are natural occurrences of any conversation. I call these codes discourse management strategies, and they consist of backchannel, procedural, tangential, off topic, positive reaction, and null and are defined further in the finalized codebook found above (Table 2).

An Explanation of the Codes of Design Discourse

Design discourse refers to the substantive area of design expertise that I found in the data. When I developed these codes for Bevins and Howard (2020) I did not define each code, nor did I select an example as I have done here. I explain each of the codes below but offer the examples in Appendix E for space.

The code *tools* includes any discourse surrounding the use of a particular tool in the design project. A tool could be a software program the designers were using to work on/complete their design or a specific feature of a particular tool.

The code *design tensions* includes any discourse surrounding issues relating to what is and what ought to be (vision level), the initial focus of the design project (approach), the limitations that may arise from budget constraints, client satisfaction, and other limitations within the project (project tensions), and the consequences, good and bad, of the product that is created (as created situations) (Tatar, 2007).

The codes *user experience, usability,* and *aesthetics* are very similar; however, there are notable differences between these three and the types of discourse that could be coded as each. The code *user experience* includes any discourse surrounding the path the

user takes in the design, what they see, what they hear, and what they do. The code *usability* refers to the discourse surrounding the usability of the design, for example: Did the users find it intuitive and usable or did the users have problems in accessing or learning how to use the designed product? The code *aesthetics* includes discourse about the holistic experience of the user. Some of the discourse that could be coded as aesthetics may also be coded as *user experience*. *Aesthetics,* however, is more inclusive and would refer more to talk about the emotional, physical, and/or spiritual experience of the design.

The codes of *problem solving* and *problem framing,* while similar, can be distinctly separated within the discourse. The code *problem solving* includes any discourse surrounding the design problem. This could include discourse where the designers are trying to understand the problem given to them or where they are determining what actually is the problem. The code *problem framing* includes discourse surrounding how the designers approach the design problem. It could include discourse surrounding how the designers see or view the problem. Any discourse coded as *problem framing* would come after the designers have established what exactly is the design problem (*problem solving)* and would move forward to how they are going to approach this particular problem at this point in the design project.

The last two substance codes deal with the physical and tangible items that designers may use in practice and their previous experiences both as a designer and a user. The code *external representations* includes any discourse about sketches, written notes, pictures — anything that represented the design product. The code *precedent*

includes discourse about a previous experience of a designer. These prior experiences could be from their experience as a designer or as a user. Specifically, this discourse would include the designer's use of that previous experience to help them in the current design project.

I added a code of *inquiry* in the first session of coding because it appeared as a unique form of discourse management because it was so closely tied to other design discourse types. After discussion surrounding this feature of the discourse, I elected to make it a separate code and count its frequencies like other design discourse types. IDs and the clients eliciting information from each other emerged more akin to design discourse than discourse management. Therefore, *inquiry* refers to discourse that the speaker used to elicit information from the listener. These utterances could be in question or statement form. I have labeled this code as design discourse, as most often these utterances were eliciting information that represented a certain type of design expertise.

Discourse Management Strategies

Discourse management strategies refer to the discourse that was not coded as one of the ten types of design discourse. These codes were developed during the three sessions of coding that were used to develop the observation system. I explain each of the codes.

The *procedural* code refers to any discourse surrounding the organizational, procedural, and logistical tasks associated with the design project. This discourse could refer to the deadlines and next steps within the OIT Jumpstart program that the clients were working through during the development of this design project. This code could

also include discussion about next steps on the project for both the designers and the clients.

The *backchannel* code refers to any discourse used by the listener to communicate their understanding of and/or interest in what the speaker is saying (Yngve, 1970). This type of utterance is typically short in nature, i.e. yes, okay, mmhmm, etc.

The code of *positive reaction* was created to describe utterances where the speaker was giving their positive opinion of something said or decided by the other speaker (Howard, Barrett, & Frick, 2010). Examples of this code would be "I like that," "that looks great," and "that sounds good." These utterances communicate the approval of the listener.

The codes of *tangential* and *off topic* are close in nature but do have notable differences. The *tangential* code refers to discourse that has slightly diverged from the design project. This type of discourse has emerged from discussion about the design project and is tangential to the project. This discourse could be about an e-mail they received with information about some aspect of the OIT Jumpstart program or it could be about the screen that was not working in the conference room when trying to project the learning management system (LMS) course shell. The *off-topic* code refers to discourse that is not related to the design project at all. This discourse emerged randomly within the discourse and was unrelated to anything mentioned before, i.e., discourse about a movie they recently saw.

The final code in the discourse management strategies section is the *null* code. This code refers to discourse that cannot be understood, that is unclear, or that does not

relate to any discourse before or after. Iterative development of the codebook continued until the Null code reached less than 5% of the total sample.

A Unique Heuristic in the Coding Process

A heuristic that emerged during this first round of coding was to read two utterances together if interrupted by a backchannel. This helped in understanding and determining utterances that had been interrupted but were not complete thoughts on their own. Those utterances were given the same code as the utterance they were separated from.

Unit of Analysis

The unit of analysis for this study is the utterance. An utterance is defined in discourse analysis as the smallest unit of discursive meaning (Spector, 2013). The large unit of analysis typically used in Conversation Analysis is the *turn;* however, turns can be made of multiple utterances of different substance types, as depicted in Figure 3.

I separated turns in the data into utterances according to two different rules. The first was that if a change in speaker occurs, the next utterance must be placed on a new line. For example, in Figure 4, speaker C1 says “Yes. And so instructions are do this, do that do that. The process description is this is what this what happens. You know when food rots, this is what happens.” Next, speaker D1 says “Yeah. Yeah, that’s excellent.” These are two different utterances because of the change from Speaker C1 to Speaker D1. The next rule was that if a change in meaning occurred, so did the line of the utterance, regardless of speaker. I divided the turns into utterances when a change in the substantive

D	E	F	G	H	I
Speaker	Gender	Role	Utterance	Words per utterance	Discourse
C1	F	C	yes. And so instructions are do this, do that do that. The process description is this is what this what happens. You know when food rots, this is what happens.	30	s
D1	F	D	Yeah. Yeah, that's excellent.	5	n
D1	F	D	And then as far as like their, do they get a choice on that description?	15	i

Figure 3: A screen capture of the division of utterances by a change in speaker or by a change in the discourse type

area of discourse type occurs. For example, in Figure 4, Speaker D1 says “Yeah, yeah that’s excellent.” This utterance, I coded as positive reaction. The next utterance is from the same Speaker, but I coded it as inquiry. Speaker D1 continues, “And then as far as like their, do they get a choice on that description?” This utterance was eliciting information from another speaker in the meeting and was not a continuation of the first utterance as a positive reaction.

Inter-rater Agreement

The development of the observation system was aided by an inter-rater agreement procedure using a sample of 50 utterances. A research technician was recruited to read and code the 50 utterances in order to determine the inter-rater agreement. I used a website (http://justusrandolph.net/kappa/) to calculate the agreement and Cohen’s Kappa. The percentage agreement was 82%, and the Cohen’s kappa was .79, which falls within the substantial agreement category – just .01 below the near perfect agreement category (Altman, 1991). Five of the nine disputed codes were between problem solving and precedent. The particular utterances that were disputed included discourse about possible solutions, but they were discussing these solutions by referring to prior experiences. The solutions that were proposed were being taken from this previous experience of the client; therefore, these utterances are evidence of the design discourse type of precedent. The code of precedent was further developed and defined to include any reference to a prior experience as noted in the finalized codebook (Appendix E).

The codes of design tensions, user experience, and problem framing were further developed and defined via the inter-rater agreement process. Examples found in the

dataset helped better differentiate between codes. Two of the nine disputed utterances were coded by the researcher as user experience but were coded by the rater as problem solving and design tensions. The rater may have favored problem solving and design tensions over user experience because they were more prevalent in that particular group of turns than user experience. One of the nine disputed utterances was coded as user experience by the rater and as problem solving by the researcher. The last disputed utterance was coded as problem solving by the rater and as problem framing by the researcher. All of the disputed codes involved problem solving, with the rater coding problem solving more than other design discourse types. This could be because a large percentage of utterances were in fact problem solving, and ultimately coded as such. Along with the edits to the codes of design tensions, user experience, and problem framing, I also rewrote the definition for the problem-solving code to better establish the differences among utterances of design expertise.

Conclusion to the methods

In this chapter I have described the data, the data selection and scrubbing, the customization of data preparation methods to prepare data for analysis, and the procedures I have used to insure rigor in their application. I chose to use discourse analysis in order to examine the meaning-making process of language of IDs in design meetings. I collected eight audio-recordings of meetings between IDs and clients (faculty members) and IDs and administrators. I chose to only include the five audio-recordings of meetings between IDs and clients that were part of the OIT JumpStart program. I began with a taxonomy used for a previous study (Bevins & Howard, 2020) and developed it for this study. Through iterative sessions of coding of the data set for this

study, I finalized my codebook with 16 total codes: 10 design discourse codes and 6 discourse management codes. An inter-rater *substantial* agreement was found, and changes were made to the finalized codebook to better define the codes.

Chapter Four: Results

There are five sections in this results chapter. The first section is a structural analysis of the data in order to orient the reader to the data set. The second section provides the results analytical procedures regarding RQ1, describing the design discourse types found in the data overall by speaker role. The third section answers RQ2, which addresses the aggregated design discourse categories found in the data. Next, the fourth section addresses RQ3 which compares the design discourse types in terms of frequency and complexity by speaker role. Finally, a fifth section covers an additional analysis based on gender that was completed to further enrich the discussion after I noticed differences that emerged in the data.

Orientation to the Data

Structural Analysis of Discursive Interactions

I completed a structural analysis of the descriptive statistics of the discursive interactions in each meeting in terms of length and number of speakers, total utterances and total words. Scholars in discourse analysis promote the use of a structural analysis to gain a broader understanding of the discussions being examined and to orient the reader to the scope of the discussions (Herring, 2007). Table 3 shows the descriptive statistics for each individual meeting, followed with the average of each statistic in order to understand the discursive environment of the data.

There were five meetings total in this data set with the longest meeting being Meeting 4 at 63 minutes and the shortest meeting being Meeting 2 at 28 minutes. The average length of meetings was almost 47 minutes. Each meeting had at least two participants (one ID and one client). However, Meetings 3 and 5 included two IDs and

Table 3: Descriptive Statistics of five meetings showing the longest and most complex in terms of time and participation

Meetings	**Length**	**Speakers**	**Total utterances**	**Total Words**	**Avg. words per utterance *(sd)***	**Average word length *(sd)***	**Average Words per Minute**
Meeting 1	55:12	2	557	9056	16.26 *(23.36)*	4.37 *(1.14)*	164.06
Meeting 2	28:13	4	270	4909	19.43 *(30.73)*	4.52 *(1.34)*	173.95
Meeting 3	48:44	3	478	8533	18.62 *(23.10)*	4.40 *(1.13)*	175.11
Meeting 4	62:58	2	465	7441	16.03 *(21.55)*	4.40 *(0.69)*	118.17
Meeting 5	39:49	3	474	6448	13.63 *(24.74)*	4.44 *(0.98)*	161.93
Averages	46:59 *(0.50)*	2.8 *(0.74)*	448.8 *(95.32)*	7277.4 *(1487.5)*	16.79 *(2.06)*	4.43 *(0.05)*	158.64 *(20.9)*

one client each and Meeting 2 included three IDs and one client while also being the shortest meeting in minutes. There were five different clients in this study, so each meeting had a different client. It is also notable, however, that there were six total IDs in this study; some IDs participated in more than one meeting. The ID in Meeting 1, Sarah, also participated in Meeting 2. Patrick, a different ID in Meeting 2, also participated in Meeting 3, and Emma, the ID in Meeting 4, participated in Meeting 5. There appeared to be no relationship between the number of interlocutors in each meeting and the length of the meetings. The number of IDs present in each meeting did not necessarily dictate the length of the meeting. However, I noticed that a single speaker could sway the complexity of the discussions in terms of length of utterances and words, because Meetings 2 and 3 had a similar length of utterances (the two highest for this data set), and Patrick was present at both of those meetings.

When calculating the number of utterances in each meeting, Meeting 1 had the most utterances with only two participants and Meeting 2 had the least amount of utterances with four speakers. This is different from what I expected to see. When audio-recording these meetings, I expected that Meeting 2 with four speakers would end up being longer and having more utterances than the other meetings. I also expected that the longest meeting, Meeting 4, would have the most utterances. Meeting 2, with four speakers, actually ended up as the shortest meeting. The average number of utterances for all five meetings was 448.8 utterances. These data suggest that the longer the meeting in minutes, the more utterances and words per meeting with one exception, Meeting 1.

When calculating the total number of words in these five meetings, the ratio of words to utterances per meeting was similar. Meeting 1 had the most words at 9,056 words. It also had the most utterances. Meeting 2 had the fewest amount of words at 4,909 words. The average of total words for all meetings was 7,258 words. The shortest meeting, Meeting 2, with the least amount of utterances and words, had the longest utterances with over 19 words per utterance. Meeting 5 had the shortest utterances at just under 14 words per utterance. The average length of utterances for all five meetings was 16.79 words per utterance. These average utterances are all much larger than the average utterances of students in a design studio (Bevins & Howard, 2020). It is notable, however that the teacher in that study had an average utterance length of 19 words per utterance suggesting that the complexity of utterances depends on the role of the speaker.

The average rate of words per minute (wpm) for all meetings fell above the average range of words per minute that is typically found in conversational American English. In conversational American English, the average speaking rate is between 120 to 150 wpm (Barnard, 2018). In these meetings, the average rate of wpm for all meetings was 158.64. The rate of wpm for each meeting fell above the average range of wpm for conversational American English with the exception of Meeting 4. The rate of wpm for Meeting 4 (118.17) fell below the average range of wpm for conversational American English. These results suggest that on average these meetings had a faster speaking rate than an average conversation in American English.

Average word lengths were longer than those of conversational English. All of the meetings had a similar average word length ranging from 4.37 to 4.52 characters per

word. Examining word length can help to contextualize these discussions (Piantadosi, Tily, & Gibson, 2011). The average for all meetings was 4.43 characters per word. This average word length suggests that these were complex discussions when compared to an average word length of 3.47 characters found in a conversational sample (Biber, 2012). Meeting 2 also had the largest average word length at 4.52 characters per word.

Utterances versus words

I calculated the total number of utterances and of words in relation to each type of discourse. Figure 4 shows the normalized total utterances and total words per discourse type. Both calculations were completed in order to better understand the discursive behavior in the discussions.

The total number of utterances per discourse type was calculated first and showed that backchannel actually accounted for a third of the total number of utterances. Backchannel, however, typically consists of one or two words, such as Okay or Yeah. Backchannel is discourse used by the listener to indicate their understanding of what the speaker is saying (Yngve, 1970). This discourse type facilitated discussion but did not represent a discourse performance in design. For this reason, the total number of words per discourse type was also calculated to accurately represent design discourse in the sample.

In total number of words, problem solving takes up the largest part of the discussions at 20% of the total of all words in the data. Backchannel, which occupied the most amount of utterances, occupied only 3.5% of the total amount of words in the data. User experience, tools, and procedural took up the next amount of total words in the data

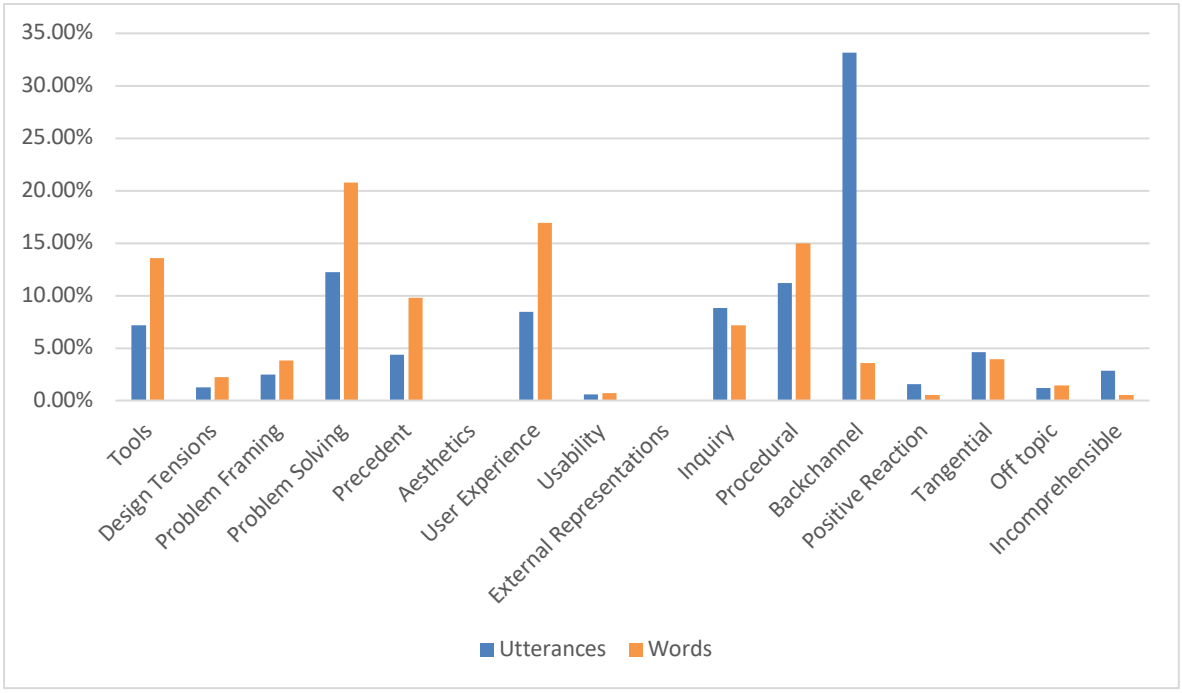

Figure 4: The normalized total utterances and total words per discourse type showing that backchannel had the most utterances of any discourse type and that problem solving had the most words of any discourse type.

17%, 13.6%, and 15% respectively. As can be seen in Figure 4, when examining the discussions in relation to all of the discourse types, total words gives a more accurate representation of the design meetings (Howard, Barrett, & Frick, 2010). Discourse types are reported in words because this measure, rather than utterances, more accurately represents the discursive action in the meetings.

I contrasted discourse management and design discourse to determine the relative discursive composition of the meetings. The aggregate of these two can be found in the finalized codebook in Table 2 in Methods. When dividing the design discourse types from the discourse management strategies, design discourse accounted for 75% of the total words in these design meetings and discourse management strategies took up 25% of the total words. IDs and clients spent 75% of their discourse effort on actual design discourse about the project, and 25% of the time managing how that would take place.

Descriptive Statistics by Speaker Role

To further orient the reader to the data, I calculated the descriptive statistics in terms of role of the speaker. This preliminary analysis is intended to prepare the reader to understand the results related to RQ1. These results can be seen in Table 4. They show the speaker role that occupied the floor the most in all meetings combined. These results also show the complexity of the discourse of each role.

As can be seen in Table 4, IDs occupied the floor more than the clients. I expected the utterances of IDs to be longer than that of the clients, but from the average words per utterance and the average speaking time per utterance, it can be seen that the length and time of utterances by both speaker roles were similar. While the role of ID held the floor

Table 4: Descriptive statistics by role of the speaker showing that the ID role occupied the floor the most.

Role	**Total number of utterances**	**Average words per utterance *(sd)***	**Average word length *(sd)***	**Total time speaking in minutes**	**Average speaking time per utterance in seconds (*sd*)**
Designers	1250	16.11 *(23.26)*	4.46 *(1.04)*	133:36	6:35 *(9:4)*
Clients	994	15.8 (*25.61*)	4.37 *(1.07)*	106:39	6:33 *(9:55)*

longer, as individuals, the individual clients actually held the floor longer because more IDs participated than clients in the meetings. The averages by role should be read with that dynamic in mind.

RQ1: Design Discourse Types Per Role

The first research question addressed the total composition of the design discourse found in the discussions: *What types of design discourse are evidenced in the discussions of these IDs and clients?* This combines both roles – IDs and clients. To answer this question, the data was coded for design discourse types from the finalized codebook (see Table 2 in Methods). The discourse types labeled as design discourse are tools, design tensions, problem framing, problem solving, precedent, aesthetics, user experience, usability, external representations, and inquiry. Figure 5 shows the normalized frequencies of the design discourse types found in these design meetings of IDs and clients. I normalized these frequencies by a percentage of the total words devoted to design discourse.

I found eight of the ten design discourse types from the finalized codebook in the discussions of IDs and clients. In this study the IDs and clients used problem solving, a focus on the establishment of the problem or a focus on the hypothetical solutions that could be used to solve the problem, the most. Problem solving accounted for over a fourth (27.66%) of the design discourse found in these design meetings. Problem solving was followed by user experience (22.54%) and discussions about tools (18.14%). Precedent accounted for 13% of the total words. Problem framing, design tensions, and usability accounted for less than 5% of the discussions each. I did not find design discourse addressing aesthetics or reference to external representations in the discussions.

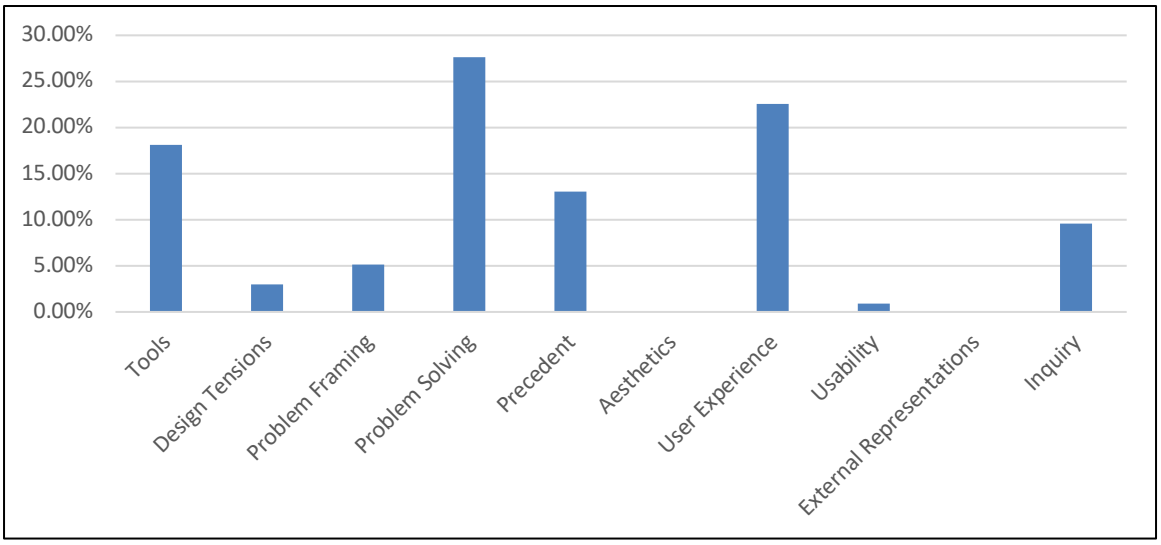

Figure 5: Normalized total words per design discourse type showing that problem solving was the design discourse type found the most

Interlocutors packaged their design discourse differently by role. The second result for RQ1 pertains to the design discourse separated by role. Through calculating the design discourse types by role of the speaker, I found differences between the design discourse of IDs versus the design discourse of clients in these meetings. The design discourse is calculated by total words according to roles in Figure 6.

IDs and clients spent a similar amount of discursive time on problem solving, 28.8% and 26.5% respectively, and different amounts of time on user experience, inquiry, and tools. Both roles were very involved in the discussions surrounding problem solving. The clients spoke more about user experience than IDs, and the IDs used inquiry more than the clients. Regarding discourse surrounding tools, over 27% of the discourse of IDs was spent on tools; however, only a little over 8% of the discourse of clients was found to be about tools. Clients spent more time than IDs in discourse surrounding precedent.

IDs spent the majority of their time in problem solving and discussion on tools. When examining problem solving and tools by total words, there was only a 1% difference between these two discourse types, as can be seen in Figure 6. Problem solving and tools were more frequent design discourses in the interactions of IDs than the other design discourse types. User experience and inquiry were next. I found no evidence of discourse about aesthetics or external representations in the IDs' discourse. As can be seen in Figure 6, clients spent the majority of their time on problem solving and user experience. They did not spend as much time on tool talk, problem framing or inquiry as the IDs. The clients did have more discourse surrounding design tensions, precedent, and

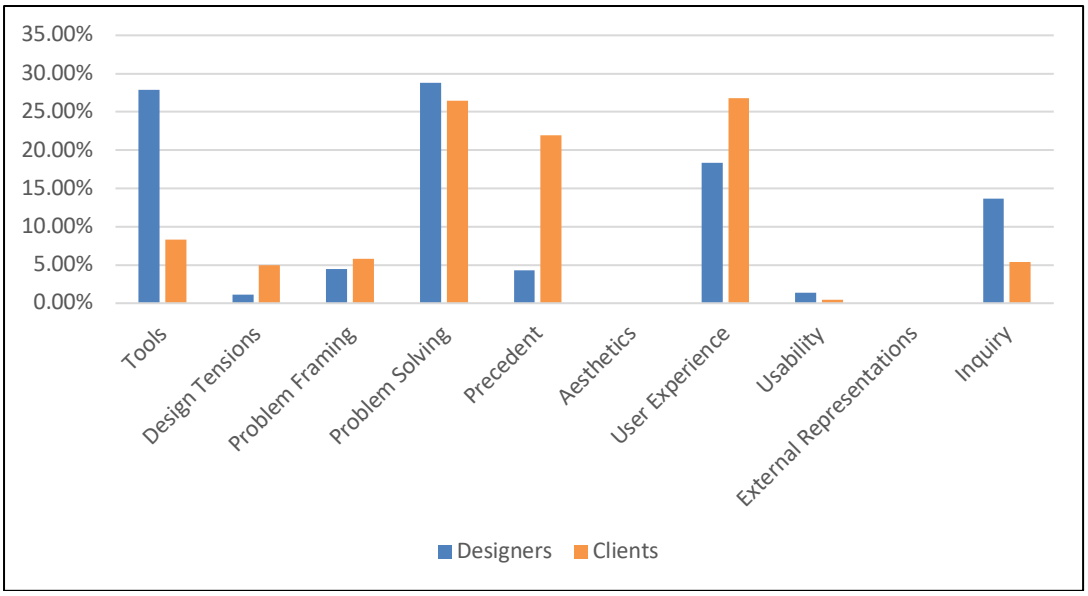

Figure 6: Normalized total words per design discourse type per role, showing the differences in where each type of role spent the majority of their time

user experience than the IDs, and also never engaged in discourse about the aesthetics of the designs.

RQ2: Aggregated Design Discourse Categories Per Role

The second research question addresses the aggregated categories of design discourse found in these design meetings: *How do aggregated categories represent design discussions in these design sessions*? Discrete codes can blur the actual meaning of the descriptive statistics when there are multiple codes of similar substance. By aggregating, the reader is able to view the larger picture more clearly, without results being obfuscated by minor differences among substance types. In statistics, blurred results are sometimes called noise; however, a similar procedure of aggregation is also used in discourse analysis when the observation system contains several codes (Howard, 2012). Of the eight design discourse types found in the data, I combined similar design discourse types into aggregated categories in order to determine if the IDs and clients spent a majority of their time in a certain category of design discourse. The aggregated categories consist of discourse surrounding problem framing and problem solving, user experience and usability, design tensions, precedent, tools, and inquiry. Aesthetics and external representations were left out of this result since they were not found in the data set. The results can be seen in Figure 7.

Almost 75% of the design discourse found in this data fell within one of three aggregated categories: problem framing/solving, tools, and user experience/usability. This suggests that in these meetings, IDs and clients spent the majority of their time discussing the problems and solutions of creating online courses, the student experience of those courses, and the tools that could be used in those online courses.

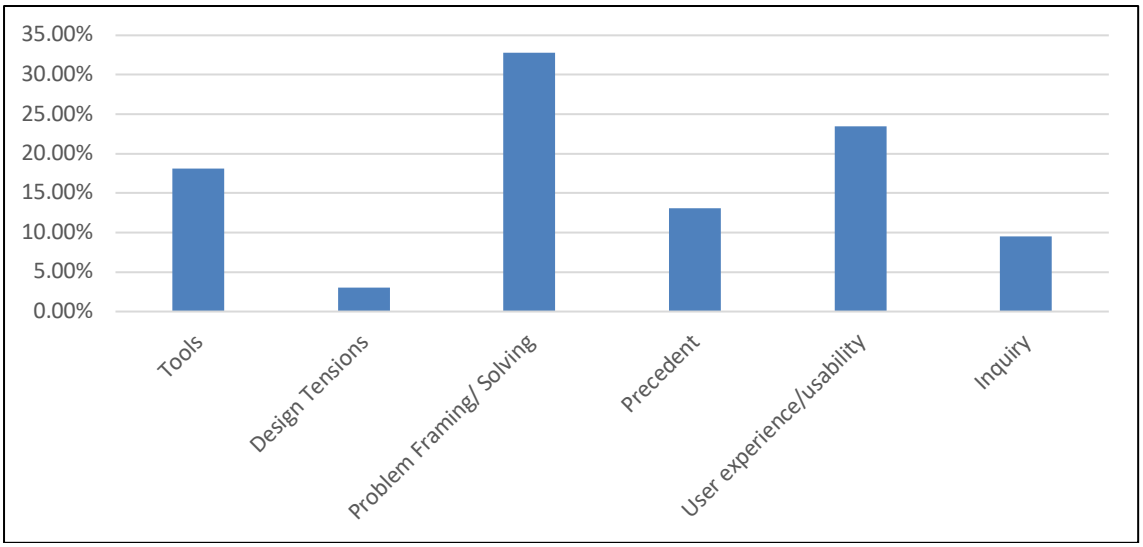

Figure 7: Normalized aggregated design discourse categories for all of the data showing that a third of the design discourse fell within the problem solving/ problem framing category

IDs and clients' discussions were centered around the problems of creating an online course and the solutions to those problems. A third (32.79%) of the design discourse fell within the problem solving/framing category. Discourse surrounding the user experience/usability accounted for 23% of the design discourse found in the data. This suggests that the needs and experience of the learners in these online courses are a primary focus of IDs and clients when designing these online courses. The tools used to design these courses accounted for 18% of the design discourse. IDs and clients focused on teaching and learning about the many tools they could use and their affordances.

The three aggregated categories with the lowest percentage of frequency in the data, precedent, inquiry, and design tensions, together accounted for 25% of the discussions. Precedent was found to represent 13% of the design discourse, and inquiry was found in 9% of the discussions. Only 3% of the design discourse centered around design tensions.

I also separated the aggregated design discourse categories by speaker role to determine in which design discourse category each speaker role, IDs and clients, spent the majority of their time. The results can be seen in Figure 8.

When aggregated into similar design categories, problem solving / framing had the highest frequency for both IDs and clients. This category accounted for almost a third of the discourse for both IDs and clients (33.29% and 32.28% respectively). Problem solving / framing was the only aggregated category where IDs and clients had similar frequencies; there was a 1% difference. These results suggest that both IDs and clients invest their time in design meetings in discussions surrounding the design problem, how to approach that problem, and the hypothetical solutions to that problem.

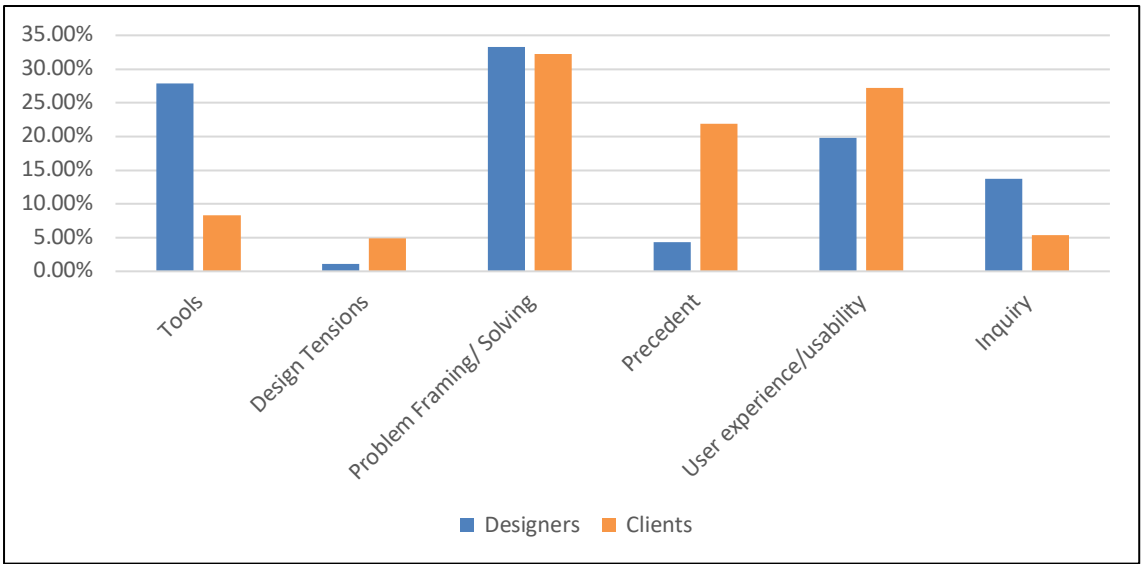

Figure 8: Normalized percentages of aggregated design discourse categories showing the differences between the ID role and the client role

In every aggregated category besides problem solving / framing, there was a difference in frequencies between the ID and client role. IDs talked about tools more than clients. There was almost a 20% difference in the frequency of design discourse about tools present in ID discourse versus client discourse. The ID role also had a higher percentage of the inquiry category than the client role. These results suggest that IDs concentrated on discussing tools that could be used, how to use those tools, and eliciting information from the clients to further the design project.

There were three aggregated categories of design discourse where the client role had a higher frequency than the IDs. Clients had a higher percentage of discourse in the precedent, user experience / usability, and design tensions categories than the ID role. Clients relied on their previous experiences of either teaching online courses or teaching these same courses in a face-to-face context to generate their discourse about design. At the same time, clients had a higher percentage of discourse about design tensions than IDs, suggesting that clients were more focused on different constraints with which they had to grapple. Clients also had a higher frequency of discourse surrounding user experience / usability than IDs, suggesting that clients were more focused than IDs on the learners in their online courses.

RQ3: Comparison of Design Discourse Types in Terms of Complexity and Time

The third research question compares the design discourse types in terms of complexity, frequency, and the amount of time they occupy in the design meetings: *How are the design discourse types found in the data represented in terms of complexity and time?* To answer this question, I calculated descriptive statistics to examine the length of utterances and words for each design discourse type and the amount of time each type of

design discourse occupied in the discussions. The results (Table 5) show only the design discourse types that were found in the data. Aesthetics and external representations are not included in this table. I examined two types of complexity for the design discourse types: average utterance length and average word length.

Through a structural analysis of the design discourse types, the complexity of each type discourse can be determined (Herring, 2004). I operationalized complexity in this study as word length, utterance length, and time per utterance. The three measures allow the reader to index design discourse types by these criteria. In terms of word length, user experience was first, tools and inquiry were second, and problem solving was third. In average utterance length in words, precedent was first, user experience was second, and tools was third. In average utterance length in time, precedent was first, user experience was second, and design tensions was third.

Precedent is the design discourse type with the longest average of words per utterance. Precedent is often expressed in narrative related to the telling of the experience of a design (Boling, 2010; Boling & Gray, 2018) and therefore takes more words to get across. I found the lowest average of words per utterance belonged to inquiry. Most of the inquiries were relatively short because the speaker was eliciting some type of information. User experience and tools also had high averages of words per utterance indicating that these two design discourse types are also complex in nature and require more words to convey a point. Usability also had a relatively low average of words per utterance as compared to the other design discourse types.

*Table 5: A table showing the complexity of each design discourse type via average words and word length, and average time per utterance. Time spent on each design discourse type is included to reflect prominence of design discourse type in the sample. * denotes complexity contributor*

Design Discourse Type	**Average Words per Utterance***	**Average Word Length***	**Total Time in minutes**	**Average Time per utterance* in seconds (*sd*)**	**Average Time per meeting in minutes**
Precedent	37.03 (*35.77*)	4.21 (*0.49*)	21:43	14:19 (*13.33*)	4:20
User Experience	32.81 (*34.21*)	4.34 (*0.68)*	41:58	13:59 (*16.24*)	8:23
Tools	31.25 (*35.17*)	4.29 (*0.61*)	25:50	10:16 (*11*)	5:10
Design Tensions	29.18 (*26.78*)	4.16 (*0.55*)	4:51	10:47 (*12:58*)	0:58
Problem Solving	27.89 (*25.32*)	4.26 (*0.63*)	46:09	10:34 (*10.53*)	9:14
Problem Framing	25.38 (*25.79*)	4.19 (*1.08*)	8:30	9:16 (*9:31*)	1:42
Usability	19.08 (*19.76*)	4.15 (*0.65*)	1:14	5:42 (*6:12*)	0:14
Inquiry	13.34 (*22.62*)	4.29 (*0.67*)	16:31	5:21 (*8:04*)	3:18
Total (Avg)	27	4.24		10:01	4:09

The average word length for each design discourse type found in these meetings fell between 4.15 characters per word and 4.34 characters per word. Average word length found in a conversational English sample is 3.47 characters (Biber, 2012). These numbers indicate that each design discourse type contained more complex words than conversational English, especially discourse surrounding user experience. These results also indicate that discourse surrounding usability did not contain as complex words as other design discourse types. This could be because usability accounted for less than 1% of the design discourse.

Discourse surrounding problem solving held the floor longest in terms of time the speakers held the floor in exemplifying a particular design discourse type. Forty-six of the total 240 minutes were dedicated to problem solving, for 19% of the discourse. Problem solving also had the highest total of words and the highest total of utterances in the data set. User experience also accounted for almost a similar amount of time as problem solving, 41 minutes or 17% of the discourse. Usability, which was the design discourse type found the least in the data set (aside from aesthetics and external representations), only accounted for 1 minute and 14 seconds of the discussions (0.4% of the discourse).

Remaining discourse types varied from 2% to 11% of the discourse. Precedent turns may have been longer because precedent knowledge is often shared via narrative (Boling & Gray, 2018). While precedent did not account for a large portion of the total time of the discussions (21 minutes and 43 seconds or 9% of the discourse), it did have the largest average time per utterance, 14 seconds per utterance. User experience had the

second largest average at 13.5 seconds per utterance. The two design discourse types with the shortest average speaking time were usability and inquiry. Usability was most likely very short in this data set because it was found the least. The utterances for inquiry were also short, because speakers were trying to elicit information from the other speakers rather than give information.

An Additional Analysis by Gender

Trends in the data suggested to me that a richer discussion of these results would be brought about via additional analysis by gender. While running the analyses on the data set, I added in a column for gender because I thought it might illuminate what this study could contribute to our understanding of design discourse. I questioned if gender played a role in the design discourse of IDs because I saw patterns emerging. A structural analysis depicted clear differences by gender. Examination of descriptive statistics by gender of the IDs via total utterances and words, average utterance length, average word length, total speaking time and average time per utterance suggested female IDs use more utterances of short length. Results can be seen in Table 6. The *n* represents the number of appearances of designers in meetings.

As can be seen in Table 6, female IDs had a higher average speaker time than male IDs in the design discussions. This could be because four of the five design meetings included at least one female ID. Two of the design meetings included one female ID and zero male IDs. A third meeting included two female IDs and zero male IDs, and a fourth meeting included a female ID and two male IDs (one of which participated very little – 5 utterances). The fifth design meeting included two male IDs.

Table 6: A structural analysis of the design discussions according to gender showing the participation of female and male IDs

Gender of designers	**n**	**Average words per utterance (*sd*)**	**Average word length (*sd*)**	**Average Speaker Time per Meeting in minutes**	**Average Speaking Time per utterance in seconds (*sd*)**
Female	5	14.18 *(22.38)*	4.49 *(1.02)*	18	6:16 *(9:36)*
Male	4	20.66 *(24.63)*	4.38 *(1.1)*	10:48	7:2 *(9:39)*

This could be the reason for the difference in the average speaker time between the male and female IDs.

Men and women packaged their design discourse differently. On average, male IDs had longer utterances at over 20 words per utterance, whereas the female IDs had utterances at around 14 words per utterance. Female IDs had a higher average speaking time in each meeting– 18 minutes; however, on average, female IDs held the floor for a shorter amount of time per turn – 6.16 seconds per utterance. Male IDs had a much shorter average speaker time per meeting – 10 minutes and 48 seconds. Male IDs did, however, have longer utterances on average in terms of time at 7.2 seconds. Female IDs also had a higher average word length than male IDs. These results suggest that on average female IDs spoke more in each meeting but that male IDs held the floor for longer when they spoke.

Next, I examined the design discourse types according to the gender of the IDs. The results can be seen in Figure 9. This figure shows the design discourse of the male IDs and female IDs and how each gender focused on different types of design expertise in their discourse. Male IDs primarily focused on tools, and female IDs primarily focused on problem solving.

Problem solving, tools, and user experience were the top three design discourse types found in the discourse of both female IDs and male IDs. However, there were differences in how these design discourse types ranked in the discourse of female IDs versus male IDs. The three design discourse types found the most frequently in the discourse of female IDs were problem solving, user experience, and tools, respectively.

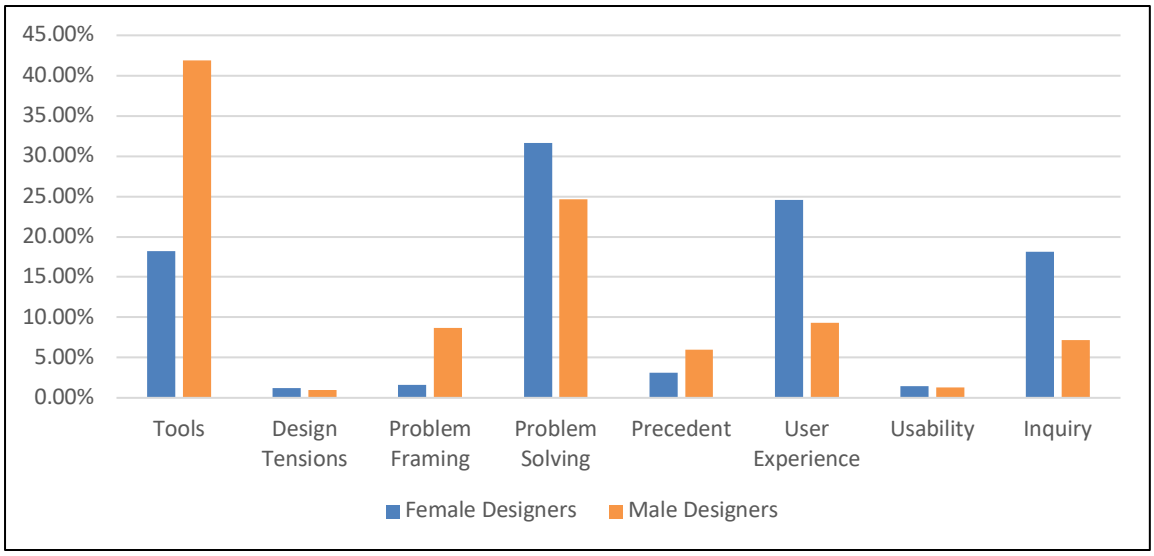

Figure 9: Normalized percentages of design discourse found in the data showing the differences between female and male IDs

For male IDs, the design discourse type found the most was tools, followed by problem solving, then user experience. These results suggest that in this study male and female IDs focused on similar design discourse types but at different frequencies.

Male IDs had a much higher frequency than female IDs in design discourse about tools. Discourse surrounding tools was the design discourse type found the most for male IDs at over 40%. 18% of female ID discourse was found to be about tools. Female IDs had higher frequencies of problem solving and user experience than male IDs. Female IDs had a higher frequency of inquiry than male IDs. Female IDs and male IDs had very similar frequencies of discourse surrounding design tensions and usability. Looking at these results, given any individual male design utterances, there is over a 65% likelihood he is talking about tools or problem solving, while in contrast, any individual female design utterance has a 57% likelihood she is talking about problem solving or the user experience.

Summary of results

In my analysis of the data based on the three research questions, I found that the discourse in these design meetings focused mostly on discourse surrounding problem solving, user experience, and tools. These three design discourse types accounted for 68% of the design discourse. When divided by speaker role, IDs focused the most on problem solving followed closely by tools. Clients focused the most on user experience followed closely by problem solving. The design discourse types of aesthetics and reference to external representations were not found in the data set.

The second research question focused on aggregated categories of design discourse types. When aggregated, discourse surrounding problem framing and problem solving accounted for almost a third (32.79%) of the design discourse in these design meetings followed by discourse surrounding user experience and usability (23.45%).

Finally, the third research question addressed the design discourse types and their complexity. Overall, precedent and user experience were found to be the most complex type of design discourse with an average of 37 and 32.8 words per utterance, respectively. Precedent and user experience also had the highest average speaking time as well. I conducted an additional analysis by gender of the IDs. Male IDs primarily focused on discussions about tools in design meetings (41.9%) and female IDs primarily focused on problem solving (31.66%).

Chapter Five: Discussion

In this chapter, I discuss what the results for each research question suggest about design discourse in IDT. I start with situating these discussions among other published research in instructional design. This is intended to orient the reader to the overall discussion. Thereafter I address each research question: (1) design discourse types per role, (2) aggregated design discourse categories per role, (3) and a comparison of design discourse types in terms of complexity and time. An additional section on the analysis of the results based on gender follows, although this was an unintended and curious aspect of the analysis. The chapter concludes with implications of the study and a brief discussion of the limitations of the study's claims.

Situating the Results Among Other Studies in Instructional Design

I set out with this study to better understand the actual practice of IDT via the design discourse of professional IDs. I explored the meaning-making process of professional IDs in CPMs with clients. I viewed the results from a perspective that there is more to the design process that the field of IDT has yet to uncover. IDT has primarily focused on how IDs use the models they were taught (Ertmer, York, & Gedik, 2009) rather than on what IDs actually do during the design process. There has been a lack of focus on the actual practice of IDT (Boling & Smith, 2009; Gray et al., 2015; Rowland, 1992). Through the examination of the actual practice of IDT, a more thorough understanding of the design process emerged along with potentially fruitful insights into how we might better train IDs.

Descriptive Statistics That Situate These Results

These five design meetings between IDs and clients were all very task focused. None were particularly short or long. These meetings ranged in length from 28 minutes to 62 minutes. The average length of meetings was almost 47 minutes. There was only one client involved in each meeting, but there were three meetings that involved more than one ID. Compared to a previous study that found that undergraduate students in a design studio were on task 84% of the project meetings (Bevins & Howard, 2020), the IDs and clients in these design meetings were on task 95% of the discussions. The IDs and clients were highly focused on the design projects during these meetings. IDs and clients were mindful of each other's time and did not waste their meeting time.

IDs make meaning by sticking close to the task at hand and actively searching for design solutions. The majority of these design meetings were spent on design discourse about the project and a small portion of the meetings were spent on project management and organization. Overall, the speakers spent 75% of the design meetings in discourse surrounding the different types of design expertise. I separated the codes from the finalized codebook into two distinct types of discourse: design discourse and discourse management. Design discourse were types of design expertise suggested in the literature as being part of the design process. The discourse management strategies are the discursive practices that speakers use to organize and facilitate their discussions. When dividing these two categories based on total words, I found that design discourse accounted for 75% of the discussions. This evidences that designers and clients are hard at work solving the problems they came there to solve. They take few cognitive breaks,

focus their effort, and manage discourse in the aim of advancing their design work as opposed to other ways professionals make meaning.

Overall, the utterances and speaking time in the two roles were quite similar. In other words, without knowing utterance size and complexity, one would not be able to recognize the role of the speaker. Both roles shared similar utterance lengths of approximately 16 words per utterance, which in normal speech, is a rather long and complicated conversational turn. IDs had an average utterance length of 16.11 words per utterances, and clients had an average utterance length of 15.8 words per utterance. Both IDs and clients also shared a similar average speaking time. IDs had an average utterance time of 6.35 seconds per utterance, and clients had an average utterance time of 6.33 seconds per utterance. These results suggest that both roles, IDs and clients, participated equally in the design meetings.

RQ1: What Types of Design Discourse are Evidenced in the Discussions of These IDs and Clients?

In these ID-client discussions, the types of design discourse evidenced were, ranked by frequency in this order: problem solving, user experience, tools, precedent, inquiry, problem framing, design tensions, and usability. I discuss these results in two sections. The first section addresses the design discourse frequencies of the entire sample of data while the second section has broken out the design discourse frequencies by role of the speaker: IDs and clients.

Design Discourse Frequencies of the Entire Sample

Most, eight of ten, types of design discourse were evidenced in these design discussions. In order of frequency in number of words, these were: problem solving, user experience, tools, precedent, inquiry, problem framing, design tensions, and usability. This finding is consistent with the literature in IDT that suggests that these types of design expertise are integral to designing instruction, and that literature is wide and prevalent in IDT research (Clark, 1994; Cross, 1982; Schön, 1983; Schön, 1987; Oxman, 1994; Tatar, 2007; Lawson & Dorst, 2009; Boling, 2010; Cross, 2011; Norman, 2013; Dorst, 2015). Seven of the eight design discourse types found in the data (usability was found in only two of the five meetings) were found in every meeting suggesting these seven design discourses embodied the act of design for these interlocutors in these contexts. Notable absences suggest areas of improvement for the field of instruction of IDT. Here is a summary of the insights garnered from analysis of the results for each design discourse type.

The absence of two discourse types (aesthetics and reference to external representations) suggest they are areas of design discourse that are uncommon or rare in IDT. The design discourse types of aesthetics and external representations were not found in this data set at all. Two other studies found examples of discourse surrounding external representations (Howard & Gray, 2015) and aesthetics (Bevins & Howard, 2020), but neither of these studies were looking at practicing, authentic instructional designers. Similarly, both of these studies were in later phases – design reviews at the end of a

Table 7: A summary of the types of design discourse showing the insights garnered from analysis.

Design Discourse Type	Summary of insights
Problem solving	Problem solving was the most common type of design discourse, is moderately complex, and present in all design discussions.
User experience	User experience was the second most common, second most complex design discourse type, and favored by female IDs and clients.
Tools	Tools were the third most common, were favored by male IDs, and were on the lower end of complexity.
Precedent	Precedent was favored by clients and was the most complex area of design expertise.
Inquiry	Inquiry could not be extracted from other types of design discourse, was prevalent in every discussion, was the least complex, and favored by female IDs.
Problem framing	Problem framing was not very common in these discussions and was favored by male IDs.
Design Tensions	Design tensions was rare, was not found in every discussion, and was favored by clients.
Usability	Usability was the rarest type of design discourse and was not found in every meeting.
Aesthetics	Aesthetics was not found in this dataset.
Reference to external representations	Reference to external representations was not found in this dataset.

project and a design studio working on the final stages of a lengthy design. Not finding discourse surrounding aesthetics or external representations suggests that these two design discourse types may not be part of the design process in the early phases of a design project when working with clients.

The context of these discussions, the OIT JumpStart program, did not lend itself to discourse surrounding reference to external representations. Prior to these meetings and this phase of the project, the clients had been given a template for their course design and had most likely met with a graphic artist to work on the visual design of the online course. Similarly, unlike in design firms, there are stricter processes and little to no beta testing in instructional design in higher education. This suggests that when design options are limited, discourse surrounding external representations may also be absent.

The most prominent discourse type was problem solving; it was the most frequent design discourse for both clients and designers (32% and 33%). For years, Jonassen (2000; 2008) advocated that problem solving was at the heart of instructional design. These data add another source of evidence to his claims. Problem solving is discourse surrounding the establishment of the problem or surrounding a comparative analysis of multiple design solutions, which includes hypothetical and conditional statements. Clients and IDs were both focused on the problem of turning a face-to-face course to an online course, and on the complications that arose from that. They focused on solutions to problems, as Jonassen (2000; 2008) argued instructional designers always do, despite how they might have been taught to design in school. This finding also aligns with Rowland's (1992) study that IDs spent extended time analyzing the problem and

considering solutions to the problem. This finding suggests that IDT in practice acts similarly to other design disciplines in that IDs, like designers in other fields, talk about solutions instead of a set of procedures or rules to follow.

Usability was not a prominent discourse type in these discussions. Of the eight design discourse types found in the data, usability was the rarest, accounting for only 0.91% of the design discourse and only found in two of the five meetings. This finding is consistent with the study on design discourse in the studio (Bevins & Howard, 2020) that found very little discourse surrounding usability. Usability is a type of discourse that one would expect to see towards the end of a project as a design undergoes testing. Usability is the discoverability of a designed product and the inherent knowledge of how to use that product for the user (Norman, 2013). To determine the usability of a product, one would need a completed version of the designed product, or a prototype. This may account for why I found so little talk of usability. This study consisted of design meetings that were in the beginning phases of a design project and could provide a satisfactory explanation for why discourse about the usability of the design was not seen frequently in this discourse. I interpret these findings in this case to suggest that usability, then, may be a type of design expertise that is only prevalent at the end of a design project rather than at the beginning or middle phases of a design project.

Usability may also have not been prominent because of the design constraints inherent in this context. In higher education, it is common for universities to have licensing agreements with specific programs for their faculty members and IDs to use. In this particular context, the learning management system and meeting software were

decided for the clients and IDs. Thus, usability may not have been as prominent in the discussions because the usability of these programs had already been confirmed before the university would have entered into a licensing agreement. This suggests that in other areas of IDT, such as a design firm, discourse surrounding usability may be more prevalent.

Usability may also be a type of design expertise that is not as relevant or at least not as prominent in IDT. Usability is about how the users can intuitively understand how to use a designed product (Norman, 2013). The examples that Norman discusses in his book revolve around physical objects that need to be intuitive so users can figure out how to use them. Most design projects in IDT are not physical objects, but instead are lessons, learning objects, websites, classes, programs, or any number of things that cannot be held or physically manipulated by the user. Typically, there is a tool of some kind, i.e. a computer, a tablet, a phone, etc., that must be used in order to interact with the designed product. In other fields of design, the onus of understanding how to use the designed product is squarely placed on the designer, while in instruction, these data suggest there is an assumption that the user put forth effort in learning to use the design. This could be why discourse surrounding user experience is more likely to be found in IDT discussions than usability. Usability seems less of a concern in IDT.

Sandwiched between the most frequent and the least frequent are the basic essentials of designing instruction. User experience (22.54%), tools (18.14%), and precedent (13.06%) accounted for a total of 54% of the design discourse across the sample. Together these three design discourse types make up the discrete design

decisions of consequence for these designers. These findings suggest that after focusing on the design problems and possible solutions, IDs and clients in design projects in this context are focused on the users of the design, the tools they can use to create and implement that design, and the prior experiences of both the IDs and the clients in designing online courses. These data suggest that these three types of design discourse should hold approximately equal value in the learning of instructional design. Presently, from my experience leading an online program, IDT expertise is typically viewed as knowledge about tools only.

The infrequency of discussion about design tensions suggests that select aspects of design discourse may be prominent at different phases in a design project. Project constraints and other tensions did not play a central role in these design meetings. Design tensions accounted for only three percent of the design discourse. This finding is inconsistent with the discussions of undergraduate students in a design studio (Bevins & Howard, 2020). In that study, design tensions had the second highest frequency in the data set. These differences could result from the difference in the phase of the design projects – the beta stage of the design project (Bevins & Howard, 2020) versus the beginning (or high-level design stage) of a design project in this study. Taken as a pair, the differences in the results of these two studies suggest that stages in the project may favor to one design discourse or another.

Design Discourse Frequencies Broken Out by Role

IDs and clients contributed differently. In these discussions, analysis revealed that the embodiment of the act of design is comprised differently in the two different roles. Of

the eight design discourse types found in the data, I found examples of each type of design discourse in the discourse of both IDs and clients; however, their frequencies were divergent. In order of frequencies, IDs focused on problem solving, tools, and user experience. The primary concerns of clients were user experience, problem solving, and precedent. These differences suggest that IDs and clients have different foci in design meetings, at least early during the design process. Both roles are concerned with problem solving. However, perspectives differ on how that problem solving manifests. While a client sees the experience of the design from the perspective of the user as how they frame their discussion, the ID offers affordances of the tools to generate design decisions.

When in meetings with clients, IDs focus on problem solving, tools, user experience, and inquiry, in that order. Problem solving was the area where IDs and clients overlapped, thereafter they approached the task differently. IDs focused on tools (27.9%). Then, they focused on user experience (18.4%), and finally on inquiry (13.7%). Lawson (2004) describes design as the practice of making gambits, "or possible ways of solving recognizable problems" (p. 448), based on past experiences. Howard and Gray (2015) found gambits were instructional design's version of higher order thinking. In light of these studies, it would follow that this is a reflection of *technoglitz*, "the desire to design using a feature or tool simply to understand how it works rather than prioritizing the outcome of the design" (Howard, 2019, p. 506). Had these been reversed, perhaps solutions might have been more accessible.

IDs focused on discourse surrounding tools in design meetings. IDs spent more discursive time in discussions surrounding tools than the clients; in fact, it was the second

most frequent type of design discourse found in their discourse. This is consistent with the finding that undergraduate students in a design studio spent 46% of their discursive time in design discourse on tools (Bevins & Howard, 2020). IDs spent a lot of time explaining different tools that could be used by the clients in order to accomplish specific objectives. It also suggests that for both novice (Bevins & Howard, 2020) and professional IDs, knowledge of the tools that can be used in designing is a pivotal part of the design process.

From a design perspective, simply being aware of the clients' areas of concern might be valuable. As reflected in their discourse, clients' design discourse fell in this sequence: (1) user experience (26.8%), (2) problem solving (26.5%), (3) precedent (21.9%), (4) tools (8.3%), (5) problem framing (5.8%), (6) inquiry (5.4%), (7) design tensions (4.9%) and (8) usability (0.4%). These data suggest that instructional designers would be wise to speak to user experience in client consultations, knowing that this is prominent among most clients' concerns.

Recounting prior experience was part of the discursive routines of these clients. Clients had a higher percentage of their design discourse in the precedent category than the ID role. Precedent is using the knowledge of previous designs in working on a current design project (Oxman, 1994). Prior experience is a design expertise that clients have easy access to. This is where design cases in IDT could come into play. Design cases are a vehicle for the dissemination of previous designs (Boling, 2010). This result suggests that clients, not just IDs, may find design cases useful. The clients participated in the design discussions by pulling on their prior experiences of either teaching online or

teaching the same courses in a face-to-face environment in order to create a new online course. Clients may benefit, as well as IDs, from reading and writing design cases in order to see what design solutions others may have explored.

RQ2: How do Aggregated Categories Represent Design Discourse in These Design Sessions?

In aggregating the eight design discourses into six to make similar categories more pronounced, discourse surrounding problem framing and solving appeared the most frequent, followed by discourse surrounding users, and then tools. IDs and clients focus on problems, the users, and the tools in design meetings. The categories that were aggregated with similar discourse types proved to be the most frequent and tell us where designers and clients invested their discourse. Almost three fourths (74.38%) of the design discourse in these meetings fell within the categories of problem framing / problem solving, user experience / usability, and tools. In these meetings, IDs and clients spent the majority of their discursive time discussing the problems and solutions of creating online courses, the student experience of those courses, and the tools that could be used in those online courses. Therefore, I will address how these data shed light on these three areas of design research, starting with problem solving.

These data suggest that IDT, as a field of study, should lend more credence to assertions about problems. While Jonassen (2008) used anecdotal evidence, informal observations, and logical reasoning to come to his conclusion, these data support that same assertion from the perspective of discourse in practice. IDs engage in problem solving more than anything else. The logical consequence is also the same. Teaching models has limited value in teaching people how to design instruction. In this study, IDs

and clients primarily spent their discursive time on discourse surrounding problems. By combining the design discourse types of problem solving and problem framing, discussion surrounding problems accounted for almost a third (32.79%) of the design discourse found in this data set. Similar to the finding in RQ1 of problem solving being the design discourse type with the highest frequency found in the data, this finding suggests that IDs and clients are both focused on establishing the problem of the design project, how to approach that problem, and the hypothetical solutions to the problem.

Both speaker roles primarily focused on problems in their discussions. Problem framing and problem solving are about determining what the problem is, how to approach that problem, the possible solutions to the problem, and the evaluation of those solutions (Lawson & Dorst, 2009; Dorst, 2015). In this study, both IDs and clients spent almost a third of their discursive time on discussions surrounding problems. The fact that this discursive type is shared as the most frequent by both roles suggests the act of designing is embodied in the interaction between the two roles, rather than within either individually. Discourse, the shared meaning-making process between people, is the foundation of design (Dong, 2009).

Addressing user experience and usability appears in this sample as an essential component of the IDT process but is woefully underserved in IDT training. Discourse surrounding users accounted for almost a fourth (23.45%) of the design discourse found in these meetings. These results provide further evidence for Parrish's (2006) assertion that the most critical skill in IDT is "the ability to step outside one's own perspective and see the design through the learner's eyes" (p. 72). Nevertheless, this ability does not rank

prominently in our training materials. For example, in the popular introductory course book by Reiser and Dempsey (2012), the terms *user experience* and *usability* do not appear in any of the 38 chapter titles. Attention to the learner is empathy in design – a concept explicitly taught in most design programs, but not typically emphasized in IDT.

RQ3: How are the Design Discourse Types Found in the Data Represented in Terms of Complexity and Time?

Precedent was the most complex design discourse type in these design meetings. Inquiry was the least complex design discourse type. I examined the design discourse types in terms of complexity via the average utterance length and the average word length. Precedent proved to be the most complex design discourse type in terms of average utterance length. On average it took participants 37 words per utterance to express precedent expertise in this study. I also found that precedent discourse had on average the longest utterance in terms of time (14.19 seconds per utterance). Precedent requires more words and more time to express than any other type of design discourse, perhaps because precedent knowledge is stored as episodic memory (Boling, 2010; Boling & Gray, 2018). While precedent had the longest average utterance length and the longest average utterance time, it was not the most common design discourse found in the data (13% of the discourse). These data suggest that discourse surrounding precedent is a more complex area of design expertise.

User experience also took many words to express. While precedent was the most complex design discourse type in terms of average utterance length, user experience was the most complex design discourse type in terms of average word length. On average, the words dedicated to user experience were 4.34 characters long. User experience also had

the second longest average utterance length indicating its complexity in terms of both average utterance length and average word length. This finding suggests that expression of the user experience requires an elaborate design vocabulary, and likely reflects more advanced design skill.

In these meetings, inquiry was used as a tactic to further the discussions rather than as a discourse that embodied design expertise. Inquiry was the least complex design discourse type in these meetings. I found inquiry to be the least complex design discourse type with the shortest average utterance in words (13.34 words per utterance) and the shortest average utterance in time (5.21 seconds per utterance). All utterances that elicited information from the other speakers were coded as inquiry. These utterances were soliciting rather than giving information, which may account for why inquiry had the shortest utterances in terms of words and time. In my experience of coding this data, inquiry emerged as a design practice rather than the embodiment of design expertise because it necessarily led into other areas of design discourse.

Additional Analysis by Gender

Male and female IDs employed different areas of design expertise, and packaged their expressions differently. An analysis of the design discourse types by gender was inspired by trends I noticed in the data. The trends suggested that this type of analysis may add to the discussion of the data. I also did not find any IDT literature that discussed how gender could play a role in design expertise.

The differences in how male and female IDs spoke in these design meetings were both structural and substantive. Male IDs had longer utterances at 20.66 words per utterance on average than female IDs (14.18 words per utterance). Female IDs, however,

had a longer average speaking time per meeting (18 minutes per meeting) than male IDs (10 minutes 48 seconds per meeting). Male IDs also had a longer average utterance in terms of time than female IDs. In this study, men packaged their design discourse directly, with fewer but longer words, while women packaged their design discourse more indirectly, using more and longer utterances, of shorter word lengths, consuming more time to explain. This suggests that this design discourse was gendered in character. Put simply, in this study, the design discourse of men and women were structurally different.

The dispersion of design discourse is equally as different in foci as it is in structure between the two genders. Female IDs spent more discursive time on problems and solutions, and male IDs spent more discursive time on tools. When examining the design discourse types found in the data, there were more differences between genders of IDs than between roles of the speakers (IDs versus clients). In all of the readings I did, I did not come across one discussion of gendered design discourse. Problem solving, tools, and user experience were the three design discourse types found the most in the discourse of both female and male IDs; however, the ranking of these three types was different between male and female IDs. Male IDs had a higher frequency of tools, followed by problem solving and finally user experience. For female IDs, the design discourse found the most frequently was problem solving, followed by user experience and then tools. In these design meetings, male IDs focused more on describing and teaching the different tools available to the clients that could be used in designing the online courses, and

female IDs focused more on the problems and possible solutions of creating an online course.

The focus of the majority of discourse for male and female IDs in design meetings differs. Given this data, gender would clearly impact design solutions. Problem solving and user experience accounted for 57% of the discourse of female IDs. Tools and problem solving accounted for 65% of the discourse of male IDs. These results suggest an orientation towards problems, solutions, and users in the discourse of female IDs in design meetings, and an orientation towards tools, problems, and solutions in the discourse of male IDs in design meetings. Given the locus of discussion is different in design discourse types when viewed by gender, the obvious logical consequence is that design solutions will be gendered in nature as well, because the discursive path that solutions emerge from is different.

Both male and female IDs were not concerned with design tensions or the usability of the product in these design meetings. Design tensions and usability each only accounted for less than two percent of the discourse of male or female IDs. These two design discourse types had higher frequencies in the discourse of clients than of the discourse of IDs. These results suggest that the role of the speaker impacted the data more than gender of the ID in the end. While clients explored tensions and usability, these were not the areas of deliberations for either gender in their role as a designer.

Implications

I have divided implications into three sections. The first section of implications deals with teaching early designers. The second section focuses on how we evaluate

designers in IDT. The third and final section discusses the implications for understanding IDT practice.

Teaching Early Designers

This study implies that we should perhaps train and teach people to do instructional design via exercises in problem solving. This study presents evidence that the design expertise types mentioned in the literature do play a role in the design process. How these types of design expertise are packaged and how much they are used are some of the implications this study has to offer to the field of IDT literature. Problem solving had the highest frequency found in the discourse of these design meetings. It also had the highest frequency when examining the design discourse of each role, IDs and clients, and finally when aggregating the design discourse types, the problem framing /problem solving category accounted for almost a third of the design discourse found in the data set. Problem solving is an integral part of the design process (Jonassen, 2000; 2008), and programs in IDT would do well to prepare students in establishing the design problem, discussing the potential solutions to that design problem, and dealing with any obstructions that arise from those solutions.

This study implies that IDT programs better emphasize that IDs take into account the needs and wants of the users of a design. User experience had the second highest frequency count found in the data set. IDs and clients both devoted 18% and 26% respectively of their discourse to discussion about user experience. Discussions surrounding user experience revolved around the student experience of the online courses being designed in this study. This result suggests that training and a focus in IDT

programs on the needs of the user is not wasted time or training. Training IDs to consider the needs and experience of the users will help prepare them for design meetings with clients, in which clients may focus on user experience.

The discourse frequencies of references to tools among IDs implies that the practice of IDT is very tied to the use and discussion of technological tools despite the relative infrequency of explicit discussion of tools in academic training. IDs, especially male IDs, focused on discussions surrounding tools when meeting with clients. In this study, I found that IDs spent over a fourth of their discursive time on tools. This finding aligns with the finding in Bevins and Howard (2020) that undergraduate students in a design studio spent 42.5% of their discursive time on tools. These two findings suggest that talk about tools plays an integral part of the design process in both a professional and a training capacity, further implying that providing space for the exploration of tools is essential in IDT training.

The lack of examples of aesthetics implies that in order to build this type of design expertise, we may need to teach this type of design expertise explicitly in IDT programs. I did not find discourse surrounding aesthetics and external representations in this study. The aesthetics of an instructional design do not appear to be considered all that often. This result suggests that in early meetings with clients on design projects, representing the design project externally or discussing the holistic experience of a design is not part of the design process in these meetings. Examining later phases in these design projects may find different results, but in the early stages of designing online courses with faculty members, aesthetics and external representations are not integral to the

process. IDs do not use either of these types of expertise in the design process. This could be because these IDs do not express appreciation for external representations or for viewing the aesthetic of a completed design.

This study implies that IDs in practice may not always use the process models they are taught in their training programs. This study analyzed authentic design discourse and found no mention or reference to a process model in this data set. IDs did not refer to a process model or to any of the individual steps that make up those process models. The literature in IDT is saturated with different process models of how to do instructional design. These models are taught to aspiring IDs in graduate and undergraduate programs; yet there is little evidence that shows that IDs actually use these models in practice (Ertmer et al., 2009) or that these models accurately depict the design process (Kirschner et al., 2002; Rowland, 1992; Wedman & Tessmer, 1993). This study provides further evidence that questions the use of design models in the learning process. If we take the discursive performances of practicing expert designers as learning targets, then less emphasis needs to be placed on these process models and more emphasis needs to be placed on design expertise IDs have been found to use in practice. This study implies that we should train and teach people to do instructional design via exercises in prominent types of design discourse and let process models serve a different purpose in IDT scholarship.

The Recognition of Design Expertise

These results imply the probable existence of a collective expertise as opposed to expertise being as simply embodied in individual designers. Collective expertise is the

"ongoing processual ability to function together with other experts and create new knowledge" (Koivunen, 2007). Through the language and discourse among experts, a collective expertise of design seems to have been built. Dong (2009) expressed that design is embodied in the discourse of practice and here we see solution frames emerging differently between genders. The collective expertise is housed in their discourse rather than in their being. Therefore, a collective expertise is shared among designers and evidenced in their discourse, rather than encapsulated in individuals.

The gender analysis suggests that mixed gender teams will have broader access to a wider array of solutions. The converse then would also be true; assuming that a collective of designers can meet its best potential in single gender teams is ignorant of the design process. Female IDs primarily focused on problem solving and user experience, and male IDs primarily focused on tools and problem solving. The implication is that the sum combination of different gendered designers will be greater than the potential of homogenous teams. The collective expertise of both female and male IDs might optimize the design process.

This study identifies areas of design expertise that are more complex. An ID who gives attention to precedent and user experience in their design discourse is demonstrating advanced design expertise. Precedent and user experience were the two most complex areas of design expertise to express. This study also implies that we need to incorporate both external representations and aesthetics in practice. The lack of these two design expertise types (external representations and aesthetics) in the data set suggests that more attention needs to be paid to aesthetics and external representations

via professional development, discussions surrounding these two expertise types in the workplace, and presentations of these design expertise types in the IDT literature.

Understanding the Design Process

This study implies that the design process of IDT largely revolves around problem solving. Problem solving was the most prominent type of design expertise found in the data. This finding suggests that discussions surrounding problems will be the largest area of design expertise that IDs will use while in practice. To further understand the design process, it may be necessary to further examine these discussions surrounding problems to determine if there are different types of problem solving as suggested by Jonassen (2008).

Precedent and user experience need to be given more time in design discussions because they take longer to convey. Examining the design discourse types by time and complexity lead to the finding that user experience and precedent are the most complex design discourse types found in the data. Precedent had an average of 37 words per utterance, and user experience had an average of 32.8 words per utterance. User experience also had the longest average word length as well. These results suggest that these two design discourse types are highly complex and require more time to convey in discussions. If educators, managers of IDs and practicing designers approached their work with this awareness, and they might be able to better harness these areas of design expertise.

This study implies that the field of IDT has yet to attain the design expertise types of aesthetics and external representations. I did not find any examples of aesthetics or

external representation in these design meetings. Aesthetics and external representations are the collective areas most in need of improvement if IDT is to aspire to be recognized as a field of design.

Limitations

The findings of this study are not generalizable because of the small sample size of participants involved. This study examined the design discourse of six IDs in practice in the context of higher education. Further examination of a larger sample of IDs would be needed in order to generalize this data to the larger population of IDs. Examining IDs in business and industry would also be useful in order to determine if these areas of design expertise are also prominent in discussions in other IDT contexts.

The phase of the design project where this data was collected is another limitation of this study. All five meetings that were audio-recorded and analyzed were part of the OIT JumpStart program and were at the beginning stages of the design project. Some of the differences found in the results between this study and other similar studies (Bevins & Howard, 2020; Howard & Gray, 2014) may result from the differences in the phases of the design projects. Examination of similar conversations between IDs and clients in the OIT JumpStart program in a later phase of the design project may find different areas of design expertise that are more prominent at that point in the project.

Clients are not trained designers, so conclusions drawn from their discourse speak not to expertise in design, but to client discourse only. The five discussions that I audio-recorded and analyzed were between IDs and clients. This is a limitation because these two speaker roles do not belong to the same communities of expertise, and clients would, therefore, not be versed in the language of the community of IDT. This would result in an

abridged form of design discourse, because the language of IDs is being accommodated for the client. Therefore, IDs are not going into the full form of their expertise as a designer. The full form of their expertise would appear in conversations with other IDs who are well-versed in the language of design.

This study does not speak to design solutions, and ultimately, design is about solutions. Discourse analysis does not look at the efficacy of solutions. I only examined five discussions at the beginning phases of a design project. I did not follow these projects through to the end to determine how the designed product turned out. These discussions could have actually resulted in terrible design projects. I, however, was only interested in examining the design discourse they used in one conversation about those design projects.

This study was not a conversation analysis. A conversation analysis could tell more about who lead in each discussion. This study also did not examine if the gender of the client in these meetings impacted the design discourse of the ID. This would be an interesting area of future research to investigate if male IDs who primarily spoke about tools did so more often in meetings with male clients or vice versa. Investigating who lead in each discussion might also give more insight into the differences between genders. These types of examination could lead to a more nuanced understanding of how gender plays a role in design, not just in the design expertise that each gender brings to the table but also in the IDs' interpretation of what the clients may want to hear or discuss and in who leads and drives the discussions.

Conclusion

I began this study in order to examine how IDs in practice make meaning in their collaboration with others. Collaboration is increasing and becoming a more prominent aspect of the workplace (Shell, 2018; Howard & Benedicks, 2019). Through my examination of professional IDs in practice, I found that the collaboration between IDs and clients revolves around discourse about problems, users, and tools in that order. I also found that design expertise is embodied in this collaboration between IDs and clients, and that collaboration between genders could be a key component to optimizing the design process.

The purpose of this study was to determine how a specific group of IDs made meaning via their communications in their process of collaboration with clients. I investigated the design discourse that emerged via a content analysis of the discourse of IDs in design meetings with clients. By conducting a discourse analysis, I was able to examine the language that ties IDs to the practice of IDT (Dong, 2009). Design expertise is embodied in discourse, and discourse is the foundation of design (Dong, 2009). Through an analysis of this foundation, I was able to gain insight into how design expertise is embodied in the discourse of IDs. To conduct a content analysis of the discourse of IDs in this study, I began with an initial codebook from an earlier study (Bevins & Howard, 2020). Through iterative coding sessions, I developed the finalized codebook. The finalized codebook consisted of 16 codes: 10 design discourse codes and 6 discourse management strategy codes.

Through a content analysis of the discourse of IDs in early stage design meetings with clients, I learned four principal answers to my research questions. The first RQ determined the types of design discourse found in the conversations of IDs and clients. I learned that problem solving is the most prominent type of design discourse used by IDs. Problem solving accounted for over a fourth (28.81%) of the design discourse of IDs found in this dataset. This finding relates to the assertions by Jonassen (2000; 2008) that problem solving is the heart of IDT.

In a second RQ, I explored these types of design expertise when in aggregate groups to make sure that the taxonomy was not so fine-tuned that it masked the larger story. This practice confirmed the top three design areas revolved around problems, users, and tools, in that order. Discussions surrounding problems, users, and tools accounted for almost 75% of the design discourse in these meetings. The majority of IDT practice consists of these three areas of design expertise.

In answering the third research question where I compared the attributes of the different discourse types against each other, I learned that precedent and user experience were the most complex areas of design discourse to address in this dataset. I found precedent to be the most complex, but not the most common, area of design expertise discussed. Precedent had the highest average utterance length per words (37.03 words) and the highest average utterance length in terms of time (14.19 seconds). In my additional analysis of the frequencies of the discourse types by gender, I learned that male and female IDs bring different foci of design expertise to the table. Male IDs

primarily focus on problem solving and tools, while female IDs primarily focus on user experience and problem solving.

This study resulted in several implications, but the principal implication is that I learned how to recognize design expertise in the actual practice of IDT beyond simply looking at the solutions or designed products. In this study, design expertise manifested itself via discourse surrounding problems and users. This suggests that providing opportunities for IDT learners to participate in discursive exercises will help them develop areas of design expertise in problem solving and user experience. Training learners in IDT to be able to participate in discourse surrounding these two areas will help prepare them for the actual practice of IDT.

Future Research

This study could lead to several areas of future research. In looking at the results of this study, two of the major findings could lend themselves to further investigation. Seventy-five percent of the design discourse found in these discussions centered on discourse about problems, users, and tools. Further investigation into design discourse, and especially in other phases of a design project, could provide a more nuanced understanding of the types of design expertise employed by IDs throughout the whole design process.

In this study, I also found that male and female IDs focused on different types of design expertise in their discussions with clients. Further investigation of the differences between genders could provide more insight into the unique areas of design expertise that male and female IDs bring to the table. Examining design discourse from a gender

perspective could also provide insight into how these types of design discussions progress and how a collective expertise of IDT can be built.

One area of research that would further this study is to examine how the design expertise types correlate to what IDs refer to in their discourse. For example, is problem solving always exemplified when IDs are referring to hypothetical design solutions or are there are other possible references that would also exhibit the design expertise of problem solving? Correlations between design discourse areas and reference would inform our understanding of how design expertise is embodied in discourse.

Another area of future research is to examine the design discourse of conversations between IDs. As mentioned in the limitations section, the meetings in this study were between IDs and clients and, therefore, represent an abridged version of design discourse. Examining conversations that happen between IDs on design projects could lead to a deeper understanding of design discourse and of IDT in practice.

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Appendices

Appendix A

Informed Consent Form

Analysis of Instructional Designer Discourse

INTRODUCTION

My name is Katherine Bevins; I am a doctoral student in the Educational Psychology Department with a Concentration in Learning, Design, and Technology at the University of Tennessee, Knoxville. You have been invited to participate in a study about design discourse. I am interested in looking at the conversation that happens in design consultations at the University of Tennessee, Knoxville. I would like to ask you to participate in this study by allowing me to record and observe you during your design consultations.

INFORMATION ABOUT PARTICIPANTS INVOLVEMENT IN THIS STUDY

Your participation in this observation will not take any additional time from you. It can provide valuable information that could change what we currently know about design discourse and design curricula. The process will consist of my attendance in observing and recording you and your colleagues during design consultations.

CONFIDENTIALITY

The information gathered during the observations and recordings will be kept confidential. Only the researcher will have access to your information and the data will be stored in a secure, password-protected computer that is owned by the principal investigator, Katherine Bevins. There will be no specific identifiers left on the data upon its collection. Once the recordings are processed into an excel file, names will be changed to pseudonyms.

PARTICIPATION

Your participation in this study is voluntary. You may decline to participate without penalty. If you agree to participate, you may withdraw from the observation at any time without penalty and without any loss of benefits to which you are otherwise entitled. If you withdraw from the study before the data collection is completed, your data will be destroyed. Your research information may be used for future research studies [and/or other purposes (education, etc.), if applicable] or shared with other researchers for use in future research studies without obtaining additional informed consent from you. If this happens, all of your identifiable information will be removed before any future use or distribution to other researchers.

RISKS

The level of risk associated with the current study is minimal. You may feel uncomfortable being recorded and observed; however, please know that all notes and recordings will be kept confidential and this study will not affect your status as an employee at UT. Please interact and participate in your design consultations as normally

as possible. However, you may choose to terminate the observation at any time. Most research involves some risk to confidentiality, and it is possible that someone could find out you were in this study or see your study information. But the investigators believe this risk is unlikely because of the procedures we will use to protect your information.

BENEFITS

You may not directly benefit from your participation in this research study. A benefit from your participation in the current study is that the data gathered from this study can help improve the quality of various programs for teachers and students in the instructional design field. The observation data will help scholars and teachers in the design field, at UTK and at other universities, in creating design curricula that accurately reflect the knowledge needed in the instructional design field.

CONTACT INFORMATION

If you have questions about the study, or you experience adverse effects as a result of your participation you may contact the following researchers:

Katherine Bevins	Craig Howard, Ph.D.
Principal Investigator	Assistant Professor
Knelso13@utk.edu	cdh@utk.edu
(423) 291-9470	(865) 974-8642

If you have questions or concerns about your treatment in this research or your rights as a research participant, please contact the University of Tennessee IRB Compliance Officer at 865-974-7697 or utkirb@utk.edu.

CONSENT

You will be given a copy of this consent form to keep for your own records.

If you wish to participate in this study, please sign and date below.

_____	_____	_____
Participant's Name *(please print)*	Participant's Signature	Date

_____	_____	_____
Researcher's Name *(please print)*	Researcher's Signature	Date

Appendix B

This text explains the OIT JumpStart program at UTK. The OIT JumpStart program is the context where the discussions analyzed in this study were situated. This website gives an overview of the program, the program process, and the program timeline. I include it here for background information on the context in which this study was situated.

This text is taken from an official UTK website: https://oit.utk.edu/instructional/development/.

Developing an Online Course?

WHERE TO START?

OIT collaborates with the Director of Online Programs to ensure that you launch a successful program/course that serves the needs of the citizens of Tennessee and beyond. Online programs that will use services provided by OIT or UT's online program management company, Noodle Partners, must be approved by the Online Program Advisory Committee (OPAC), which is composed of membership from across campus The following text was taken from an official UTK website. It explains the OIT JumpStart program, the process faculty members experience, and the timelines they follow.

INSTRUCTIONAL DESIGN & SUPPORT

and chaired by the Associate Provost of Faculty Development and Special Initiatives. Individual online courses are approved by the appropriate Department Head.
Once your program/course is approved for development, you can work with OIT for support during the course development process! Just contact the OIT HelpDesk at 865-974-9900 or complete a web form at help.utk.edu and indicate that you are looking for support to develop an online course.

HOW WILL OIT SUPPORT FACULTY (YOU)?

YOU are at the center of the process. OIT provides the staff and resources to support you, thereby creating an environment where you can concentrate on the course content. OIT concentrates on how learning, teaching, and technology come together to create a successful online learning experience.
You will be assigned an OIT instructional designer to work with. Instructional designers typically have graduate degrees and excel at the process of creating efficient instructional experiences that support learning outcomes, are engaging, and aid student learning. However, please remember that instructional designers do NOT replace your subject area content and instructional expertise!
You do not need to be an expert in how to design and develop an online course – OIT has a team of professionals to help with that! In addition to instructional design support, your course will benefit from graphic design, videography, multimedia elements and teaching tools support!
Finally, when an instructional designer and faculty member join forces to create online courses, the courses are typically more effective and the students have better outcome, as reported by a comprehensive survey implemented by Quality Matters and Eduventures Research.

WHAT IS THE PROCESS?

Join a Cohort

You will be assigned to an online course development cohort. A cohort simply refers to small groups of

faculty (three or more) who are developing an online course. Over the course of a semester, there will be two cohort gatherings, where faculty will be expected to participate in person or synchronously online to share their progress. The cohort approach serves two purposes: 1) to provide a forum for faculty to interact with peers and share experiences with online course development, and 2) to provide a systematic approach for OIT to support more faculty in their online course development.

Take Online Training

First, you will participate in online asynchronous training that was developed jointly by OIT and Teaching and Learning Innovation (TLI). This training is designed to give you a "jumpstart" on your course development. As you progress through the training, you will be completing assignments that will help you to rethink your syllabus, create a course schedule, define assessments, and identify ways to engage your students online. Your instructional designer will be checking in with you during the online training to help you determine how to transfer successful face-to-face activities to an online teaching/learning environment.

Develop Your Course

After you complete the training, you will develop your online course. An instructional designer will help you create the first two units of your course in Canvas. During training you will have selected some options for including graphic design, video, and multimedia in your course, and now, OIT will be working on those elements for inclusion in your course. You will also receive help in creating your discussion boards, assessments and other elements of your course.

Quality Assurance Check

When your course is completely developed, OIT will initiate a quality assurance check, to ensure that the course materials are accessible and user friendly (e.g. look for any typos, broken links, etc.)

Course Implementation

Offer your course!

WHEN DO COHORTS BEGIN?

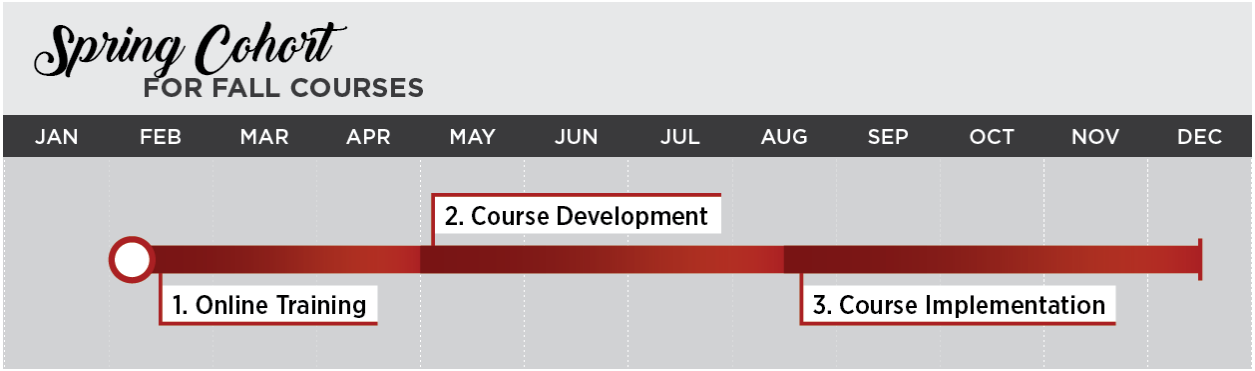
Cohorts begin in February* (for fall launch), June* (for spring launch) and October* (for summer launch). Faculty start off in the Cohort by participating in asynchronous online training that is facilitated by an instructional designer. Once you are approved by your Department Head to develop an online course, you will be invited to join a cohort.

Typically faculty receive a one semester course release (or other compensation as determined by their department) to develop their online course. Online training will start a few months before your semester course release.

* unless start time is otherwise negotiated with a department or college

TIMELINE:

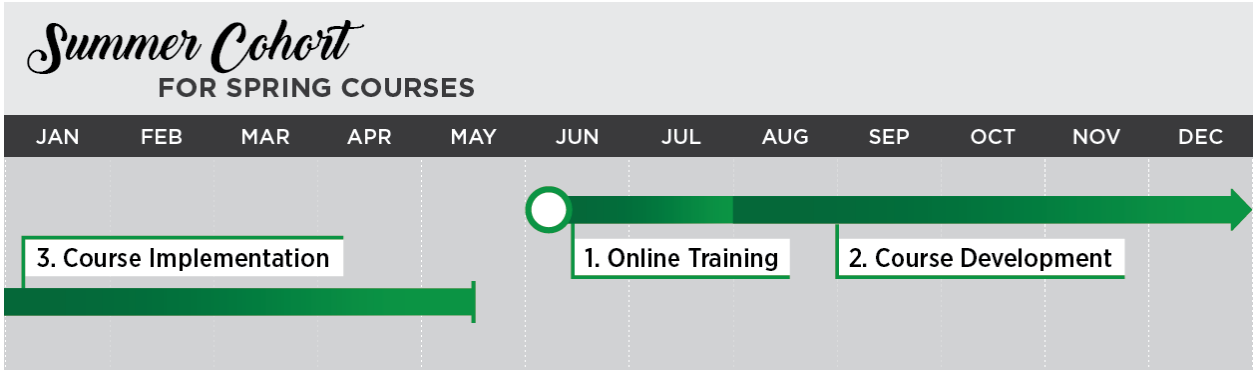
Spring Cohort for Fall Courses



February – March : Online Training
April – July : Course Development

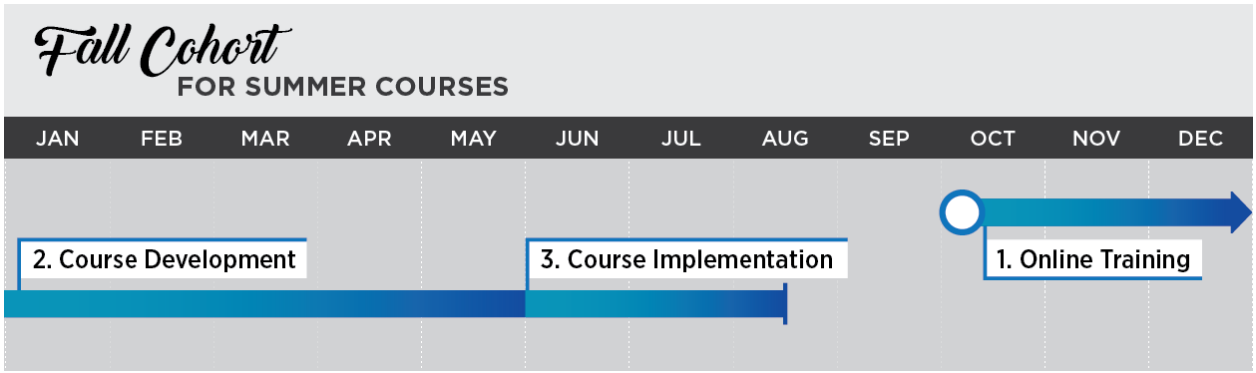
August : Quality Assurance Check
August – December : Course Implementation

Summer Cohort for Spring Courses



June – July : Online Training
August – November : Course Development
December : Quality Assurance Check
January – May : Course Implementation

Fall Cohort for Summer Courses



October – November : Online Training
January – April : Course Development
May : Quality Assurance Check
June – August : Course Implementation

Appendix C

April 10, 2019

Katherine Lynn Bevins,
UTK - College of Arts & Sciences - Modern Foreign Languages & Lit

Re: UTK IRB-19-04975-XP
Study Title: Analysis of the discourse of instructional designers (ID)

Dear Katherine Lynn Bevins:

The UTK Institutional Review Board (IRB) reviewed your application for the above referenced project. It determined that your application is eligible for expedited review under 45 CFR 46.110(b)(1), categories (6) and (7). The IRB has reviewed these materials and determined that they do comply with proper consideration for the rights and welfare of human subjects and the regulatory requirements for the protection of human subjects.

Therefore, this letter constitutes full approval by the IRB of your application (version 1.2) as submitted, including:
Informed Consent Form Revised - Version 2.0
Recruitment Script - Version 1.0
The above listed documents have been dated and stamped IRB approved. Approval of this study will be valid from 04/10/2019 to 04/09/2020.

In the event that subjects are to be recruited using solicitation materials, such as brochures, posters, web-based advertisements, etc., these materials must receive prior approval of the IRB. Any revisions in the approved application must also be submitted to and approved by the IRB prior to implementation. In addition, you are responsible for reporting any unanticipated serious adverse events or other problems involving risks to subjects or others in the manner required by the local IRB policy.

Finally, re-approval of your project is required by the IRB in accord with the conditions specified above. You may not continue the research study beyond the time or other limits specified unless you obtain prior written approval of the IRB.

Sincerely,

Institutional Review Board | Office of Research & Engagement
1534 White Avenue Knoxville, TN 37996-1529
865-974-7697 865-974-7400 fax irb.utk.edu

Appendix D

This is the iteratively developed codebook created from design literature for an earlier study (Bevins & Howard, 2020). These are the nine original design discourse codes that I used in my first round of coding.

Design Discourse	References
Tools	Clark, 1994; Kozma, 1994; Gustafson & Branch, 1997; Van Merriënboer & Martens, 2002
Design Tensions	Schön, 1987; Tatar, 2007
User Experience	Norman, 2013
Problem Framing	Schön, 1987, Lawson & Dorst, 2009; Norman, 2013; Dorst, 2015
External Representations	Schön, 1983; Cross, 2011
Problem Solving	Cross, 1982; Lawson & Dorst, 2009
Aesthetics	Parrish, 2009; Norman, 2013
Precedent	Schön, 1983; Oxman, 1994; Lawson, 2004; Boling, 2010
Usability	Norman, 2013

Appendix E

This is the finalized codebook including definitions and examples from the data of each discourse type. There are no examples provided for aesthetics and external representations because I did not find examples of them in the data.

Design Discourse	Definition	Example
Tools (t)	Discourse regarding the tool employed in the design process.	Ex: “And then I put the cursor down here. And I click on more external tools, just like in the module, and I choose studio.”
Design Tensions (d)	Discourse surrounding issues related to the vision of the project, the initial focus, the project limitations or competing constraints, or the consequences of the designed product.	Ex: “or you're not going to be able to pull that together by Friday, then just don't worry about that.”
Problem Framing (f)	Discourse surrounding how the designers see or view the problem or that identifies the subject of the design as an example of a specific design genre.	Ex: “Um, but because we're looking at instead of a graduate class an undergraduate class”
Problem Solving (s)	Discourse surrounding the establishment of the problem or a comparative analysis of multiple design solutions; characterized by hypothetical and conditional statements. A gambit.	Ex: “I've got about seven main assignments in the way I teach it face to face, I may change that to five or combine the six and seven, so five or six in the summer just for ease.”
Precedent (p)	Discourse about a previous experience both as a designer or a user.	Ex: “which I have. Well, actually, I haven't, I change peer reviewers in my other online course, and they just do one group project.”
Aesthetics (a)	Discourse surrounding the holistic experience of the design (the emotional, physical, and/or spiritual experience of the designed product.	

User Experience (e)	Discourse surrounding what the user sees, hears, and does while using the designed product.	Ex: “It looks really nice. It'd be a nice nice asset. The intro video is also really important.”
Usability (u)	Discourse surrounding the usability of the designed product, including problems or positive aspects of using the designed product.	Ex: “We want to empower the students to know what they're doing without you having to get involved with, you know, a bunch of emails through the week and so forth. That annoys everybody. So that will be that's really the advantage of having nice and clean structure. They can take over and they know what to do.”
External Representations (r)	Discourse about sketches, written notes, pictures – anything that represents the design.	
Inquiry (i)	Discussion used to elicit information from the other speaker (could be in question or statement form)	Ex: “And it's your preference to do a five week versus a full?” Potential miscodes: “Okay. And this was the one where you were talking about, you had asked me about whether to go with four groups of five, or five groups of four?”
Procedural (l)	Discourse surrounding procedural, logistical, or organizational tasks related to the design project.	Ex: “We can review of the canvas jumpstart and kind of kind of see where where you have completed things where you haven’t.”
Backchannel (b)	Discourse intending to convey the interest and/or comprehension of the listener (Yngve, 1970).	EX: “Yeah, okay, mmhmm, right.”
Positive reaction (n)	Discourse intending to convey a positive reaction of the listener to the idea expressed by the speaker.	Ex: “Oh yeah, that sounds good.”

Tangential (g)	Discourse that is tangential to the design project. It is not about the current project but is a result of discussion about current project.	Ex: “if you can get the screen to come on. I couldn't get it to come on the other day.”
Off topic (o)	Discourse that is off topic and is not associated with the project or anything tangential to the project.	Ex: “Have you seen frozen 2”
Incomprehensible (c)	Discourse that is incomprehensible and does not relate to a previous utterance.	Ex: “If you”

Vita

Originally from Mountain City, TN, Katherine Bevins now lives in Glade Spring, Virginia. After high school, Katherine attended King University where she received a Bachelor of Arts degree in French and Youth Ministry. After undergrad, Katherine attended the University of Tennessee, Knoxville (UTK) and received a Master of Arts degree in French Literature and Languages. After completing this degree, Katherine began teaching French full time in the Department of Modern Foreign Languages and Literatures at UTK. After two years of teaching French full time, Katherine decided to pursue a Doctor of Philosophy degree in the Learning, Design, and Technology program. She is grateful for all of the support from her husband and her family.