



# Exploring the two sides of a moment of use approach to design

John Baaki<sup>1,2</sup> · Monica W. Tracey<sup>3,4</sup> · Elizabeth Bailey<sup>3,5</sup>

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## Abstract

We have explored designers having empathy for the audience of focus, designers using empathy as a means to an end, and designers using empathy to deliver a meaningful design deliverable. Our research has evolved from studying how designers reflect on their own design context and the audience's given circumstance to designers acting on moments of use. Our purpose was to explore two sides of a moment of use approach to design by observing one team of graduate student designers, tasked with designing an online training course from beginning to end. Our research question was the following: how did the design team act on a moment of use approach to design a meaningful design deliverable? Our findings indicated that although the design team designed a meaningful design deliverable the client did not implement the final deliverable. We discuss why this happened and the implications for designers and those who prepare designers.

**Keywords** Empathic design · Intention · Interaction · Introspection · Localized context of use · Meaningful design deliverable

In our empathic design research, we have explored designers having empathy for the audience of focus (Baaki et al., 2022), designers using empathy as a means to an end (Tracey & Baaki, 2022), and designers using empathy to deliver a meaningful design deliverable (Baaki & Tracey, 2022; Herman et al., 2022). Our research has evolved from studying how designers reflect on their own design context and the audience's given circumstance to designers acting on moments of use (Tracey & Baaki, 2023; Meloncon, 2017). Here a designer designs for a specific moment resulting in a meaningful design deliverable which provides an audience

of focus (e.g. learners) what they need to do when they need to do it. Furthermore, we have adapted the NEW framework for evaluations of creative products to evaluate a meaningful design deliverable (Dousay, 2018; Henriksen et al., 2015; Mishra et al., 2013).

In 2020, 19 instructional design graduate students, collaborating in six teams, worked with an organization that provides residential and support services to adults with developmental disabilities, referred to as ABC Homes. Each student team was assigned a different training initiative to develop direct care workers in areas such as communication skills, harassment awareness, Health Insurance Portability and Accountability Act (HIPPA) compliance, and job tasks. Teams were partnered with a member of the organization's administrative team who served as a primary point of contact for the team. Over a 15-week semester, the second author – the instructor of the graduate students' advanced instructional design course – guided the students through an empathic design process that emphasized a moment of use while advising teams in providing a meaningful training deliverable.

Teams met the client face-to-face, visited a group home, and observed direct care workers in action. Then, in March 2020, the COVID-19 pandemic struck. Direct care workers along with the adults with developmental disabilities were infected with COVID-19. Direct care workers who were

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✉ John Baaki  
jbaaki@odu.edu  
Monica W. Tracey  
monicatracey@wayne.edu  
Elizabeth Bailey  
ba2390@wayne.edu

<sup>1</sup> Old Dominion University, Norfolk, VA, USA  
<sup>2</sup> Darden College of Education and Professional Studies, 4301 Hampton Boulevard Suite 4125, Norfolk, VA 23539, USA  
<sup>3</sup> Wayne State University, Detroit, MI, USA  
<sup>4</sup> Learning Design & Technology, College of Education, 668 Education, Detroit, MI 48202, USA  
<sup>5</sup> College of Education, 5425 Gullen Mall, Detroit, MI 48202, USA

not infected by COVID-19 worked with fear and anxiety. As a result of COVID-19 safety restrictions, adults with developmental disabilities could no longer participate in activities and field trips. Direct care workers faced how to care for the adults who could no longer enjoy physical and community activities.

The study's purpose was to explore two sides of a moment of use approach to design by observing one team of graduate student designers, tasked with designing an online training course from beginning to final deliverable. The team's training focused on how direct care workers, employed at a home for adults with developmental disabilities communicate with one another regarding what is occurring at a specific group home. In this setting, communication during shift change becomes essential. Our research question was the following: how did the design team act on a moment of use approach to design a meaningful design deliverable?

## Background

To understand context, for ourselves and our teaching, we researched design context in an attempt to define it (Baaki & Tracey, 2019). We failed to provide a clear definition of context for instructional design. What we learned was context means quite different things and appears to be defined more by the use of context (Duranti & Goodwin, 1997; Meloncon, 2017). Our research resulted in our discovery of the moment of use. A moment of use approach emphasizes specific moments where context is scaled back to what is needed in a situation or moment (Baaki & Tracey, 2019; Baaki et al., 2022; Tracey & Baaki, 2022). One side of moment of use emphasizes a personal side of context (Meloncon, 2017) where a designer reflects on their context and the context of the audience of focus (Baaki & Tracey, 2019; Baaki et al., 2022; Tracey & Baaki, 2022). The second side of moment of use emphasizes action where a designer designs with introspection, interaction and intention (Herman et al., 2022).

### Moment of use Emphasizes a Personal Side of Context

Both an audience of focus and designers act in context. A personal side of context is dynamic, about interpretation, filling spaces, and meaning making to move forward (Baaki & Tracey, 2019).

Nothing in the lives of a designer and an audience of focus is stationary. MacPhail (2014) contends that context is woven together contingently, rather than deterministically. The audience of focus actively connects information to the world in which they find themselves embedded. For a designer, the dynamic nature of context happens when a designer experiences epistemic uncertainty that results

from having incomplete information about the design and use space (Ball et al., 2010). In a dynamic design space, a designer becomes aware of what they know and what they do not know. As context continues to change and emerge, uncertainty becomes a mediator between design requirements and the design strategy deployment (Ball et al., 2010).

Context is synonymous to interpretation (Duranti & Goodwin, 1997; MacPhail, 2014). As an audience of focus draws on their experiences and intuition, they actively cultivate and organize their perceptions. Much the same, a designer interprets their values, beliefs, prior experiences, knowledge, and skills as they work through the many design decisions that are made (Baaki & Tracey, 2019).

An audience of focus actively participates in an exchange of context (MacPhail, 2014) with family, friends, coworkers and anyone else involved with the context. Exchanging contextual information has both operational and pragmatic value as the audience of focus takes information and fills spaces in their specific setting. What contextual information does in a setting is more important than what the contextual information is (MacPhail, 19). When a designer has incomplete information, they use empathy to fill in the spaces of the audience of focus and the audience's context. When designers have a deep understanding of the audience, designers can create meaningful products, services and experiences (Bohorquez, 2018).

Meaning making is a creative synthesis of personal knowledge and impersonal data (MacPhail, 2014). A person engages with information and synthesizes the information with their beliefs, feelings and experiences. MacPhail (2014) refers to the synthesis as turning information into "good information" (p. 155). In other words, a person's meaning-making from incomplete information results in good information which moves a person forward in their design. A designer's combined personal, educational, and professional experience create meaning for a design situation (Baaki & Tracey, 2019). A designer's meaning-making by affectively forecasting the audience during and after their interaction with the design deliverable allows the designer to move the design forward (Baaki & Tracey, 2019; Ferrer et al., 2015). When emphasizing specific moments of use where designers reflect on what the audience needs when they need it (Baaki & Tracey, 2019; MacPhail, 2014; Meloncon, 2017), design action can occur through introspection, interaction and intention (Herman et al., 2022).

### Design Action Through Introspection, Interaction and Intention

A moment of use approach does not simply mean reflection and empathy for the audience and designer themselves. As designers of change, designers must act. Thomas et al. (2002) introduced the 3 I's – introspection, interaction,

and intention. The 3 I's drive moments of use such that a designer determines the specific moment of use and then designs for the moment (Herman et al., 2022; Baaki & Tracey, 2019).

**Introspection** Introspection starts with examining the context surrounding the specific moment of use. Focusing a design for a specific moment allows a designer to identify the critical forces at work that can affect the understanding and application of the design deliverable (Baaki & Tracey, 2019; Herman et al., 2022; Meloncon, 2017). Designers educate themselves, connect and communicate with the audience on a deep and personal level, and determine the best approach to move the design forward. Introspection is not a solitary event; rather, a designer may find it helpful to collaborate in critical reflection with a design team. A collaborative structure can force a designer back from their inherent biases and to consider moments of use that had previously gone unrecognized (Herman et al., 2022).

**Interaction** As well as collaborative introspection with peers, interacting with the audience of focus includes a co-determination of specific use cases. When a designer considers a specific moment of use, they reflect on how the audience will use the design deliverable and the different ways the audience may then act (Herman et al., 2022). A moment of use may be a short moment or a longer moment. For example, Herman et al. (2022) described an instructional designer's interaction with students of color who were negatively affected when trying to access an exam proctoring platform. The short-term moment of use was the time it takes for a student to log onto a proctoring software platform while the long-term moment was the time it takes to abolish policies that threaten the ability of a campus to diversify.

**Intention** A designer's intention must be to act. In the above example, a designer may set their sights to design for greater equity and inclusion, but a designer will never move the needle towards a more equitable and inclusive society if they fail to act (Herman et al., 2022). Failing to use a moment of use approach may have meant that the scope of the design would never have narrowed. The result may have been another ineffective call for abolishing an inequitable practice that did not translate into immediate relief for students of color. Acting on moments of use means determining the specific moment of use for a design and designing for that moment.

### Producing a Meaningful Design Deliverable

Designers must meet their audience where the audience is, not where designers think the audience should be. Meaningful design deliverables provide the audience with what they need in a specific situation or moment.

In instructional design, a meaningful design deliverable includes a presentation of activities specifically for the audience's context and an opportunity for the audience to apply the activities (Tracey & Baaki, 2022). For example, a design team was tasked with creating a course to teach math ratio concepts to adult audiences preparing to take their high school equivalency exam (Tracey & Baaki, 2022). The team began designing the *Understanding Ratio* course starting with course goals, outcomes, and assessments. Identifying 'must have' course content along with reflecting on their audience's challenges working with ratios and wondering when the audience would possibly need to use ratios, the team determined that there is a ratio moment of use when employed in certain jobs. One of the possible employers of their audience might be a coffee shop, so the team designed a ratio activity using illustrations of a cup of coffee, black, with milk and with milk and sugar. The activity was designed for the moment the audience may need to use ratios,  $1/3$ ,  $2/3$ , and whole.

In past research (Tracey & Baaki, 2022; Baaki & Tracey, 2022), we evaluated instructional design deliverables using three criteria. We reviewed a design deliverable focusing on the learning context and performance context. Our review focused on the presentation of activities, specifically the visuals, language, layout etc., (learning context); the nature of the activities based on the audience's world/context (learning and performance contexts); and the application of the activity, or can they use it (performance context). We evaluated the *Understanding Ratios* deliverable using our criteria and concluded it was a meaningful design deliverable.

Historically, theorists and researchers have had a difficult time clearly defining creativity (Henriksen et al., 2015). Creativity is the production of useful interventions to problems where interventions are novel, effective, and whole. Creative work is novel when it brings something new into the world that did not exist before in the specific context (Henriksen et al., 2015). However, novelty alone is not creative as it must be effective towards a purpose. Creative design deliverables are context-based and must be valued within the context in which they are deployed (Henriksen et al., 2015). Finally, creative interventions include a strong aesthetic quality. The aesthetic element brings wholeness to the design deliverable that are bound to the context within which the deliverable occurs (Henriksen et al., 2015).

Novel, effective, and whole are the criteria for the NEW rubric to measure creative artifacts (Dousay, 2018; Mishra et al., 2013). Using a 5-point scale, scores of 5 s and 4 s would point to an excellent design deliverable, scores of 2 s and 3 s would result in an average deliverable, while a lesser design deliverable would receive a 1. The initial data set for the use of the NEW rubric included over 350 different student-generated artifacts and the inter-rater reliability test resulted in a score of 0.87.

The NEW rubric is used to measure a creative work’s quality while at the same time remaining flexible in interpretation and sensitive to context. In other words, when applying the rubric to a different project or circumstance the definitions remain in place, while the local context of use elements can be determined by those measuring the meaningful design deliverable. Table 1 presents how we align presentation of activities with whole (aesthetics elements); activities based on the audience’s world/context with novel (brings something new to the context); and application of the activity, or can they use it to effective (value with the context).

### Design Team and Instructional Context

In a graduate advanced instructional design course, the second author coordinated six design projects with a local organization servicing multiple homes for adults with developmental disabilities. The projects ranged from a direct care worker orientation program to HIPPA training to harassment awareness. The design team in our study was tasked to design an online training course focused on communication skills between direct care workers. The design team in this study had varying experience in design and project management, and was comprised of three graduate students, two men and one woman ranging in age from 30 – 55 years. The woman (pseudo name Kristen) participant held an undergraduate degree in interior architecture and design, left her interior design position after one year to work for 15 years as a business analyst/project manager. The first of the two men participants (pseudo name Charles), held a degree in education and worked at a museum designing educational programs for students, while the second man (pseudo name Nick) was an instructor for 10 years teaching computer courses in the federal government as an HR Learning Development Specialist. All of this team member’s experience was prior to entering the Learning Design and Technology program.

As part of the course, the second author created a learning environment where the students were guided through a moment of use approach using introspection, interaction, and intention. In addition to learning what it means to have empathy for others, the context, and oneself, the students developed milestones when they would complete instructional design elements for both client and instructor feedback. The design elements included the design problem/opportunity, audience of focus description, outcomes and assessments, content outline, instructional strategies and activities, and an evaluation plan. At the end of 15-week semester, the design team turned over their final online communications skills training to home directors.

**Table 1** “NEW” rubric for design projects, adapted from Henriksen et al. (2015)

Criteria	1	2	3	4	5
Novel activities are based on learner’s world/context	Completely lacking any form of unique characteristics and/or lacking content	Most components are standard or conventional with some uniqueness	Average product with a balance between conventional and novel characteristics	Mostly unique, but some conventional components	Strong qualities of novel characteristics
Effective Application of activities [can learners use it?]	Confusing, limited, and/or ineffective in design or application	Design or application is mostly confusing or somewhat limited with some elements of effectiveness	Interesting design with some confusing or limitations in application	Thoughtful design with little confusion or limitations in application	Excellent application with no confusion or limitations
Whole presentation of activities [visuals, language, message design]	Little or no consideration to aesthetics or design practice and incomplete	Some aesthetic appeal, but lacking cohesion or design practice consideration or incomplete	Conventional or standard aesthetic appeal, complete, and obvious consideration to design practice	Some aesthetic appeal with some conventional or standard design and complete	Exceptional aesthetic appeal with rich sensory interest and complete

## Methodology and Analysis

Our research question was how did the design team act on a moment of use to design a meaningful design deliverable? To ensure triangulation of data, we analyzed two team collaborations, the team members' end-of-semester reflections, the final design deliverable, and interviewed the team's client contact to gain insight into course implementation.

### Team Collaboration Analysis

We employed a protocol analysis methodology to document verbal exchanges between team members. Although the team had multiple collaborations, the second author required the team to share two recorded collaborations during week 7 and week 14. Following Tinsley and Weiss (2000) we used an intercoder agreement approach to determine how three independent coders evaluated team collaborations for instances of introspection, interaction and intention (the 3 I's) and then reached the same conclusions. The intercoder approach measured the extent to which the three reviewers identified the same instances of the 3 I's.

We documented verbal exchanges between team members in the two recorded collaborations. Between the two collaborations, we transcribed 15,673 words and used four rounds of analysis to come to agreement on instances of introspection, interaction and intention. In round 1, the first author reviewed both collaborations and determined 113 instances of introspection, interaction and intention. In round 2, the third author reviewed both collaborations and determined 115 instances of the 3 I's. The first and second authors agreed on 88% of the instances. After round 2, the first and third authors did not agree on 14 instances. In round 3, the second author reviewed both collaborations. The second author agreed with the first author on two instances, agreed with the third author on 12 instances and disagreed with the first and third authors on three instances. In round 4, the first and second authors met and reconciled all outstanding instances of disagreement. After round 4, between the two collaborations, there were 116 instances of introspection, interaction, and intention.

### Team Member Reflection Analysis

At the end of the 15-week course, the team members reflected on their design experience. The instructor provided five prompts: (a) as you reflect back on your instructional design project, what role has empathy played in the process, (b) describe specific examples of how you met the client where they are, (c) describe specific examples of how you met the end learner where they are, (d) describe specific

examples of how you worked in the specific context of the project, and (e) how has empathic design influenced how you moved among design spaces or other aspects of your process? Each author analyzed the reflections for instances of the 3 I's. We then synthesized our individual analyses into common themes.

### Final Design Deliverable

Using an analysis table, the first two authors together evaluated the communications online course using three criteria: (a) presentation of activities, specifically the visuals, language, layout etc., (b) the nature of the activities based on the direct care workers' world/context and (c) the application of the activity or can the direct care workers use the activities at the group homes. For each criterion we noted specific examples from the course that met the criterion and/or examples that showed the course did not meet the criterion. Based on our criteria aligning well with the NEW rubric to measure creative artifacts (Table 1), we then re-evaluated the course using the NEW rubric.

### Client Interview

We arranged a Zoom interview with a director from the organization servicing adults with developmental disabilities. The director was the direct contact for the team that designed the direct care worker communication skills online course. As all three authors traded asking open-ended questions regarding the director's experience working with the team, how the course matched the need for communication skills training and how the course has been implemented among direct care workers, the authors took handwritten notes. Immediately following the interview, the authors remained in the Zoom room and discussed interview insights and conclusions.

## Findings

Our four data collection sources provided a critical and nuanced approach to uncover what was happening as the team designed the direct care worker communication online course. We share the findings for each data collection source.

### Team Collaboration Findings

The two collaborations produced 116 instances of introspection, interaction and/or intention. Initially, we planned to categorize the instances into one of the 3 I's. However, when analyzing the collaborations, we realized that the 3 I's do not occur in isolation. We discovered that designers bounced ideas off one another, often at a quick pace,



producing multiple instances of the 3 I's in one collaborative moment. Imagine three lasers where introspection is red, interaction is blue and intention is yellow in a closed room. Each laser bounces off walls, ceiling, and floor; cross one another; then bounce around individually; then cross again and so on (Baaki & Tracey, 2019). When the 3 I's cross, it may be a design breakthrough moment, or it may be a moment where the team realizes they need to go back to one of the 3 I's and take a closer look. Designers are engaged in abductive thinking where they shift and transfer thought between a design activity's required function and purpose and an intervention's appropriate forms to satisfy the purpose (Cross, 2011).

To demonstrate how the 3 I's work together, in Tables 2 and 3, we include exchanges from week 7 and week 14. We use pseudonyms for the team members and client content. For the collaborations, in italics, we note if the statement was introspection, interaction or intention. Regarding Table 2, the team discovered early on that an important communication tool for direct care workers was a logbook. As shifts changed, direct care workers were required to log important information regarding the adults and what was happening in the house. The logbook became the focus of the team's communication skills training. In the Table 2 exchange, Kristin and Charles discuss a reminder poster or a checklist to remind direct care workers to complete the logbook prior

**Table 2** Team collaboration from week 7

Team Collaboration	
Week 7	<p><b>Kristin:</b> Well, yeah. I'm just trying to think about the checklist and how it's going to fit in [<i>introspection</i>]. I don't think having a checklist is going to help [<i>introspection</i>]. So, they're having problems. There's one gal at Jefferson house that doesn't log anything at all [<i>interaction</i>]. She just is really bad at updating it, putting anything in there at all. There are other people that don't read the logbook [<i>interaction</i>]. So, I think it's more about some basic things regarding the logbook...I think if we created a checklist, it would be a shift change checklist [<i>intention</i>] more like, did you say hi? Number one. Number two did you talk to your person and ask how things went? Did you review the logbook? Number three. Number four did you say hi to the residents? Like in my mind that would be the checklist [<i>intention</i>]</p> <p><b>Charles:</b> That would be taking personal responsibility [<i>introspection</i>]</p> <p>—</p> <p><b>Charles:</b> But then I would also go back to personal responsibility [<i>introspection</i>]. Where...what if they don't put the logbook back at the end of the shift and they leave it on a resident's dresser [<i>interaction</i>]? Or something like that. You see what I'm saying, too?</p> <p><b>Kristin:</b> Well, that's in the – I mean we can include that in the training [<i>intention</i>]. Well, and that was one thing that Kim said [<i>interaction</i>]. The logbook should always be in the same spot. And actually, Jefferson house is not that big, so Kim might just leave it open in the same spot and just come to it every...I'm not sure [<i>interaction</i>]. But I think what is lacking is personal responsibility, Charles [<i>introspection</i>]. That's why we really need to reiterate the importance of these tools and reiterate the importance of saying hi [<i>interaction</i>]. Why saying hi is important. How smiling at your fellow coworker is a nice thing to do...you know what I mean [<i>intention</i>]? I think we have to back up a little bit [<i>introspection</i>]. So that's why I was saying within each of these statements there's a lot behind them. And we need to like break them down [<i>intention</i>]</p> <p>—</p> <p><b>Charles:</b> It would be at an adult level [<i>introspection</i>]. But also at the same time, we also want the residents to know it, too. And understand what they're doing, too. And that they want to smile to each other, too. So, there's also that dynamic too [<i>interaction</i>]. Making it very simple [<i>intention</i>]. No not making it seem like it's over done...And we also need to think about some of these workers coming in, English – sometime in the future might not be their first language, either [<i>introspection</i>]. You know what I mean? We don't know the background necessarily of all the future direct care workers. We know what they are now. But our training is also going to be used in the future [<i>intention</i>]</p> <p><b>Kristin:</b> So, we kind of have to think of that as well [<i>introspection</i>]. I think it'll be a finale to decide what the poster ultimately looks like [<i>intention</i>]. We can probably give her some options. Some with text, some with words. But I think the key point for now is we don't want to give them any paper at all to fill out. Because they were very very clear [<i>interaction</i>]. That's very frustrating. They don't want to fill out any more papers. And I understand you're saying it's simple, but if they have to take the time to print this thing at the end of their shift every time – it's gonna be too much [<i>interaction</i>]</p>

**Table 3** Team collaboration from week 14

Team Collaboration	
Week 14	<p><b>Nick:</b> Let's get clarity on that before we branch out with the manager perspective [<i>intention</i>]. Because I know for sure we need – the end user is a direct care worker [<i>introspection</i>]. But let's make sure about the manager [<i>interaction</i>]</p> <p><b>Kristin:</b> During our initial call, Nicole and Lou [<i>interaction</i>] told us they want everybody to take the communication skills training [<i>introspection</i>]. And then Nicole reiterated that they wanted direct care workers and managers to take the training [<i>interaction</i>]. So</p> <p><b>Charles:</b> Now I'm trying to remember. The managers are pretty much all full-time, right [<i>introspection</i>]? That's correct? And the direct care workers are not necessarily [<i>introspection</i>]. They're the ones that are working two and three jobs and that sort of thing [<i>introspection</i>]</p>

to the end of their shift. The 3 I's are not applied in a neat step-by-step approach. Rather, as the colored 3 I's lasers bounced around and crossed, the team benefitted from their introspection, interaction and intention. Through interaction with Kim (house manager) and Nicole (director), Kristin and Charles understood the logbook importance and that minimizing paperwork is critical. Both Charles and Kristin connect to the direct care workers on a deep and personal level (introspection) realizing that when direct care workers complete the logbook the direct care workers take personal responsibility regarding what is happening at a group home. Charles and Kristin end the exchange discussing an intervention (intention) to assist direct care workers in completing the logbook at the end of each shift.

Table 3 is a week 14 exchange where the team was finalizing design decisions. The team had developed personas of direct care workers and house managers. The question facing the team was would the communication skills online training include managers along with direct care workers? Was the team designing for the direct care workers' moments of use as well as the managers' moments of use, which would directly affect the communication skills training outcomes, assessments, and activities? Interestingly, at this point in the design, it was not clear who would be included as the audience of focus. However, the team had had the wherewithal to construct a direct care worker persona and a manager persona to assist with the course design.

### Team Member Reflection Findings

In reviewing student end-of-semester reflections, students reinforced what we had found in the collaborations. The 3 I's did not occur in isolation and instead existed simultaneously in a mutually influential way throughout the design process. We identified two categories of relationship between the 3 I's, the first was designers' interactions informed introspection which clarified the designer's intentions. The second was designers' introspections informed interactions which clarified the designer's intentions. In both cases we saw a reciprocal relationship between the designers' development and the development of the project.

The designers experienced interactions as both direct interactions through conversations with the house managers and selected direct care workers, and vicarious interactions through the constructed direct care workers empathy maps and personas. Designers became aware that their perspective as graduate students would influence their intentions for content choices.

**Interactions inform introspection** We found instances where designers' interactions with the house managers and the direct care workers produced introspections that allowed designers to align their intentions with the direct care workers'

moment of use. This alignment helped designers center the organization's needs in selecting content, and the direct care workers' needs in planning for delivery. For example, Charles reflected how interactions supported his introspections which aligned content with organizational needs, "After meeting with the ABC team and reflecting back on the empathy maps created, my team realized the client really felt the employees needed to learn basic and fundamental communication strategies they could utilize in written, verbal and face to face communication experiences." Nick wrote about how interactions supported introspections on strategies to align delivery with direct care workers' needs, "Our group had an opportunity to meet with (Nicole) and she gave us a clear description of the DSP's (direct care workers). I was able to feel and think about some of the wants and needs of the DSP. This empathetic process allowed our Design Plan to become personalized."

**Introspection Informs Interactions** We found selected instances where designers' introspections changed designers' approach to interactions, which allowed them to become more aware of their intentions. These interactions centered around communications from the team to the house managers to the direct care workers. Kristin commented on how introspections informed intentions for interactions with the house directors, "I learned that my client, (Nicole), was a very busy person and I strived to be respectful of her time. I always communicated clearly and concisely with her." Charles reflected on how introspections informed intentions for interactions with direct care workers:

My team also made sure the language we used to present the lessons reflected both ABC's professional jargon as well as the knowledge level of both managers and Direct Support Professionals. For example, when explaining to learners the proper procedures for writing in ABC's logbook, we used simple terminology and not overly complicated language that would not be understood by some participants.

### Final Design Deliverable Findings

The team designed a three-module communications skills course hosted on the Canvas learning management system. Each module was designed to take 15–20 min to complete so that as Kristin explained, "direct care workers could complete them (modules) in-between their other household duties." The first and second authors first reviewed the Canvas course using three criteria: (a) presentation of activities, specifically the visuals, language, layout, (b) the nature of the activities based on the direct care workers' world/context and (c) the application of the activity, or can the direct care workers use the activities at the group homes.

**Presentation of Activities** The look and feel of the course are clean with good use of white space. Throughout most modules, the course personalizes activities with the use of “you” as in “you are here.” Language is direct (e.g. responsible, must, required) as there is an emphasis in all three modules on managing the logbook. In some cases, wording became inconsistent as modules used “employees”, “direct care professionals”, and “you” to refer to the direct care workers. As the team noted in the Table 2 collaboration, the house managers were adamant that less paperwork is best. However, in Module 3, the learner must download a PDF, print it, and then complete the exercise on the back of the PDF.

**Nature of Activities** The course addresses both the direct care workers and managers by providing all managers resources on a manager page at the end of Module 3. The course highlights the importance of the logbook as the main source of communication. When participating in the activities, the learner is faced with common scenarios that should or should not be included in the logbook. In Module 3, the course ends with the learner completing a storyboard to create an exchange between a direct care worker leaving their shift and the next shift direct care worker arriving to work.

**Application of the Activities** All activities and quizzes are centered around what direct care workers must do in the logbook. The course uses a what-is-fact-and-what-is-fiction approach to present key group home communication moments before, during, and after a shift. In essence, learners engage in practicing what they include in the logbook and how they handoff their shift to the next direct care worker. The learner may print a job aid which summarizes the logbook requirements.

Based on our criteria, we concluded that the communications skills online course was a meaningful design deliverable. We then reviewed the course using our adaption of the NEW Rubric for evaluation of creative products (Table 1). In this framework, Novel, or activities are based on the direct care workers’ world/context and Whole, or presentation of activities both received a 4, which points to an excellent design deliverable. Effective, or application of activities (can the direct care workers use it?) received the highest score of five.

## Client Interview Findings

From our interview with the Director of the organization, Nicole, three themes emerged: (a) the team met course expectations, (b) the course has not been implemented and (c) in retrospect, a different approach may have been more appropriate. In short, the director stated, “content

is fantastic and (the course) has pertinent information.” Nicole credited the team to working hard to get to know the managers and the organization’s needs. For example, Nicole had stressed that an interactive course would keep the direct care workers’ attention and an online course would limit the need for paperwork which is an organization goal.

Despite these positive attributes, unfortunately, Nicole admitted the course is, “not being used” for a variety of reasons. The communications skills online course was not required and since the direct care workers are required to complete numerous mandatory trainings, Nicole explained that, even in ideal circumstances, it is difficult to get direct care workers to complete any training beyond what is mandatory. Although the organization aspires to move training and essential communications online, the direct care workers do not have the skill set to interact with a Canvas course.

According to Nicole, the pandemic heightened existing pressures on direct care workers’ time and attention. For direct care workers, learning to navigate Canvas and engaging with the course became, “...another thing to put on them.”

We ended the interview by asking Nicole what approach may have been more appropriate. Maintaining a paperless goal, she suggested a simplified electronic job performance aid. The job aid would focus on the most essential communication moments of use in an 8-h shift. Nicole ended our conversation by reflecting on what they believed is essential to moving forward. Since there are 12 group homes in the organization with some homes small enough where there is only one direct care worker per shift, how can the organization simplify training so the critical requirements of the logbook are met within the context of each on the twelve houses?

## Discussion

The design team in this study exhibited introspection, interaction and intention while designing a meaningful deliverable. These 3I’s supported a moment of use approach, assisting the team as they determined the specific moment of use for the direct care workers, and then designed the deliverable for that moment. In answering our research question “how did the design team act on a moment of use approach to design a meaningful design deliverable?” our findings indicate that although they employed the 3I’s in a meaningful way, designed what the client asked for and aligned with the direct care workers’ moment of use, the final deliverable was not used. Why is this? We examine this dilemma beginning with the moments of use.



## Moments of Use

Three distinct relevant moments of use emerged in this study: 1) engaging with the instruction, 2) applying the instruction, and 3) the dynamic moment of use.

**Engaging with the Instruction** The moment of use most considered by designers was how learners would engage with the designed instruction. Consideration of the time and energy constraints experienced by direct care workers defined the duration and chunking of the training, ensuring that it would be easy to pick up and put down. The organization manages 12 homes, each with unique characteristics and operations. To accommodate the multitude of moments of use, the client requested that the designers develop instruction that was generically applicable across all households. The result was a modular online course that direct care workers would complete outside of their regularly scheduled duties to build core communication skills. After the deliverable was implemented, Director Nicole needed to cover direct care worker shifts in several homes due to an outbreak of COVID among staff. It was while covering these shifts that she realized that, although the design team produced exactly what she asked for, the instructional delivery method did not work with the direct care workers moment of use, which consisted of urgent and necessary tasks that demanded direct care workers' already scarce time, energy, and attention. Engaging with the instruction moment of use actually changed from what was initially identified by the client.

**Applying the Instruction** The second moment of use was the setting in which direct care workers would apply the knowledge from the instruction. Designers worked under an assumption that direct care workers' performance would be most impacted by application of basic communication skills. In part due to COVID, the client wanted additional online instruction for all of their workers. The design team met that request with the online communication skills course. However, when Director Nicole covered the shifts in the group homes, she realized that what was most urgently needed by direct care workers was specific communication procedures within each unique household that were easily and immediately accessible when needed during a direct care worker shift.

**The Dynamic Moment of Use** The moment of use was initially characterized as static while in reality the moment of use was dynamic. The design team posed the right questions and designed to the moment of use that was asked of them. They had the right information from the client, and yet the final deliverable was not being used. Why? When the client went into the homes to work, she realized that due to

COVID, short staffing, and increased responsibilities, direct care workers did not have time to take this online communication course. She also realized that her request for one course for all of the homes did not meet the individual home communication needs. She relayed that the moment of use is so dynamic that the relatively static deliverable was not going to work. Every house is different, so communication in each house must be different. As such, the moment of use is not static, but dynamic.

## Dynamic Nature of Design

The moment of use for a designed deliverable is dynamic. How do designers stay ahead of a dynamic moment of use? Aligned with our belief that good design is messy, complicated and difficult, we provide two insights for those who design and those who prepare designers: 1) the collaborative nature of iterative design and 2) the designer's professional identity.

**The Collaborative Nature of Iterative Design** Although current design models attempt to illustrate the iterative nature of design, the results of this research clearly demonstrate the intensive iterative nature of design, not only in a design meeting, but in individual thoughts and sentences during that meeting. Others have written about the importance of design collaboration highlighting designer roles (Cross, 2011), but our results indicate the need for a different type of collaboration, one that is deep and ongoing. We found 116 instances of introspection, interaction and intention. The 3I's did not occur in isolation but only through real time, ongoing deep collaborative design discussions. Iterative design models are now accepted on a macro level in design, and this research indicates the need for ongoing collaborative iterative design at a micro level during the entire life of the design project.

Our past research results indicate that while empathy is now a standard in design practice, engaging in empathy does not guarantee a meaningful design deliverable (Tracey & Baaki, 2022). This research indicates that although a design team can produce a meaningful design deliverable, it may not be used. Although a design team communicates with the client, the learners and the content, the moment of use may be changing as quickly as the team is designing. In this study, this was apparent in time and place. The design plan established pre-COVID was not applicable in post-COVID (time). The design plan established for a general location (one for all of the homes) was not applicable to the specific locations (place). How can a team get closer to designing for the dynamic moment of use? A design applied to a dynamic moment of use needs to be similarly dynamic. In this dynamic context, a simpler design that is easily updated by the client would have been a more meaningful design. Kalimullina et al. (2021) demonstrate that digital

platforms require ongoing and active management to be successfully adopted. Hughes and Lewis (2020) identify that for educational materials to be adopted, clients and users must have an active, agentic role in implementation and feedback. Combined with the findings from this study, this demonstrates an imperative for designers to consider clients' agency in providing mechanisms to facilitate updates to key components of the design that align with design principles as the moment of use changes. Clients with the agency to adapt designs to a changing moment of use are better able to ensure the designs become and remain relevant.

Designers might also reconsider how to *iteratively* design, and to consider strategies to include client-driven iterations after the designer-client relationship has terminated. Increasing the iterative nature of design should include revisiting the design at key milestones, as well as during smaller moments of design activity. For example, at the end of every design session (defined as an email, text, design team meeting, etc.) designers can ask: What does this mean? Has anything changed? Are we going down the right road? These questions iteratively asked throughout the entire design can address the changing nature of the design's moment of use. Table 2 presents the team's ongoing collaboration around a logbook or checklist. The team spent considerable time discussing the nuances of a logbook intervention. What would be included in the logbook? Where would the logbook be kept? What would the logbook be – a printable PDF, a dry erase ink board, a poster or binder with individual logbook pages? This could have been the moment where the team changed their design direction and designed some type of logbook job aid instead of an online communication skills course. In the moment of the team's collaboration, the team understood how important the logbook is to the direct care workers' moment of use to ensure shift changes occur efficiently and effectively. We understand that a design relationship cannot go on forever, it has a beginning, a middle and an end. Time is the number one constraint in design so decisions must be made in order to move the design forward, and clients must be prepared to make appropriate decisions after the designer has moved on. The team decided to stay the course and include what is important about the logbook into the overall online courser. Unquestionably, the designer is the critical player in the initial design, and the client is the critical player in sustaining the design's relevance.

**The Designer's Professional Identity** Designers are the creators of moments of use for learners. Their empathy, creativity, ability to communicate and collaborate impact the design deliverable, determining its value to the learner and the client. It is the designer who has to continually ask questions, operate in uncertainty, and iteratively collaborate with fellow design team members in an effort to create a final meaningful deliverable that meets the learners' moment of

use. Designers with the ability to decide while being open to iteratively adjust that decision are better suited for the collaborative nature of iterative design we are describing.

By the same token, those of us who prepare designers by providing authentic design projects for them, must have confidence in our design teams. As instructors, we have to support the decisions they make while working with their clients, believe they know better than us in designing for the moment of use, and communicate that confidence to the team. Reflecting back on collaborating and consulting the team, the second author would have fully supported a team decision to scrap the online communication skills course for a deliverable designed around a logbook job aid. Our professional identity must include trust, confidence and the ability to support our designers, guiding them toward success. It is our job to cultivate our design student's professional identity preparing them for the messy, complex nature of iterative design.

**Data Availability** Data is available by contacting John Baaki at jbaaki@odu.edu.

## Declarations

**Conflicts of Interests/Competing Interests** The study received approval by the appropriate ethics committee and participants received an informed consent document. All authors have no conflicts or competing interests.

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