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CHOPPED ID AND *BICYCLE REPAIR*: CONTRASTING VALUES IN SYNCHRONOUS GRADUATE INSTRUCTIONAL DESIGNS FOR DESIGN LEARNING

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This article presents two similar design cases and a discussion of how like values resulted in dissimilar design moves. Both cases were gamified learning activities for graduate students in instructional design. Both interventions employed rapid prototyping and were delivered synchronously in an at-a-distance setting. This article compares the two designs, the two designs' similar development narratives, and the two designs' divergent features. We give special attention to the common values the designers brought to the act of designing. Contrasting crucial features in similar designs allowed us, as designers, to appreciate divergent design moves. A discussion of the two cases explains how designers arrived at different design decisions through similar rationale. The authors were both designers and instructors of the implementations; each presents their case in relation to the other. Our combined cases explore how designers might compare salient features of similar instructional interventions and appreciate design moves that one chose not to make.

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INTRODUCTION

This article presents two cases side-by-side. Each design is a gamified rapid prototyping experience for graduate learners in instructional design. These two instructional interventions share many key features in both development and end product. The two designs also differ in significant ways. We cover the development and design contexts in parallel narratives and return to a discussion of the two designers' shared values in light of dissimilar design decisions. In both cases, we present innovations in synchronous graduate settings where graduate learners were engaged in design learning. Each of us came upon our innovations through curiosity and iteration. Both interventions use scenarios and engage learners in describing prototypes and design rationale within the class time. Both took place in live, video conference settings that afforded break-out rooms.

We had a two-fold purpose in writing this case. Readers may find utility in the cases themselves or the discussion that follows the cases. We wanted to explore how designs can inform each other and, in the process, try and break ground on how smaller vignettes might come together as a single design case. Through this process, we found value in appreciating design moves the other had made and recognizing that similar perspectives resulted in dissimilar strategies. For brevity, we have chosen to call Craig's case *Bicycle Repair*, and John's case *Chopped ID*. We present the narrative of context and development in parallel sections in the voice of each designer, so the nuanced feel of the design perspective is

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tangible. Capturing this reflection-in-action (Tracey & Baaki, 2014) lends insight into the design process. We return to a discussion of these features in a single voice to explore how shared values diverge in practice, as evidenced by specific exemplar design decisions.

The discussion that follows the descriptions of process and product highlights five key values. We mention these values prior to the vignettes because reading the cases with these values in mind reveals aspects of design attitude (Michlewski 2015) that may help the reader understand how individual designers' decision making may have contributed to the larger user experience of those who experienced the design. In other words, our areas of focus are presented to lend transparency to our descriptions. Michlewski (2015) uses the term "design culture" to describe how user experience in the context of a design firm or institution can be impacted by values. In our cases, the design cultures fostered here would relate to the cultures of the respective graduate programs in instructional design. The values we uncovered were: *action in design, embracing uncertainty, manipulating constraints, quick access to feedback,* and *recognizing failures*. We feel each value impacted both our designs, despite significant differences in how these values manifested in designed instruction. We would argue that design cultures might also grow out of these decisions. Thus, the reader may find it beneficial to read our descriptions with these five values in mind.

CONTEXTS OF THE TWO DESIGNS

The contexts of the two interventions were more similar than divergent. Both interventions' settings were in at-a-distance graduate programs in instructional design that were delivered synchronously through video conference platforms. Each designer incorporated the break-out room function in the design. Both designers were also the instructors of their respective courses—mixed master's and Ph.D. level courses in instructional design and technology. Both designers have academic backgrounds in instructional technology and advanced degrees. The designers' experiences outside of academic training however, differed greatly.

A brief overview of each design in the voice of the designer follows, giving the reader a short synopsis of each context from which the designs emerged. In the designer reflections in Table 1 (previous page), we source context as much in the experiences the designers brought to the design as in the context of learners in a graduate instructional technology program. The parallel table format affords the reader to juxtapose the two cases in unison, taking in the voice of each designer in the description of aligned aspects of the design context. In the parallel Table 1, we first address the context of the learning, then provide our personal contexts that brought us to the design of pivotal features.

DESCRIPTIONS OF THE FINAL DESIGNS

The two designs shared a number of similar components. Each included a scenario under which learners would develop a rapidly prototyped instructional intervention. Both included different roles for learners to assume at different points in the experience to keep learners continuously engaged. Each intervention was time-limited and included a pre-determined beginning and end. Table 2 provides a more nuanced look at the two design's components. Again, we have purposefully chosen to retain the voice of each designer in hopes of preserving the nuance of expression that might better capture the reflections-in-action (Tracey & Baaki, 2014) of each designer's rationale, and thus more transparently present the two cases. In Table 2, each designer describes how they arrived at features of the scenarios that were tied to nurturing different design attitudes. While each feature is quite similar to its paralleled partner, the total manifestation is quite different. The scenario in *Chopped ID* is authentic and timely to the contexts that learners might encounter, while the scenario for *Bicycle Repair* is intentionally absurd. [Typically, designers are not asked to create designs that purely express a theoretical stance, and few designers are tasked with viewing learning outcomes as irrelevant.] Despite the differences in the manifestations of these features, the configuration of components was quite similar. For example, in each designers' description of the break-out activity, they focus on how learners are prepared. Neither chose to discuss how they were monitored or even if they were proctored at all. In fact, neither designer endeavored to guide the behavior in the break-out room nor describe it in reflections. Also, neither instructor limited learners to immediate resources or forbade web exploration while learners were in the break-out rooms. *Action in design*, emerges as a value in these descriptions.

Embracing uncertainty emerges as a value in both descriptions but manifests differently in practice. Both designs engaged the non-presenting students in support roles, albeit different ones. While both instructors of the course played host, the roles of the non-presenting students were poles apart, in one case making rather inconsequential guesses, and in the other, determining who proceeds in the competition and who is eliminated. Artifacts from the designs explain this dynamic more graphically in Figures 1-9.

The figures in Table 2 provide the reader with a more nuanced and tangible perspective on the two designs, from launch to wrap up. While each designer held values similar to the other, the social construction of the implementations emerged almost antithetical despite their physical beginnings appearing almost identical. Figures 1 and 2 show how the break-out room scenarios were similarly introduced. Figures 3 and 4 show how the prototype explanations proceeded in similar ways. Thereafter the figures show how the designs diverged. The *Bicycle Repair* design documented

BICYCLE REPAIR (CRAIG)	*CHOPPED ID* (JOHN)
Context of the Design For a synchronous graduate course in instructional design, I designed a two-and-a-half-hour lesson on learning theories that was gamified in ways to promote learner engagement through humorous interactions. Essentially, this was a ninety-minute guessing game that engaged learners in creating a prototype for an instructional intervention; the prototype would only be successful if it conveyed, or effectively failed to convey, the learning theory from which it spawned. After a brief introduction and description of learning theories that had been assigned as prior-to-class reading, learners were paired into virtual break-out rooms to design lessons from a self-selected theoretical perspective. There were two ways to win the game when the class reconvened to share their designs. Winners were either the design that was most often guessed correctly or most often guessed incorrectly. The design was an attempt to instill play into dry content and scaffold interaction such that it resulted in learning but did not feel laborious.	**Context of the Design** In my designing of an activity to bolster engagement in my synchronous graduate class in instructional design, I saw a connection with what the *Chopped* chefs experience and what instructional designers experience when solving complex problems and designing effective and efficient interventions. Using our online web conferencing, graduate students in my Advanced Instructional Design Techniques course experienced three rounds of 12-15 minutes of competitive designing. These graduate learners were charged with creating and presenting progressively more complex solutions to a specific instructional design problem. If learners were not playing, they were judging. Classmates served as expert judges, discussed, and select who gets chopped after each round.
Context of the Designer I think the origin of these design decisions came from years of foreign language teaching where games proved better elixirs to bring people to using target language structures in engaged talk than the speaking drills and discussion prompts found in textbooks. While other people have mentioned to me that this was a gamified instructional design, my intention was to design a scaffolded discussion experience about learning theories, not a game. Learning theories is rather dry content, and I was searching for an active way to work with the theories. I hoped to bring up pivotal aspects of each theory through natural discussion while also demonstrating how theories are difficult to recognize in the application, although nevertheless ever-present. The subject matter of the learners' planned intervention needed to be neutral; I eventually selected bicycle repair as the subject matter and thus the name of the design even though the design has really nothing to do with bicycles. That also comes from my personal experience, having never fixed a bike and with no real notions about how one would come to that knowledge in the first place. People who can fix bikes just seem to already know-how. In the local vernacular of the program, the activity acquired the name "Bicycle Repair Lesson" as learners referred back to the experience in subsequent discussions. Somehow the moniker Bicycle Repair proved more memorable than learning theories.	**Context of the Designer** I started *Chopped ID* because I was fascinated with the Food Network's show—*Chopped*. Each time I sit down for an episode, I watch from the perspective that each chef is a designer. Each chef knows how to design an appetizer, an entrée, and a dessert. No problem. But wait, can the chef prepare an appetizer in 20 minutes with four mystery ingredients that have nothing to do with one another? Then, can the chef survive a critique on taste, presentation, and creativity where one chef is chopped and eliminated from the competition should they not out-cook another? Chopped brings together what master designers thrive on – tolerating and working through uncertainty, having the confidence to conjecture and explore, interacting constructively with something (food), and relying on intuition (Cross, 2011). I love the ok-you-are-a-trained-chef-but-can-you-flat-out-cook approach. This is what I want my graduate students to experience. We have discussed Skinner. We have followed the Morrison, Ross, Kemp, and Kalman model. We agree that general systems theory, learning theory, and communications theory are the foundation of instructional design. But can you design? When on the clock and presented with a scenario, can you produce something? Can you provide your fellow students something to react to? The name of the intervention is drawn from the TV show. It carries with it the tension I hoped for learners to experience within the design.

TABLE 1. Parallel contexts of the two designs in the voice of each designer.

BICYCLE REPAIR (CRAIG)	*CHOPPED ID* (JOHN)
Crafted Scenario The design scenario was to design a lesson on *Bicycle Repair* from the theoretical position of a specific learning theory without using any buzzwords associated with that theory. Figure 1 shows the constraints I put on learners' designs and the subsequent descriptions of the designs. The designing was constrained by time, and the descriptions were constrained by forbidding keywords and names of authors of theories that we had read that would tip off an obvious position. In previous iterations of the activity, this slide was much leaner. With the development of the activity, the number of constraints grew to include presentation options that might scaffold the experience. These came about through my own reflection on learner descriptions that made the learning less accessible for others or detracted from the competition of the game. Figure 1 shows the expanded form after several iterations.	**Crafted Scenario** For each *Chopped ID* round, I presented these competitors (graduate students in IDT) a design scenario. Design scenarios changed with course content, but they were always focused on authentic contexts. Before *Chopped ID*, when our class would discuss designing strategies for facts, procedures, concepts, and rules, I would merely come up with a quick scenario: You are working with Habitat for Humanity. You are training volunteers on safety. How do you train them on—It's best to wear safety glasses when hammering? More times than not, a student would answer by relating a generative learning strategy. It is not what I wanted. I wanted design. I envisioned *Chopped ID* as a design environment.

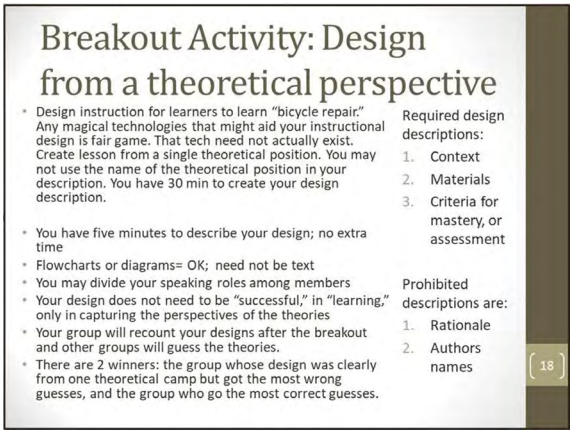
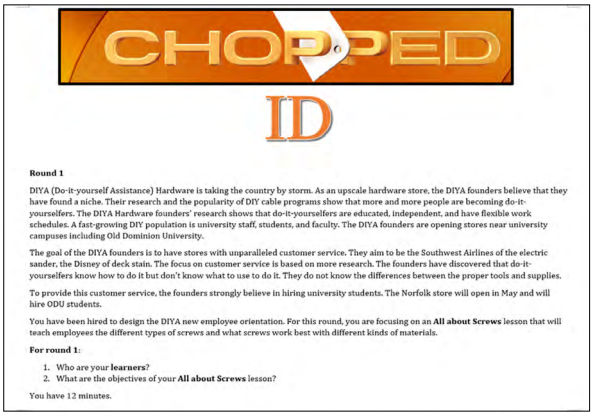

	

FIGURE 1. Introduction and directions to *Bicycle Repair* activity showing that the designing would take place in break-out rooms. Legible text is provided in the appendix. Prior to the class session, learners had been assigned to read a textbook chapter on learning theories that overviewed seven theories in relatively accessible language (see Driscoll 2018). Once in class, and after a brief introduction and review, the scenario I presented asked learners to create an instructional intervention plan from one of six theoretical positions, content area— bicycle repair. In the previous iterations of the activity, learners had selected their own subject areas, which resulted in little commonality among designs and a misconception that each subject area has a "correct" theoretical position.	**FIGURE 2.** Introduction slide to *Chopped ID* design competition showing the design scenario and constraints for break-out room development. Legible text is provided in the appendix. Competitors had no prior knowledge of the scenario content. Competitors only know that the scenario is tied to the week's content-presentation type. For example, in one week, competitors had to design strategies for facts. The Round 1 design scenario is written out in graphical form in the introduction slide (as seen in Figure 2) and was as follows: *DIYA (Do-it-yourself Assistance) Hardware is taking the country by storm. As an upscale hardware store, the DIYA founders believe that they have found a niche. Their research and the popularity of DIY cable programs show that more and more people are becoming do-it-yourselfers. The DIYA Hardware founders' research shows that do-it-yourselfers are educated, independent, and have flexible work schedules. A fast-growing DIY population is university staff, students, and faculty. The DIYA founders are opening stores near university campuses.*

TABLE 2. Juxtaposed components of the two designs described in the voice of each designer.

BICYCLE REPAIR (CRAIG)	*CHOPPED ID* (JOHN)
I needed a scenario that was equidistant from everyone's knowledge base and theoretically neutral in how it might be taught. Any academic area would inevitably play to someone's hand and defeat the purpose of the lesson because many of these graduate students were already versed in certain subject areas; a rapid prototype would emerge from their experience rather than from their reflection on how a learning theory might manifest in the design of instruction. I came upon bicycle repair after several iterations. For as much as we claim instructional design is content-agnostic, it's not. What one is teaching is always going to impact how one approaches it. I searched for generic content because this lesson was not about teaching the content; it was about how the content was taught. Learners had about 30 minutes to craft a description of their instructional design that did not use any of overtly identifying buzz words present in the definitions of each learning theory in the course text.	I explained, as is seen in the introduction slide Figure 2 that the goal of the DIYA founders is to have stores with unparalleled customer service. They aim to be the Southwest Airlines of the electric sander, the Disney of deck stain. The focus on customer service is based on more research. The founders have discovered that do-it-yourselfers know how to do it but don't know what to use to do it. They do not know the differences between the proper tools and supplies. To provide this customer service, the founders strongly believe in hiring university students. The Norfolk store will open in May and will hire students. You have been hired to design the DIYA new employee orientation. For this round, you are focusing on an *All about Screws* lesson that will teach employees the different types of screws and what screws work best with different kinds of materials. For Round 1, competitors had to produce a design representation that answered who are the learners and what are the objectives of the *All about Screws* lesson? Competitors had 12 minutes.
The Use of Break-Out Rooms Before learners were sent off into break-out rooms, I provided a brief overview of learning theories, especially to scaffold learners who perhaps had not read the course text or read it without giving attention to key parts of each theory. I found the quick review a valuable refresher of the six learning theories. I then paired up the learners and told them all that they are to design a lesson from the learning theory perspective of their choice. I instructed them to generate an instructional design to teach *Bicycle Repair* from a specific theoretical perspective and that a guessing game would follow. A team could win in two different ways, either by being the team that was most often guessed correctly or by being most often guessed incorrectly. Each team would describe and explain the features of their planned intervention for *Bicycle Repair* learning. Others would reflect on the theoretical positions which likely spawned the design. I then set the learners into virtual break-out rooms in pairs to create their design.	**The Use of Break-Out Rooms** Once the scenario is presented, competitors leave our class WebEx and enter the *Chopped ID* WebEx competitor break-out room where they design. Competitors cannot hear what is going on in the class WebEx room. After 12 minutes, the competitors are invited back into the class WebEx virtual space where each competitor shares and explains his/her design. Once all competitors present their designs, competitors return to the *Chopped ID* WebEx competitor break-out room where they wait for their fate. Once classmates decide who is chopped, I invite the competitors back to the class WebEx room, and I announce who is chopped. This process continues for Round 2 and Round 3, with one competitor chopped after each round.

TABLE 2 (CONT.). Juxtaposed components of the two designs described in the voice of each designer.

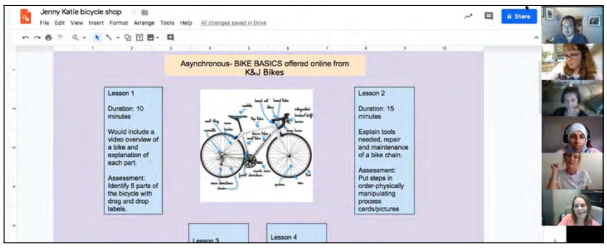
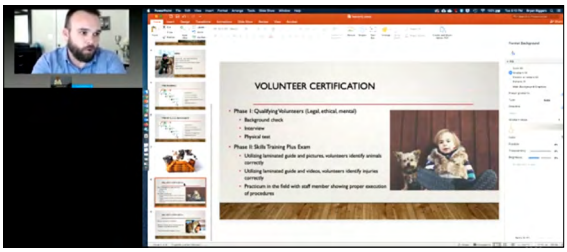
BICYCLE REPAIR (CRAIG)	*CHOPPED ID* (JOHN)
Learners in Different Roles Once learners reconvened into the shared conference space, the guessing game began. I acted as a kind of organizer or host, guiding the sequence of presentations. Learners could be in one of two roles during the activity: either a guesser, or a designer. Designers described the design they had just created to teach bicycle repair. Figure 3 provides a view of how learners described their prototypes to classmates, who, while listening, may have been trying to align the design components with a theory they had just learned. When it was their turn to describe their design, they explained how the design worked and the features of their design that linked the design to a learning theory. If a student was not presenting their design, they were guessing. Once a description was completed, each learner was allowed a guess. Teams were not required to make coordinated guesses, and individuals could ask the presenters probing questions. I reminded learners that keywords presented in the learning theory descriptions were forbidden, as buzzwords would too easily give away the theoretical source of one's design. Learners presented their guesses with the rationale behind their reasoning, and if designers did not include their reasoning, I prompted them to provide it. Learners were, in fact, careful not to use terms that would give away the answer too easily. As for my own role, I did record my own guess and rationale for each design, but for some reason, did not count my guess towards the tally. I only noticed this in reflection on the design and re-watching the video.  **FIGURE 3.** Learners presenting their rapid-prototyped designs while classmates ponder source learning theories that drove the instructional strategy. After guesses had been made, I recorded the guesses on a slide offscreen as each team went on to describe their design. Then we returned to my slide deck to tally guesses. Figure 5 shows how I tallied guesses. While 12 learners are actually participating in the activity, only six can be seen at any one time. The video conference toggles to show the current speaker at all times.	**Learners in Different Roles** If a student is not competing, then the student is judging. For each round, judges judge competitors' design representations on creativity, presentation, and solid instructional design based on the week's content-presentation type (e.g., designing instructional strategies for facts). While competitors design in a *Chopped ID* WebEx break-out room, judges discuss their expectations for the round. Once the competitors present their design representations and return to the *Chopped ID* competitor break-out room judges deliberate on who should be chopped. In the end, the majority rules. Once the instructor declares the chopped competitor, one judge explains why the competitor was chopped. When a competitor is chopped, he/she becomes a judge for the rest of the week's competition. As the *Chopped ID* host, I create the design scenarios and coordinate weekly game operations and aesthetics.  **FIGURE 4.** Learner presents a rapid-prototyped instructional design to classmates who will determine if this learner is eliminated or survives this competitive design challenge. When competitors come back to face the judges' decision, I use the class WebEx room overhead camera to show an actual chopping board where a 12" x 9" envelope lay containing the name of the chopped contestant. On the envelope, "Whose design is on the chopping block?' is printed. Figure 6 is what each competitor faces when he/she returns to the class WebEx room. Kapp (2012) explains that aesthetics plays an important role in the overall experience of games. When competitors return to the class WebEx room and see the fate-holding envelope placed on the chopping block, the competitors are caught up in the *Chopped ID* experience.  **FIGURE 6.** The ominous envelope containing the names of the chopped learners. Notice the cutting board adding motif to the aesthetic value of the activity.

TABLE 2 (CONT.). Juxtaposed components of the two designs described in the voice of each designer.

BICYCLE REPAIR (CRAIG)

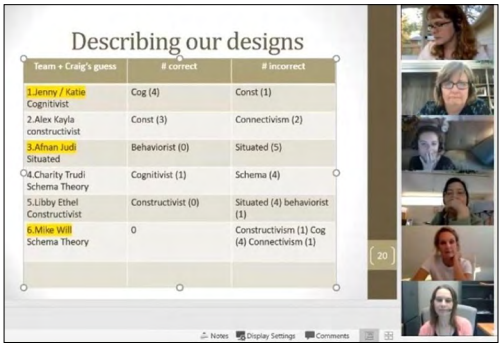


FIGURE 5. Classmates guessing the source learning theory. Highlights represent winners whose designs garnered either the most correct guesses, one winner, or incorrect guesses, two winners.

Once all the guesses had been tallied, I made the tally slide viewable and solicited the intended strategy of the designers and the rationales behind the guesses. Figure 5 shows the slide that tracked the guessing game, while Figure 7 shows a subsequent slide that facilitated a more analytical discussion. By soliciting the rationale behind the clues dropped and the clues overlooked (see Figure 7), I hoped for the learners to better grasp the nuances of the material. This strategy allowed me to structure discussion to explore the learning theories while holding learners' engagement through a kind of self-check that was low pressure and lighthearted. After having read John's case, I will be using a champion slide. It had never crossed my mind until I read the *Chopped ID* reflection. Instead, *Bicycle Repair* was focused on generating discussion, and I did not recognize the value in designing competitive aspects into the activity until I heard his other options.

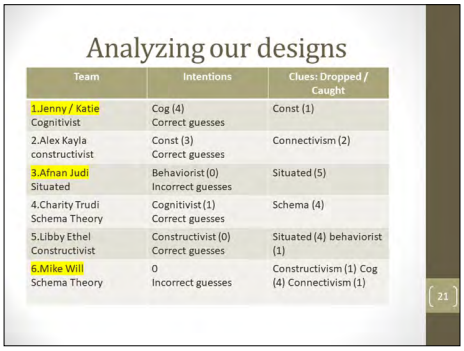


FIGURE 7. Scaffolding slide supports subsequent learner analysis by going through the intentional strategies and which clues were dropped and caught by the learners. Winning teams are highlighted in yellow.

CHOPPED ID (JOHN)

On the Food Network show, the winning chef goes home with $10,000. For Chopped ID, I present and then send the winning designer a $10 Starbucks gift card. Inside the envelope contains the name of the competitor chopped at the end of each round. Students not only compete for a $10 Starbucks gift card but also to have their name forever placed on the Chopped ID Slide of Fame (Figure 8).

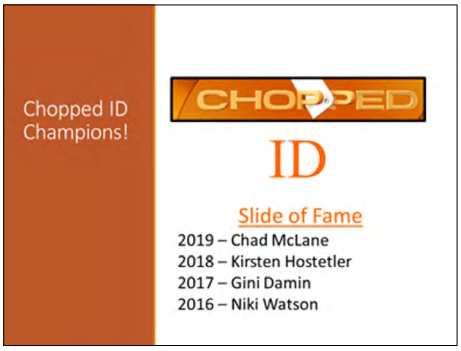


FIGURE 8. The champions slide adds a sense of belonging and identity to the participants.

TABLE 2 (CONT.). Juxtaposed components of the two designs described in the voice of each designer.

students' rationale and facilitated analytical discussion (Figures 5 and 7), while *Chopped ID* raised tension through the display of an actual chopping block (Figure 6) and a champion slide (Figure 8). Table 2 (previous pages) provides the details of the completed designs from the perspective of each designer.

THE DESIGN PROCESS

The process of each design was iterative, developing annually over multiple years. Each year both designers introduced relatively small changes, some having rather a significant impact on the final design. These small changes would prove to change the design of the activities dramatically. We have formulated an iteration table based on our own processes.

In Table 3, values are evident, though not obvious, in their manifestations. In the first iteration of each design, the lack of uncertainty is a design failure recognized by the designer. Only in retrospect and through our discussions did features align to values. Superficially, features may seem polar opposites. For example, a "magic tool" (*Bicycle Repair*) shared little in outward appearance with unpredictable design scenarios (*Chopped ID*) until we discovered similar rationales behind the design moves. It is from the shared value for learners embracing the uncertainty that these design moves emerged. While *Chopped ID* is envisioned here as a competitive game from the start, *Bicycle Repair* became a game only through iteration in an attempt to increase difficulty through the application of constraints, another value addressed in the discussion section. Many of the details in Table 3 are, in fact, constraints introduced to steer learning or control difficulty. Several details described in Table 3 are addressed following the table in the discussion section that explores common values between the two designers.

DISCUSSION: SIMILAR DESIGN VALUES INSPIRED DISSIMILAR FEATURES

What drew us to want to share this multi-case began with a discussion about how we share values—both in our teaching and in our practice of designing instruction. We want our students to embrace the act of design with certain values and attitudes, namely, valuing action in design, embracing uncertainty, manipulating constraints, quick access to feedback, and recognizing failures. We viewed ourselves as both practitioners in designing instruction, and design educators who share a perspective that values the real act of designing instruction, and within that, these five values in particular. We each endeavored to create learning experiences that manifest these shared values. However, in doing so, our designs emerged very differently in their materialization.

Through our discussions, we came to recognize these five areas as nurturing a kind of respect for the creative process. We reasoned that this respect is mirrored elsewhere and may be inherent in all professional performances. We recalled voices from other fields outside of instructional design. Regarding respecting the creative spaces of jazz musicians, the great trumpeter Wynton Marsalis concluded that it comes down to, "Can you play?" Ray Bradbury (1990) talks of being drunk on writing and stopping thinking so that you can write. For us, it came down to, "Can you design?" After sharing *Bicycle Repair* and *Chopped ID* with one another, although we found the unique features of the designs themselves interesting, what excited us and motivated us to share these cases was how the different design features emerged out of similar instructional values. Despite relatively similar instructional contexts and closely aligned values, the designed experiences took on very different auras and dynamics. The parallel investigation of the two designs reminded us that developing an appreciation for colleagues and our students' designs is both a state one wants to be in and a goal we have for our learners. We endeavor to respect each other's creativity as designers, and we want to come away from the experience of our students' instructional designs with that same appreciation, "Yeah, that cat can design!" The appreciation for alternative design moves, design moves that one could not have come to on their own, lies at the heart of curating and sharing design cases (Boling, 2010; Howard et al., 2012; Smith, 2010). These five areas illustrate appreciations for differences that became visible through this dual design case.

Valuing Action: Just, Design!

Both designers valued actual practice, but the features that emerged from this value took different shapes. The act of designing was foregrounded in both the competitions so that graduate students had the opportunity to show us what they could do. To accomplish this, one design employed the affordances of pressure, the other just the opposite— play.

These contrasting features emerged from a shared axiom, engage learners in the act of design whenever possible. In *Bicycle Repair*, the competition was meant to be rather light, a whimsical competition meant to facilitate serious learning and make that learning more accessible. Craig wanted learners to experience not taking their design decisions so seriously, but engage quickly and to a certain end. Craig's point in the gamification of the task was to engage the learners in creating, and creating quickly. While the discussion surrounding the subsequent guesses carried the true experience of analysis in recognizing applied theory, nothing can replace the act of designing. The game was not meant to bring in competition, but rather to facilitate discussion, and remove the typical performance pressure from the act of design. Craig reasoned that design specifications other than learning objectives, might release learners to play, and let go of notions of design as a lockstep process. Planned inauthenticity (Fanselow, 1987) was purposively designed into *Bicycle Repair* to reduce stress and allow learners to create and create quickly. Meanwhile, in *Chopped ID*, authenticity

	BICYCLE REPAIR (CRAIG)		*CHOPPED ID* (JOHN)	
#	DESIGN DECISION	FAILURES & SUBSEQUENT DECISIONS	DESIGN DECISION	FAILURES & SUBSEQUENT DECISIONS
1	Change from a matching activity to a learner-generated fill in the blank activity	The intervention failed to meet my aspiration of constant creation. I revised for more emphasis on small group ideation and a desire to create a broader range of possible interventions.	Change from a face-to-face competition used in 2012 to a WebEx competitionw	I piloted *Chopped ID* in a face-to-face undergraduate course in 2012. As a synchronous online program, I had to adapt the *Chopped ID* process to a virtual competitive environment.
2	Introduction of the magic tool	Designs were predictable and unimaginative. I wanted to see more exploration of possibilities. Offering learners the option of a "magic tool" opened up possibilities. Tele-porting, instructional holograms, three-dimensional learning objects— all could be part of the imagined instructional designs.	Change the *Chopped ID* scenarios	Knowing that graduate students talk to one another, I tweaked all scenarios to ensure no competitor could go into *Chopped ID* knowing the instructional design scenario.
	Introduction of the content area: elementary fractions	Math teachers in the class have strong opinions on effective and ineffective approaches to teaching fractions; this subject matter drew focus off the intended learning objective—to design from a theoretical perspective. After this experience I searched for a content area that would likely find no experts among the learners.	Adapt to the number of students in the course	*Chopped ID* is designed to have four students compete each week. There are three weeks of competition and then a championship week which pits the three weekly winners and one wildcard competitor against each other. If there are less or more than 12 students in the course, then adjustments are made each week to the number of students competing which then affects the number of competitors chopped after each round.
3	Introduction of the activity as a guessing game	Learners had previously gotten bogged down incorrect and incorrect theoretical sources of learning activities. "Half from one theory and a half from another" was not a satisfactory answer for learners who felt they needed to know in which category an activity falls into. The whole concept of learning theory was too vague to master via self-descriptions. I removed the task requirement of having learners explain their theory from which they designed by making it a guessing game where no partial guesses were possible.	Respond to student feedback for a practice round	In 2017, students provided feedback that a practice round is needed because students who compete in the first week are at a disadvantage not seeing how *Chopped ID* is played. I disagreed with students as each week is its own competition, but addressing the issue became part of the instruction. In the first week, each student is on equal footing of never seeing *Chopped ID* played. The winner of week 1 advances to the *Chopped ID* championship and the runner up is eligible for the wildcard spot.

TABLE 3. Iteration tables for the two designs that outline each design's process narrative.

	BICYCLE REPAIR (CRAIG)		*CHOPPED ID* (JOHN)	
#	DESIGN DECISION	FAILURES & SUBSEQUENT DECISIONS	DESIGN DECISION	FAILURES & SUBSEQUENT DECISIONS
3	Introduction of the content area juggling	I tried introducing the content area scenario as teaching juggling, because I had done this in the past. However, learners really had few ideas about how people actually learn to juggle because no one in the class could juggle. Without a subject matter expert, learners were at a loss about where to begin, and would revert to public video sharing sites such as YouTube to find guidance and got bogged down in the content and often failed to generate a reasonable design in 30 minutes.	Engage judges while competitors are designing	When competitors are taking 12-15 minutes to design, the judges have downtime. To fill the downtime, I engage the judges in a discussion about what they expect to see during the round. I asked, "What will they (judges) be focusing on when the competitors present?"
			Design a new instructional design scenario	Interestingly, the *Chopped ID* championship design scenario centered around training graduate students on how to use library databases. Realizing that one of the finalists was a head librarian at a community college system, I designed a new scenario so the student would not have an unfair advantage.
4	Introduction of dual strategy guessing	Scoring system had incentivized simple, easy-to-categorize designs. To combat this, I introduced an alternative winning strategy—another option to win the game. There would be a second winner: the design that garnered the most incorrect guesses. This feature forced more thought-provoking designs and more engaged guessing based on key features mentioned in the design descriptions.	Changed how much design time competitors had for each round.	There were 18 students in this course, which meant that instead of 4 competitors each week, 6 competitors competed each week. In previous *Chopped ID* seasons, competitors had 12 design minutes in round 1, 12 design minutes in round 2 and 15 design minutes in round 3. In order to move along a 6-competitor week, I reduced the minutes in round 1 and round 2 to 10 minutes and kept round 3 at 15 minutes.
	Expanded categories to include more learning theories	I felt that the previous design that offered only three learning theories to choose from did not elicit enough critical discourse on how features of designs may relate to the theoretical position from which the design might have emerged. I needed to show there were branches from the big three learning theories that dominate discussions of learning theories in ID coursework. I felt this adjustment increased the nuance of the resulting discussion about the designs and their theoretical origins.		

TABLE 3 (CONT.). Iteration tables for the two designs that outline each design's process narrative.

was magnified to increase tension, and again, bring learners to creating quickly. The core value behind both interventions was identical, have learners create instruction quickly and as often as possible.

Exploring how features emerged in *Chopped ID* also shows that the shared value placed on action in design in the context of a learning experience leads to antithetical design moves that served an identical purpose. In *Chopped ID*, the value placed on actual designing emerged in the creation of a more competitive learning intervention. Details in Tables 2 and 3 point to design decisions that emphasize action. *Chopped ID* has time limits, multiple scenarios, and even a reward. Nevertheless, although the competition is fierce, it is not the purpose of the activity. Pressure is a means to an end. Students reflect on what their peers have designed, which may or may not be the design approach that the judge would follow. Learners reported that this process was highly rewarding, the design choices expressed a more nuanced look at authenticity: Designs will be judged with consequences. Judges noted that it is tough being a judge where a classmate is going to get chopped at the end of each round. The tension and pressure align with the value placed on the rapid prototyping experience even though from the user perspective, this purposeful design decision may not be obvious. In *Chopped ID*, the competitive features of the design were meant to bring learners to the act of designing quickly, under pressure. Pressure was simply seen as a motivator instead of an inhibiter, as it was seen in *Bicycle Repair*.

In both interventions, the value of action can be seen by viewing what learners actually did, no matter how the socially constructed reality was construed. Figures 3 and 4, where the learners are presenting mockups of their designed instruction, are so similar they could be switched, and one might hardly see a difference. Presenting external representations is critical to the instructional design process (Baaki & Luo, 2019; Baaki, Tracey, & Hutchinson, 2017), and a clear component of the value of action in designing, and this value is evident in both design cases. This shared value expressed an underlying assumption that both held, namely, that the learner must provide something to react to in order to develop. Both interventions required that learners graphically explain what has been designed. Both *Bicycle Repair* and *Chopped ID* intended to resolve learners' over-analysis and get right to creation, even if the strategies were disparate.

Valuing Learners Embracing Uncertainty

Both designers valued uncertainty but approached it using different features of their designs. In *Chopped ID*, uncertainty was attained through the lack of exhaustive information. In the *Bicycle Repair* lesson, uncertainty revolved around the convoluted nature of the task. In *Bicycle Repair*, the students' designed prototypes were not meant to actually teach but rather to garner either correct or incorrect guesses. Classmates' guesses were inherently uncertain because learners could not predict which cues would be noticed and which would not. The very real notion that theoretical positions are rarely deterministic in their manifestations in designed instruction, even if always present, also contributed to the uncertainty of the task in *Bicycle Repair*. Since any multitude of scenarios might constitute a winning design, an effective game-winning strategy was far from visible at the onset. In *Chopped ID,* however, uncertainty was arranged by keeping the details to just a few and pitting learners against the clock. In contrasting the two cases, the shared value of incorporating uncertainty into design learning manifested differently.

Both designers viewed a fear of uncertainty as holding learners back from real growth. Real-world design has uncertainty as a permanent component of all design contexts (Lawson & Dorst, 2013). We felt that a challenge for teaching and learning instructional design is bringing learners to a place where they feel comfortable making design decisions in the face of uncertainty. In *Chopped ID*, students do not know each round's scenario ahead of time and do not know if they will be chopped once the design is created. That alone provides uncertainty, and doing so was a strategic design move. In John's courses, he had found uncertainty often froze students' performance. Students evolved to over-analyze as they learned in the program and eventually did not start designing until they felt that they had all the information. Each round was created to provide progressively more information to the competitor. In the final round, the competitor had all the needed information to complete a more informed instructional design. Thus, *Chopped ID* expressed uncertainty as an integral part of learning to design, minimized only through hard work and success.

Both interventions embraced uncertainty when tasking learners to stop analyzing and just design, even if the strategies for accomplishing this value appeared quite different from the outside. In *Bicycle Repair*, Craig wanted to dispel, from the onset, the notion that the designer can determine the real driver behind a design; the supposition that learning objectives drive designs, Craig felt, was rarely accurate. Experience designing instruction that meets some other goal is actually far more common (Fanselow 1987), and Craig felt this aspect of design learning was an essential component of graduate learning in instructional design. A feature of the *Bicycle Repair* design was that a prototype's value might be out of the designers' control. Instead of gradually decreasing uncertainty, uncertainty hinged on learners' confidence in each other. Learners who judged the resulting designed interventions may not have picked up on key features that these early designers felt made their designs representative of a theory. These features expressed a parallel notion to *Chopped ID's* value in uncertainly. Instead of uncertainly framed as decreasing through hard work, in *Bicycle Repair*, it

was framed as hinging on knowledge of one's audience and what values that audience is likely to bring to the table. In both *Chopped ID* and *Bicycle Repair*, a foundational value was graduate students facing the question, "Can I design?" in light of uncertainty and somehow coming out on the other side having done so.

Valuing Constraints

In our roles as design educators, we targeted instilling an appreciation for constraints in the design process, but the strategies we used to accomplish this contrasted dramatically. In our discussion of value placed on constraints, we approached teaching the value from opposing mindsets. Both designers came from a position that sees design constraints as friendly obstacles, presenting a challenge while at the same time functioning as a guide to the design. A design must do X, and must not do y, and must be done in Z amount of time with a given amount of content. In both interventions, the most obvious constraint was development time, but they differed in other important features related to constraints. Both cases mentioned constraints in the scenario used to frame the learners' design task. In *Bicycle Repair*, Craig attempted to remove all constraints to convey the message that constraints are valuable, while John leveraged constraints as scaffolds in *Chopped ID* to achieve the same appreciation.

The two scenarios presented opposite strategies in teaching the value of constraints. In the *Bicycle Repair* design scenario, the instructional strategy was to remove all constraints in hopes learners might recognize their value. This removal was intended to be accomplished via the "magical tool" option. In the scenario, learners could propose any magical tool they could think of, such as a hologram instructor, telepathic knowledge base, AI-supported robot peer students, or even intelligent shock treatment. Learners could envision the design serving any number of learners, having any price tag for development, and deployed in any way. In the small group discussions, learners quickly realized that imagining a magical tool could eat up a lot of design time, so almost all groups decided against it and simply imposed constraints on themselves. Discussing the constraints that they placed on themselves and why they had not employed magic tools became part of the discussion. Only one of the prototypes proposed in *Bicycle Repair* imagined a yet-to-be-realized tool. Compared to *Chopped ID*, the decision to attempt to remove constraints in order to teach their value appears as a circuitous strategy. *Chopped ID* approached teaching the value of constraints as a straightforward design scaffold.

The *Chopped ID* scenarios leveraged constraints as scaffolds by bringing learners to see constraints as guideposts for design moves. John envisioned, *if you provide me constraints, then I can guide the design of each round*. Each round was presented with a narrative and specific design questions (see the example in Table 1). John wanted *Chopped ID* competitors to design around specific constraints. Each round built on the previous round's narrative, elucidating the constraints throughout the learner experience. Providing them in larger numbers each round-framed constraints as supports in the design process. In each round in *Chopped ID*, the constraints and design questions were clear, and key, information in the learners' design process. Through this approach in *Chopped ID*, constraints scaffolded the design experience directly and were highlighted as an obvious point of the instruction. The design of the scenarios supported an appreciation for constraints, whereas in *Bicycle Repair*, an appreciation for constraints was sought through their absence.

Valuing Feedback

Both designs expressed value in getting feedback to learners quickly. In *Chopped ID*, that feedback was direct and came directly to learners through an opened envelope. In *Bicycle Repair*, the feedback was masked in the correct or incorrect guesses of their peers. In *Bicycle Repair*, the feedback appeared in the discussion of one's likely theoretical position, while the actual position was known only to the team that was being judged. Only the presenting students knew what aspects of their design their classmates had picked up on, and which they had missed. Thus, the interpretation of the clues they presented in their prototypes that were discussed among peers comprised the feedback these student designers received. Since the discussion did not revolve around assessments of design quality, only the presenters knew if they had done well or not. This made the peer feedback, and the instructor feedback, indirect. In *Bicycle Repair*, the instructor took part in the discussion, unaware of the learners' source theory, just like the learners making the guesses. In *Bicycle Repair*, the feedback was immediate but essentially private to individual teams.

In contrast, in *Chopped ID*, the feedback was direct and public to the group. Peer judges provided direct feedback to the competitors after a brief huddle. As soon as their designs were presented in each round, the competitors went to the *Chopped ID* break-out room, and the judges discussed whose design will be chopped. Mirroring the TV show, John asked one judge to explain to the chopped competitor why he/she had been chopped. The judging-student first explains what the judges liked about the design and then explains why the judges are chopping the competitor. Giving feedback is as important skill and is equally connected to the design process as getting feedback (Shute, 2008), so in this regard, the *Chopped ID* design may have generated more authentic feedback. In contrast, students in *Bicycle Repair* had to interpret the feedback they received from peers and the instructor.

In both cases, crafting the feedback was a source of enjoyment, even if experienced differently. In *Chopped ID*, the

learners expressed that they enjoyed collaborating with their fellow students to make the difficult decision on whose design is, or is not, on the chopping block. While in *Bicycle Repair*, the reveal moment when learners disclosed their source theories facilitated a number of a-ha moments where key design choices of their classmates could suddenly be recognized and appreciated. In both cases, there was very little lag time between designing and getting feedback about a design. The intentional limitations of time between the act of designing and the feedback on performance was a value of both design educators. Despite differences in how the value emerged in features of the intervention, both designers identified desiring expeditious feedback as a force behind their design decisions.

Valuing Failures as Part of the Design Process

For both designers, the recognition of unexpected obstacles and unintended consequences of design decisions were pivotal and important aspects of the learning intervention. Both instructional interventions contained features put in place to recognize and discuss design failures, but one design faced it head-on, while the other intentionally attempted to cushion the blow that facing failures might carry. These contrasting perspectives are evidenced even in the nomenclature of the roles, such as guessers in *Bicycle Repair* and judges in *Chopped ID*.

Chopped ID intended to heighten the tension for effect, while *Bicycle Repair* was intended to address failures surreptitiously. In *Bicycle Repair*, the discussions after the presentation of each design were in place to let each team recognize where their proposed design might have misled their peers in sourcing a theoretical position; meanwhile, discussion of design efficacy arose naturally through group dialog. This contrasts with the *Chopped ID* strategy that took on failures head-on. Competitors were judged on creativity, presentation, and solid instructional design work relevant to the given scenario. Although in the heat of the work, competitors may not have realized that they did not answer a design question or did not take into consideration an important element in the narrative, judges in *Chopped ID* picked up on unintended consequences of design decisions and provided competitors with the insightful and explanatory feedback. With the *Chopped ID* narratives, competitors were asked to design a portion of a larger training initiative. *Chopped ID* competitors often failed to manage scope creep and provided a design too large for the constraints and resources outlined in the narrative. This contrasts with the *Bicycle Repair* strategy that endeavored to create a play space.

In *Bicycle Repair*, features of the design were in place to enable the discussion of failures and unstick novice designers if these were found during the prototyping excursive. The design feature "magic tool" contributed to the creation of a play space where unforeseen obstacles to the design could be addressed. The learners who selected this feature provide an example of how it leaned to discussing a failure without consequences. Figure 9 shows a design in a discussion as the student explains the required materials in the prototype, including job aids, practice bikes, and "holographic blueprints for each bicycle part." The student explains that the 3-D

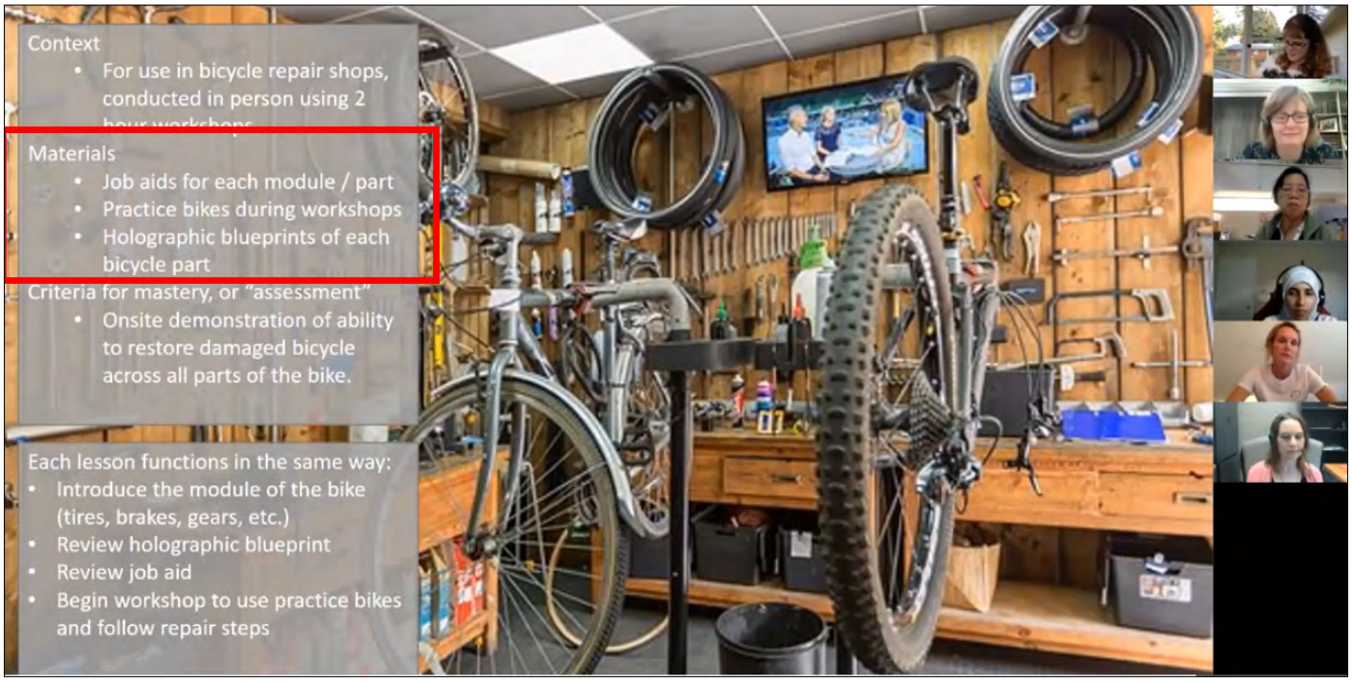


FIGURE 9. Learners present Bicycle repair instructional prototypes containing a magic tool highlighted in red. The tool provides recognition without consequences for failures inherent in a design. More legible text is reproduced in the appendix.

magical tool was necessary to complete the design given the obstacles they faced in the prototype.

Although *Bicycle Repair* may have cushioned the blow that facing failure may carry by bringing levity to the discussion, learners still faced failures in how their explanation and rationale fell on classmate's ears. If the other learners picked up miscommunications due to descriptions of the designs, only the presenting students were in a position to know. This did not change the fact that the efficacy of the designed product was still center stage. Unlike *Chopped ID* where tension made design failures more obvious and foregrounded, the ensemble of features in *Bicycle Repair* came together to reduce stress wherever possible; and in doing so, afford the recognition of failure without the social anguish of facing the fact that work fell short of others' performances. In *Bicycle Repair*, failure was couched in the contrived nature of the task, and in so, could be openly discussed without consequence.

In Chopped ID, at least some learners faced failure head-on in every round. For example, in round 1 of each *Chopped ID* week, competitors must recognize key characteristics of the learners, but some prototypes failed to recognize these in their solutions. Empathic design where students open themselves in a responsive way to the feelings and experiences of the learners was essential to advancing to the next round. Failure to embrace the learners is an inevitable trip to the chopping block in *Chopped ID*. Failures had consequences. Attention to failures as part of the design process was thus inherent in both *Chopped ID* and *Bicycle repair*, even if the dynamic of instructional interventions varied significantly.

CONCLUSION

In this dual design case, we presented the story of how each design case came to be as it was, and then mined each narrative for ways to appreciate the two cases in light of the other. Interwoven into this dual case is a notion that the relationships between design values and expressions of those values in designed products is far from deterministic. Exploring those types of universals is beyond the scope of a design case (Boling 2010), but juxtaposing cases in this way offered us new perspectives on our designs. The new ways of seeing designs that shared similar contexts and values, yet garnered opposing design decisions, add a way for us to appreciate each other's work to enrich our own. We purposefully discussed few similar design decisions and experiences even though there were many to choose from; for example, both designers amended the scenarios because of learner overperformance— increasing the difficulty of the task was essential for the success of both lessons. We chose not to discuss similar design decisions because we felt they did not lend utility to the discussion of the cases. While the utility is in the hands of the reader (Smith, 2010), we reasoned that the differences would prove to be a more valuable discussion.

This multi-case was meant to shed light on the differences between the two interventions, but the differences, nor similarities, that we were able to uncover were not exhaustive. For example, we did not talk about titles or how each design entered the culture of our respective programs via the design attitudes (Michlewski, 2015) they foster. *Chopped ID* acquired its name from the design feature that mimicked the show, while *Bicycle Repair* came from students' programmatic vernacular. Rather, the innovative aspects of our designs drove us to want to share these cases. *Chopped ID* offered stark authenticity through progressive removal of designers from a design competition, while *Bicycle Repair* offered an inauthentic design competition aimed at accomplishing a theoretical discussion. These aspects of our designs brought us to want to share the cases, but the insights revealed in the sharing were new to both of us and begged exploration. Contrasting values is something dual design cases might offer to this method of knowledge building in instructional design— a means to uncover and share precedent in the design of instruction otherwise unavailable in other methods of inquiry.

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APPENDIX

The text in Figures 1, 2, and 9, made legible.

Figure 1: Legible text from *Bicycle Repair*

Break-out Activity: Design from a theoretical perspective

Design instruction for learners to learn "*Bicycle Repair*." Any magical technologies that might aid your instructional design are fair game. That tech need not actually exist. Create lessons from a single theoretical position. You may not use the name of the theoretical position in your description. **You have 30 min to create your design description.**

You have five minutes to describe your design; no extra time.

Flowcharts or diagrams= OK; need not be text

You may divide your speaking roles among members

Your design does not need to be "successful," in "learning," only in capturing the perspectives of the theories

Your group will recount your designs after the break-out, and other groups will guess the theories.

There are 2 winners: the group whose design was clearly from one theoretical camp but got the most wrong guesses, and the group who go the most correct guesses.

Required design descriptions:

- Context
- Materials
- Criteria for mastery, or assessment

Prohibited descriptions are:

- Rationale
- Authors names

Figure 2 legible text from *Chopped ID*

Round 1

DIYA (Do-it-yourself Assistance) Hardware is taking the country by storm. As an upscale hardware store, the DIYA founders believe that they have found a niche. Their research and the popularity of DIY cable programs show that more and more people are becoming do-it-yourselfers. The DIYA Hardware founders' research shows that do-it-yourselfers are educated, independent, and have flexible work schedules. A fast-growing DIY population is university staff, students, and faculty. The DIYA founders are opening stores near university campuses, including Old Dominion University.

The goal of the DIYA founders is to have stores with unparalleled customer service. They aim to be the Southwest Airlines of the electric sander, the Disney of deck stain. The focus on customer service is based on more research. The founders have discovered that do-it-yourselfers know how to do it but don't know what to use to do it. They do not know the differences between the proper tools and supplies.

To provide this customer service, the founders strongly believe in hiring university students. The Norfolk store will open in May and will hire ODU students.

You have been hired to design the DIYA new employee orientation. For this round, you are focusing on an All about Screws lesson that will teach employees the different types of screws and what screws work best with different kinds of materials.

For round 1:

1. Who are your learners?
2. What are the objectives of your All about Screws lesson?

You have 12 minutes.

Figure 9: The magical tool legible text

Context

- For use in bicycle repair shops conducted in personal using 2 hours workshop

Materials

- Lob aids for each module/part
- Practice bikes during workshops
- Holographic blueprints of each bicycle part

Criteria for mastery, or "assessment."

- Onsite demonstration of the ability to restore damaged bicycle across all parts of the bike

Each lesson functions in the same way:

- Introduce the module of the bike (tires, brakes, bears, etc.)
- Review holographic blueprint
- Review job aid
- Begin workshop to use practice bikes and follow repair step