

Chopped ID: Students Engaged in Gamification to Enhance Advanced Instructional Design Techniques

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The Food Network's television show Chopped pits chefs against each other, in a three-round battle, to create their best appetizer, entrée, and dessert. Facing master chef judges, the chef participants present their dishes with one chef chopped (eliminated) after each round. The last chef standing is crowned the Chopped Champion. A faculty member in an instructional design and technology program, created Chopped ID, an innovative adaptation and gamification of the Food Network's Chopped for application in a distance learning environment. Participating as competitors and judges, graduate students, firsthand, experienced gamification as an advanced instructional design technique. In the end, Chopped ID helped graduate students improve their instructional design skills.

The Food Network's television show Chopped pits chefs against each other, in a three-round battle, to create their best appetizer, entrée, and dessert. Chefs face demanding constraints like a time clock, a mystery basket of ingredients, and a call to create a dish using the mystery ingredients that is delicious, creative, and one that meets a presentation expected from a well-respected restaurant. Facing a trio of master chef judges, the chef participants present their dishes with one chef chopped (eliminated) after each round. The last chef standing is crowned the Chopped Champion.

As a faculty member in an instructional design and technology (IDT) program, the instructor (first author) is a big fan of Chopped and was intrigued about how the show highlights key elements of gamification and the characteristics of design. Like designers, chef participants need to tolerate and deal with uncertainty, show confidence to conjecture, interact with a physical item, and rely on intuition and reflection-in-action (Cross, 2011). The instructor 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 online web conferencing, the instructor created Chopped ID, an innovative adaptation and gamification of the Food Network's Chopped for application in a distance learning environment. Graduate students in an Advanced Instructional Design Techniques course had three rounds of 12-15 minutes to create and present their progressively complex solutions to a specific instructional design case. Other online graduate students served as expert judges and discussed and selected who would be chopped after each round. We share Chopped ID by presenting the literature that grounded Chopped ID, a description of the Chopped ID setting, the Chopped ID process, and the participants' perceptions of how Chopped ID helped them become better instructional designers.

Background

Enthusiastically explicit in our belief that instructional designers are designers first who design instruction and embracing this belief through gamification, we were interested in the alignment between what instructional designers are expected to do and the aspects of designing and the essential features of design ability. We found a foundation for this alignment in Tessmer and Wedman's (1990) layers-of-necessity model. Kapp's (2012) work in game-based strategies for training and education provided a gamification framework for Chopped ID.

A Way of Thinking about Instructional Design

As a practitioner's model, from simplified to highly complex instructional design (ID) approaches, the layers-of-necessity accounts for a breadth of designer expertise and practice. Designer constraints like time, duration, money, personnel, stress, difficulty, content and project familiarity, and material resources are essential to the layers-of-necessity (Tessmer & Wedman, 1990). Each layer is self-contained and matches what is necessary for the project. For an ID situation with severe constraints (limited budget and tight timeline), only one layer may be possible. For situations where more time and resources are available, a designer then may use more sophisticated layers.

Tessmer and Wedman viewed the layers-of-necessity as a new perspective on ID which provided insight into how instructional designers think about design, which is no easy task. Even though people have been designing since the beginning of time, the way in which people design has been poorly understood for a rather long time (Cross, 2011). To illustrate that the layers-of-necessity is a way of

thinking about instructional design and that instructional designers exhibit the essential features of design ability, we discuss how the layer-of-necessity characteristics of task enhancement, principle-based design, and opportunistic perspective were embedded in Chopped ID. To connect to the essential features of design ability, Cross summed up what designers say about design:

There is a need to tolerate and work with uncertainty, to have the confidence to conjecture and to explore, to interact constructively with sketches and models, and to rely upon one's "intuitive" powers of reflection in action. (p. 26)

Task enhancement. In the layers-of-necessity approach, ensuing layers enhance the previous completed design work. This was crucial to success in Chopped ID. Rather than iterations where earlier instructional design components are revised, in each round, Chopped ID participants added onto the design work that was done in the previous round. Designers discover the layers of their project (Cross, 2011). In each Chopped ID round, Chopped ID participants engaged with a design representation (e.g. PowerPoint) that was another layer following on from the previous rounds' design representation.

Principle-based design. In a layered approach to thinking about instructional design, principles, not procedures, govern design and development activities (Tessmer & Wedman, 1990). A principle-based perspective asserts that instructional design is based on layer-selection principles and layer-implementation principles. Layer-selection principles determine which instructional design activities are feasible given the design constraints while layer-implementation principles guide how the various design and development activities are implemented.

Chopped ID participants designed in uncertainty. Participants had no clue about each round's ID scenario. Cross (2011) described uncertainty as the joy and frustration that designers get from their design activity. Designers cope with uncertainty by providing order. In studying urban designers, Levin (1966) witnessed designers leaping to partial solutions before they had fully formulated the problem. To formulate partial solutions, designers provided information or the "missing ingredient," (Levin, 1966, p. 8). Levin called the missing ingredient an "ordering principle" which is the formal properties that are evident in a designer's work (p. 8). Chopped ID participants relied on sound ID principles to design strategies for facts, processes, concepts, and rules.

Opportunistic perspective. Ambiguity and constraints are necessary to the design process. Ambiguity allows all

those involved in the design process the freedom to move about independently among the design objects (Cross, 2011). Constraints allow for reflection and taking stock in what designers have done and what designers still can do. Tessmer and Wedman explained that instructional design is opportunistic. In a layered approach, design components may be deleted or minimized. Taking an opportunistic perspective, instructional designers identify how to work with constraints. When designers know the constraints they then can design.

No designer will settle for good enough when they can have the best. However, this is not how a problem usually comes about in actual design situations. "In the real world we usually do not have a choice between satisfactory and optimal solutions, for we only rarely have a method of finding the optimum," (Simon, 1969, p. 64). Simon introduced the term satisficing to describe such situations. Tessmer and Wedman defended that a layers-of-necessity approach is consistent with Simon's satisficing. Instructional designers oftentimes must select actions, "which get the job done while not necessarily in an optimal manner," (Tessmer & Wedman, 1990, p. 79). Chopped ID competitors designed under strict time and scenario constraints. Competitors' designs had to satisfy the necessities of the presented ID situation.

Gamification

Gaming is a prevalent phenomenon occurring worldwide. Currently, more than 1.2 billion people are playing computer, mobile, and console-based videogames around the globe, among whom approximately 700 million play online; this is equal to 44% of the world's total online population (Spil Games, 2013). The Pew Research center reported that 49% of adults in the U.S have played video games with 10% of them believing that they themselves are gamers (Duggan, 2015). Games have become one of the most prominent new media, which has multiple implications for learning due to their prevalence and popularity. Incorporating gaming mechanics and thinking into educational practices to improve and augment learning appeals to many educational researchers and practitioners.

Gamification is a process of incorporating gaming mechanics and elements into a non-gaming context (Deterding et al., 2011; Kapp, 2012; Zichermann & Cunningham, 2011). A video game typically possesses all of those commonplace gaming mechanics including narratives, quests, levels, points, virtual goods, and leaderboards, used in isolation or in various combinations. Behind the scenes of these gaming mechanics, there exists various fundamental gaming elements and principles that are contained within them which make games engaging, exciting, motivational, and even irresistible. Gamification, therefore, is a way of

applying those gaming elements and principles in a non-game setting.

Kapp (2012) identified eleven elements in his book to illustrate how those elements can be applied in an instructional environment and create a gamified learning experience, including setting goals, creating rules, involving conflict and competition or cooperation, considering time, establishing reward structures, providing feedback, creating levels, and storytelling. Similarly, Nicholson (2015) synthesized six key elements of gamification as recipes for meaningful gamification, namely, play, exposition, choice, information, engagement, and reflection. In a systematic mapping study, Dicheva et al. (2015) found that the most commonly discussed educational gamification design principles from empirical studies are: storytelling, competition and cooperation/social engagement loops, feedback, challenges and quests, and customization.

The use of gamification can be applied in various disciplines and used to teach knowledge in different cognitive domains. Research evidenced that the game-based teaching approach outperformed the conventional teaching approach in varying facets across a plethora of contexts. Early studies have shown that students produced substantial knowledge gains via a gaming approach as opposed to case-based teaching methods in the field of business (Wolfe, 1997). In a meta-analysis study, participants using interactive simulations or games demonstrated an increase of cognitive development compared to conventional methods (Vogel et al., 2006). The game-based approach holds considerable potential in teaching conceptual knowledge (Squire et al., 2004; Ravenscroft & Matheson, 2002), procedural knowledge (Padgett et al., 2006; Sitzmann, 2011), problem-solving (Akcaoglu, 2014; Baytak & Land, 2011; Monreno, 2004), and appears to aid higher-order learning more than declarative or factual knowledge (Ke, 2009).

In an affective learning domain, participants reported a higher level of confidence when they participated in a job-related, game-based training program versus training via traditional methods (Sitzmann, 2011). Other studies suggested that self-efficacy, attitudes toward learning, and motivation are enhanced in game-based learning environments (Thomas & Cahill, 1997; Tuzun, 2007; Van Eck, 2006). While a myriad of evidence from prior literature supports the potential effectiveness of game-based learning, researchers believe that theoretical and empirical studies are still in need to understand nuances in gaming design and development across different contexts (Hays, 2005; Sanchez et al., 2010).

Findings of current literature have also suggested a natural parallel between instructional design and game design. As Becker (2008) stated, games as a medium are highly suitable for the implementation of various

instructional design models and principles, yet the models may be deemed as an underlying thread embedded throughout the ongoing progression of the game. For example, gaming researchers have found that one of the classical instructional design models, Gagne's (1985) Nine Events of Instruction, is often covertly exemplified in almost all elements of game design (Becker, 2008; Copp et al., 2013; Gunter et al., 2006). Gunter et al. (2006) contended that seven of nine events, such as providing learner guidance, eliciting performance, and promoting feedback, precisely align with design principles and elements of a game of any kind.

In this study, we contend that gamification as an overarching instructional strategy echoes varying principles of good instructional design and is a suitable strategy to utilize in an online course focusing on instructional design. Although Nicholson (2015) suggests that not every element of his framework needs to be part of a gamification system for it to be successful, the more elements it contains, the more likely the system would offer different ways of engaging students. Our goal for Chopped ID was to employ game-like thinking and game mechanics, using them to create a gamified learning experience aiming to engage, motivate, and assist instructional design graduate students.

Purpose

Our purpose is twofold. First, we share how the instructor organized Chopped ID and how students engaged in Chopped ID as competitors and judges. Second, we present students' perceptions of how Chopped ID helped them become better instructional designers.

Evaluation Process

A graduate level course, the purpose of Advanced Instructional Techniques is to explore and apply techniques, tools, and competencies characteristic of expert designers. Students investigate instructional strategies, program design, advanced analysis techniques, rapid prototyping, reducing cycling time, and designing instruction for diverse learner populations. As a distance learning course, local students may attend the class face-to-face while distance students may attend the class via WebEx. The synchronous classroom is set up so distance students, local students, and the instructor may interact in real time. For this particular Advanced Instructional Techniques course of 13 students, two students attended the class face-to-face and 11 students attended via WebEx. Six students were working towards a master's degree while seven students were on a PhD journey.

With the intent to gain a full view of participants'

perspectives, we interviewed six students who had varying success as competitors. We interviewed one student who was eliminated after the first round, one student who was eliminated after the second round, one student who lost in her week's final round, one student who lost in her week's final round and was chosen as a wildcard for the Chopped ID Championship, the Chopped ID Championship runner-up, and the Chopped ID Champion. Three students were following a master's track while three students were on a PhD journey. Table 1 provides pseudonyms of the competitors that we interviewed.

Table 1

Competitors Who Were Interviewed and How They Finished in Chopped ID

Competitor	How Competitor Finished
Clare	Chopped in Round 1 of competing week
Drew	Chopped in Round 2 of competing week
Holly	Chopped in Round 3 of competing week
Lynn	Chopped in Round 3 of competing week, earned wild card spot in Chopped ID Championship
Paula	Runner-up in Chopped ID Championship
Gail	Chopped ID Champion

In interviews via phone or Skype which lasted approximately 20-30 minutes, each author interviewed three students asking the following four guiding evaluation questions:

- what was your perception of gaming as an instructional design technique prior to you participating in Chopped ID,
- what was your perception on gaming as an instructional design technique after you participated in Chopped ID,
- how did your perceptions change as you competed, judged, and observed your fellow students compete, and;
- how did participating in Chopped ID make you a better instructional designer

During each interview we took notes and then transcribed our notes within 24 hours after the interview. Applying member-checking techniques, we sent our transcriptions to the students and asked each student to review his/her transcription to ensure that we captured all responses accurately. All six students reviewed his/her interview transcription and provided clarification and additional responses where appropriate. First, separately, the two authors analyzed interview responses that we conducted and captured themes that emerged from the evaluation questions. Second, we then met and discussed the

differences and similarities of our themes. Third, we then analyzed the interview responses of each other's interviews and then met again to finalize the themes for each question. We discuss the themes below.

Chopped ID Process

In weeks 6 through 10 of the semester, class topics included designing instructional strategies for four content-performance types: (a) facts, (b) procedures, (c) concepts, and (d) rules (Morrison et al., 2007). Beyond understanding the strategies, the instructor wanted students to experience designing instruction using strategies for content-performance types. Each week of Chopped ID focused on one of the content-performance types. Each student competed at least once as a Chopped ID competitor. Week 10 was the Chopped ID championship where the winners of each week plus one wild card competitor competed to be named the Chopped ID champ. The instructor chose the wild card competitor based on the best performance by competitors who made it to the third round of their respective week but were ultimately chopped.

The Competitors

For each round, the instructor presented competitors a design scenario. Competitors had no prior knowledge of the scenario content. Competitors only knew that the scenario was tied to the week's content-presentation type. In week 7, competitors had to design strategies for facts. The Round 1 design scenario 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.

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 do not 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. At this point, the competitors left WebEx and entered the Chopped ID WebEx room where they designed. Competitors could not hear what was going on in the class WebEx room. After 12 minutes, the competitors were invited back into the class WebEx room where each competitor shared and explained his/her design. Once all competitors presented their designs, competitors returned to the Chopped ID WebEx room where they waited for their fate. The instructor invited the competitors back to the class WebEx room and the instructor announced who was chopped. This process continued for Round 2 and Round 3 with one competitor chopped after each round.

The Judges

If a student was not competing, then the student was a judge. For each round, judges judged 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 designed in the Chopped ID WebEx room, judges discussed their expectations for the round. Once the competitors had presented their design representations and returned to the Chopped ID WebEx room, judges deliberated on who should be chopped. In the end, majority ruled. Once the instructor declared the chopped competitor, one judge explained why the competitor was chopped. When a competitor was chopped, he/she became a judge for the rest of the week's competition.

The Instructor (Host)

As the Chopped ID host, the instructor created the design

scenarios and coordinated weekly game operations and aesthetics. Table 2 shows the similarities between the Food Network's Chopped and Chopped ID as it relates to critical game elements. When competitors came back to face the judges' decision, the instructor used 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?" was printed. On the Food Network show, the winning chef goes home with \$10,000. For Chopped ID, the instructor presented and then sent the winning designer a \$10 Starbucks gift card.

The judges did all the chopping. When judges were deadlocked on who to chop, the instructor required the judges to make a decision as a competition rule was a competitor had to be chopped after each round. The only influence that the instructor had on Chopped ID results was choosing the wild card contestant.

Table 2

The Similarities of Food Network's Chopped and Chopped ID as it Relates to Critical Game Elements

Games have	Food Network's Chopped	Chopped ID
Goals and Rules	3 rounds, must use basket ingredients, someone is chopped after each round	3 rounds, must design to provided scenario, someone is chopped after each round
Conflict, competition, or cooperation	Compete: Start with 4 chefs and end with 1 chef	Compete: Start with 3-4 instructional designers and end with 1 designer
Time	Each round is 20 or 30 minutes	Each round is 12 or 15 minutes
Reward structures and feedback	Present your dish to the judges, advance to the next round, win \$10,000	Present your design to the judges, advance to the next round, win \$10 Starbucks card
Levels	3 levels: Appetizer, entrée, and dessert	3 levels: Each scenario builds on the previous scenario
Storytelling	Themed competitions: Chopped Jr., Chopped BBQ, Chopped Thanksgiving	Scenarios tied together as 1 instructional design story
Aesthetics	Kitchen, pantry, the chopping block	Scenario template, chopping block, suspense envelope, slide of fame

Replay or do over	Redemption show where those chopped in the final round come back to compete	Wildcard to get into finals for one designer who was previously chopped in a final round
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Scaffolding	Focused on an instructional design theme, each round's scenario built on the previous scenario
Episodic memory	Designers pulled from experience, intuition, and instructional design knowledge
Cognitive apprenticeship	Scenarios were authentic and provided learning opportunities in a way that textbook examples and declarative knowledge cannot
Social learning theory	Designers were competitors and judges, multiple contexts to interact
Flow	Balanced the instructional design challenge with designers' skills and abilities; not too easy where designers became bored and not too difficult where designers have anxiety

Reflections and Implications

In planning Chopped ID, the instructor had two main goals. First, the instructor wanted the students to experience gamification as an advanced instructional design technique. Gamification experience was important, as it is one thing to learn and understand about gamification it is another thing to experience it firsthand. Second, the instructor wanted students to improve their instructional design skills. In the end, the purpose of the class was to make students better instructional designers. We reflect on these two goals and share the implications.

Experiencing Gamification

In the week prior to the first Chopped ID competition, the instructor and students discussed Kapp's (2012) work in game-based strategies for training and education. In addition to the game elements (Table 2), the instructor and students reflected on the theories behind gamification. Students were intrigued to see that theories that they had read, discussed, and applied in other instructional design classes were relevant to gamification. The instructor challenged himself to ensure that some of these theories would surface in Chopped ID. Table 3 presents the connection of Chopped ID and key theories behind gamification.

Table 3

The Connection of Chopped ID and the Key Theories Behind Gamification

Theories behind Gamification	Chopped ID
Motivation (Keller's ARCS Model)	Grabbed designers' and judges' attention, showed relevancy to real instructional design situations, instilled confidence in that designers produced good designs, and resulted in satisfaction for the Chopped ID champion
Self-determination	Designers were in control of their designs, experienced competence in designs, and related to design competitors

In our interviews with six competitors, they explained how difficult it was competing in Chopped ID. Five of the six competitors noted that they felt intense pressure that, in some cases, led to stress. Lynn explained, "It was stressful. You wanted to save face and you wanted to come off good in front of your classmates." She added, "You see it on TV, but you don't see the intensity." Although competitors did not enjoy the time pressure to design instructional strategies, all six competitors clearly understood that time constraints were an important part of Chopped ID.

Reflecting on the Chopped ID experience, although all six competitors we interviewed had varying levels of success, four competitors shared how to succeed in Chopped ID. Competitors stressed focusing on learning objectives and closely tying the learning objectives to the week's content-performance type. Gail, the Chopped ID Champion, advised:

A few tips for future contestants: focus on learning objectives, tie everything back in the instruction to learning objectives, be focused in the design, be prepared - do the weekly reading and have a good grasp of the material (content-performance type) which will help you focus on each type of instruction and be able to create what is expected.

Competitors provided recommendations which are always important to improving instructional techniques especially gamification. Two recommendations were to provide a practice round for competitors who compete in the first week and specific guidelines for the judges. Clare noted, "The game might not be fair to early contestants as they didn't have much chance to observe

before participating as a contestant." Each week of Chopped ID was its own competition. Although the competitors in the first week of Chopped ID had nothing to reference expect for the Food Network's Chopped and the instructor's directions of how Chopped ID would proceed, all four competitors in the first week of Chopped ID were in the same situation. The winner of the first week advanced to the championship week and had the opportunity to participate as a judge in two Chopped ID weeks leading up to the championship week. Chopped ID took place over four WebEx sessions. Adding another week for a run through or practice round would have taken away from other planned topics in the 15-week course.

In Chopped, the chef judges are asked to judge competitors on taste, presentation, and creativity. In Chopped ID, the instructor directed judges to judge competitors on creativity, presentation, and solid instructional design as it relates to the week's content-performance type theme. Holly shared, "It may have been more beneficial if judges could agree on what they were looking for in regard to designing for rules, facts, and principles." Lynn suggested a rubric approach. The instructor made a calculated decision to leave judging open. Knowing that judges would have down time as competitors designed for 12-15 minutes, the instructor filled this time by facilitating a discussion with the judges on what they would look for in the upcoming round. Overall, this worked well as judges were engaged in reviewing the round's design case and presenting what they thought would be important to view in the designs. Although, in some rounds, judges enthusiastically debated for a length of time regarding who would be chopped, the instructor always agreed with judges' decision.

Become a Better Instructional Designer

The instructor embraced Tessmer's and Wedman's view that instructional design is opportunistic and satisficing. Taking an opportunistic perspective, instructional designers identify how to work with constraints. Satisficing means that instructional designers work with constraints and get the job done. Chopped ID competitors faced strict time and scenario content constraints. Holly noted, "Time constraints did not affect me." She explained that she drew on her corporate background when she often responded with a, "You need it now, no time to reflect" design approach. Holly stated that she saw the design scenarios open enough to allow for different design approaches. She continued that she had to take pieces from different round scenarios and had to be flexible with what the learners wanted to accomplish. Drew saw the constraint of what was going to happen in the next round as a key element of Chopped ID. He clarified, "You are working in one round and thinking

what will happen next." Lynn described how, in the WebEx chat, students would chat about their concerns that, when they would compete, they would not be able to come up with a design in the 12-15 minutes. Lynn concluded, "I didn't worry about it. To me, this (competing round by round) is real life."

In designing Chopped ID, the instructor wanted to ensure that all students were involved in the competition. Each week, a student was either a judge or a competitor. Even though we recognized that as a judge, a student had an opportunity to learn, we were surprised how beneficial it was to be a judge. All six competitors that we interviewed either stated that serving as a judge was just as engaging as competing or serving as a judge was more engaging than competing. Clare summarized, "I was engaged more as a judge than actually playing the game, watching everything transpire." She added, "Being a judge gave me the opportunities to see how theory, strategies, techniques lined up in the designs of contestants." The competitors that we interviewed liked working with other judges. Working with other judges helped competitors understand the design better and gave competitors an opportunity to be open to other judge's views.

In the end, Chopped ID was an intense learning environment where students who we interviewed felt that they became better instructional designers. For Clare, Chopped ID enhanced her understanding of gaming and honed her instructional design skills to design and implement her own game. She reflected on Chopped ID, "The experience was transformative. I saw all the gaming elements played out in the game, rewards, engagement, consequences, storyline, and motivation where you keep someone guessing."

Gail and Paula took away that Chopped ID forced them to focus on content-performance types. Gail's, the Chopped ID champ, remarks aligned with three layers of necessity characteristics described above - task enhancement, principle-based design, and opportunistic perspective. She reflected, "ID can be very simple. Even with limited resources, you can still design quality instruction if you can stick to focused instructional techniques and your learning objectives. Understand the key and essence of ID."

Holly and Lynn enjoyed that Chopped ID took place over multiple weeks. Viewing four different design scenarios, over a total of 12 rounds, by 13 different instructional designers provided Holly and Lynn and opportunity to see alternative ways to approach the design scenarios. Holly stated, "It showed different ways to apply constraints and see how others apply constraints." Drew put it this way, "I got to see 12 other people approach things differently. Looking at how people would do this (compete in Chopped ID), I got to see 12 case studies."

Conclusion

Chopped ID showcased alignment between the characteristics of instructional design and key elements of gamification through students designing and developing instructional strategies. Our Chopped ID experience exemplified the design process of a gamified instructional approach and documented students' reactions towards it. While reflecting on the entirety of the Chopped ID process along with various roles in the instructor and students' experience as a competitor, judge, and host, we conclude that students were highly engaged and motivated in the learning experience. While experiencing the authentic challenges and constraints that an instructional designer may encounter as students progressed through Chopped ID, students were able to hone their instructional design skills as they felt that they were better prepared to become competent instructional designers.

Chopped ID is a first step experimenting with the gamification approach in our graduate courses in IDT. Our goals were met as a qualitative exploratory study in that students perceived this experience favorably while vocalizing various ways in which this experience helped them become better instructional designers. While we offer insights into our gamification design process and student reactions, we did not address how and in what ways precisely the gamification approach helped students as novice instructional designers learn and improve their instructional design skills. Though it was implied in our design approach, we did not ask students to reflect on the gaming elements grounded in the design and to what extent the Chopped ID experience felt like a game to them. We would like to see this approach being carried out further in our next step. Moving forward we would like to continue our research by closely examining any student learning gains such as motivation, engagement, knowledge, and performance, as a result of this gamification approach. We are also interested in replicating the experience in alternative instructional design courses or contexts to explore effectiveness of gamification in any design-related learning contexts as we strongly believe that the gamification approach holds tremendous potential in educating and training instructional designers.

References

Akcaoglu, M. (2014). Learning problem-solving through making games at the game design and learning summer program. *Educational Technology Research and Development*, 62(5), 583-600.

Baytak, A., & Land, S. M. (2011). An investigation of the artifacts and process of constructing computer games

about environmental science in a fifth grade classroom. *Educational Technology Research and Development*, 59(6), 765-782.

Becker, K (2008). *The invention of good games: Understanding learning design in commercial video games* (Publication No. 230701461) [Doctoral dissertation, University of Calgary. ProQuest Dissertations and Theses Global.

Copp, S. E., Fischer, R. L., Luo, T., Moore, D. R. & Differs, S. (2014). Analyzing commercial video game instruction through the lens of instructional design. *Journal of Applied Instructional Design*, 4(1), 79-90.

Cross, N. (2011). *Design thinking*. New York: Berg.

Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011, September). From game design elements to gamefulness: Defining "gamification". In A. Lugmayr (Ed.), *Proceedings of the 15th international academic MindTrek conference: Envisioning future media environments* (pp. 9-15). ACM.

Dicheva, D., Dichev, C., Agre, G., & Angelova, G. (2015). Gamification in education: A systematic mapping study. *Journal of Educational Technology & Society*, 18(3), 75-88.

Duggan, M (2015). *Gaming and gamers*. Retrieved from http://www.pewinternet.org/files/2015/12/PI_2015-12-15_gaming-and-gamers_FINAL.pdf

Gagné, R. M. (1985). *Conditions of learning* (4th ed.). New York: Holt, Rinehart, and Winston.

Gunter, G., Kenny, R. F. & Vick, E. H. (2006). A case for a formal design paradigm for serious games. *The Journal of the International Digital Media and Arts Association*, 3(1), 93-105.

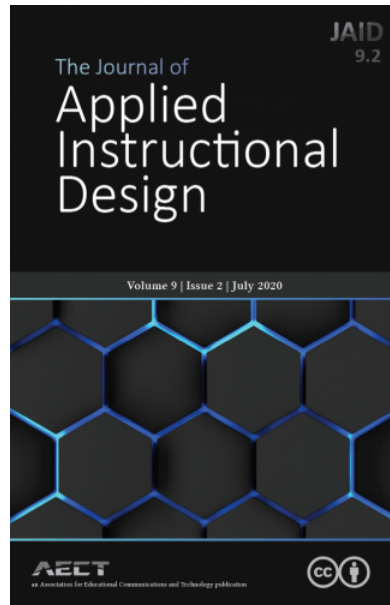
Hays, R. (2005). *The effectiveness of instructional games: A literature review and discussion*. (Report No. 2005-004). Orlando, FL: Naval Air Warfare Center, Training Systems Division. <https://edtechbooks.org/hfM>

Kapp, K. M. (2012). *The gamification of learning and instruction: Game-based methods and strategies for training and education*. San Francisco, CA: John Wiley.

Ke, F. (2009). A qualitative meta-analysis of computer games as learning tools. In R. E. Ferdig, (Ed.), *Handbook of research on effective electronic gaming in education* (Vol. 1, pp. 1-32). Hershey, PA: Information Science Reference.

Levin, P. H. (1966). *Decision making in urban design*. Text of a talk given to a meeting of the Design Research Society on April 27, 1966 at Imperial College, London.

- Morrison, G. R., Ross, S. M., & Kemp, J. E. (2007). *Designing effective instruction* (5th ed.). Hoboken, NJ: John Wiley & Sons, Inc.
- Moreno, R. (2004). Decreasing cognitive load for novice students: Effects of explanatory versus corrective feedback in discovery-based multimedia. *Instructional Science*, *32*, 99-113.
<https://doi.org/10.1023/B:TRUC.0000021811.66966.1d>
- Nicholson, S. (2015). A RECIPE for meaningful gamification. In T. Reiners & L. A. Wood (Eds.), *Gamification in education and business* (pp. 1-20). New York, NY: Springer.
- Padgett, L.S., Strickland, D., & Coles, C.D. (2006). Case study: Using a virtual reality computer game to teach fire safety skills to children diagnosed with fetal alcohol syndrome. *Journal of Pediatric Psychology*, *31*(1), 65-70.
- Ravenscroft, A., & Matheson, M.P. (2002). Developing and evaluating dialogue games for collaborative e-learning. *Journal of Computer Assisted Learning*, *18*(1), 93-101.
- Sanchez, A., Cannon-Bowers, J. A., & Bowers, C. (2010). Establishing a Science of Game Based Learning. In J. Cannon-Bowers, & C. Bowers (Eds.), *Serious game design and development: Technologies for training and learning* (pp. 290-304). Hershey, PA: IGI Global.
- Simon, H. A. (1969). *The sciences of the artificial*. Cambridge, MA: The M.I.T. Press.
- Sitzmann, T. (2011). A meta-analytic examination of the instructional effectiveness of computer-based simulation games. *Personnel Psychology*, *64*(2), 489-528.
- Spil Games (2013). State of the industry report. Retrieved from <https://edtechbooks.org/Idoa>
- Squire, K., Barnett, M., Grant, J.M., & Higginbotham, T. (2004). Electromagnetism supercharged! Learning physics with digital simulation games. *Proceedings of the 6th International Conference on Learning Sciences* (pp. 513-520). Santa Monica, CA: International Society of the Learning Sciences.
- Tessmer, M. & Wedman, J. F. (1990). A layers-of-necessity instructional design model. *Educational Technology Research and Development*, *38*(2), 77-85.
- Thomas, R., Cahill, J., & Santilli, L. (1997). Using an interactive computer game to increase skill and self-efficacy regarding safer sex negotiation: Field test results. *Health Education & Behavior*, *24*(1), 71-86.
- Tuzun, H. (2007). Blending video games with learning: Issues and challenges with classroom implementations in the Turkish context. *British Journal of Educational Technology*, *38*(3), 465-477.
- Van Eck, R. (2006). The effect of contextual pedagogical advisement and competition on middle school students' attitude toward mathematics and mathematics instruction using a computer-based simulation game. *Journal of Computers in Mathematics & Science Teaching*, *25*(2), 165-195.
- Vogel, J. J., Vogel, D. S., Cannon-Bowers, J., Bowers, C. A., Muse, K., & Wright, M. (2006). Computer gaming and interactive simulations for learning: A meta-analysis. *Journal of Educational Computing Research*, *34*(3), 229-243.
- Wolfe, J. (1997). The effectiveness of business games in strategic management course work. *Simulation & Gaming*, *28*(4), 360-376.
- Zichermann, G., & Cunningham, C. (2011). *Gamification by design: Implementing game mechanics in web and mobile apps*. Sebastopol, CA: O'Reilly Media.



Baaki, J. & Luo, T. (2020). Chopped ID: Students Engaged in Gamification to Enhance Advanced Instructional Design Techniques. *The Journal of Applied Instructional Design*, 9(2). Retrieved from https://edtechbooks.org/jaid_9_2/chopped_id_students



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