Design Considerations for Bridging the Gap Between Instructional Design Pedagogy and Practice

Jill Stefaniak, Rebecca M. Reese, & Jason K. McDonald

Research indicates there is a gap between employers' expectations of instructional designers' roles and responsibilities, and what designers actually do. The purpose of this paper is to explore the unique nuances inherent in instructional design practices from a variety of work settings. Our paper is grounded in a practitioner's perspective utilizing long-standing careers in the instructional design sectors and informal discussions with many practitioners. The goal of the paper is to highlight constraints and contextual considerations that instructional designers must address while working on projects. We also discuss how instructional design educators can support instructional design students to better prepare them for real-world instructional design contexts.

Introduction

Individuals with advanced degrees in instructional design and technology are employed in a variety of industries ranging from higher education, healthcare, government, K-12, and for-profit corporations (Klein & Kelly, 2018, Pershing et al., 2006; Sugar et al., 2012). Within these varying work environments, they assume roles that require them to facilitate learning (Tracey & Boling, 2014); however, each instructional design role is accompanied by unique contextual factors that designers must address while working on projects.

Research has shown that there is a gap between employers' expectations of instructional designers' roles and responsibilities and what designers actually do

on-the-job (Klein & Kelly, 2018; Sugar & Moore, 2015; Villachica et al, 2010). There is a logical need, then, for instructional design programs in higher education to develop a better understanding of the practices performed by instructional designers in the field and align these practices with their curricula. Not only will this help programs address workforce development needs as they relate to instructional design, it will also position academic programs to prepare their learners for the expectations of the workplace. In turn, learners will be better able to articulate instructional design principles in practice, communicate with project constituents, and educate employers on the skills and competencies possessed by thoroughly prepared instructional designers.

A key skill for new Instructional Designers (IDs) is the ability to embrace project constraints, working among changing project expectations, and interacting with multiple stakeholders on a variety of projects. Academic instructional design programs can provide new Designers with a solid foundation in fundamental instructional design concepts as well as work towards cultivating their learners' interpersonal skills (Visscher-Voerman, 2017).

It is important for academia to take inventory of how they facilitate authentic learning experiences for their learners to ensure that novice or newly trained Instructional Designers (IDs) are confident to adapt to different situations and factors that may impact the results of their projects (Bannan-Ritland, 2001; Quinn, 1994, 1995). As educators provide these situated real-world experiences, learners are able to develop abilities as IDs and create artifacts showcasing their skills making them more competitive and viable in the workforce.

This paper explores the unique nuances inherent in instructional design practices from a variety of work settings and is grounded in a practitioner perspective utilizing long careers in instructional design and informal discussions with many practitioners. The goal is to highlight constraints and contextual considerations that IDs must address in their designs while working on projects in sometimes very different cultures or contexts. We also briefly discuss how instructional design educators can facilitate real-world learning opportunities through case-based learning to instill confidence in instructional design students as they prepare to work in diverse situations.

Context 1: Instructional Design in Higher Education Institutions

Is the practitioner role in higher education for you? Before making There are a few

things you should consider before making this choice. First, the world of a non-faculty or non-teaching Instructional Designer (ID) is quite different from that of an instructor/faculty member. Second, no amount of coding classes will help you secure a job offer if that is not a job requirement. Every organization has different expectations for how an Instructional Designer (ID) will engage with course development. The key is to identify your strengths and grow those, then find the job that best fits your particular skill set. The many hats that IDs wear during course development often includes project manager, multimedia editor, graphic designer, and subject-matter experts (SMEs) whisperer. Of these, you will spend a great deal of time fostering relationships with your subject-matter experts (SMEs) or Faculty member. You become their eLearning trainer, technology support and online resource connection (e.g., introducing them to a Librarian to identify open education resources).

IDs must plan for continuous improvement and professional development to keep up with the rapid changes in trends and research. For example, the addition of educational technology and users demands for more innovative methods for engaging with learners. With a large number of eLearning software options to enhance an online course, it is important to have strong design skills, creativity, and knowledge of learning theories. An IDs efforts to keep on top of learning research ensures courses are applying eLearning tools in the most effective way. To stay on point professionally, connect with professional organizations, follow instructional design forums, grow your digital identity through social networks, and subscribe to journal resources.

One of the toughest challenges faced by instructional design practitioners in higher education is obtaining ‘buy-in’ from faculty (Mansbach & Austin, 2018). Faculty often have little experience working with IDs, and might find it hard to accept suggestions for changes to teaching strategies or struggle with technology. For example, it is easy to fall into a routine and to lose that critical eye for how your course operates, and the IDs presence is not to supersede the faculty, rather provide an alternative perspective. IDs working with faculty provide suggestions for improving alignment of activities to learning outcomes, and creating meaningful digital experiences for learners. IDs want to communicate their goals for the course, they must be sure to intentionally listen to the faculty to help facilitate their thoughts and intentions into the course. One way to ease tensions around an ID working in a course is to provide clear definitions of roles and contributions during development. A successful ID is willing to negotiate the workload, assigned tasks, and responsibilities based on the skills of the faculty (Ritzhaupt & Kumar, 2015).

Context 2: Utilizing Instructional Design to Support Performance Improvement Initiatives in Healthcare

Oftentimes, IDs working in healthcare settings are required to be sensitive to constraints associated with time and access to SMEs. There is increased pressure to design viable and sustainable solutions as they often have a direct impact on patient safety. Frequently trainees in healthcare-related fields learn and perform under a significantly higher levels of cognitive load. This is due to the amount of subject matter content that must to be covered in a condensed amount of time. IDs working with program directors and instructors in healthcare-related programs; must correctly identify and employ instructional strategies to mitigate the effects of cognitive load on the learner. They must also account for the need for healthcare professionals to make decisions promptly and work in highly stressful situations.

Historically, healthcare professionals have been taught how to perform a variety of medical procedures through the “see one, do one, teach one” approach (Beck, 2004). Of course, prescribing this type of training philosophy can pose several problems for the learner and trainer. IDs will often come across instructors and program directors who use to these types of learning strategies because they were trained in a similar manner. IDs, therefore, should be comfortable with questioning their SME and communicating the need to implementing different instructional strategies that yield improved learning and performance outcomes. This can be challenging and push IDs outside of their comfort zone (Visscher-Voerman, 2017). Failure to have these difficult conversations often leads to issues with the delivery of instruction and the inability of the learners to transfer knowledge to a working context.

Healthcare professionals regularly find themselves working within teams to deliver patient care. While the expectation is that individuals from varying disciplines will work together, these disciplines train separately. While research in medical education is promoting more interprofessional educational training opportunities earlier in programs (Reeves et al., 2013; West et al., 2016), the ID can provide a pivotal role when designing instruction that poses implications across the healthcare system.

Within contexts involving multiple learners and disciplines, it is beneficial for the ID to utilize a systems view of the organization (Stefaniak, 2020). Design decisions

must account for the systemic implications of proposed solutions. The ID must demonstrate an understanding of the inputs and outputs pertinent to the authentic environment they are designing within. Failure to do so will result in design solutions that will fall short of their intended goals or are unsustainable.

Context 3: Promoting Instructional Design Practices Among Startup Companies

In many ways, working in startup environments magnifies many of the challenges that instructional designers experience working in other types of organization. For instance, although it often is not the case that being first to market provides a competitive advantage (Suarez & Lanzolla, 2007), the leadership of many startups assume this is true and so push their employees as hard as they can so they can be the first to offer a product in their given sector. Additionally, many startups work with limited funding, which may not provide IDs with the resources (e.g., financial, technological, etc.). IDs are increasingly used as inputs for creating high-quality educational materials. There may only be one ID in a company or perhaps they are a member of a very small team, yet they are often expected to produce large quantities of material in a short time. This means IDs working for startups find themselves experiencing even more pressure to bypass the phases of analysis or evaluative, unlike in a larger organizations. They may even find themselves pressured to release "beta" or "alpha" versions of their materials so as to not forego windows of opportunity for learners within the company or their customer base.

As a consequence, IDs in startups must find ways to creatively use their resources in order to be successful. While working with fewer resources, IDs must still produce results. Sometimes this could mean the first evaluation of instruction occurs in initial situations, having built in designs mechanisms to quickly update even foundational, structural elements of instruction responding to the results the initial group of participants (see Gibbons, 2013). Perhaps to do this IDs will rely on simpler technologies that allow them to update components without the involvement of other team members. Being successful could also mean finding creative ways to help learners achieve the desired learning outcomes. For example, enlisting other employees within the company as ad-hoc trainers to help others master skills in which they may have some pre-existing expertise.

To help make these concepts more concrete, we describe the case of a recent graduate (we'll call them 'Nia') from one of our instructional design programs. Nia accepted a position as the Director of Training in a local startup. Their experience

at this position illustrated many of the factors described above. For example, Nia was expected to not only develop training curriculum for new employees but also to travel throughout the United States and internationally to facilitate the training as the organization opened new facilities. Often Nia's timeline, from receiving an assignment to traveling on-site for training, was measured in weeks. Nia was expected to guarantee that every employee in the new facility was fully prepared for the business to open and welcome customers immediately after training. Nia is the first contact for employees at all levels after returning from a trip, to provide remediation or otherwise reinforce the learning outcomes on which employees were trained. In addition, Nia has also assumed responsibility for being a leader within the organization to advocate for good learning and training practices. This is not a small responsibility—preparing, discussing, following-up, creating materials that take advantage of opportunities that present themselves—all take additional time that is worthwhile in ultimately improving the culture of learning in the organization. This creates additional work that she must balance with the duties for which she is officially held accountable.

This balance of responsibility that Nia engages in is one of the most meaningful goals instructional design programs can adapt to help their graduates become successful in start-up environments. Other jobs in this context will almost certainly be more self-paced and self-directed than are found in other organizations. While this provides a sense of freedom that many IDs appreciate, it also comes with roles and responsibilities needed in the organization. IDs who cannot manage their own workload, or effectively pace activities within projects, or who do not clearly and precisely negotiate their stakeholders' priorities in a project, are likely to find themselves misaligned with the organizational culture in which they find themselves. Instructional design programs that provide support for students in developing these skills will be more successful in helping their students excel in startup environments.

Aligning Pedagogy with Practice

Recent discussions in the field of instructional design are focusing on how educators are preparing the future generation of instructional designers to be adaptable to real-world design (Boling, 2017; Stefaniak et al., in press). As a contribution to this conversation, and consistent with the diverse environments described above, this paper proposes two-tiered approach to align pedagogy with practice in preparing future generation of IDs to work in varied organizational cultures: 1) instructional design students should engage in more hands-on learning experiences; and instructional design scholarship should better support the need of helping students transition from academics to practice.

A hands-on instructional design learning experience

In addition to the foundational and theoretical concepts that every ID must understand, instructional design students should be presented with multiple opportunities to gain hands-on design experience in authentic and situated environments. It is important that they recognize how contextual factors can impact design solutions (Arias & Clark, 2004; Parrish, 2009; Perkins, 2003, Tessmer & Richey, 1997). This can be achieved through case-based instruction, situated design, and learning from design failures (Tawfik et al., 2015).

Use of Case-based Instruction

Case-based instruction provides opportunities for instructors to present a range of unique instructional situations for students to review and identify design solutions for a particular learning space. Incorporating realistic examples in the classroom can help instructional design educators observe how students are applying conceptual knowledge presented in a course. Case-based instruction provides a platform for students to use their analysis skills to provide the rationale for their design decisions (Tawfik, 2017; Tawfik & Jonassen, 2013). Through the use of case-based instruction, students are more apt to establish mental models related to problem-solving as they pull from their experience and domain-specific knowledge (Ifenthaler, 2010; Mayo, 2004).

It is important for IDs to not only be able to design for all types of situations, but also be able to converse about it with stakeholders (Visscher-Voerman, 2017). The practice of discourse helps ID students become more comfortable with communicating various themes of ID as well as serves as an indicator as to the extent of their awareness for the nuances of design. Instructional scaffolding can be used through guided debriefings to elicit students' rationale for proposed solutions to case scenarios (Cho & Jonassen, 2002).

Situated design outside of the classroom

In addition to case-based instruction, instructional design educators should look for facilitate learning experiences that encourage students to design within authentic learning environments. These types of experiences provide students with opportunities to apply their knowledge of instructional design to authentic projects, in real-time (Correia et al., 2010; Maddrell, 2015; Stefaniak, 2015; Tracey et al., 2008). Designing for authentic learning experiences puts the ID in the position of designing solutions to address contextual and environmental factors that may not be covered in detail while learning the fundamentals of instructional design. The most effective experiential assignments expose students

to many of the demands highlight in this article, plus inter- and intra-team communications, negotiating with supervisors or other organizational stakeholders, as well as providing leadership to a team, in both formal and informal ways.

A benefit of these kinds of experiences is that as while students engage in domain-specific knowledge, they have the opportunity to see how it directly translates to the field, while their instructor(s) provide the necessary scaffolding to aid students in bridging theory and practice. An implication of this is that instructors of instructional design are, in fact, capable of providing such mentoring. It will be important for instructional design educators to take advantage of professional development opportunities themselves via consulting or contract work for the development of instructional materials in an organizational setting. We anticipate that this should include more than maintaining their current skills. Rather, instructors should seek opportunities to improve their context-specific skills or interpersonal skills in order to be effective mentors. For example, educators who have deep experience in design methodologies might intentionally seek out opportunities to provide project management leadership, thus giving them an experiential base to coach future students who struggle when placed in similar situations.

Learning from design failures

Cross (2011) contends that good designers must be comfortable exploring. While he was speaking to design in general, this certainly lends itself to the discussion of educational practices for instructional designers. Instructional design educators need to work towards breaking the stigma that failure is bad. Instructional design students should be encouraged to embrace failure. Students learn to employ different instructional strategies and approaches through trial and error. This practice helps students gain perspective into how different contextual factors may affect design solutions (Tessmer & Richey, 1997). It is through iterations of design that students will hone their craft as designers.

Learning from failed attempts can help IDs "better understand the complexity of the problem" (Tawfik & Jonassen, 2013, p. 388). Failed design assists learners in constructing a mental model related to the problem they are attempting to solve (Rong & Choi, 2019). It can be argued that these failed attempts help the ID embrace the iterative nature of design and understand the intricate relationship between design strategies, context factors, and situated environments.

Instructional design scholarship that supports transitions from academics to practice

To date, instructional design scholarship can be categorized in three ways: 1) the application of instructional design practices to solve problems; 2) the exploration of educational technologies to facilitate learning, and 3) the role of the instructional designer. While many studies focus on the applications and utility of instructional design, few studies are directed towards the pedagogical practices for training purposes (Bannan-Ritland, 2001; Boling, 2017; Ertmer & Cennamo, 1993; Ertmer & Koehler, 2015; Lowell & Ashby, 2018; Rich et al., 2015). Additional research is needed to identify and refine the necessary instructional strategies that support the professional development of instructional design students in order to continue to espouse the skills needed to for instructional design practices in solving problems from a variety of contexts (Stefaniak et al., 2018).

Instructional design educators should look to research studies (Boling et al., 2017; Klein & Kelly, 2018; Lachheb & Boling, 2018; Roytek, 2010; Williams et al., 2011) reporting on the trends in the field, or trends in related fields, and integrate that information to leverage their instructional practices in the learning space. Instructional activities should be tailored to address the challenges facing IDs in the field. For example, using studio-based pedagogical methods found in other fields to act as a bridge for supporting students as they move beyond their academic identities and into the identities of professional practice (Brandt et al., 2013; Gray, 2014). We encourage further study of this approach in instructional design, along with the study of other methods that promise similar results.

Conclusion

In this paper, we have presented a need for greater alignment between the pedagogical practices of instructional design programs, and the practical realities of instructional design work in the field. We have described three very different contexts in which IDs may find themselves working (higher education, healthcare, and startup organizations), and highlighting some of the contextual factors within these environments that are vital for success but that are typically not addressed by instructional design programs. We have suggested two ways that instructional design programs can support the transition from academic learning to practice: by providing more hands-on instructional design learning experiences, and by more instructional design scholarship that studies this transition experience.

As a final point, we note that our exploration of this topic is intended to demonstrate the importance of such a line of inquiry. We call on instructional design researchers, educators, practitioners, and students to engage in this type of research together and to tell each other their stories. Creating instructional design programs that successfully address the challenges we raise will require a united effort by all of these groups--in addition to close collaboration with their organizational stakeholders--to ensure that changes to programs meet the needs in ways that are both rigorous and meaningful. The time to start is now. The challenges facing IDs in practice promises to grow more complex as time goes on. However we believe the effort it takes will be worthwhile in the pursuit of more effective and relevant learning for those that our instructional design students will help in future.

References

Armstrong, A. M. (Ed.). (2004). *Instructional design in the real world: A view from the trenches*. IGI Global.

Arias, S., & Clark, K. A. (2004). Instructional technologies in developing countries: A contextual analysis approach. *TechTrends*, *48*(4), 52-55.

Bannan-Ritland, B. (2001). Teaching instructional design: An action learning approach. *Performance Improvement Quarterly, 14*(2), 37-52.

Beck, A. H. (2004). The Flexner report and the standardization of American medical education. *Jama*, *291*(17), 2139-2140.

Becker, S.A., Cummins, M., Davis, A., Freeman, A., Glesinger Hall, C. & Ananthanarayanan, V. (2017). *NMC Horizon Report: 2017 higher education edition* (pp. 1-60). The New Medium Consortium.

Boling, E. (2017). Teaching the complex performance of instructional design: Why we cannot use the (existing) tools of instructional design. In A.A. Carr-Chellman & G. Rowland (Eds.), *Issues in technology, learning, and instructional design: Classic and contemporary dialogues* (pp. 81-83). Routledge.

Boling, E., Alangari, H., Hajdu, I. M., Guo, M., Gyabak, K., Khlaif, Z., Kizilbogam, R., Tomita, K., Alsaif, M., Lachheb, A., Bae, H., Ergulec, F., Zhu, M., Basdogan, M., Buggs, C., Sari, A., & Techawitthayachinda, R. (2017). Core judgments of instructional designers in practice. *Performance Improvement*

Quarterly, *30*(3), 199-219.

Brandt, C. B., Cennamo, K., Douglas, S., Vernon, M., McGrath, M., & Reimer, Y. (2013). A theoretical framework for the studio as a learning environment. *International Journal of Technology and Design Education*, *23*, 329–348.

Cho, K. L., & Jonassen, D. H. (2002). The effects of argumentation scaffolds on argumentation and problem solving. *Educational Technology Research and Development*, *50*(3), 5.

Correia, A., Yusop, F.D., Wilson, J.R., & Schwier, R.A. (2010, April). *A comparative case study of approaches to authentic learning in instructional design at two universities.* Paper presented at the Annual Meeting of the American Educational Research Association, Denver, CO.

Ertmer, P.A., & Cennamo, K.S. (1993). Teaching instructional design: An apprenticeship model. *Performance Improvement Quarterly, 8*(4), 43-58.

Ertmer, P. A., & Koehler, A. A. (2015). Facilitated versus non-facilitated online case discussions: Comparing differences in problem space coverage. *Journal of Computing in Higher Education*, *27*(2), 69-93.

Gibbons, A. S. (2013). *An architectural approach to instructional design*. Routledge.

Gray, C. M. (2014). *Living in two worlds: A critical ethnography of academic and proto-professional interactions in a human-computer interaction design studio*. (Doctoral dissertation, Indiana University).

Gudmundsdottir, S. (1991, April). *The narrative nature of pedagogical content knowledge.* Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, IL.

Ifenthaler, D. (2010). Relational, structural, and semantic analysis of graphical representations and concept maps. *Educational Technology Research and Development, 58*(1), 81–97.

Jonassen, D. H., & Hernandez-Serrano, J. (2002). Case-based reasoning and instructional design: Using stories to support problem solving. *Educational Technology Research and Development*, *50*(2), 65-77.

Jonassen, D. H., Tessmer, M., & Hannum, W. H. (1998). *Task analysis methods for instructional design*. Routledge.

Klein, J. D., & Kelly, W. Q. (2018). Competencies for instructional designers: A View from employers. *Performance Improvement Quarterly*, *31*(3), 225-247.

Kolodner, J. L., & Guzdial, M. (2000). Theory and practice of case-based learning aids. *Theoretical foundations of learning environments*, 215-242.

Lachheb, A., & Boling, E. (2018). Design tools in practice: instructional designers report which tools they use and why. *Journal of Computing in Higher Education*, *30*(1), 34-54.

Lowell, V. L., & Ashby, I. V. (2018). Supporting the development of collaboration and feedback skills in instructional designers. *Journal of Computing in Higher Education*, *30*(1), 72-92.

Maddrell, J. (2015). Designing authentic educational experiences through virtual service learning. In B. Hokanson, G. Clinton, and M.W. Tracey (Eds.), *The design of learning experiences* (pp. 215-229). Springer.

Mayo, J. A. (2004). Using case-based instruction to bridge the gap between theory and practice in psychology of adjustment. *Journal of Constructivist Psychology, 17*(2), 137-146.

Mansbach, J., & Austin, A. (2018). Nuanced Perspectives about Online Teaching: Mid-Career and Senior Faculty Voices Reflecting on Academic Work in the Digital Age. *Innovative Higher Education*, *43*(4), 257–272. https://doi.org/10.1007/s10755-018-9424-4

Parrish, P. E. (2009). Aesthetic principles for instructional design. *Educational Technology Research and Development*, *57,* 511-528.

Perkins, R. A. (2003). *The role of context in instructional design: A case study examining the re-purposing of Web-based master's degree courses for use in Malawi* (Doctoral dissertation, Virginia Tech).

Pershing, J. A., Ryan, C. D., Harlin, N. M., & Hammond, T. D. (2006). 2006 AECT Membership Salary Survey. *TechTrends*, *50*(5), 10-19.

Quinn, J. (1994). Connecting education and practice in an instructional design graduate program. *Educational Technology Research and Development*, *42*(3), 71-82.

Quinn, J. (1995). The education of instructional designers: Reflections on the Tripppaper. *Performance Improvement Quarterly*, *8*(3), 111-117.

Reeves, S., Perrier, L., Goldman, J., Freeth, D., & Zwarenstein, M. (2013). Interprofessional education: effects on professional practice and healthcare outcomes. *Cochrane Database of systematic reviews*, (3).

Rich, P. J., West, R. E., & Warr, M. (2015). Innovating how we teach collaborative design through studio-based pedagogy. In *Educational media and technology yearbook* (pp. 147-163). Springer, Cham.

Richey, R.C., Klein, J.D., & Tracey, M.W. (2011). *The instructional design knowledge base: Theory, research, and practice.* Routledge.

Ritzhaupt, A. D., & Kumar, S. (2015). Knowledge and skills needed by instructional designers in higher education. *Performance Improvement Quarterly*, *28*(3), 51-69.

Rong, H., & Choi, I. (2019). Integrating failure in case-based learning: a conceptual framework for failure classification and its instructional implications. *Educational Technology Research and Development*, *67*(3), 617-637.

Roytek, M. A. (2010). Enhancing instructional design efficiency: Methodologies employed by instructional designers. *British Journal of Educational Technology*, *41*(2), 170-180.

Schank, R. C. (1995). *Tell me a story: Narrative and intelligence*. Northwestern University Press.

Sinnott, J. D. (1989). *A model for the solution of ill-structured problems: Implications for everyday and abstract problem solving*. Praeger Publishers.

Stefaniak, J. E. (2015). The implementation of service-learning in graduate instructional design coursework. *Journal of Computing in Higher Education*, *27*(1), 2-9.

Stefaniak, J. (2020). The utility of design thinking to promote systemic instructional design practices in the workplace. *TechTrends*, *64*(2), 202-210.

Stefaniak, J., Baaki, J., Hoard, B., & Stapleton, L. (2018). The influence of perceived constraints during needs assessment on design conjecture. *Journal of Computing in Higher Education*, *30*(1), 55-71.

Stefaniak, J., Yang, X., & DeVaughn, P. (In press). The preparation of instructional designers: An Exploration of design pedagogy and praxis. In R. Branch, H.

Lee, & T. Sheng-Shiang (Eds.), *Educational Media and Technology Handbook (Vol. 43)*.

Sugar, W., Hoard, B., Brown, A., & Daniels, L. (2012). Identifying multimedia production competencies and skills of instructional design and technology professionals: An analysis of recent job postings. *Journal of Educational Technology Systems*, *40*(3), 227-249.

Sugar, W., & Moore, R. L. (2015). Documenting current instructional design practices: Towards a typology of instructional designer activities, roles, and collaboration. *The Journal of Applied Instructional Design*, *5*(1), 51-59.

Suarez, F. & Lanzolla, G. (2005). The role of environmental dynamics in building a first mover advantage. *Academy of Management Review, 32*(2), 377-392.

Tawfik, A. A. (2017). Do cases teach themselves? A comparison of case library prompts in supporting problem-solving during argumentation. *Journal of Computing in Higher Education*, *29*(2), 267-285.

Tawfik, A., & Jonassen, D. (2013). The effects of successful versus failure-based cases on argumentation while solving decision-making problems. *Educational Technology Research and Development*, *61*(3), 385-406.

Tawfik, A. A., Rong, H., & Choi, I. (2015). Failing to learn: towards a unified design approach for failure-based learning. *Educational technology research and development*, *63*(6), 975-994.

Tessmer, M., & Richey, R. C. (1997). The role of context in learning and instructional design. *Educational technology research and development*, *45*(2), 85-115.

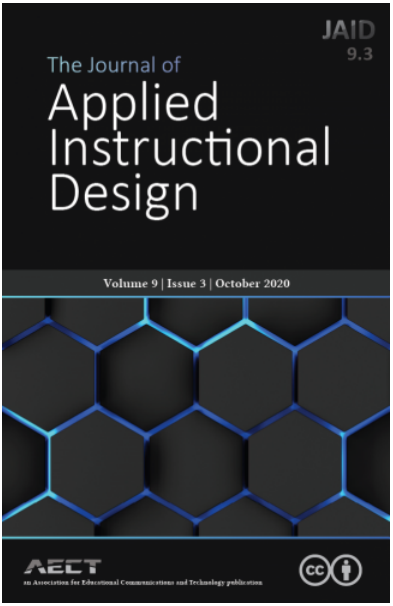
Tracey, M. W., Chatervert, C., Lake, K., & Wilson, R. (2008). Real world projects in an advanced instructional design course. *TechTrends*, *52*(4), 24-29.

Visscher-Voerman, I. (2017). Necessary ingredients for the education of designers. In A.A. Carr- Chellman & G. Rowland (Eds.), *Issues in technology, learning, and instructional design: Classic and contemporary dialogues* (pp. 73-76). Routledge.

Villachica, S. W., Marker, A., & Taylor, K. (2010). But what do they really expect? Employer perceptions of the skills of entry-level instructional designers. *Performance Improvement Quarterly*, *22*(4), 33-51.

West, C., Graham, L., Palmer, R. T., Miller, M. F., Thayer, E. K., Stuber, M. L., Awdishu, L., Umoren, R.A., Wamsley, M.A., Nelson, E.A., Joo, P.A., Tysinger, J.W., George, P., & Carney, P. A. (2016). Implementation of interprofessional education (IPE) in 16 US medical schools: Common practices, barriers and facilitators. *Journal of Interprofessional Education & Practice*, *4*, 41-49.

Williams, D. D., South, J. B., Yanchar, S. C., Wilson, B. G., & Allen, S. (2011). How do instructional designers evaluate? A qualitative study of evaluation in practice. *Educational Technology Research and Development*, *59*(6), 885-907.



Stefaniak, J., Reese, R. M., & McDonald, J. K. (2020). Design Considerations for Bridging the Gap Between Instructional Design Pedagogy and Practice. *The Journal of Applied Instructional Design*, *9*(3). https://edtechbooks.org/jaid_9_3/instructional_design_pedagogy