

# Practitioner Perspectives on the Benefits of a Cross-Organizational Collaboration Between AECT and NATO

Dolowitz, A. & Collier, J.

Collaboration

Instructional Design

Practitioner

*Collaboration is widely known to be beneficial in the workplace, with many job announcement analyses confirming it as a desired skill (Klein & Kelly, 2018; Lowenthal et al., 2010; Wakefield et al., 2012; Wang et al., 2021). During the COVID-19 pandemic, practitioners found new opportunities to collaborate with colleagues across industries. One such collaboration allowed instructional design practitioners in higher education to work with staff from a military organization on the design and development of content for a microlearning mobile app called NeNA. This paper will explore the benefits of cross-organizational collaboration and co-design on instructional design projects, such as better design, improved communication, and*

*increased effectiveness, using the NeNA project as an example.*

## Introduction

Practitioners in the instructional design field can look to many organizations to discover the competencies or capabilities expected (AECT, 2012; ATD, 2020; ISPI, n.d.; Hoard and Stefaniak, 2016). Although collaboration is not explicitly listed in every professional organization's list of suggested competencies, it is a skill expected in most workplaces. Researchers looking to identify instructional design competencies through job announcement analysis identified collaboration as one of those competencies (Lowenthal et al., 2010; Wakefield et al., 2012). More recently, Wang et al. (2021) and Klein and Kelly (2018) confirmed that collaboration is one of the top skills sought by employers of instructional designers. Despite its importance, collaboration is often a struggle for practitioners and their managers; Harvard Business Review research found that "32% of employees worldwide say people in their organizations don't collaborate enough" (Carucci & Velasquez, 2022, para. 3).

Collaboration has been an important skill for instructional designers for quite some time, and during the COVID-19 pandemic (COVID), practitioners found new opportunities to collaborate with colleagues across a variety of industries. One such collaboration that had to adapt to changes impacted by COVID was that of the North Atlantic Treaty Organization's Headquarters Supreme Allied Commander Transformation (NATO HQ SACT) and the Association for Educational Communications and Technology (AECT). The collaborators were NATO employees and AECT consultants, who formed a cross-organizational team to work on a mobile app called the NATO e-Learning Network Application, or NeNA.

NATO and AECT had entered their collaboration prior to the pandemic, and the pandemic impacted each agency differently. For AECT, there was less of an impact on the organization as a whole because AECT operated in a virtual world most of the year, whereas NATO did not. At NATO's 2021 hybrid technology and training conference, the AECT consultants learned how unprepared NATO and their allies were to carry on daily operations with the COVID shutdown. This forced hiatus provided unexpected opportunities to transition learning and development into a virtual environment, complicated by the need to ensure security measures affiliated with different topics and clearance levels. For AECT, all communications about the opportunity to join this collaboration had to be targeted to those in leadership positions who then shared it throughout their division's leadership boards. One of the key takeaways from this process was the need for all members of the collaboration to be flexible. Flexibility was seen in the recruiting process, meeting times, work times, sharing of ideas, and the need for self-management.

Collaboration at the organizational level sets the tone for the stakeholders actively achieving organizational goals, and those stakeholders can have both common and different interests that may change over the course of the project (Wood & Gray, 1991). Our interview with the NATO team leader revealed several details about the intent of the collaboration. NATO had

two goals for this collaboration. The first goal was designing microlearning content for a mobile app to be accessible by NATO employees in remote areas, such as when they were on duty and without Wi-Fi access, to continue to improve their performance. The second goal was to enable NATO to capture employees' implicit knowledge prior to the end of their tours of duty to prevent the knowledge loss that occurred every 18-24 months (C. Kumsal, personal communication, March 1, 2021). The AECT key stakeholder explained several reasons for the collaboration with NATO. For AECT, two key rationales emerged. First, AECT members were knowledgeable in learning theory and designing learning materials. AECT members' research skills would better enable NATO to fill its existing knowledge and research gaps. Secondly, this collaboration would provide authentic experiences for academics and graduate students. "It goes beyond reading to direct contact and becomes experiential in several areas with NATO and their member states" (T. Amankwatia, personal communication, February 24, 2023). Members would be able to build assessment, communication, design, development, and research skills in an authentic setting, while improving a member's résumé or CV.

In this paper, the terms partnership and collaboration are used interchangeably. The authors' view of collaboration is based on the seminal works of Gray (1989) and Wood and Gray (1991). In particular, the authors draw on Wood and Gray's revised definition of collaboration: "Collaboration occurs when a group of autonomous stakeholders of a problem domain engage in an interactive process, using shared rules, norms, and structures, to act or decide on issues related to that domain" (p. 146). This paper will explore the benefits of cross-organizational collaboration and co-design on instructional design projects, such as enhanced design, communication, and effectiveness.

## Background

Often, collaboration begins before the instructional designer (IDer) is introduced to the project, as was the case for the AECT members who served as consultants. The collaboration process of designing microlearning content for the NeNA app began at the organizational level with an alliance between NATO and AECT in 2018. However, the idea for this partnership was born even earlier when an AECT Design & Development Board Representative (D&D Board Rep) attended the NATO Training Technology Conference (NTTC). This annual conference gathers "representatives from academia, industry and military" to explore "how modern and emerging training technologies can add value to NATO's Education & Training" (NATO, 2022). The D&D Board Rep attended this conference for two years and recognized the gaps that NATO representatives were discussing at NTTC. This rep realized that the two organizations would make a good alliance where AECT members' expertise could address NATO's design and performance gaps. The D&D Board Rep spoke to AECT leadership to determine the best route for proposing a partnership with NATO. These efforts resulted in the microlearning knowledge exchange at NCCT as well as "collated resource lists of AECT mobile learning, microlearning, and virtual reality research and proceedings" (T. Amankwatia, personal communication, February 22, 2021).

From the above efforts, a formal letter of accord that was created and signed between NATO and AECT in 2018 was recently renewed for another four years. The accord outlined four key activities that were to occur as a result of the NATO AECT collaboration: "1. Knowledge

Exchange (AECT Research & Publications); 2. Experimentation (i.e., New Research); 3. Design and Development (with AECT members); and 4. Dialogue and Conversation (i.e., Conventions, meetings, symposia)” (T. Amankwatia, personal communication, February 24, 2023). As a part of this collaboration, NATO sponsors an annual design and development competition. In 2019, a student team created an app called Knowing NATO for the competition that would house microlearning modules (Dixon, 2019). The designs created for the competition were not typically developed or tested for deployment, but NATO was impressed with the microlearning app project. In 2021, they were ready to “develop a mobile application with various microlearning options” (T. Amankwatia, personal communication, February 22, 2021). This app, which is now known as NeNA, was designed to address human performance improvement challenges by providing just-in-time content. NATO, having developed an alpha version of the project, now needed support and guidance from AECT members to create microlearning content, beta test the app, create resources for users (e.g., a content creation checklist, microlearning tutorials, etc.), and gather user feedback. NATO specifically needed the content to adhere to microlearning tenets.

The success of the NeNA project relied on various teams working together collaboratively. The AECT consultants, or the AECT team, consisted of three members of the organization who had little to no prior experience working together. The NATO team consisted of the staff who were assigned to the project: a staff officer for training technologies and a project coordinator for the innovation branch of Headquarters Supreme Allied Commander Transformation (HQ SACT). There was also a media and design team that consisted of a third-party contractor and a NATO staff member, as well as a team of app developers from a third-party company. All these teams combined formed the overarching NeNA team responsible for the design, development, and evaluation of the project.

It was the second (experimentation) and third (design and development) key activities from the letter of accord between NATO and AECT that AECT consultants were recruited for within the NeNA app development plan. The consultants were informed that their project would test a pilot app for 700 people. Over the course of six months, they would lead the content development and testing of the app. It was clearly stated that all developers or testers had to be from a NATO country and that this project was a “real-world application” (T. Amankwatia, personal communication, February 22, 2021). Collaborators working on this project included AECT members from various institutions, third-party contractors for multimedia creation, NATO e-Learning employees, and NATO’s staff officer for training technologies. During beta testing, the team worked with additional NATO employees to gain feedback on the design process and the usefulness of the app.

As Wood and Gray stated in their 1991 revised definition, stakeholders can have both common and different interests that may change over the course of the project. For AECT, the benefit was the ability to create authentic experiences for members where they could further develop and apply their knowledge and skills while filling gaps that NATO had in academic knowledge and research. For NATO, microlearning design, development, and technology could effectively and efficiently be implemented by knowledgeable stakeholders.

In their revised definition, Wood and Gray also mention the importance of stakeholders being autonomous. One of two key characteristics of the NATO AECT collaboration was the autonomy given to all the participating stakeholders. When a stakeholder was given a goal,

they were given the autonomy of determining the best process to meet that goal. For instance, the AECT consultants were tasked to redesign onboarding materials so that they would fit a microlearning design. Any media that needed to be developed was planned between the NATO team, the third-party contractor, and the AECT consultants. When the consultants ran into barriers or had recommendations about the app's design, the app development team was contacted to meet with the whole NeNA project team to brainstorm. If revisions were needed, the stakeholders would come together to discuss what would be the best way to achieve these revisions. In other words, the collaboration was an interactive process (Wood & Gray, 1991).

## Interactive Design Process

Working in a collaborative setting is not always straightforward and can end up being an interactive design process. Being a member of a cross-organizational team emphasizes the challenges and opportunities that collaborating creates. However, the opportunities for this partnership outweighed the challenges that were to occur at an organizational level (T. Amankwatia, personal communication, February 24, 2023). As previously mentioned, the team that worked together during the beta testing period was multidisciplinary. There were representatives from AECT, NATO, and a third-party app developer. Further, individuals from AECT had varying backgrounds and professional experience. For example, although all the AECT consultants had educational backgrounds in instructional design and technology, one consultant had professional experience as a faculty member, while another worked on the staff side of higher education. Much of the NATO team had been working on this project since the collaboration began, whereas the instructional designers (AECT consultants) were new to the team.

One of the four overarching elements of Wood and Gray's (1991) collaboration framework is the role of the organization as a stakeholder and the influence the organization has regarding available resources. Like Wood and Gray, Bawa and Watson (2017) found the type of control the organization used in the collaboration determined the dynamics of the collaboration. This was made apparent to the AECT consultants throughout the beta testing period. For example, the NATO team leader and his project partner from NATO's innovation hub determined which features the microlearning app would have, even though they were not well-versed in learning theories or multimedia learning principles. In part, this was due to the available funding and the existing contract between NATO and the app developer. Another challenge that occurred at an organizational level was the restrictions on who could be recruited to join the team. Though both AECT and NATO are international organizations, NATO has limitations regarding who can be a member. AECT had to respect this condition, which meant that members in AECT from non-NATO member states could not participate in the partnership.

## Encouraging a Stronger Culture of Collaboration

Though interdisciplinary teams will encounter challenges, as mentioned above, with conscious efforts, these challenges need not be detrimental to the success of the collaboration. One way to ensure a successful collaboration is to work with management and managers on the team to allow for delegation to occur. According to Harvard Business Review research (Carucci & Velasquez, 2022), a couple of the top reasons that collaborations fail are a lack of collaborative vision from managers and managers not wanting to relinquish control. This could happen for many reasons, including fear of being overshadowed and having a hard time trusting others. The NeNA project did not fail, and there are three tangible reasons for this. First, the vision of the collaboration was captured in the letter of accord between NATO and AECT. Second, there was a high level of trust and support from the manager of the NATO team. Finally, communication was open and efficient, and members from both organizations have continued to be actively involved in training and development initiatives together by attending and participating in conferences hosted by the two organizations.

## Establishing Trust and Understanding

Another key element for successful collaborations is trust. Trust needs to be established upfront and maintained, regardless of the setting for the collaboration. In 2018, Richardson and colleagues explored the successful collaborations between IDers and faculty at a large midwestern university. Their interviews revealed four central themes: the purpose of the collaboration, the configuration of the stakeholder relationships, common barriers or supports for the collaboration, and competencies necessary for successful collaboration between faculty and designers. The first competency that Richardson et al. identified was building trust and rapport (p. 865). They found that almost all the stakeholders (faculty and instructional designers) reported that trust and rapport needed to be developed for productive joint relationships to occur. Based on participants' answers, the authors concluded that these types of relationships allowed stakeholders (faculty) to relax and increased buy-in to the collaboration.

The NATO team leader demonstrated his ability to create trust and rapport in the way he treated each team member. He assumed that all team members were competent, trusted their expertise, and valued their opinions. When he was asked questions that he could not answer, or if he was asked to help with a task where his skills were lacking, he quickly referred AECT consultants to the team members who could address these issues. He made himself readily available and responded to any type of correspondence quickly. All these behaviors demonstrate two types of trust essential for successful cross-functional teamwork, knowledge-based trust and identification-based trust (Scandura, 2016).

Like Richardson et al. (2018), Scandura (2016) discusses a core part of successful leadership is trust. In her book, *Essentials of Organizational Behaviors*, Scandura (2016) stresses the importance of establishing three types of trust that need to occur with another person. The first is calculus-based trust, where the ground rules are established. Like transactional leadership, the employee does what their employment contract states, and the employer fulfills their part by providing pay and agreed-upon benefits. If this is broken, there are consequences that occur. Scandura states that calculus-based trust is the "recordkeeping" type of trust, and the relationship is kept at "arm's length" (p. 35). As the contract is kept, trust builds to the next level, which is knowledge-based trust. Here the

employer and employee have established patterns and find each other's behaviors predictable. The employer can now ask their employee to do different tasks and knows that the employee will complete them. In the collaboration with NATO, the AECT consultants found themselves in the unique position of the NATO team lead assuming that knowledge-based trust had been established. He treated the AECT consultants and the rest of the team as knowledgeable experts.

The NATO team lead's behaviors instantly created a foundation of trust and relationship building, which made the whole team demonstrate the third level of trust, identification-based trust. This level of trust is where the employee and the employers share the same goals and objectives (p. 36). If the employer or leader cannot be present for activities, the employees will carry on and take care of all necessary tasks to achieve the goals and objectives as if the leader were supervising. This level of trust could be seen in the assignments that the AECT consultants were given to complete. Another demonstration of this type of trust was when the NATO team asked for the AECT consultants to meet with NATO majors or generals to determine how to transition their trainings to fit a microlearning format. Further, the AECT consultants were asked to lead the conversations of creating microlearning content with one of NATO's training schools in Germany. These experiences enhanced the collaboration because the consultants gained confidence as a result of being trusted and viewed as experts rather than being overshadowed by those in positions of authority.

## Open Communication

Communication is essential for success in any endeavor. A core component of successful communication is the ability to actively listen, which is fundamental to building and maintaining the knowledge-based and identification-based trust (Scandura, 2016). In the case of active listening in a virtual setting, such as the one experienced by the authors, applying active listening principles becomes even more important because there may be missing cues and differences in an interaction that makes it more difficult (Center for Creative Leadership, 2019).

The second key competency that Richardson et al. (2018) identified was being an active listener (p. 865). This skill is essential for the IDer to engage in for all stakeholders because IDers have the knowledge of how to design and implement content, but stakeholders may not readily know how to identify their needs (Richardson et al., 2018). In a study of ID technologists and trainers, Hoard and Stefaniak (2016) discovered a common theme that participants expressed was that communication and team building should be added to human performance technology practitioners' competencies. Klein and Kelly (2018) explored what competencies employers were seeking from potential IDers, and one of the top competencies was interpersonal communication skills. Communication was continually emphasized through various channels created for the team to communicate asynchronously.

In this collaborative partnership, the head of the NATO team scheduled regular communications, such as weekly check-in meetings via Skype. The team lead made sure that all persons attending were addressed and ended the meetings with assigned tasks for the following week. In between times, both email and WhatsApp were used for



asynchronous communication. Practitioners may find that having too many lines of communication available can be distracting, so it is important to define what works best for each collaborative team. The NeNA team found that certain tools worked best for regular meetings (e.g., Skype), while others were best for questions that needed immediate replies (e.g., WhatsApp) or questions that were not pressing and those that required more complex explanations (e.g., email).

Bawa and Watson (2017) used Wood and Gray's (1991) study to frame their study's protocols and concluded that there were nine core characteristics to create a productive collaboration which formed the acronym CHAMELEON, where the "C" stood for communication. Like Richardson et al. (2018), Bawa and Watson found that stakeholders emphasized the importance of active listening and regular communications. Bawa and Watson also found that another aspect of effective communication was making sure that the IDers asked good questions or were good questioners who would actively listen and use "gentle persuasion" techniques (p. 2343). In the case of the NATO/AECT collaboration, the AECT consultants asked questions not only to ensure understanding of instructions or content but also to show they were actively listening and wanting to create the highest quality content possible.

## Transparency

Transparency is intricately related to communication. However, it is its own subcategory of communication because it needs to be intentional for any teamwork, especially cross-functional teams where vocabulary and skill sets are diverse. Transparency is more than just being clear about the goals and objectives needed to complete a project. As the NATO team lead stated, "Objectives need to be clear, transparent, and well communicated to the team" (C. Kumsal, personal communication, February 23, 2023). Transparency of goals and objectives was also emphasized by the AECT partner and was plainly illustrated in the letter of accord and key activities that were agreed upon by both organizations. A willingness to be transparent will require a leader and a team that has high emotional intelligence. Without clear communication and transparency successful delegation will not occur. Effective delegation is hard to do and you "[n]eed to take a risk with trust" (C. Kumsal, personal communication, February 23, 2023). The effectiveness in delegating, and in team building and effective collaboration overall, begins with transparency.

## Benefits of Co-Designing

### Enhanced Design

The above sections have explained and demonstrated what has made the collaboration between AECT and NATO successful. So what are the benefits of co-designing? Bawa and Watson (2017) noted three central benefits of better understanding stakeholders' perceptions in a collaboration. First, the demand for collaboration continues to rise between subject matter experts (SMEs) and IDers. Second, they contend that due to the increase in collaborative projects, strong teamwork skills will continue to be a job qualification and that effective collaboration improves the skill sets of all the stakeholders. Finally, they argued



that with the increase in collaborations, there is a knowledge gap about stakeholders' perceptions of collaborating. Where AECT consultants did not have certain skills, such as creating animations, other stakeholders took the time to train the team on how to use NATO's media design tools. Team members were also encouraged to seek out training from NATO's audio-visual tech team. This reinforces what Bawa and Watson stated as their second contention, that collaboration improves the skillsets of the stakeholders.

Bawa and Watson (2017) also noted that the design process was improved because of looping, the iterative design process (p. 2346), and oscillation (p. 2347), the use of trial and error. The NeNA team conducted an iterative design process in which users were onboarded to the app, and their feedback was used to make changes. Since SMEs, end users, and designers worked together in this iterative process, the design was improved, including the addition of important features like descriptive text and accessible colors and the addition of training modules to teach users not only about the operation of the NeNA app but also about the concept of microlearning. After going through several iterations and using trial and error to develop and test content within the app, the final product showed significant improvement compared to the initial design.

## Improved Communication and Adaptability

As the cohesion of the NeNA team increased, communication noticeably improved. The AECT consultants were able to ensure their competing needs could be accommodated while accomplishing the desired goals and objectives of the project. In other words, adaptability was exercised on all stakeholder parts, and no one was being "pushed over" by too many demands (Bawa & Watson, 2017; Richardson et al., 2018). Both Richardson et al. and Bawa and Watson stressed the need for humility, particularly on the part of the IDer. However, this type of humility was regularly modeled by the NATO lead when he felt that something that other team members might need was not within his skill level. He stated that he could not help but then directed the question to the person on the team who could provide the help.

Although the consultants for the NeNA project were considered experts in microlearning and instructional design, they still had to be adaptable, as they had varying levels of experience working in different environments, and they were not experts in military operations or subject matter. Their adaptive analytical skills were important as the team worked to apply instructional design best practices in this specific environment (DeVaughn & Stefaniak, 2020). As a result of working in a new environment with a supportive, communicative team, the consultants felt their skills improved, and they learned new ways of communicating and collaborating with cross-organizational teams virtually.

## Resources for Users

Sugar and Luterbach (2016) sought to identify critical incidents of ID and multimedia production. Their intention was to determine what constituted effective, ineffective, and extraordinary ID and multimedia production to create more clarity on best practices for ID. Two of the six themes that emerged from the incidents in their study included providing resources for users and collaboration with stakeholders. The NeNA project resulted in the AECT consultants creating products for the end user. The process of developing these

resources, such as a content creation checklist and microlearning tutorials, was tested by users to provide feedback on their usefulness. This allowed the AECT consultants the opportunity to revise the resources to make them more user-centered.

This iterative process of content and resource development supports what Sugar and Luterbach (2016) identify as extraordinary incidents, where there was a matching of methods and media to content and the learners. This was accomplished by getting user feedback and applying learning theories. In other words, theory was used to inform practice. Two theories that the AECT consultants based their content design on were Mayer's (2014) cognitive theory of multimedia and Sweller's (1994) cognitive load theory. Clark and Mayer's (2016) principles of multimedia learning were used as part of the design process as well as for creating a microlearning content creation checklist. These principles were also used to evaluate content once it was developed by NATO employees.

## Increased Effectiveness and Efficiencies

Again, the first goal for NATO was to create a tool to improve employee performance that users could and would utilize. One of the best parts of this collaboration was the openness and desire of the end users to test the app and its functions as well as provide feedback on the content. Having the NATO design team be open to candid feedback enabled them to quickly reiterate and make changes seamlessly. It also allowed the team to provide better feedback to the app developers on NATO's specific needs to allow the goal of improved performance to be met. It is here where stakeholders' perceptions were being sought to improve the design and use of the app, which ultimately enhanced the product and experience. By doing this, NATO was ensuring that there would be buy-in from the end users, increasing the effectiveness of the NeNA app to improve employee performance.

The second goal, capturing employees' implicit knowledge, was more challenging. This was largely due to users not understanding how to create content focused on only one or two concepts that were "chunked." Users tended to provide their knowledge in various formats (e.g., graphics, presentations, podcasts), and the design team (AECT consultants and the head of the NATO team) quickly realized the need for a way to rapidly provide feedback as well as a need to provide a guide to assist SMEs and NATO employees from various areas in designing content. The AECT consultants called upon their knowledge of learning sciences and multimedia design principles to provide feedback to the users about how to design microlearning content. In addition to providing feedback directly via the app and email, the consultants developed a job aid that the management team could use after the AECT consultants' time on the team came to an end. The AECT consultants evaluated the available features of the app and recommended other features to explore as NATO transitioned into formally adopting the NeNA app as part of their learning and development efforts. These processes and experiences during this collaborative project reinforce Bawa and Watson's (2017) first two points, especially increasing the skill sets of all the stakeholders.

## Concluding Thoughts

Two of the most essential skills necessary to ensure the success of a collaborative project between major organizations are communication and flexibility. As the NATO team lead expressed, teams should accept and celebrate diversity and use active listening. Further, team leaders must effectively delegate while accepting the expertise of the designers and SMEs (C. Kumsal, personal communication, February 23, 2023).

Overall, the AECT consultants' experiences with this collaboration proved beneficial at many levels. Throughout the project, it became apparent not only how including collaborators with diverse perspectives was essential but also how vital effective communication is when working with interdisciplinary collaborators toward a desired outcome. It is also imperative to consider the end user as a collaborator when designing and evaluating the products or services they will be using. This builds a more solid product and develops trust among designers and users, which helps ensure a higher quality product and a higher return on investment.

For future collaborations such as the one between AECT and NATO, the authors recommend taking the advice provided by the NATO team lead: "Be positive, communicate a lot, be clear in communications, be accountable to your work, trust the team and process, [and] show empathy" (C. Kumsal, personal communication, February 23, 2023). Because of this advice, the cross-organizational NeNA team was cohesive and efficient, and the project was a success.

## References

- Association for Educational Communications and Technology. (2012). *AECT standards, 2012 version*. Retrieved March 1, 2023 from <https://www.aect.org/docs/AECTstandards2012.pdf>
- Association for Talent Development. (2020). *ATD's new capability model introduces the capabilities talent development professionals should have to be successful*. Retrieved March 1, 2023 from <https://www.td.org/magazines/td-magazine/competency-out-capability-in>
- Bawa, P., & Watson, S. (2017). The chameleon characteristics: A phenomenological study of instructional designer, faculty, and administrator perceptions of collaborative instructional design environments. *The Qualitative Report*, 22(9), 2334–2355. <https://doi.org/10.46743/2160-3715/2017.2915>
- Carucci, R., & Velasquez, L. (2022). *When leaders struggle with collaboration*. Harvard Business Review. <https://hbr.org/2022/12/when-leaders-struggle-with-collaboration>
- Gray, B. (1989). *Collaborating: Finding common ground for multiparty problems*. Jossey-Bass Publishers.
- Center for Creative Leadership. (2019). *Active listening: Improve your ability to listen and lead (2nd ed.)*. Center for Creative Leadership.

- Clark, R. C., & Mayer, R. E. (2016). *E-learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning*. Wiley.  
<https://doi.org/10.1002/9781119239086>
- DeVaughn, P., & Stefaniak, J. (2020). An exploration of how learning design and educational technology programs prepare instructional designers to evaluate in practice. *Educational Technology Research and Development*, 68, 3299–3326.  
<https://doi.org/10.1007/s11423-020-09823-z>
- Dixon, R. (2019). *ITLS students take first place in NATO design competition*. Emma Eccles Jones College of Education and Human Services. Retrieved from  
<https://cehs.usu.edu/news/2019/nato-design-competition>
- Hoard, B., & Stefaniak, J. E. (2016). Knowledge of the human performance technology practitioner relative to ISPI human performance technology standards and the degree of standard acceptance by the field. *Performance Improvement Quarterly*, 29(1), 9–33.
- International Society for Performance Improvement. (n.d.). *Performance standards*. Retrieved March 1, 2023 from <https://ispi.org/page/CPTStandards>
- Klein, J. D., & Kelly, W. Q. (2018). Competencies for instructional designers: A view from employers. *Performance Improvement Quarterly*, 31(3), 225–247.
- Lowenthal, P., Wilson, B. G., & Dunlap, J. C. (2010). An analysis of what instructional designers need to know and be able to do to get a job. In annual meeting of the Association for Educational Communications and Technology. Anaheim, CA.
- Mayer, R. E. (2014). Cognitive theory of multimedia learning. In R. E. Mayer (Ed.), *The Cambridge Handbook of Multimedia Learning* (pp. 43–71). Cambridge University Press. <https://psycnet.apa.org/doi/10.1017/CBO9781139547369.005>
- North Atlantic Treaty Organization. (2022). *NATO training technology conference 2022 explored modern technology to improve operational readiness*. NATO Allied Command Transformation. <https://www.act.nato.int/articles/nttc-explores-modern-technology-improve-operational-readiness>
- Richardson, J. C., Ashby, I., Alshammari, A. N., Cheng, Z., Johnson, B. S., Krause, T. S., Lee, D., Randolph, A. E., & Wang, H. (2019). Faculty and instructional designers on building successful collaborative relationships. *Educational Technology Research and Development*, 67, 855–880. <https://doi.org/10.1007/s11423-018-9636-4>
- Scandura, T. A. (2019). *Essentials of organizational behavior*. Sage.
- Sugar, W. A., & Luterbach, K. J. (2016). Using critical incidents of instructional design and multimedia production activities to investigate instructional designers' current practices and roles. *Educational Technology Research and Development*, 64, 285–312. <https://doi.org/10.1007/s11423-015-9414-5>

- Sweller, J. (1994). Cognitive load theory, learning difficulty, and instructional design. *Learning and Instruction*, 4(4), 295–312. [https://doi.org/10.1016/0959-4752\(94\)90003-5](https://doi.org/10.1016/0959-4752(94)90003-5)
- Wakefield, J., Warren, S., & Mills, L. (2012, March) Traits, skills, and competencies aligned with workplace demands: What today's instructional designers need to master. In P. Resta (Ed.), *Proceedings of society for information technology and teacher education international conference 2012* (pp. 3126–3132).
- Wang, X., Chen, Y., Ritzhaupt, A. D., & Martin, F. (2021). Examining competencies for the instructional design professional: An exploratory job announcement analysis. *International Journal of Training and Development*, 25(2), 95–123. <https://doi.org/10.1111/ijtd.12209>
- Wood, D. J., & Gray, B. (1991). Toward a comprehensive theory of collaboration. *The Journal of Applied Behavioral Science*, 27(2), 139–162.