



How Instructional Design Is Operationalized in Various Industries for job-Seeking Learning Designers: Engaging the Talent Development Capability Model

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Abstract

In 2020, as COVID-19 impacted the world, instructional designers quickly came to the forefront of higher education, consulting, and corporate settings. Additionally, in early 2020, the Association for Talent Development (ATD) globally launched their new Talent Development Capability Model. To determine how instructional design is operationalized in various industries, we utilized the Talent Development Capability Model as a framework to review 100 online job postings from LinkedIn, [Indeed.com](#), and [HigherEdJobs.com](#), scanning each for the 23 capabilities identified in the ATD Talent Development Capability Model. Using the preferred reporting items for systematic reviews and meta-analyses (PRISMA) organizational framework as our method of reviewing job postings, we found that instructional design, talent delivery and facilitation, technology application, communication, and collaboration and leadership capabilities appeared the most frequently. Educational requirements were statistically significantly associated with job sectors, as shown in our analysis. With these results and analysis, this research will inform both formal instructional design education programs and job seekers regarding how instructional design is operationalized in job requisitions. This research will also provide insights into alignments with the ATD Talent Development Capability Model and job requisitions.

Keywords ATD talent development capability model · Instructional designer · Job descriptions · Jobs

The advent of the 2020 Talent Development Capability Model from the Association for Talent Development (ATD) raised a plethora of questions for all manner of professionals. The COVID-19 pandemic caused unemployment in the United States to reach between 13%–14% in April 2020, making competition for instructional design (ID) job seekers fierce (U.S. Bureau of Labor Statistics, 2020). It would behoove ID job seekers to arm themselves with knowledge of which

capabilities institutions desire the most and in what sectors. While many fields have employees in instructional design roles, those roles differ in their specific job responsibilities. As such, the main goal of this study is to inform ID job seekers as to what skills employers look for the most by analyzing current job postings for the field of instructional design using the Association for Talent Development's (2020b) Development Capability Model.

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Literature Review

Instructional design practitioners can work in various settings, such as higher education, corporate, government, healthcare, and nonprofits. Within each of these settings, there are multiple titles for practitioners in instructional design, such as learning and development professional, learning experience designer, trainer, and more (Stolovitch & Keeps, 1992). To appreciate the breadth of the potential job roles, history can help explain some of the variety. The following section explains

and describes the beginnings of the instructional design role and how it has changed over time.

Brief History and Evolution of Instructional Design Jobs

While the full origins are debated, a formal instructional design systems approach originated during World War II out of the U.S. military's need to train a large number of people quickly and effectively (Reiser, 2002). Specifically, the use of audiovisual technology was used to deliver training. Initially, this was referred to as “audiovisual instruction,” but by the 1970s terms such as “educational technology” and “instructional technology” were also used (Reiser, 2002). After World War II, it took awhile for the term “instructional design” to be widely used, and for a systematic approach to training and curriculum development to become an accepted methodology for organizations to use (Gustafson & Branch, 2002).

From the 1960s, instructional design changed significantly. In 1962, Robert Glaser coined the term “instructional system,” creating a connection between education and learning practice rooted in psychology and indicating the need for practitioners to engage in developing instructional technology (Shrock, 1995). In addition, B. F. Skinner laid the foundation for the systematic design of instruction, specifically concentrating on the use of aids to improve the quality of education (Skinner, 1974). By the 1970s, instructional design methods and models were not only used in the military, but had also become more common in business and industry. This is when instructional design began to blend with and focus more broadly on such influences as organizational development and human performance improvement (Pasmore, 1988). At the same time, various social movements, such as feminism, environmentalism, and gay rights, were influencing society and, by proxy, how organizations approached training. This led to the emergence of workplace sensitivity training, designed to raise participants' awareness of their racist and discriminatory behaviors and make workplaces more inclusive and welcoming (Shaw, 1994). This was a stark contrast to the military-training roots of instructional systems design, but one that paved the way for compliance training. The 1970s also brought about cognitive information processing theory and, with it, an increased interest in the instructional design profession (Driscoll, 2000). Many graduate programs in instructional design were created due in part the interest of instructional design (Kang, 2004). From the late 1980s and into the early 1990s, computer-based training (CBT) began to develop. While instructional design was heavily impacted by the adoption of technology and the readiness and accessibility of devices, it also helped pave the way for eLearning in the later 1990s and 2000s (Molenda, 2008). Research focused on a five stage development process called ADDIE, which stands for analysis, design,

development, implementation, and evaluation, emerged in instructional design in the 1980s and 1990s (Julian et al., 2000). Additionally, it was during this period that instructional design professional development organizations such as the ATD led various competency studies to identify knowledge, skills, and abilities for the instructional design professional (Julian et al., 2000).

Becoming an Instructional Designer

Before explaining more about the ATD Development Capability Model and this paper's job posting research, it is worth mentioning how many people come into the field of instructional design. The expectations of an instructional designer have shifted and changed over the past decade. For example, the International Board of Standards for Training, Performance, and Instruction (IBSTPI) has identified the skills and abilities required for job roles such as instructors, instructional designers, and training managers (Klein & Richey, 2005). This is in addition to the competencies presented by the American Society for Training and Development (ASTD) for workplace learning and performance practitioners (see the next section for more details on ASTD). Others have also identified the skills and characteristics of capable professionals in the field (Fox & Klein, 2003; Stolovitch et al., 1999; Vadivelu & Klein, 2008). Goksu et al. (2021) found that ID studies nearly a decade ago used keywords such as “e-learning” and “online learning,” while contemporary studies include keywords that prioritize massively open online courses (MOOCs), flipped classrooms, mobile learning, augmented reality, and gamification. These changes represent not only the development of information technology, but also the associated changes to theories, learner needs, strategies, and expectations (Goksu et al., 2021). Despite this, there is an overall dearth of literature that confirms what skills are required of ID professionals (da Silva et al., 2015; Klein & Jun, 2014).

Cox and Osguthrope (2003) found that many practitioners in the field of ID have not completed any formal coursework in instructional design. In fact, Bean (2014) coined the phrase “accidental instructional designer” for individuals who become instructional designers without any formal education in the subject. This often happens with corporate practitioners who are promoted into a training role because they are a strong individual contributor to the organization and likely a subject-matter expert in the field (Bean, 2014).

Using competencies, theories, and models as a guide to prepare future instructional design practitioners can provide a strong foundation, but additional knowledge and skills should be explored. Julian et al. (2000) indicated that instructional design knowledge and skills instructional design students need to be successful in a work setting were not provided in their professional learning program. Specifically, many

participants in a group competition to complete an instructional design case study found it difficult to apply theory and information to real-world contexts. While many participants appreciated the case study and the intentionality of it being like a real-world instructional design problem, some noted that it was difficult to know how to get started (Julian et al., 2000).

Previous studies have discussed employer expectations of instructional designers. These studies found that possessing the knowledge of ID and learning, instructional theories, the capacity to collaborate with a team and possessing communication skills are required by the employers to meet their organizational needs (Lowell & Ashby, 2018; Ritzhaupt & Kumar, 2015; Ritzhaupt & Martin, 2014; Sugar & Moore, 2015; Wakefield et al., 2012). Employers also sought instructional designers that are independent thinkers and can adapt to new and developing circumstances (Lowell & Moore, 2020; Sugar et al., 2012). In addition to being independent thinkers, possessing technical skills is important to meet the employer's expectations (Lowell & Moore, 2020; Ritzhaupt & Kumar, 2015; Sugar et al., 2012).

There is some empirical evidence that a gap between formal ID education and on-the-job expectations of instructional designers exists. Thompson-Sellers and Calandra (2012) conducted an in-depth qualitative exploratory study to discover whether instructional designers mainly learn about theories and conducting instructional design on the job or in a formal program. In the study, they found that it wasn't necessarily the formal instructional design programs that provided the practitioners with the experience necessary to do their jobs, but involvement in various professional organizations such as ATD. Additionally, research participants said they needed to adapt to their environments and compensate for any deficits in their knowledge and skills (Thompson-Seller & Calandra, 2012). While it is important to note that as with any field, no formal instructional design degree program fully prepares one for their profession, it is clear that involvement in instructional design professional organizations can help fill the gap.

Villachica et al. (2012) sought to answer the question of what employers perceive are the skills necessary for entry-level instructional designers. Of the 85 respondents who employ instructional designers, more than half said that all entry-level IDs should be able to perform common activities of ADDIE. While this sample is small, it yielded some takeaways specifically about reasons why there are gaps in applying theory to practice. Villachica et al. (2012) stressed the importance of the continuing education of instructional design professionals, recommending that employers should realize the need for continuous learning and support it.

Association for Talent and Development (ATD)

In 1942–1943, the American Society of Training Directors (ASTD)—which eventually developed into the ATD—was formed at a meeting of the American Petroleum Institute in New Orleans, Louisiana (Oakes, 2014). Since then, the ATD has served as many instructional design practitioners' professional organization of choice, specifically those in government, non-profit, and corporate settings. ATD is a national organization that oversees and supports various local chapters.

ATD Competency Model

In 1978, ATD membership reached 15,323 and the organization published its first competency study, *A Study of Professional Training and Development Roles and Competencies* (Oakes, 2014). Since then, the competency model has been updated every five years or so with different emphases, such as *Models for Excellence* (1983), *Models for HRD Practice* (1989), *ASTD Models for Human Performance Improvement* (1996), and *Models for Learning Technologies* (1998) (Rothwell et al., 1998). From the 2004 competency model to the 2013 competency model, a shift from a specific orientation, such as learning technologies or human resource development, to a more generalized model occurred (Naughton, 2014).

From the 2004–2019 competency models, ATD created a single competency model consisting of 10 specific areas of expertise (AOE) and six foundational competencies which guide the programming and professional development of ATD in various ways. All 10 AOE are programming tracks at the annual Association of Talent and Development International Conference and Expo conference, as well as mandatory program tracks offered at local ATD chapters governed by the Chapter Affiliation Requirements (CARE) (Association for Talent Development, 2020a). ATD also identified additional foundation competencies to provide guidance for professional practice beyond content knowledge and skills (Naughton, 2014).

ATD's Talent Development Capability Model

In 2020, the ATD Talent Development Capability Model was released globally. According to the FAQs section of the ATD website, this new model is designed “to help talent development professionals stay current on knowledge and skills that are important for success in the field” (Association for Talent Development, 2020c). There are now 23 capabilities under three core capabilities. The 23 capabilities are further delineated into numerous skill and knowledge statements. The 2020 ATD Talent Development Capability Model has been described as a career blueprint and, therefore, informs both job

seekers and practitioners (Association for Talent Development [ATD], , 2020d).

With the COVID-19 pandemic creating demand for online delivery of learning experiences, many organizations including higher education and corporations needed to hire instructional designers (Bao, 2020) on top of the vast number of instructional design practitioners already practicing throughout the United States. According to O*Net data, there are currently approximately 180,000 instructional design practitioners in the United States (National Center for O*NET Development, 2020). Throughout the last three quarters of 2020, instructional design jobs were steady and there were many openings in various settings due to the need for organizations to move content online. Additionally, with many teachers needing to deliver online instruction, some learned about instructional design and have considered transitioning careers (Johnson, 2020). While teaching jobs require formal teaching licenses, instructional design jobs do not. Because of the lack of a formal license program, many instructional designers look to professional development organizations like the Association for Talent and Development (ATD) for guidance.

ATD Compared to AECT

According to its website, the Association for Education Communications and Technology (AECT) is a “professional association of instructional designers, educators and professionals who provide leadership and advise policy makers in order to sustain a continuous effort to enrich teaching and learning.” The organization’s members are mostly composed of higher education researchers, faculty, and instructional designers. AECT supports multiple research journals and is composed of various divisions such as emerging learning technologies, research and theory, and learner engagement. AECT provides the AECT Instructional Design Standards for Distance Learning for use by its members.

The AECT Instructional Design Standards for Distance Learning has a different purpose than the ATD competency and capability models, as it is focused more on the product than the individual (Pina, 2018). The purpose behind these standards stems from discussions between AECT members and AECT staff regarding the prevalence of online courses being developed at higher education institutions without guidance and benchmarks for evidence-based standards for designing online learning (Harris, 2017). Instead of standing alone, like the ATD competency and capability models, the AECT Instructional Design Standards for Distance Learning are meant to be paired with other standards, like the Quality Matters rubric (Pina, 2018). The purpose of the AECT Instructional Design Standards is to provide guidance before, during, and after the design and development of distance learning experiences (Pina, 2018). For the full texts of the

AECT Instructional Design Standards for Distance Learning, see Appendix 5.

While the competencies and standards from AECT focus on the course, AECT also provides instructional designers with a professional code of ethics (AECT, 2018). This is interesting given the history of instructional design. Instructional design is broad in many respects and has been influenced by many disciplines and professions. Creating a code of ethics is a way to legitimize instructional design as a profession on its own (Welliver, 1989). The AECT Code of Ethics (Appendix 4) is divided into three sections: commitment to individual learners, commitment to society, and commitment to profession.

Research Questions

An overall review of literature surrounding the 2020 ATD Talent Development Capability Model revealed little information on the practical applications for ID job seekers. The model is still new, which might explain this dearth of research. The current study, then, can provide significant insights and advantages not only for practitioners on the market, but also researchers and formal educational programs across various sectors of ID. We sought to answer the following research questions to guide our review:

RQ1: What can we learn about the requirements of instructional designers from current job descriptions in comparison to the 2020 ATD Talent Development Capability Model?

RQ2: How is instructional design operationalized in the lens of various sectors?

Methods

To begin this research, we adapted the 2009 preferred reporting items for systematic reviews and meta-analyses (PRISMA) organizational framework strategy to collect and analyze online job postings (Moher et al., 2009). PRISMA is an internationally accepted statement for systematic reviews (Bacca Acosta et al., 2014). It is similarly a widely used and validated process for conducting systematic reviews (Moher et al., 2015; Sønderlund et al., 2019). This framework of record collecting and analysis can be successfully applied to a range of disciplines, contexts, and subjects, including but not limited to clinical medical trials, social sciences, and education (e.g., Shadiev et al., 2020). Other frameworks, such as the consolidated standards of reporting trials (CONSORT), are less applicable to conducting systematic reviews (Johansen & Thomsen, 2016) and require multiple extensions to be successfully deployed for educational studies (Grant et al., 2013).

Although the framework is from 2009 and currently in the process of being updated, PRISMA has been formally endorsed by approximately 170 editorial organizations, including the World Health Organization (Moher et al., 2015; Sønderlund et al., 2019; for a full list of endorsements see <http://www.prisma-statement.org/Endorsement/EndorsePRISMA.aspx>). Due to its transparency, validity, and adaptability, we elected to use the PRISMA organizational framework to guide the foundations of this systematic review.

Following PRISMA, we began by identifying and screening potential job postings to be included. Instead of using bibliographic online databases as in a typical systematic review, we executed our search on the popular job-focused websites LinkedIn, [Indeed.com](https://www.indeed.com), and [HigherEdJobs.com](https://www.higheredjobs.com). Similarly, each job posting collected was considered like a published article. We set strict criteria for inclusion/exclusion for this analysis including:

Full-time job.

Uses the term “instructional design” somewhere within the job advertisement.

Located in the United States or eligible for remote work in the United States.

Lists at least five job duties to ensure thorough job-role descriptions.

Has preferred and required qualifications.

Next, we assessed the full texts of the qualifying job postings as described in the next PRISMA organizational framework for inclusion. We conducted record collection from June 2020 to July 2020 by searching “Instructional Designer” on LinkedIn, [Indeed.com](https://www.indeed.com), and [HigherEdJobs.com](https://www.higheredjobs.com). The job search was customized to look for this term throughout the entire post and not necessarily the title alone, as “Instructional Designer” is but one of many titles for professionals in this field (e.g. including a post for “Corporate Learning and Development Specialist” and “LMS Curriculum Developer”). Any discrepancies regarding job posting relevance were discussed and resolved among the authors. Due to the constant updating of job posting sites, job data was collected in sets of 20–30 job postings each week. We initially screened over 1000 job postings, of which 118 were eligible for further review. After applying the inclusion/exclusion criteria and reading the job-post information, 18 records were removed (see Fig. 1). Each set was compiled into a single document that contained the full texts of potential jobs.

In order to provide calibration of all the reviewers, training was taken to safeguard against bias when coding the job postings against the ATD Talent Development Capability Model. To find evidence of the ATD Talent Development Capability Model in job postings, the authors used the ATD Book of Knowledge’s description of each capability as the scope for

each one. In each description, many keywords were used for each capability to see if it was represented in the job posting (Table 1). Once a keyword was found, the rater would read it in the context of the sentence/description to see if it matched the description for the capability or if it was a word/phrase that didn’t apply. If the rater found that it did apply, they indicated that the capability was represented in the job posting and continued to the next capability. These keywords were specifically chosen based on the ATD capabilities model definitions. In addition, all authors met the first week with a practice set of 20 jobs to calibrate rater reliability and keyword accuracy. The authors continued to convene weekly to discuss capability/keyword accuracy and reliability (see Appendix 1 (Table 3) for keyword list; see ATD, 2020d for all capability descriptions). Keyword synonyms, such as business acumen to represent business insights, were not considered in order to specifically align with the ATD definitions, as the term “acumen” does not appear in the definition for business insight (ATD, 2020d). Furthermore, it is unfeasible for both job seekers and those posting jobs to include every synonym for each keyword/capability when looking for a job or posting a job opening.

Next, all authors would receive the set of 20 job postings and code the jobs individually based on the ATD Talent Development Capability Model in Microsoft Excel. Each job posting represented a row and each of the 23 capabilities was a column, in addition to several descriptive columns (job title, the database in which it was found, mentioned COVID-19, and mentioned specific models) and an extra column for notes. If the job posting contained information related to one of the 23 capabilities listed in ATD Talent Development Capability Model, an entry of “1” was typed into the cell for that capability (see Appendix 2 (Table 4) for example excerpts). Figure 1 presents a flowchart of the process.

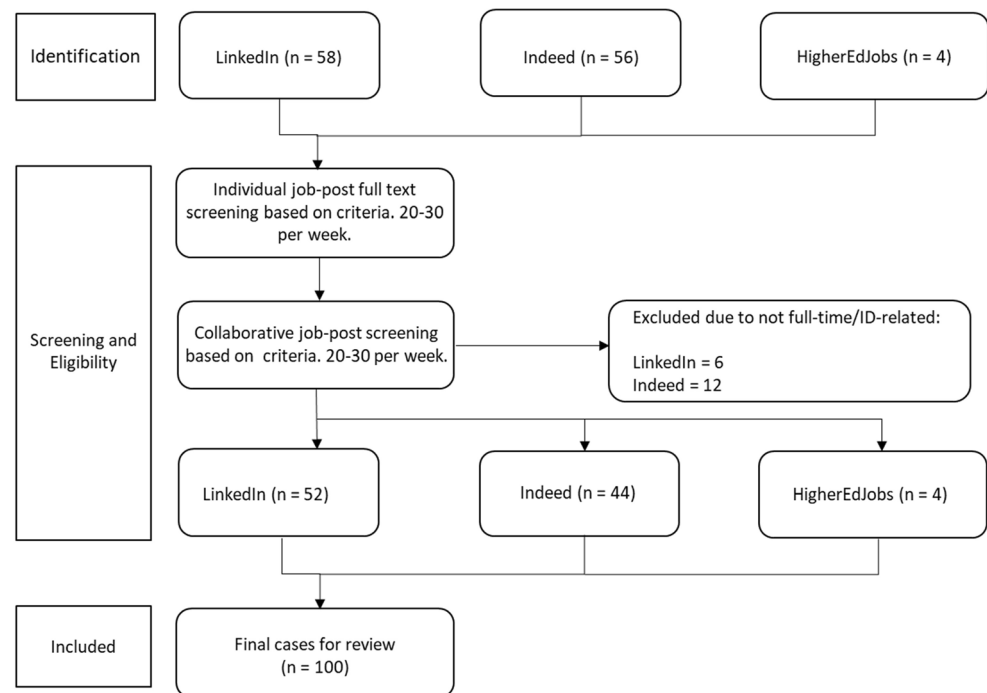
All authors convened each week to assess our coding reliability on the sets as well as to determine whether any cases did not fully meet inclusion criteria. Out of the 100 cases, we had 88% in full coding agreement across all 23 capabilities. Any and all discrepancies were discussed and resolved together.

Results and Discussion

RQ1: What can we learn about the requirements of instructional designers from current job descriptions in comparison to the 2020 ATD Talent Development Capability Model?

To help answer RQ1, we can investigate what is required most from instructional designers by detailing the capability frequencies. Major subjects, themes, and patterns within the job postings are represented by keywords (Luborsky, 1994; Wu

Fig. 1 Job-post Screening Flowchart.



et al., 2012). Observing keyword frequencies then, according to Krippendorf (1980) and Luborsky (1994), can allow for core subjects, knowledge domains, and, in this case, core capabilities to manifest. These “manifest contents” (Wu et al., 2012, p. 359) can then be further analyzed, linked, and connected to other content (Krippendorf, 1980; Luborsky, 1994). Among the three domains within the ATD Talent Development Capability Model, “Developing Professional” (DP) had far more mentions than the other two. When analyzing the 100 job postings, there were 346 instances of a “Developing Professional” capability, while there were 193 instances of “Building Personal” (BP) and only 94 instances of “Impacting Organizational” (IO) capabilities. For descriptions of each capability in the ATD model, see ATD, 2020d.

While this result does not mean that BP and IO are not important capabilities, it suggests that employers and those who create job postings are first and foremost searching for applicants with skills and experience in the DP domain. The capabilities within the Developing Professional domain are most specific to the requirements of the job, describing the functional skills necessary to perform. ATD states that, “this domain of practice embodies the knowledge and skills talent development professionals should possess to be effective in their roles of creating the processes, systems, and frameworks that foster learning, maximize individual performance, and develop the capacity and potential of employees” (ATD’s talent development capability model, 2021). On the other hand, the BP domain provides descriptions of skills that all working professionals should have to be successful. These may not appear as frequently in job postings as they may be assumed

to be necessary of all potential employees. Conversely, the IO domain may not appear as frequently due to a lack of understanding or evaluation not being a prominent job requirement. Often, once a project is complete, the need to move onto the next project outweighs the need to evaluate and determine the impact of the project on the organization as a whole.

High Frequency

The five capabilities we detected the most in the 100 job postings were Instructional Design (ID), Training Delivery & Facilitation (TDF), Technology Application (TA), Communication (COMM), and Collaboration and Leadership (CL).

Developing Professional: Instructional Design The search terms used to locate instances of this capability were “instructional” and “design.” The Instructional Design capability appeared in 99 out of the 100 postings. The single job that did not specifically use the term “instructional design” had a job title of “instructional systems designer.” In addition to the term “instructional design” appearing in the job title, it often appeared frequently in the job description. For example, in the Skills or Education (or similarly titled) sections of job postings, some specified a degree in instructional design. One example of this appeared in the Responsibilities section of a job posting, stating that the applicant should be able to “co-lead instructional design on multiple products with department staff.”

Table 1 Example of ATD Development Capability Model Capability, Description, and Keywords.

Name of capability	Description	Keywords to look for in job description
Impacting Organizational Capability: Talent Strategy and Management	“For an organization to realize its potential, talent development should be integrated into all components of talent strategy and management. Talent strategy and management are the practices used to build an organization’s culture, engagement, capability, and capacity through the implementation and integration of talent acquisition, employee development, retention, and deployment processes, ensuring these processes are aligned to organizational goals. Depending on organizational context and structure, broad partnerships with HR and line leaders will be needed.”	Keywords: talent strategy, talent management, culture, engagement, employee development, retention, goals

This result of the term “instructional design” appearing in 99% of the postings is not surprising due to the fact that the job search specifically looked for instructional design job postings. There has recently been an emergence of other job titles within the field, such as “learning experience designer,” for example. A broader search for other job titles may have resulted in fewer instances of the term “instructional designer.”

Developing Professional: Training Delivery & Facilitation The search terms used for this capability were “training,” “delivery,” and “facilitation.” Of the 100 job postings, 96 included a mention of talent delivery and facilitation. Throughout the job postings, talent delivery and facilitation varied in their application. For example, one posting required a training-related certification and/or experience in a training field. Another used the term as part of the job title “Training Developer.” Another included in its qualifications list that the applicant must have “excellent presentation and facilitation skills.”

Some jobs only require the instructional designer to develop the instructional modules. Under more normal circumstances, ID positions in higher education are often this way, with the course instructor delivering the instruction. In some industries, such as in the corporate sector, instructional designers may be responsible for developing, delivering, and facilitating training. When the COVID-19 pandemic shifted employees to work from home, a considerable amount of training and instruction had to transition from in-person to digital landscapes. Because the sample of job postings were curated during the pandemic, institutions and corporations might be looking for more delivery-focused skills, resulting in 96% of the job postings in the sample having instances of this capability.

Developing Professional: Technology Application The search terms used for this capability were “technology,” “tool,” and “multimedia.” There were 77 job postings that had mentions of these terms. Many instructional designers are now using authoring and presentation tools such as Adobe Captivate or Articulate 360. Some postings listed specific tools in which the applicant must be proficient, while others had broader technological skill requirements. One posting, for example, stated, “fluent in learning technologies and one or more major authoring tools” in its list of required skills.

As with Training Delivery & Facilitation, more distance-based technologies might play a role in the high frequency of Technology Application. Companies and institutions might be seeking applicants who can facilitate instruction through tools such as Zoom, Microsoft Teams, or certain Learning Management Systems. They may also look for skills in video creation,

Building Personal: Communication The search terms used for this capability were “communication” or “comm.” There were 71 job postings that had at least one mention of communication as a job requirement or necessary skill. Examples of these instances were often in the Required Skills (or similarly named) section, and included descriptions such as “excellent oral, interpersonal, and written communication skills.”

The authors found it surprising that there was not a higher frequency of this capability. Communication skills being understood as required, as with many other jobs, might explain this finding. As previously stated, excellent personal skills such as communication are necessary for any professional to be effective in their field.

Building Personal: Collaboration & Leadership Finally, among the highest-mentioned capabilities, 55 of the job postings placed an emphasis on the ability to collaborate with others. The search terms used for this capability were “collaboration,” “collab,” and “lead.” This capability was detected in job

postings with required skills such as “ability to work independently yet collaboratively in a team environment.”

It was surprising to the authors that this capability did not appear in more than 55% of the job postings. Similar to communication, ID relies on other people to make the best product possible. Perhaps collaboration is an assumed job requirement and needed skill for most professionals who work within a team of people.

Low Frequency

The three capabilities we detected the least often were Knowledge Management (KM), Lifelong Learning (LifeLong), and Business Insight (BI).

Developing Professional: Knowledge Management The search terms used for this capability were “knowledge” and “management.” There were only three jobs posting that had mentions of knowledge management as a job requirement. One posting required extensive instructional design knowledge and a track record with various applications. Another example appeared in the Responsibilities section of the job description as “managing standard operating procedures (SOP) documents and ensuring that their knowledge library is current and effective.”

Because instructional design is a multifaceted, synergistic activity involving teams whose members are frequently conveyed in various localities, it was somewhat surprising that knowledge management was in the bottom three capabilities. Instructional designers must have a firm understanding of knowledge management best practices and lessons learned while supporting the development of a knowledge management infrastructure by transforming knowledge into learning (McIver et al., 2016). Perhaps one explanation for this low number is that companies already have knowledge management systems in place due to long-lasting contracts. As such, depending on the level of the ID, they do not have recommendations for new systems. For example, many postings request specific Knowledge Management skills, like Adobe Captivate, meaning that the company likely uses Adobe management systems already. Changing systems might also take years and large amounts of collaboration between different company departments.

Building Personal: Lifelong Learning The search terms used for this capability were “lifelong,” “learn,” and “learning.” There were two job postings that mentioned lifelong learning as a required skill. One posting required commitment to continuous learning and professional development. Another example appeared in the Responsibilities section as implementing learning solutions that will assist the business to meet future growth.

Instructional designers can demonstrate the value of lifelong learning by seeking knowledge for continuous learning and for personal/professional development for themselves and for others (Cross, 1981). The low frequency of lifelong learning as a required skill is somewhat surprising. It might be due to budget cuts and lifelong learning being more individual than organization-based. Most of the job postings were at the ID level, and oftentimes organizational support for professional development comes from allocating money from the budget. The budget is typically in the control of the department leader, not the individual contributor. Additionally, labor and opportunities abound, so perhaps companies are less concerned about lifelong learning if the worker can quit anytime in right-to-work states.

Impacting Organizational: Business Insight The search terms used for this capability were “business” and “insight.” Among the least-mentioned capabilities, only one job posting specified the need of an instructional designer to have a level of providing business insight as a job requirement. That posting required providing the business with critical insights using analytics. Instructional designers should understand general business standards and the specific business or organization in which they work, as both are fundamental in aligning the organization’s business strategy of delivering the learning experience and achieving results for its users and stakeholders (Villachica et al., 2010). Perhaps higher-level or sales-oriented positions include more Business Insight (BI) capabilities. At the individual contributor level, instructional designers might not need to sell products; however, if an Instructional Designer does not have BI, then expectations for training others in BI would be difficult to successfully achieve.

RQ2: How is instructional design operationalized in the lens of various sectors?

In addition to the data collected from the sample of job descriptions that was compared against the ATD Talent Development Capability Model, data from the job descriptions yielded additional information about how instructional design is operationalized in the lens of various sectors. To compare the data, each job was coded for the following: level of job, experience, education, authoring tools mentioned, learning management system (LMS), other tools/preferences, models, and setting. (For more information about each of these codes, refer to Appendix 3 (Table 5).)

Fisher’s exact test was employed to test the association between two categorical variables: educational requirements and job setting (Agresti, 2013). Specifically, educational degree requirements were coded as high school, bachelor’s, bachelor’s but master’s preferred, master’s, or PhD. The settings were coded as corporate, education, non-profit, or government. This information came primarily from each job

description, with some information on companies' job settings sought by visiting a company's website to learn more about them. Using Fisher's exact test, the results show that there is a significant association ($p < .001$) between the job setting and the educational requirements stated in the job description. For corporate settings, more jobs than expected require bachelor's degrees and fewer jobs than expected require a master's degree or higher. On the contrary, for higher education settings, more jobs than expected required master's degrees or higher and fewer jobs than expected required bachelor's degrees. While this may not be surprising to some job seekers, it does indicate that job applicants with bachelor's degrees already possess the educational requirements for a corporate role.

Instructional Design Software

Given the variety of settings and requirements listed in instructional design job postings, we also coded names of specific products mentioned in job descriptions. The full list can be seen in Table 2. For specific authoring tools, Articulate Storyline edged out Adobe Captivate as the one mentioned most frequently in the job descriptions. In addition, approximately 10% of job postings ($n = 11$) mentioned that they were looking for instructional design candidates who had experience with both Articulate Storyline and Adobe Captivate. This could be for a variety of reasons including an organization having access to both of these eLearning authoring tools or wanting a candidate who had the flexibility to use either. Other tools specifically mentioned included TechSmith Camtasia (a video creation/editing tool), Adobe Creative Cloud, Microsoft Powerpoint, Vyond (an animated video creation tool), and Lectora.

Table 2 Specific Tools, LMS, and Models Mentioned in Job Postings.

Name of product	Number of times mentioned in the sample of job postings
Articulate Storyline	36
Adobe Captivate	29
TechSmith Camtasia	21
ADDIE	15
SCORM	13
Adobe Creative Cloud	11
Canvas Learning Management System	9
Microsoft PowerPoint	7
Blackboard Learning Management System	6
Vyond	5
Lectora	5
xAPI	5
Kirkpatrick Model	4
Moodle	2
Cornerstone OnDemand	2

Learning Management Systems

In the sample of job postings, almost 50% of our sample ($n = 47$) mentioned that instructional designers would be expected to use a learning management system to deliver learning experiences without specifying a particular system. For the job postings that did mention specific learning management systems, the most popular was Canvas, mentioned in nine job postings. Also mentioned were Blackboard (six), Moodle (two), and Cornerstone OnDemand (two). SCORM was mentioned specifically in 13 of the job postings. In addition, there were two job postings that mentioned learning experience platforms (LXPs) specifically, and five job postings mentioned that instructional designers should have knowledge of xAPI.

Conclusion and Suggestions

For anyone looking to become an ID, our review shows the skills job seekers may wish to focus, as these are the skills most often found in job postings, as well as what to expect regarding potential roles and responsibilities. The three capabilities organizations currently tend to look for the most, aside from Developing Professional: Instructional Design, are Talent Delivery and Facilitation (TDF), Technology Application (TA), and Communication, as determined by the frequency with which they appeared in the results. This is not to say that other capabilities are not important and should not be improved. On the contrary, some skills and capabilities may be assumed to be necessary for all job applicants, regardless of field, and thus do not frequently appear as searchable terms within the job postings. Also, some

capabilities, such as consulting and business partnering, could be easier to convey in a job interview compared to other capabilities like training delivery and facilitation. As a general suggestion based on these results, ID job seekers may wish to display strong TDF, TA, and Communication capabilities in order to appeal to a range of companies.

Talent Delivery and Facilitation

In many industries, the purpose of the Instructional Designer is to “help individuals improve performance at work by learning new skills and knowledge” (Association for Talent Development, 2020a). It corresponds that many of the reviewed job postings described a responsibility of facilitating instruction and learning for the end-users. This may include preparing a physical or a virtual environment.

We suggest that ID job seekers looking for TDF experience volunteer to produce events in a virtual conference through their local ATD chapter. Alternatively, job seekers might develop eLearning modules and put them on social media for feedback. A job seeker can also join Toastmasters to hone TDF skills.

Technology Application

As learning opportunities become more and more digital, especially for corporate employees, instructional designers are frequently called on to be their company or department’s technology experts. Disruption via technology will continue to be a reality for organizations and talent development functions. Talent development professionals must have the ability to identify, select, and implement the right learning and talent technologies that serve the best interests of the organization and its people. Practitioners should be able to identify opportunities to adapt and leverage the right technologies at the right time to meet organizational goals. In postings mentioning applying technology, many mentioned selecting/supporting the learning management system.

To improve TA, job seekers will need to learn to evaluate technology. We suggest conducting a substantial analysis of what a specific organization needs - perhaps an organization in which the job seeker is interested in applying - rather than using a new trendy system simply because it is new on the market. Knowing audiences and how they interact with the technologies they currently have—as well as ones they would like to have—is also beneficial. It is inadvisable, both at the job-seeking and professional level, to assume that because a few people like something then the population will like it too.

Even for entry-level job seekers, having a strong knowledge of available technologies will benefit themselves and the company. Many employers are open to new ideas, especially if these ideas will improve efficiency or save money. Although new or entry-level employees may not immediately

be able to select technology for their own use, having a list of technologies that the applicant is confident using and could recommend is valuable.

On the other hand, job seekers looking for upper-level positions may be asked to select technology and provide evidence for their choice(s). Building expertise in a range of technology, and an understanding of how different technologies may be important for different purposes, can be very important for finding a new job in a new field. Preparing for an interview with knowledge and skills in a variety of technology applications is important.

Communication

Instructional designers need to effectively and appropriately communicate a message to their learners or end-users. As communication is truly at the core of everything an instructional designer does, it is not surprising that this capability would be seen so frequently among the job descriptions in this review. Communication also goes hand in hand with collaboration. Instructional designers often work in cross-functional teams, making the ability to collaborate a necessity, and making effective communication even more important. As leaders, Instructional Designers can promote collaboration within their teams by providing motivation, establishing rules, recognizing and rewarding collaborative behavior, and building trust. A leader should also be able to manage and diffuse conflict and provide quality feedback. Entry-level positions are also required to show good communication skills in order to collaborate and work effectively within their team and with those outside of their team.

We advise ID job seekers to invest in and develop soft skills, delivering content in an effective way rather than a commanding way. We also advise improving visual design skills, because visuals can ease communication via information design rather than through copious text. Finally, job seekers should be asking for feedback to know where improvements can be made.

Implications for Formal Training

While instructional design is a profession that casts a wide net from the setting of practice to expectations on the job, there are many ways that formal education can better prepare instructional design students. One way is more interaction with clients. From working with a subject matter expert to a product manager to a faculty/administrator, instructional designers are the experts in processes while working with content. Working with a client is a critical job function of an instructional designer (Rowland, 1993). While it can be difficult to find real-life clients, formal education programs can look to various professional development organizations for partnerships. For example, a local Association for Talent and

Development chapter could partner with a formal instructional design program to serve as clients to ID students and give them the practice of talking through a needs analysis, working with a subject matter expert to format curriculum, creating a storyboard for the subject matter expert to sign off on, and designing a learning experience. Setting up a learning opportunity like this not only gives students an opportunity to get involved with a professional development organization, it provides them access to practitioners who could help them in their future careers. Additionally, partnerships like this give students formative learning experiences, a safe place to fail, and the opportunity to receive feedback from instructional design practitioners, which adds value to the formal education experience.

Another consideration is the opportunity to see practitioners in action. York & Ertmer (2016) found from surveying 31 instructional designers that instructional design is a problem-solving process more than anything else. Instead of memorizing steps in a model, shadowing opportunities and practitioners' day-in-the-life video diary entries provide ID students with stories they can learn from, including lessons learned and tactics applied. Similarly, formal instructional design programs should consider having clinical faculty be a part of the program. Clinical faculty should be instructional designers from various settings who can provide more guidance on doing the job and not just research.

In 2020, as COVID-19 impacted the world, instructional designers became even more of a necessity in both higher education and corporate settings. In the next three to five years, it is likely the profession will continue to grow as more K–12 educators and other professionals look to make the leap into instructional design. For them to be successful practitioners, they not only need a working knowledge of instructional design theories and history but also opportunities for real-life practice. Instructional designers, much like the history of their profession, are influenced by multiple factors when creating a learning experience. For formal education programs to better prepare future practitioners, further study is needed to understand when and how instructional designers build learning experiences and examine holistically their professional judgment, influences, and constraints.

Limitations and Future Directions

Due to the search criteria requiring “instructional designer,” it seems natural that the highest frequency capability would be instructional design. It is also possible that some capabilities are more easily conveyed in an online job posting than others. For example, an employer might be able to concisely and directly explain the importance of communication better than knowledge management. Even

further, some capabilities lend themselves to development over time and are challenging for a potential employer to assess early on, such as Business Insight. Although we chose to search for keywords that directly align with the ATD Talent Development Capability Model, job-posters might have used synonyms or adjacent terminology that are related to the model. The research team took several steps to lessen the impact of this limitation (see Methods section). Finally, because the Talent Development Capability Model is so new, it is possible that many employers have not updated their job postings and or potential-employee search criteria to match the wording of the new model. Researchers may wish to repeat this review in the future with new job postings. Additionally, due to ATD now transitioning its focus from learning and development to talent and development, some of the capabilities can be harder to find in instructional designer job roles.

In the future, researchers may wish to compare job postings during the COVID-19 pandemic with job postings prior to the pandemic to determine if employers' expectations of instructional designers changed. Additionally, future research may include collecting job postings some time after the pandemic has subsided and comparing the results to those of the current research or comparing to job postings prior to the pandemic. Perhaps more employers will allow remote employees than before, or require different training skills and techniques of their instructional designers. While this is an interesting and related topic, it is outside the scope of the current research. Job postings for this research were collected during the height of the pandemic lockdowns in the United States, therefore, noting COVID-19 was important.

In conducting this review, we hope to provide an explanation and description of the necessary skills and capabilities for professionals seeking a career in instructional design. Future directions for capabilities research might involve longitudinal trends in job postings. There are also qualitative aspects that can inform results, such as interviewing job seekers and professionals regarding intersections between the job market and the ATD talent development capabilities model.

Ethical Approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the instructional and/or national research committee and the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study. This article does not contain any studies with animals performed by any of the authors.

Appendix 1

Table 3 ATD Capabilities and Keywords Utilized

Core Capability	Capability	Keywords
Building Personal	Communication	Communication, comm
	Emotional Intelligence and Decision-Making	Decisions, decide, emotion
	Collaboration and Leadership	Collaboration, collab, lead
	Cultural Awareness and Inclusion	Diverse, diversity, culture, cultural, awareness
	Project Management	Project+management
	Compliance and Ethical Behavior	Ethic, ethics, ethical, compliance
	Lifelong Learning	Lifelong, continuous, learning
Developing Professional	Learning Sciences	Learning, sciences
	Instructional Design	Instructional, design
	Training Delivery and Facilitation	Delivery, facilitation
	Technology Application	Technology, application, tool, multimedia
	Knowledge Management	Knowledge, management
	Career and Leadership Development	Leadership, development
	Coaching	Coach, coaching
Impacting Organizational	Evaluating Impact	Evaluating, evaluate, impact
	Business Insight	Business, insight
	Consulting and Business Partnering	Business, partnering, consult, consulting
	Organization Development and Culture	Development, culture
	Talent Strategy and Management	Talent strategy, talent management, culture, engagement, employee development, retention, goals
	Performance Improvement	Performance, perform, performing, improvement
	Change Management	Change, management, versatile, versatility, flexibility
Data and Analytics	Data, analytics	
Future Readiness	Future, readiness, emerging+trend	

Appendix 2

Table 4 ATD Capabilities Model and Brief Excerpts

Core Capability	Capability	Brief Excerpt
Building Personal	Communication	“Strong communication skills, especially written; able to translate complex concepts into appropriate language for a wide range of learners with varying backgrounds.”
	Emotional Intelligence and Decision-Making	“Partner with our Product Management team to help make informed content design decisions and our Media Production team to conceptualize visual aids and graphics for supporting course content.”
	Collaboration and Leadership	“Author eLearning lessons, storyboards, exercises and supporting material either independently or in collaboration with other content developers and/or subject matter experts.”
	Cultural Awareness and Inclusion	“Diversity, equity, and inclusion are core values of Germanna Community College. We recognize our responsibility to create, maintain, and nurture an academic and social environment that respects the diversity of people and ideas. We are committed to being an inclusive community that respects all cultures, experiences, and abilities and that prepares individuals to thrive in a global society.”
	Project Management	“Outstanding project management, problem solving, and organizational skills.”
	Compliance and Ethical Behavior	“Developing learning with ADA compliance in mind.”
	Lifelong Learning	“Highly motivated and committed to continuous learning and professional development.”
Developing Professional	Learning Sciences	“The Instructional Designer leverages expertise in learning science and an in-depth understanding of...tools and technology to create learning best practices for our boot camp courses.”
	Instructional Design	“Designs and implements modern instructional design and engaging user experiences...”
	Training Delivery and Facilitation	“Plans and develops online training materials, which may include technical writing, in alignment with established guidelines and needs of the department, faculty, staff and students.”
	Technology Application	“Creating and/or updating SCORM based courses using Articulate Storyline 360...creating multimedia, graphics, and interactive course solutions.”
	Knowledge Management	“Knowledge of subject matter expert selection in alignment with organizational programming, objectives, and stakeholder needs...knowledge to understand and interpret the end-user experience.”
	Career and Leadership Development	“Help managers develop their team members through career-path road-mapping.”
	Coaching	“Implement various learning methods company-wide (e.g., coaching, job-shadowing, online training).”
Impacting Organizational	Evaluating Impact	“Evaluate and enhance the overall content design of existing Esri curriculum.”
	Business Insight	“...provides business critical insights, ensures cross-functional alignment of goals and execution, and helps teams drive new initiatives forward. We stay focused on aligning the highest-level company priorities with day-to-day operations, and help evolve early-stage ideas into future-growth initiatives.”
	Consulting and Business Partnering	“Tackle any phase of development required in the process of bringing training experiences to life, from the beginning stages of consulting with clients and developing the training strategy to writing and developing scripts and other training materials, to QA, final design, and delivery.”
	Organization Development and Culture	“Apply instructional design, organizational development, adult learning principles, learning evaluation and learning management best practices to lead course development cycles (ADDIE).”
	Talent Strategy and Management	“Incorporate learning experiences in courses to develop the unlimited potential of...talent in achieving our universal mission, vision and goals.”
	Performance Improvement	“Advanced level skills in application of planning, resourcing and monitoring of effective design life cycles of training and other learning and performance solutions to support the organization.”
	Change Management	“Understand change management and apply such principles to training strategies.”
Data and Analytics	“Partners with our HR analytics team to use data and analytics to understand learner behavior and drive continuous improvement in our learning solutions.”	
Future Readiness	“Research emerging trends in educational technology and support their implementation as appropriate.”	

Appendix 3

Table 5 Job Sector Coding Explained

Name of variable	Description
Level of Job	Coded as junior instructional designer, instructional designer, senior instructional designer, instructional design manager and instructional design director based on job name from the job description.
Experience	Open code to list the range of experience requested by the job description. Examples include 2–4 years, 3–5 years, 5+ years, etc.
Education	Coded as high school, bachelor BA/BS, bachelor's, master's preferred, master's, or PhD.
Authoring tools	Open code to include if the applicant needs any proficiencies using specific eLearning authoring tools or video creation software. Examples include Articulate Storyline, Adobe Captivate, TechSmith Camtasia, Lectora, Domiknow, etc.
LMS	Coded as yes/no if learning management system (LMS) knowledge or administration was mentioned in the job description. If a specific LMS was mentioned, it was also captured. Examples include Canvas, Blackboard, Moodle, Cornerstone OnDemand, etc.
Other tools/- preferences	Open code to include if the applicant needs any proficiencies in other tools/preferences that are not authoring tools or learning management systems. Examples include augmented reality, virtual reality, xAPI, Javascript, Zoom, etc.
Models	Open code to include if the applicant needs any knowledge about specific models and frameworks to instructional design. Examples include backwards design, Successive Approximation Model (SAM), ADDIE, etc.
Setting	The setting of the job. Coded as corporate, higher education, non-profit, or government

Appendix 4

AECT Code of Conduct

The AECT Code of Professional Ethics 2018

Preamble 1. The Code of Professional Ethics contained herein shall be considered to be principles of ethics. These principles are intended to aid all members of the educational communication and technology profession individually and collectively in maintaining a high level of professional conduct. 2. The Professional Ethics Committee will build documentation of opinion relating to specific ethical statements enumerated herein. 3. Amplification and/or clarification of the ethical principles may be generated by the Professional Ethics Committee in response to a request submitted by a member. 4. Concerns about ethical matters involving members of AECT should be addressed to the Chair of the Professional Ethics Committee. (See the note following the end of this document.) The policies of ISTE regarding codes of conduct for members and events located at "<https://www.iste.org/membership/codes-of-conduct>" are incorporated into this AECT Code of Ethics, with "AECT" replacing "ISTE" everywhere it appears. Members are expected to engage in the "expected" behaviors and to avoid the "unacceptable" behaviors described in those policies. In addition, AECT will implement the consequences described in those policies.

This integration of the ISTE codes is as of December 5, 2018. If the ISTE codes of conduct change in the future, AECT reserves the right to determine whether those changes are also to be integrated into its policy. The email address for filing a written complaint is abbasj@cameron.edu, and the email address for asking questions and providing feedback is abbasj@cameron.edu

Section 1 - Commitment to the Individual Learner:

In fulfilling obligations to the individual learner, the member:

1. Shall encourage independent action in the individual learner's pursuit of learning and shall provide access to varying points of view.
2. Shall protect the individual learner's rights of access to professional or instructional materials of varying points of view.
3. Shall guarantee to each individual learner the opportunity to participate in any appropriate educational program.
4. Shall conduct professional activities so as to protect the privacy and maintain the personal integrity of the individual learner.
5. Shall make reasonable efforts to protect the individual learner from learning environments or working conditions harmful to health and safety, including harmful conditions caused by technology itself by following professional procedures for evaluation and selection of materials, equipment, and furniture/carts used to create educational work areas.
6. Shall not stalk, bully, injure, harass, defame or retaliate against any person through any media or in any way or violate any person's right or privacy, professional

development, or right to publication or diminish an individual's integrity, rights, or educational opportunities

Section 2 - Commitment to Society:

In fulfilling obligations to society, the member: 1. Shall represent accurately the member's institution or organization and take adequate precautions to distinguish between personal and institutional or organizational views. 2. Shall represent accurately the facts concerning educational matters in all public expressions. 3. Shall minimize any negative environmental impacts of educational technologies. 4. Shall promote the responsible use of communication media for learning and social purposes. 5. Shall seek to encourage the development of programs and media that emphasize the diversity of societies as multicultural communities

Section 3 - Commitment to the Profession:

In fulfilling obligations to the profession, the member: 1. Shall accord just and equitable treatment to all members of the profession in terms of professional rights and responsibilities, including being actively committed to providing opportunities for culturally and intellectually diverse points of view in publications and conferences. 2. Shall not use coercive means or promise special treatment in order to influence professional decisions of colleagues by accepting gratuities, gifts, or favors that might impair professional judgment, or offer any favor, service, or thing of value to obtain any personal advantage. 3. Shall avoid commercial exploitation of membership in the Association for private gain and shall engage in fair and equitable practices with those rendering service to the profession through proper channels. 4. Shall strive continually to improve professional knowledge through research and implementation of best learning and teaching practices, and shall make available to patrons and colleagues the benefit of those professional attainments through design practices, presentations, and publications. 5. Shall represent personal professional qualifications and the professional qualifications and evaluations of colleagues accurately, including giving accurate credit to those whose work and ideas are associated with publishing in any form. 6. Shall promote current and ethical professional practices in the use of technology in education. 7. Shall delegate assigned tasks to qualified personnel with appropriate training or credentials and/or who can demonstrate competency in performing the tasks. 8. Shall inform users of the stipulations and interpretations of the laws affecting our profession and support compliance through our professional activities. 9. Shall conduct research using professionally accepted guidelines and procedures, especially as they apply to protect participants from harm. 10. Shall report, without hesitation, illegal or unethical conduct to the current Chair of the AECT Professional Ethics Committee. There should be compliance with all laws and professional standards. An infraction should be reported to the appropriate authority including civilian authority if appropriate

Note First adopted in 1974, adherence to the AECT Code became a condition of Association membership in 1984. This version was approved by the Professional Ethics Committee on July 13, 2018, and then by the AECT Board of Directors on October 19, 2018. Concerns about ethical matters involving members of AECT should be addressed to the current Chair of the Professional Ethics Committee. The Chair of the Ethics Committee will keep the Executive Committee informed of any ongoing discussions related to allegations of violation of the Code of Ethics and potential solutions

Appendix 5

AECT Instructional Design Standards for Distance Learning

Standard 1: Purpose. Effective course design begins with a clearly articulated purpose. This is the standard to which all other standards must align. The purpose may be thought of as two-dimensional: institution or instructor and student. The design should include both the purpose of the course as envisioned by the institution or instructor and the purpose as viewed by the student. As the purpose is articulated through goals and objectives, the collaboration between instructor and student will set a firmer foundation than can be achieved through a one-dimensional purpose statement

Standard 2: Assumptions. Course design must take into account assumptions that shape the purpose and subsequent course development. Most assumptions are based on students' prior knowledge and established understandings and skills. Articulating these content assumptions provides a starting point for new learning. Assumptions in the case of online learning also encompass students' ability to use delivery technology

Standard 3: Sequence. Learning opportunities must be sequenced in a manner that promotes efficient knowledge acquisition consistent with the prior-knowledge assumptions. Various models of sequencing—linear, spiral, scaffold, etc.—should be considered, and the course design should incorporate those strategies best suited to the content within the constraints of online delivery

Standard 4: Activities. Learning is achieved through activities both passive (reading, listening, viewing) and active (experimenting, rehearsing, trying). Activities should be chosen that best suit the content, students' levels of knowledge, experience, and ability, and online delivery constraints, particularly accommodating synchronous, asynchronous, and mixed course participation. Student self-selected or self-developed learning activities should be incorporated along with instructor-selected and instructor-developed activities, consistent with a two-dimensional purpose

Standard 5: Resources. A range of resources should be articulated to foster deep learning and extend course-centered experiences and activities. Resources should be multimodal to accommodate students' interests, understandings, and capacities, consistent with course content and technological accessibility. Resources should allow students to go beyond the constraints of the formal course structure to engage in self-directed, extended learning

Standard 6: Application. Consistent with providing for active learning, students should have integral opportunities within the course design to apply new learning. Effective course design incorporates opportunities to practice newly acquired understandings and skills, both independently and collaboratively. Online collaborative application opportunities should be developed using social media, and offline collegial groups also should be structured whenever the physical proximity of students affords this opportunity

Standard 7: Assessment. Regardless of the model of sequencing learning opportunities, the sequence should include points of assessment for purposes of feedback and review, with instances of re-teaching as necessary for students to acquire full understanding. Formative assessment, whether formal, informal, or incidental, allows teachers and students to give feedback to one another and to review the operationalized design in order to revise the course design based on students' input with regard to knowledge acquisition and effective use of new understandings and skills

Standard 8: Reflection. Effective course design must include opportunities for reflection as an extension of the Feedback/Review/Reteach standard. Reflection involves both instructor self-reflection and student self-reflection related to the achievement of the purposes that have been articulated as the basis for the course. Such reflection is intended to deepen the learning experience and may serve as the reiteration of purpose at key points during the course

Standard 9: Independent Learning. Effective course design incorporates opportunities for independent learning, both instructor- and self-directed. Online course development, particularly in the asynchronous mode, should epitomize independent learning, which should include opportunities for feedback, review, and reflection—all of which should resonate with the purpose

Standard 10: Evaluation. Course evaluation must be purpose-driven. Alignment with the purpose should be threefold: a) based on an acquisition of new knowledge, understandings, and skills; b) based on instructor self-evaluation; and c) based on student self-evaluation. Multidimensional evaluation offers a fully articulated basis for judging the success of the course and the students as well as providing information that can help shape future iterations of the course

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