CASEmakers
Sources of Information About Early Childhood & Family Support Practices

# Sources of Information about Design and Technology for Developing Online Professional Development

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**Abstract**

Selected references providing information about online professional development are included in this *CASE*maker. For purposes of this paper, online professional development or e-learning is post-secondary or in-service professional training provided to an individual using a digital device like a computer, tablet, or smart phone. The source material in this bibliography provides a foundation for understanding instructional design and technical elements needed for constructing online professional development. The source materials should be useful to programs and individuals who are developing online professional development and may be particularly useful to the fields of early childhood intervention and early childhood special education.

## Introduction

Online learning is a preferred delivery method of professional development among early childhood practitioners because of its flexibility, accessibility, anonymity, and relative cost (Barnes, Guin & Allen, 2018; Stone-MacDonald & Douglass, 2015). Online learning provides practitioners access to more learning opportunities and capitalizes on how adults learn by providing just-in-time training with practical job implications (Merriam & Bierema, 2013). Online professional development allows flexibility and self-pacing for the practitioner that face-to-face does not, and often provides a less expensive option to face-to-face trainings (i.e., conferences, workshops, and on-site training).

Creating and deploying online professional development has become easier to create with the advances in digital technology. The quality of online professional development depends on using sound course development practices. Developers should understand adult learning theory and implement multiple elements of instructional design and digital technology to effectively produce online professional development that engages the practitioner and accomplishes the intended learning objectives (Cercone, 2008). A framework is helpful in developing training that meets the user's identified need. Online training is created within a digital package that is enhanced by visual, auditory, and multimedia elements. This CASEmaker bibliography includes selected references pertaining to instructional design and technical elements to consider in creating online professional development aligned with adult learning theory.

## Stages of Course Development

Online professional development should follow a framework. Within the framework, the need and content should be appropriate for the adult learners and applicable to their work. Multiple resources exist to guide the process of creating online professional development. Common stages that appear throughout the literature include conducting a needs assessment, developing instructional content, designing instructional formatting, and evaluating the effectiveness of the learning experience. Developing the e-learning often involves use of varying professionals with different skills to produce the final product. The following references include information on the various frameworks for online professional development and explain or guide decisions in the development process.

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Clark, R. C., & Mayer, R. E. (2016). *e-Learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning* (4th ed.). Wiley.

Kavadella, A., Kossioni, A. E., Tsiklakis, K., Cowpe, J., Bullock, A., Barnes, E., Bailey, S., Thomas, H., Thomas, R., Karaharju-Suvanto, T., & Suomalainen, K. (2013). Recommendations for the development of e-modules for the continuing professional development of European dentists. *European Journal of Dental Education, 17,* 45-54.

Ross, J. D. (2011). *Online professional development: Design, deliver, succeed!* Corwin.

### Relevant Content That Meets User Need

As with any professional development, the content is foremost in importance and should be relevant to the intended learner. Adult learning theory stresses adults will retain information that is relevant to their life, which includes their career. Content must be relevant to the practitioner to be useful and put into practice (Qian et al., 2018). The objectives and the audience of the online professional development should guide the authors and designers in developing all aspects of the learning experience (Bean, 2014). A needs assessment is a highly recommended starting point to gather information about potential highly relevant content (Farris, 2015; Spence et al., 2018). The following references provide guidance for understanding how to match the online professional development to the needs of the learner.

**Rx Prescription for Practice Rx**

The prescription for practice lists four references especially important in the ongoing research of evidence for creating online professional development.

Bean, C. (2014). *The accidental instructional designer*. ATD Press.

Cuevas, R. F. (2019). *Course design formula: How to teach anything to anyone online*. Learn and Get Smarter, Inc.

Kavadella, A., Kossioni, A. E., Tsiklakis, K., Cowpe, J., Bullock, A., Barnes, E., Bailey, S., Thomas, H., Thomas, R., Karaharju-Suvanto, T., & Suomalainen, K. (2013). Recommendations for the development of e-modules for the continuing professional development of European dentists. *European Journal of Dental Education*, *17*, 45-54.

Ross, J. D. (2011). *Online professional development: Design, deliver, succeed!* Corwin.

Bean, C. (2014). *The accidental instructional designer*. ATD Press.

Farris, S. (2015). Think "E" for engagement: Use technology tools to design personalized professional e-learning. *Journal of Staff Development*, *36*(5), 54–58.

Qian, Y., Hambrusch, S., Yadav, A., & Gretter, S. (2018). Who needs what: Recommendations for designing effective online professional development for computer science teachers. *Journal of Research on Technology in Education, 50*(2), 164-181.

Spence, C. M., Connor, S. M., Burke, T., Cheema, J. R., & Ostrosky, M. M. (2018). Assessing early intervention provider needs. *Infants & Young Children, 31*(1), 53-68.

### Digital Technology and Technical Support

The digital platform, technology available, and technical support intertwine to make the online professional development useful to the learner. The online platform used should match the goals for the professional development activity and characteristics and abilities of the anticipated users (Faustmann et al., 2019). Popular platforms for profession development include Learning Management Systems (LMS), Course Management Systems (CMS), and Massive Open Online Courses (MOOC). Developers should understand the features and limitations of the chosen platform technology and have in-house or contracted staff to design and integrate the professional development content into the technical platform. Also, technical support is essential for online learning. Developers should include technical assistance information listing possible problems, solutions, and ways to connect with technical assistance in case the learner gets stuck due to a technical glitch. (Karthik et al., 2019). If the learner struggles with technology issues, the training may be frustrating and may prevent knowledge transfer (Park & Wentling, 2007). The following references include examples of professional development constructed on varying platforms and suggestions for technical support.

Conway, H. (2018). Establishing an e-learning program within Mirion's training program in the nuclear measurement industry. *Journal of Radioanalytical and Nuclear Chemistry, 318*(1), 183-185.

Ginda, M., Richey, M. C., Cousino, M., & Börner, K. (2019). Visualizing learner engagement, performance, and trajectories to evaluate and optimize online course design. *PLOS ONE, 14*(5), Article

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Faustmann, G., Kirchner, K., Lemke, C., & Monett, D. (2019). Which factors make digital learning platforms successful. In *13th Annual International Technology, Education and Development Conference (INTED), Valencia, Spain* (pp. 6777-6786).
Hollebrands, K. F., & Lee, H. S. (2020). Effective design of massive open online courses for mathematics teachers to support their professional learning. *ZDM -Mathematics Education, 52*, 859-875.
Karthik, B. S. S., Chandrasekhar, B. B., David, R., & Kumar, A. K. (2019). Identification of instructional design strategies for an effective e-learning experience. *The Qualitative Report, 24*(7), 1537-1555.
Park, J. H., & Wentling, T. (2007). Factors associated with transfer of training in workplace e-learning. *Journal of Workplace Learning*, *19*(5), 311-329.

### Alignment with Instructional Design

An understanding of instructional design aides in developing online course content the learner will find engaging and easy to process. Materials used with face-to-face lessons do not transfer directly to an online format. Cuevas (2019) stresses original training material needs to be reformatted into chucks or sub-sections that are short and succinct. The "chunks" of information need to be sequenced and presented at a pace that allows the learner time to absorb the information. Online components should be formatted to allow the learner to "work at their own pace, review audio and video training units, and reference information as many times as suited their learning style" (Pittman & Lawdis, 2017, p. 86). Karthik and colleagues (2019) explain that "employing authentic stories or scenarios in the virtual instructional environments and unraveling the facts about a problem that individuals and organizations face" increase the learner's engagement and reflection in the e-learning (p. 1545). Providing case studies or scenarios within the online professional development allows the learner to use problem-based learning and to practice new knowledge and skills in the pretend environment. The following references provide guidelines for formatting and sequencing online content and using problem-based learning scenarios to promote learning.

Bravender, M., & Staub, N. (2018). Using interactive, problem-based simulations in a mentoring program for novice school leaders. *Education Leadership Review, 19*(1), 77-91.
Cuevas, R. F. (2019). *Course design formula: How to teach anything to anyone online*. Learn and Get Smarter, Inc.
Karthik, B. S. S., Chandrasekhar, B. B., David, R., & Kumar, A. K. (2019). Identification of instructional design strategies for an effective e-learning experience. *The Qualitative Report, 24*(7), 1537-1555.
Moore, R. L. (2019). Welcome to Normalton: Leveraging effective e-learning principles for adult learners. *International Journal of Designs for Learning, 10*(1), 155-165.
Pittman, C. O., & Lawdis, K. (2017). Does the use of multifactorial training methods increase practitioners' competence? *Journal of Educators Online, 14*(2), 83-89.
Varonis, E. M. & Varonis, M.E. (2015). Deconstructing Candy Crush: What instructional design can learn from game design, *International Journal of Information and Learning Technology, 32*(3), 150-164.

### Multimedia Elements

Using multimedia elements (visual and auditory) within online professional development has been shown to facilitate the learner's understanding of the material and engagement with the training (David & Glore, 2010; Reyna, 2013; Toci et al., 2015). Aesthetically pleasing audio and visual elements direct the learner to the key points encouraging learners to react to and interact with the online material. Videos are popular elements to include in online professional development, and they can provide visual examples that increase the learner's understanding when written words do not. Videos also allow the learner to see real world examples, provide the learner with an opportunity to apply new learning in a controlled environment, and consequently, increase the learner's engagement (Kyzar et al, 2014). The following references provide information about including multimedia elements in online professional development.

David, A., & Glore, P. (2010). The impact of design and aesthetics on usability, credibility, and learning in an online environment. *Online Journal of Distance Learning Administration, 13*(4), 43-50.
Fiorella, L., & Mayer, R. E. (2018). What works and doesn't work with instructional video. *Computers in Human Behavior, 89*, 465-470.
Hartsell, T., & Yuen, S. C. Y. (2006). Video streaming in online learning. *Association for the Advancement of Computing in Education Journal, 14*(1), 31-43.
Kyzar, K. B., Chiu, C., Kemp, P., Aldersey, H. M., Turnbull, A. P., & Lindeman, D. P. (2014). Feasibility

of an online professional development program for early intervention practitioners. *Infants & Young Children, 27*(2), 174-191.

Reyna, J. (2013). The importance of visual design and aesthetics in e-learning. *Training & Development, 40*(5), 28-31.

Toci, V., Camizzi, L., Goracci, S., Borgi, R., De Santis, F., Coscia, L., Perrone, F., Cigognini, M., & Pettenati, M. (2015). Designing, producing, and exemplifying videos to support reflection and metacognition for in-service teachers training. *Journal of e-Learning and Knowledge Society, 11*(2), 73-89.

## Conclusion

This CASEmaker provides information about the instructional design and technology associated with creating online professional development. Using a systematic approach along with current, relevant content creates online professional development courses that meet intended learning objectives. With the global shift to online learning, developers should design with sound adult learning principles in mind and incorporate technical support to users to enhance the learning experience. Sound online professional development is imperative to growing the content knowledge of learners across the early childhood intervention field and to maintaining relevance in an ever-growing technological world.

## References

Barnes, J. K., Guin, A., & Allen, K. (2018). Training needs and online learning preferences of early childhood professionals. *Journal of Early Childhood Teacher Education, 39*(2), 114-130.

Cercone, K. (2008). Characteristics of adult learners with implications for online learning design. *Association for the Advancement of Computing in Education Journal, 16*(2), 137-159.

Merriam, S. B., & Bierema, L. L. (2013). *Adult learning: Linking theory and practice*. Jossey-Bass.

Stone-MacDonald, A., & Douglass, A. (2015). Introducing online training in an early childhood professional development system: Lessons learned in one state. *Early Childhood Education Journal, 43*(3), 241-248.

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