

# Chapter 1

## Learning Design in the 21st Century

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### **ABSTRACT**

*This chapter provides a review of multiple facets of current and promising trends for learning design technologies for the 21st century, with the intention to provide a centralized discussion of different avenues in learning design considerations. An attempt is made to cover multiple parallel trending areas, such as adaptive learning, digital storytelling, gamification, simulation technologies, augmented and virtual reality, cybernetics, the xAPI standard, mobile and ubiquitous learning, with a glimpse of how such trends are shaping or expected to shape the future of all those involved in designing and delivering learning or effecting human behavior and performance change. Moreover, a discussion on learning theories for the digital age is presented, as well as brief overviews on several areas of concern in learning design, such as in assessment and verification, cloud computing, data and data analysis, artificial intelligence, blockchain, open educational resources, etc.*

### **INTRODUCTION**

The field of instructional or learning design is considered by many to be a recent addition to the learning and training professional fields even though activities revolving structuring learning have been present for thousands of years. Widely accepted definitions of the term “learning design” or “learning design” include the ability to use current technology to analyze, design, develop, implement, and evaluate learning and performance in a consistent and reliable fashion (Reiser & Dempsey, 2012; Rothwell & Kazanas, 2008, Brown & Green, 2015; West, Thomas, Bodily, Wright, & Borup, 2017). The development of educational psychology, learning theories, as well as the various models that facilitate the design, development, and implementation of structured learning has seen a multi-year progress, especially due to recent scientific and technological advancements that have created novel avenues to improve or accelerate processes and practices and redefine what was thought to be possible before.

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By virtue of the broad definition of the field, learning design can be thought of as being in existence since antiquity from the methods developed by ancient Greeks, such as Aristotle, Socrates, or Plato, focusing on cognitive approaches in their teachings to current learning design practices of infusing the latest technological advances into instructional developments. Scholarly publications, such as that by West and Borup (2014), have confirmed the breadth and complexity of the present-day learning design field which seems to encompass various areas, from education and psychology, to computer science, communications, data analytics, and of course all sorts of available technologies. Hence, it can be safely assumed that what we consider to be instructional or learning design is a complex field in constant evolution based on the evolution of the fields contributing to it (West, Thomas, Bodily, Wright, & Borup, 2017). In order to accomplish the expansive range of tasks learning designers are responsible for, fields such as computer science, psychology, communications, and related technologies, must be intertwined and strongly accounted for within learning design approaches in order to create effective learning experiences that are strongly grounded in both research and theory (Figure 1). Even management principles (such as project management) and business considerations (such as return on investment or budget adherence) are quite applicable to present-day learning design (Roubides, 2017).

## **LEARNING DESIGN TRENDS AND PROMISING PATHWAYS**

The past one hundred years have witnessed a dramatic change and evolution of the learning design field. With the advancement of technology, ease of use, and the benefits that follow in many aspects of everyday life including in learning, educational research has shifted its focus from the previously dominant philosophies of behaviorism and cognitivism to a more encompassing constructivist ideology which promotes socially contextualized learning but also the use of technology in creating collaborative and socially inclusive instructional interventions (Roubides, 2019). Constructivist theories have shifted the roles of both instructors and learners, with instructors moving toward a facilitator/mentor role, while learners being placed at the center of the learning process, having a much more active role in learning, even in the assessment of learning itself, such as via reflective exercises, collaborative projects, semantic mapping, or portfolio development (Campbell & Schwier, 2014; Roubides, 2015b). Increasing internationalization of education in recent years has also demanded different approaches to addressing the needs of an increasingly diverse population of learners from different language, cultural, socio-economic, and experiential backgrounds.

Over the years, multiple learning design models were developed and are in use today by industry professionals, including ADDIE, ASSURE, Dick, Carey, and Carey, Morrison, Ross, and Kemp, Hannafin and Peck, ARCS, Gerlach and Ely, SAM, 4C-ID, Smith and Ragan, Rapid Prototyping, among many others! The constructivist approach to learning is greatly supported by various technology-enhanced learning environments which however have been criticized by some researchers, such as Kirschner, Sweller, and Clark (2006), for the lack of sufficient instructional guidance especially “during the instruction of novice to intermediate learners” (p. 82). It is noteworthy to mention here that the large majority of present day learning design models are either variants or derivatives of the earliest modern-day learning design model, the ADDIE model.

Moreover, in a study conducted by Soto (2013), more than half of the participating learning designers indicated that they did not use all the steps/stages required by their instructional model of choice and one reason given for this was their belief that “each project requires a unique approach to design instruction”

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