

## Chapter 95

# Emergent Technologies Shaping Instructional Design

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### ABSTRACT

*This chapter discusses emergent technologies that are currently shaping or expected to shape the field of instructional design in the near future. The discussion begins with a brief overview of instructional design as a professional field over the past century, then focuses on current and promising trends for the field based on advances in technologies supporting instructional development. This chapter intends to provide a centralized literature review of multiple pathways currently being carved in the field, encompassing several parallel trending areas, such as adaptive learning, digital storytelling, gamification, simulation technologies, augmented and virtual reality, cybernetics, the xAPI standard, mobile and ubiquitous learning, and offer a glimpse of how they are shaping or expected to shape the future of all those involved in designing and delivering learning or effecting human behavior and performance change.*

### INTRODUCTION

Instructional design is considered by many to be a “newer” professional field even though activities revolving structuring learning have been present since antiquity. Broadly accepted definitions of the term “instructional design” include the ability to use 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 historical era of the development of this field spanning the last century has seen the development of educational psychology and learning theories, as well as the development of processes (models) in order to facilitate the design, development, and implementation of formal training and learning regiments. Recent scientific and technological advancements created new opportunities to improve, accelerate, or reshape learning processes and designs resulting in a plethora of promising avenues to improve human performance practices and redefine what was thought to be possible before.

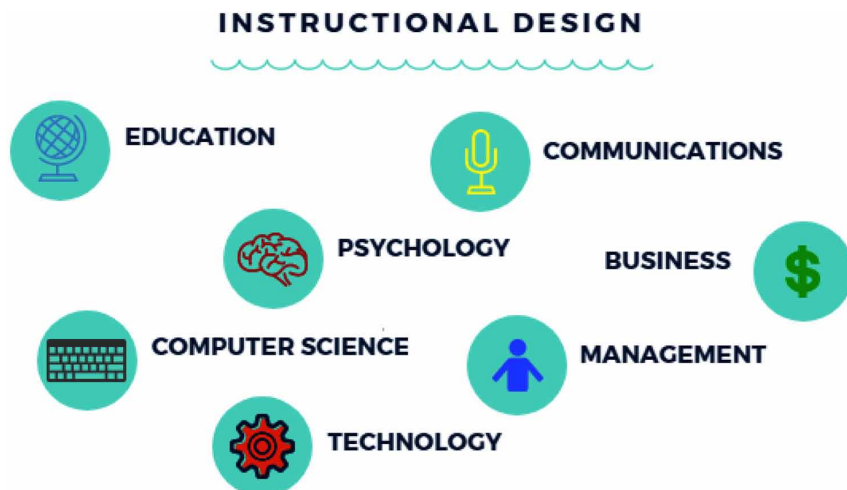
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By virtue of the broad definition of the field, instructional design can be thought of as being in existence since antiquity from the methods developed by ancient Greeks, such as Aristotle, Socrates, or Plato, focusing on cognitive approaches in their teachings to current instructional design practices of infusing the latest technological advances into instructional developments. In a study conducted by West and Borup (2014), article keywords extracted from databases of ten instructional design journals encompassing ten years (2001-2010), confirmed the breadth and complexity of the instructional design field. Other similar studies of scholarly publications have also confirmed that instructional design encompasses various areas, from education and psychology, to computer science, communications, and general technology. Hence, there is a multiplicity of fields contributing to what we consider to be instructional design and the field is 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 instructional designers are responsible for, fields such as computer science, psychology, communications, and related technologies, must be intertwined and strongly accounted for within instructional design approaches in order to create effective learning experiences that are strongly grounded in both research and theory (Figure 1). Even management principles and business considerations (such as return on investment) must be given in present-day instructional design (Roubides, 2017).

### A CENTURY-LONG DEVELOPMENT JOURNEY

Just like all fields undergo changes over time, so has the field of instructional design also undergone its own long period of formation as a professional field, and of course a lot of transformation has also taken place to what we now consider instructional design (West, Thomas, Bodily, Wright, & Borup, 2017). No specific date or particular event can be considered as marking the beginning of instructional design as a professional field; however, a lot of related events occurring during the early 20<sup>th</sup> century can be interpreted as the beginning of the field as a “science” (Brown & Green, 2015). A brief overview of some of the developments in the field in the last one hundred years is presented in the sections that follow.

*Figure 1. The underlying base forming instructional design*



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