

Chapter 36

A Practitioner Guide on Backward Design Application for Online Aviation Training in Higher Education

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ABSTRACT

The aviation industry experienced a significant growth over the years. Such growth was supported by a highly knowledgeable workforce, which presented various skills, including problem-solving and decision-making. The need for a highly skilled workforce led an aviation-focused university located in southeast USA to provide students with learning opportunities to hone those skills to succeed in the industry. This chapter explains the process through which those learning opportunities are created. It presents a practitioner's guide on how that university is designing online courses for the aviation industry. The entire design and development process and the theories supporting it, such as Backward Design and authentic learning, are thoroughly discussed. The chapter also presents several challenges negatively impacting the successful design of those courses and how those challenges can be mitigated so instructionally-sound online courses are created.

INTRODUCTION

The purpose of this chapter is to describe the design and development of online courses supporting the academic mission of an aviation-oriented university in order to inform the online learning community of the process and challenges of designing online courses for a specific industry. Such university has received several accolades for the quality of the design and delivery of their online undergraduate and

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graduate courses over the years. The success of the instructional pursuits of the institution is largely credited to the online course development process and structure established by the institution's instructional design team in collaboration with the colleges and supporting departments.

The online course development process conducted by the instructional design team was built upon teaching and learning theories, practices, and frameworks targeting the design of instruction that benefits the non-traditional, adult learner. Those theories include Backward Design, Gagné's Nine Events of Instruction, Keller's ARCS Model, and authentic learning. They were selected because of their nature and foundation, which are focused on how adult learners develop new knowledge from existing knowledge and from their engagement with learning activities built upon real-world issues (Bofill, 2013; Brandon & All, 2010; Lombardi, 2017; Mbatia, 2012; Tucker, YoungGonzaga, & Krause, 2014). The characteristics, demands, and limitations presented by the adult learner working in the aviation industry shaped the online course development process, as it geared the process to become more aligned with andragogical principles, such as prior experience of the learner as well as readiness and motivation to learn (Knowles, Holton III, & Swanson, 2012). By designing and developing learning activities based on those theories, practices, and frameworks, the instructional design team created a learning environment that provides adult learners with the knowledge and skills they need in order to succeed in their careers in the aviation industry.

The chapter will further explain the theoretical foundation underpinning the university's online course development process. The process spans several months and involves several stakeholders, such as instructional designers, senior instructional designers, instructional design and development directors, course developers, academic chairs, instructional technologists, and media producers. It starts with an initial course development project kickoff meeting, in which the director explains the entire online course development process to the course developer. Subsequently, the instructional designer and the course developer start collaborating on the design and development of the online course in a course template site within the institution's learning management system (LMS). Throughout its development process, the course undergoes a number of quality assurance reviews by content editors, senior instructional designers, and academic chairs. Once the course is entirely built in the course template site and the project is finalized, the course is transferred into a master template from which the sections are created.

Additionally, this chapter also provides a description of the resources available to course developers and instructional designers as they engage in the development process. Lastly, it will explain the common challenges associated with the design and development of undergraduate and graduate online courses; and the actions to mitigate those challenges while creating an effective learning environment for the adult learner in the aviation industry.

LITERATURE REVIEW

This section of the chapter explores the theoretical foundation upon which the online course development in question is centered. It covers the evolution of the aviation and aerospace industry and the role training played in such evolution. Additionally, this section of the chapter explains how the needs of the industry defined the workforce skills underpinning the industry evolution and how the university developed training focused on those skills. Lastly, this section explains the theories and practices adopted in the design of the university training – including Backward Design, Gagné's Nine Events of Instruction,

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