# Chapter 4.15

# Transforming a Pediatrics Lecture Series to Online Instruction

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## ABSTRACT

A major issue facing medical education training programs across the USA is the recent advent of universal mandatory duty hour limitations and the time pressure it places on formal face-to-face educational sessions. In response to these mandates and associated issues many medical education programs are exploring the use of online instruction to address issues of accessibility. This chapter describes the instructional development process followed to transform a classroom-based pediatrics residency lecture series into an on-demand, video-enhanced, online instructional environment. An overview of the learning principles and instructional sciences that guided the design process is provided. The phases of the designed solution are then described in the context of enhancing the lecture series as it was transformed into online instruction. Implementation logistics are described followed by an overview of the benefits, barriers, and initial project outcomes. Plans for future enhancements and research projects are also discussed.

## INTRODUCTION

Designing good instruction is predicated on understanding learning. Effective learning is predicated on accurately defining learning outcomes and providing instructional environments that support the achievement of learning outcomes. Both are essential to successful online instruction (Koszalka, 2007, p. 2).

Principles of learning and the instructional sciences were used to enhance the overall strength of the pediatrics residency curriculum at SUNY

Upstate Medical University in Syracuse, New York. In response to the recent advent of universal mandatory duty hour limitations and the time pressure it places on formal face-to-face educational sessions, the entire residency curriculum, consisting of a year-long classroom-based lecture series, was transformed into a blended video-based online format supported by application-based classroom experiences. The online lectures component was not a straight conversion where lectures were simply videotaped and offered to the residents through a distance education program, rather the demand for change was used as an opportunity to re-evaluate the design of the lecture series and apply sound learning and instructional design principles to enhance the overall residency instructional process.

**Application of learning principles.** Learning at its foundation is about change, change in human condition based on experiences. Principles of social learning theories posit that learning is a construction of knowledge based on an individual's observations of, and interactions with, information and people around them. Learning can occur both at surface and deep levels depending on how individuals interact with new information.

Surface learning suggests storage and remembrance of information, facts, concepts, principles, and procedures. It often results in recalling basic information and demonstrating new procedures and behaviors, for example. Deep learning, or critical thinking, suggests activation of higher order thinking. Outcomes of this type of learning include constructing knowledge to evaluate, apply, diagnose, problem solve, debate, critique, and other activities that require successfully addressing complex and ill-structured problems, such as those encountered by medical professionals.

The construction or learning of knowledge at these different levels is supported through different types of interactions (instruction) with content and people that accommodate individual preferences and learning styles of the learner (Akdemir & Koszalka, In-press; Akdemir & Koszalka, 2005;

Kidney, G., & Puckett, 2003). Thus, instruction is thought to be richest and most effective in facilitating deep learning when:

- Learners are *engaged* in solving real-life problems;
- Existing knowledge is *activated* as a foundation to new knowledge;
- New knowledge is *demonstrated* to the learner;
- When new knowledge is *applied* by the learner;
- When new knowledge is *integrated* into the learner's world (Merrill, 2000).

**Application of instructional sciences and design processes.** The instructional sciences inform how activities can be designed to prompt and facilitate required levels of learning that meet expected outcomes. To design instruction and learning experiences that apply learning principles successfully an instructional system design (ISD) process can be undertaken. The process includes: (A) analyzing the gap in knowledge (what does the learner know and what should they learn), (D) designing an instructional and learning solution, (D) developing the solution based on the design, (I) implementing and testing the solution, and (E) evaluating the results (Dick, Carey, & Carey, 2005; Smith & Ragan, 2005). An ADDIE approach, guided by principles of learning and instruction, is especially important when designing instruction for online applications, as the perceived separation of learner and facilitator can be distracting to the learner or fail to provide information and social learning interactions required by the learner.

Distance education of the past was designed to stand on its own as correspondence courses in which learners received an instructional packet and submitted assignments at their own pace. There was little or no social interaction with peers or an instructor. Distance education today however mostly refers to technology-delivered instruction and learning activities that are designed to provide

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