

Chapter 25

An Interactional and Aligned Educational Design Framework to Support Teachers' Pedagogical Reasoning

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ABSTRACT

This chapter presents and problematizes a theoretical design framework for understanding and supporting teachers' pedagogical reasoning in online contexts. The framework synthesizes existing educational theories to illustrate how digital technologies can be used to create interactional and aligned educational designs and is therefore referred to as the IAED framework. The IAED framework can be used in teacher education and development programs, and by teachers, researchers, educational designers, and others. In the chapter, empirical examples and analysis are provided to illustrate and discuss how the IAED framework can be used to (1) support teachers' pedagogical reasoning and educational design practices, (2) evaluate existing educational designs and design practices, and (3) study educational designs and design practices, as well as (changes in) teachers' pedagogical reasoning.

INTRODUCTION

Teaching and learning are increasingly carried out in online contexts where digital technologies are used to offer learners access to a variety of educational resources and opportunities for interaction. However, the degree to which the teaching and learning takes place online can vary. *Online learning* is often used to refer to learning scenarios in which teachers and their pupils are separated physically while interacting synchronously (in real time) as well as asynchronously through the use of digital technologies like video

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conferencing and email. Other terms that are used to describe this type of learning scenario are distance learning and remote learning. The physical separation of teachers and peers thus distinguishes these educational variants from *blended learning*, where teachers and pupils primarily meet face-to-face but also interact online to take advantage of the educational materials and interactional opportunities there. Today, a third “hybrid” educational variant with aspects of online learning is increasingly discussed and evaluated. In *hybrid learning* contexts some pupils are present in the classroom while others participate by means of video and audio communication technologies. In this chapter, *online learning* is used to refer to learning scenarios in which the teachers and their pupils are physically separated. However, this is done with the understanding that blended and hybrid learning also include aspects of online learning.

Regardless of the educational variant in question, teachers are faced with opportunities and challenges when considering how to teach in online contexts. For example, existing instructional strategies need to be reconsidered when teachers are unable to see or “feel” the signs they have learned to pick up on in the physical classroom, or when pupils are asked to perform group work while physically separated. Therefore, teachers need to be aware of and include the possibilities and constraints of online, blended or perhaps even hybrid teaching and learning in relation to the learning tasks they set and teacher-pupil and pupil-pupil interactions. In relation to this, teachers need to explore and develop their abilities to use digital technologies as “teaching tools” in order to realize their own pedagogical intentions. They also need to consider whether and how pupils can use digital technologies as “learning tools.”

To signal the substantial shift in the conditions and requirements of their professional practices, teachers are increasingly referred to as *educational designers* (cf. Laurillard, 2012). Educational researchers have developed theoretical models to conceptualize and analyze the multifaceted knowledge that teachers need to develop as educational designers (cf. Koehler & Mishra, 2009) and the important aspects that need to be present in successful online learning environments (cf. Garrison et al., 2010). The argument that is put forward in this chapter is that in their role as educational designers, teachers would benefit from a research-based theoretical construct as a conceptual framework in the actual educational design process.

The aim of this chapter is therefore to suggest and problematize a theoretical *design framework* for understanding and supporting (student) teachers' educational design processes in online, blended and hybrid contexts. The design framework aims to support Interactional and Aligned Educational Design and is therefore referred to as *the IAED framework*. The IAED framework can be used to: (a) support teachers' pedagogical reasoning, (b) evaluate existing educational designs and design practices, and (c) study educational designs and design practices and (changes in) teachers' pedagogical reasoning. The framework can be used in teacher development programs, by teachers, researchers, and others.

Primarily, the chapters in this book focus on online teaching as a “virtual environment.” The framework proposed can be used regardless of the educational context, although it was originally constructed to support teaching and learning in blended and online contexts. It can also be used to support teachers' pedagogical reasoning when using emerging technologies like virtual reality (VR) applications that enable pupils to experience 3D-simulated worlds – or 360-degree filmed materials – from a first-person perspective using head-mounted displays (HMDs).

This chapter discusses how the challenges of educational design and the opportunities that come with the introduction of new digital technologies remind us what research has taught us about successful ways of supporting learning. The discussion also highlights the importance of being prepared to modify existing theoretical frameworks to accommodate the various design challenges and possibilities. This is illustrated by an explanation of how the proposed IAED framework was dynamically developed on the

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