Chapter 13
Technology Tools for Teaching and Learning in Real Time

Emtinan Alqurashi

https://orcid.org/0000-0003-4738-4331
Temple University, USA

ABSTRACT

Digital technologies provide learners with the opportunity to be actively involved and engaged in the online learning experience. However, with the rapid growth of technology, it can be challenging for instructors to keep up with the changes and assess the effectiveness of new technologies within online learning environments. In order to successfully integrate technology, two theoretical frameworks are commonly used to evaluate instructional technology effectiveness: the SAMR and TPACK models. Although there are many studies that discuss theoretical frameworks for technology integration, there is still a need to discuss the practical use of technology tools in the live online classroom in higher education. This chapter provides instructors with a practical guide for evaluating and implementing synchronous tools to enhance the student experience and learning. It focuses on four components: virtual classrooms, individual activities, real-time assessments, and group work.

INTRODUCTION

Technology plays an essential role in online synchronous learning environments. Synchronous technology tools allow instructors to interact with their students, and the students to interact with their classmates in real time, thereby enriching the learning that occurs in online classes through collaborative learning (or something like that). Although there are many technology tools that can be used for teaching
and learning, it is important to understand how the choice of technology can assist in meeting learning goals and helping students to learn.

The Association for Educational Communication and Technology defines instructional and educational technology as “the study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources” (Januszewski & Molenda, 2013, p. 1). Although instructors in higher education are considered content experts and have advanced degrees in their field of study, they are not often prepared in or have knowledge of pedagogy or effective technology integration. For this reason, before discussing technology tools to integrate in synchronous teaching and learning, it is important to highlight some of the theoretical frameworks to better understand how to effectively integrate technology in the classroom. Two commonly used theoretical frameworks to assess instructional technology effectiveness are the Technological Pedagogical Content Knowledge (TPACK) model and the Substitution, Augmentation, Modification, Redefinition (SAMR) model.

The TPACK Model

The TPACK model was developed by Koehler and Mishra (2009). It involves understanding content (i.e. area of expertise), teaching methods, and knowledge of integrating technology to enhance students’ learning. Mishra and Koehler define TPACK (2006, p. 1029) as:

*the basis of good teaching with technology and requires an understanding of the representation of concepts using technologies; pedagogical techniques that use technologies in constructive ways to teach content; knowledge of what makes concepts difficult or easy to learn and how technology can help redress some of the problems that students face; knowledge of students’ prior knowledge and theories of epistemology; and knowledge of how technologies can be used to build on existing knowledge and to develop new epistemologies or strengthen old ones.*

The TPACK model (as shown in Figure 1) includes three main components of the instructor’s knowledge: content, pedagogy, and technology. Interactions among these components of knowledge result in a total of seven components of TPACK, and they are defined as follows:

- **Content Knowledge (CK):** The subject matter that students will learn.
- **Pedagogical Knowledge (PK):** The instructional methods and their application.
- **Technological Knowledge (TK):** The use of technology tools and resources.
Related Content

Negotiating Reduced Forms
(2017). *Exploration of Textual Interactions in CALL Learning Communities: Emerging Research and Opportunities* (pp. 55-113).
[www.igi-global.com/chapter/negotiating-reduced-forms/178763?camid=4v1a](www.igi-global.com/chapter/negotiating-reduced-forms/178763?camid=4v1a)

Instructional Strategies for Game-Based Learning
[www.igi-global.com/chapter/instructional-strategies-for-game-based-learning/181388?camid=4v1a](www.igi-global.com/chapter/instructional-strategies-for-game-based-learning/181388?camid=4v1a)

Arranging and Rearranging Practice in Digital Spaces: Professional Learning Amongst Teacher Educators
Managing Multi-Cloud Data Dependability Faults
Mohammed A. AlZain, Alice S. Li, Ben Soh and Mehedi Masud (2019). Knowledge-Intensive Economies and Opportunities for Social, Organizational, and Technological Growth (pp. 207-221).
www.igi-global.com/chapter/managing-multi-cloud-data-dependability-faults/214333?camid=4v1a