

# Chapter 24

## Flipping the Medical School Classroom

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### ABSTRACT

*The preparation of today's physicians is a tremendous responsibility. For medical students to be successful, they must experience a multitude of opportunities to develop appropriate clinical skills, problem solving acumen, and medical knowledge. Due to various barriers, medical students may develop gaps in critical and foundational knowledge. The use of flipped lectures has the capacity to "mobilize" education and ensure for versatility and improved content acquisition through the implementation of both online and face-to-face teaching methodologies. This hybrid learning environment has the capacity to also address the increasingly diverse needs of today's matriculating medical student. This chapter identifies tools and strategies of how to incorporate flipped lectures into medical education.*

### INTRODUCTION

Teaching and learning in medical schools and institutions is a multifaceted endeavor, especially as the United States' health care system continues to become more complex. Medical students need to develop a rich foundation of not only content knowledge, but also problem solving and technical clinical skills. However, due to various barriers such as inadequate or limited clinical placements, an unpredictable learning environment, and duty hour time restrictions (Feng et al, 2013; McLaughlin et al., 2014; Tainter et al, 2016), medical students may develop gaps in knowledge that could impact their future success. To circumvent these gaps, medical education programs must be innovative in how they deliver core content knowledge. Historically, lecture-based didactics permitted learners to be passive in the acquisition of knowledge, while teaching faculty were recognized as a "sage on the stage" (King, 1993). The role of "sage on the stage" is considered to be the keeper of knowledge and who considers students as empty vessels that need to be filled. This archaic method of interaction and learning is not appropriate in the preparation of today's 21<sup>st</sup> century medical student (O'Brien & Irby, 2013).

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Educational opportunities should be provided in a manner that is learner-centered and innovative to further increase student engagement and deeper comprehension of the required medical knowledge (Irby, Cooke, & O'Brien, 2010; Prober and Heath, 2012). Suggestions from Irby, Cooke, and O'Brien (2010) assert four goals that are imperative for the future of medical education:

1. Standardization of learning outcomes and individualization of the learning process,
2. Integration of formal knowledge and clinical experience,
3. Development of habits of inquiry and innovation, and
4. Focus on professional identity formation (pg. 5-6).

With these objectives in the forefront, educational theories and practices must be revisited, tailored, in order to improve and evolve current pedagogical practice.

Rapid advancements in technology, both of software and hardware, have encouraged e-learning to emerge as a key component in curricular development, especially in the field of medical education (Dankbaar & de Jong, 2014). Students can now access and interact with required readings, cases, models, videos, simulations, and collaborate with peers across the country or the world. Remarkably, e-learning has allowed educators to “mobilize” their teaching practice and provide content at any point in time, from any location (Jashapara & Tai, 2011). However, there are always challenges when attempting to develop and implement a new e-learning strategy while simultaneously integrating face-to-face contact. Thus, how does an educator integrate both e-learning and face-to-face learning in a balanced and engaging way? This article synthesizes the method of flipped lectures or flipped learning and presents practical strategies to implement flipped learning within the unique medical education setting.

## **BACKGROUND**

The flipped lecture, flipped learning, or inverted classroom originates from K-12 education (Bergmann & Sams, 2012) and provides students with the opportunity to interact with content prior to entering the classroom in a structured, organized way (see figure 1) (Barett, 2012; Mazur, 2009; O'Flaherty & Phillips, 2015; Lage, Platt, & Treglia, 2000). Flipped classrooms stemmed from the Khan Academy, conceived in 2006 by Salman Khan which provided access to 3200 videos and 350 practice exercises which were used by teachers for flipped classrooms (Bishop & Vergler, 2013).

From there, flipped lectures have steadily grown in popularity following a distinct curricular design. First, students participate in the asynchronous event, commonly recognized as an online component. This typically involves a module with videos, podcasts, interactive readings, reflective questions, and/or chatrooms (Prober & Health, 2012, Sharma et al., 2015). Then, during the face-to-face class time, or synchronous event, students participate in active learning and implementation of new knowledge. Flipped learning is *not* simply assigning homework or readings and then conducting teacher-led lectures. Rather, flipped learning incorporates a diverse amalgam of technology, literature, and inquiry to establish a critical knowledge base prior to engaging with the content on a higher level of learning. In turn, the learning environment becomes personalized, engaging, and content rich, thus improving the ways in which students apply abstract knowledge to solve realistic problems (Bergmann & Sams, 2012; Mann, 2011; Sharma et al., 2015).

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