Chapter 12
Intentional Use of Digital Technology in Graduate Epidemiology Education

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EXECUTIVE SUMMARY

Public health education is continuously changing. Several papers have been written on the need to update epidemiology education in public health to match the needs of the "real world" as well as keep up with the digital age, yet few papers have been published on how to make this happen. Utilizing a blended learning framework, a graduate-level course was revised to improve student learning and teaching practice. By considering and implementing various pedagogical practices and tools, students learned more, were able to utilize this information in class and in other settings, and were able to take more control of their learning. Improvements were made to teaching practice, specifically by being more student-centered and providing better planned integration of technology for the advantage of the student and instructor. Using well-designed pedagogical tools and spending the time to plan out the course methodology based on expectations at the conclusion is a best practice that should be used by instructors in various fields but especially those in public health.

INTRODUCTION

In 2016, I applied to be an Inaugural Fellow in the Florida Agricultural and Mechanical University Digital Learning Initiative. My goals were few – I wanted learn how to better incorporate technology into my classroom and I wanted to improve how I was teaching a particular course that was extremely important but had become a dreaded challenge for graduate students in the program. Students needed to attain and retain knowledge and I needed to do better in making this happen. As a self-professed technology geek, I had tried (and sometimes failed) in incorporating technology tools I loved into my interactions with students both in and out of the classroom. I regularly sought out tool after tool and asked friends in the

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professoriate for suggestions of what they used. As a professor without formal education in education, I knew there had to be some kind of connection between my teaching methodology and the outcomes for students in my courses. While the field I work and teach in – epidemiology – is very quantitative, the Digital Learning Initiative offered the opportunity to learn from others in different fields, be challenged to think outside the box, and to focus on exactly what was frustrating me as a professor. This chapter will describe in detail my learning process, alterations to the course I selected to update, student reactions, outcomes of the transformation, and lessons learned during my time as a Digital Learning Initiative Fellow.

BACKGROUND

Public health education is continuously changing. The field of public health has traditionally been divided into five core areas – biostatistics, environmental health, social and behavioral health/health education, epidemiology, and health policy and management. As defined by the World Health Organization, epidemiology is "the study of the distribution and determinants of health-related states or events (including disease), and the application of this study to the control of diseases and other health problems" (World Health Organization, 2018). It is widely recognized as the foundational science of public health. Mathematics and statistics are among the areas of knowledge important for using epidemiology or being an epidemiologist. Numerous public health academicians and practitioners have discussed the shortcomings of current public health education, and even specifically epidemiological education (Brownson et al., 2015; Caron, 2013; Gange, 2008; Goldmann, Stark, Kapadia, & McQueen, 2018; Keyes & Galea, 2014; Morabia, 2014; Muttappallymyalil et al., 2016; Ruiz de Castañeda et al., 2018; Sullivan & Galea, 2017; Young, Naude, Brodovcky, & Esterhuizen, 2017). However, little has changed in terms of the practice of teaching in this digital age. Few publications exist that provide directives of things programs and schools should or did change to improve public health education (Mincey & Gross, 2017; Sullivan & Galea, 2017) but more exist on the reasons why it needs to change (McKeown, 2013). As Sandro Galea, Dean of the Columbia University School of Public Health, emphasizes at every given chance, we must commit to making public health education relevant to the work that public health students are doing when they exit educational programs and we must commit to helping them understand how the work they do feeds back into changing the world – it must be of consequence (Galea, 2013). These papers, though few, lay the groundwork for why this chapter in particular is important – it is not enough to continue to state why we need to change. More work on pedagogy and practice needs to be published demonstrating how things have changed in public health education in order to drive solid pedagogical knowledge and practice.

While important to focus on pedagogical knowledge, it is just as important to note that there have been recent alterations to the content knowledge required in the United States for public health education. The Council on Education for Public Health (CEPH) "…is recognized by United States Department of Education to accredit within the United States schools of public health and public health programs outside schools of public health, at the baccalaureate and graduate degree levels, including those offered via distance education." (Council on Education for Public Health, 2018). In 2016, CEPH updated the criteria for the Masters of Public Health programs (Council on Education for Public Health, 2016) and, as such, the criteria for classes related to epidemiology changed. In addition to simply wanting to update a course to make the material easier to grasp and retain, any course modifications needed to include the new criteria in order to ensure the course met the requirements for the graduate program to