


Chapter 8

Technology–Enhanced Student Learning, Improved Engagement, and Performance in an Anatomy and Physiology Course

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ABSTRACT

The use of technologies at Florida Agricultural and Mechanical University allows faculty to create interactive learning materials. This model of instruction has proven to be very successful, especially with online instructors reporting an increase in independent thinking, improved integration of information, and an increase in students' ability to answer their own questions. Therefore, the central goal of the chapter was to enhance anatomy and physiology (AP) course resources and incorporate the use of interactive visual interfaces and software that facilitate visual analytics tasks and offer the learners the acquire knowledge. To achieve the goal, the authors designed and implemented innovative curriculum resources into AP courses. Student performance was evaluated based on class attendance, discussion forum, computerized homework, and proctored exams. Data showed that students performed better when taught face-to-face with technology. The use of technologies enhanced the course by providing a novel comprehensive approach to improving student productivity.

DOI: 10.4018/978-1-6684-5332-2.ch008

BACKGROUND

Current instructional technology potentially provides effective learner-centered, personalized education for non-traditional and non-residential students around the globe. Using technology in the classroom has become very important, especially for the Generation Z students. Most generational theories agree that Generation Z encompasses people born between 1995 and 2010 (Karabatak & Karabatak, 2020). Generation Z students present themselves with characteristics such as loyalty, thoughtfulness, determination, compassion, open-mindedness, and responsibility. A study by Steele Flippin (2017) demonstrated that Generation Z students identified themselves as eager, hardworking, creative, and motivated (Flippin, 2017). Another study by Seemiller and Grace indicated Generation Z college students prefer video-based learning and applied it to learning where they can see a demonstration of the task they need to do either in-person or online (Hartman, Townsend, & Jackson, 2019; Seemiller & Grace, 2017). In addition, Generation Z students like their learning to be associated with real-world issues, those they are experiencing presently or those they will face in their future careers. The majority of generation Z students enrolled in the Anatomy and Physiology course at FAMU re African-American as the university is designated an Historically Black College and University (HBCU).

Scientific data have revealed that African-American students are more likely to come from low-income families and they have limited academic resources that will help them compute in school (Hults, 1992; Sard & Rice, 2014). Compared to other ethnic groups, a large proportion of the African-American students are economically disadvantaged and/or first-generation college attendees (Assari, Mardani, Maleki, Boyce, & Bazargan, 2021; Riddle & Sinclair, 2019). Some of these students live in poverty which stresses them physically and mentally as their families' struggle to make ends meet (Ladson-Billings, 2006; Matthew, Reeves, & Rodrigue, 2017). According to the National Science Foundation (NSF), Historically Black Colleges and Universities (HBCUs) award more than 15% of all bachelor's degrees to African American students every year (Foundation, 2011). Despite the socioeconomic status, FAMU is one of the HBCUs that provides social and financial support to African-American students and provides them free access to campus resources (library, student support center, faculty mentor, etc...) that help them to thrive in college, graduate, and find a successful career. FAMU plays a significant role in the production of undergraduate and graduates degrees awarded to African-American students and other ethnic groups, particularly in Science, Technology, Engineering, and Mathematics (STEM) disciplines.

To meet FAMU's mission of teaching with excellence, two anatomy and physiology courses were enhanced using innovative technologies. An important component of these innovative technologies is the social and communicative interactions

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