Chapter 8

Sustainable Quality Education During the Pandemic and Beyond:
Challenges and Solutions for Higher Education Institutions

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ABSTRACT

Information technologies are an indispensable part of modern business, education, and personal lives. However, the COVID-19 pandemic has shown everybody around the world the insufficiency of available information technology infrastructures and the importance of establishing strong infrastructures for citizens from all backgrounds and geographic locations. The challenge has been especially hard for educational institutions because very few were truly prepared for an emergency transition to distance education. This chapter aims to explain the main components of a modern university information technology infrastructure and offer guidance in establishing a strong infrastructure for sustainable quality education.

INTRODUCTION

The COVID-19 pandemic that started in early 2020 caught many educational institutions unprepared for such a challenge. In the beginning, higher education

institutions throughout the world either postponed their educational activities or switched to totally online mediums (Hodges et al., 2020). As the pandemic continued to spread at an increasingly higher rate, everybody realized postponement was not a viable solution and embraced online education even if it meant a premature transition. Although the pandemic did not treat any educational institution differently, the institutions with little to no online and distance education experience faced a greater deal of challenges (Bailey & Lee, 2020; Roy & Covelli, 2020). Unfortunately, the emerging challenges have been too overwhelming for some, and their unpreparedness made the quality and rigor of educational activities questionable at best. Needless to say, both faculty members and students faced many problems during assessment activities and live classroom meetings. In short, the forced transition to online education was suboptimal for most stakeholders, and it has turned educational decision makers' attention to sustainable technology integration during and beyond the pandemic.

In this context, the purpose of this chapter is to overview the challenges an educational institution could face during the transition to the digital medium and offer guidance in reviewing and selecting the solutions available to them. An effective educational technology integration endeavor covers multiple aspects of technology use (Vivek & Bhattacharjee, 2021) including hardware and software facilities available to the users, service agreements, and professional development activities. Without paying due attention to these crucial aspects, even single-classroom-level technology integration efforts are bound to fail. Thus, technology integration initiatives at an institutional scale should pay close attention to the needs of all stakeholders and cover all relevant aspects simultaneously (Moore & Fodrey, 2018).

When we talk about the digital transformation of an institution, the first thing that comes to mind is unquestionably hardware infrastructure. A modern university is expected to provide technical facilities such as campus-wide wireless internet access and computer labs at various locations. However, on-campus facilities of this type themselves have been proved to be ineffective during emergencies like the pandemic. Therefore, institutions should establish both on-campus and off-campus technology infrastructures for sustainability. In the following section, the basic components of university hardware infrastructure will be explained.

HARDWARE INFRASTRUCTURE

On-campus infrastructure is the fundamental side of a digital campus. Over the years, hardware, software, and other informational technology (IT) services have improved tremendously, and there are many options available to choose from; therefore, decisions towards computing infrastructure are not always straightforward.

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