Chapter 13
Science, Technology, Engineering, and Mathematics Learning Technology Implementation to Address 21st-Century Skills:
The Zimbabwean Higher Education Context

Doris Chasokela
https://orcid.org/0009-0001-5983-8508
National University of Science and Technology, Zimbabwe

Funa Moyo
National University of Science and Technology, Zimbabwe

ABSTRACT

The book chapter explores the integration of learning management systems and course/module software in science, technology, engineering, and mathematics learning and 21st-century skills in Zimbabwe's higher education. The chapter introduces the concepts of STEM and their importance for developing the skills needed for success in the 21st century. It presents an overview of the implementation of learning management systems and course/module software in the Zimbabwean

DOI: 10.4018/979-8-3693-3443-0.ch013

higher education system. The potential benefits of these technologies for STEM are highlighted. In this chapter, it is argued that the integration of information and communication technology in the teaching of science, technology, engineering, and mathematics plays a crucial role in addressing quality-related issues. Finally, the chapter presents case studies of higher education institutions in Zimbabwe that have successfully implemented learning management systems and course/module software and describes the positive effects on student learning.

INTRODUCTION

Science, technology, engineering, and mathematics (STEM) education has become increasingly important in the 21st century, as these skills are essential for innovation, economic growth, and competitiveness. However, there are still many challenges in implementing STEM learning technologies in developing countries like Zimbabwe. This chapter explores the current state of STEM education in the Zimbabwean higher education context and examines the potential of STEM learning technologies to address 21st-century skills. Zimbabwe is facing several challenges in the field of STEM education, including low levels of student achievement, inadequate infrastructure, and a lack of qualified lecturers. To address these challenges, the country has launched some initiatives and policies aimed at improving the quality of STEM education. These include the National STEM Education Programme, launched in 2017, and various initiatives at the university level. Additionally, the potential of STEM learning technologies has also been recognized as a way to address 21st-century skills, such as problem-solving, critical thinking, and collaboration.

Background

Zimbabwe's economy has been struggling for decades, with high levels of unemployment, poverty, and inequality (Mutambisi et al. 2023; Ochi 2023; Xaba & Akinola 2023). An overview of the current state of STEM education in Zimbabwe includes the levels of investment, lecturer training, and student performance. According to Zhou et al (2020), the government of Zimbabwe has made some efforts to improve STEM education, including the establishment of the National STEM Education Programme in 2017. However, the programme has faced challenges such as a lack of resources and inadequate training for lecturers. Despite these challenges, some progress has been made, with a few schools implementing STEM education programmes with the support of international organizations and donors. Some of the