

Chapter 7

Integration of E-Learning Technologies: RPI, E-Portfolio, and Virtual Reality in Medical Laboratory Science

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ABSTRACT

Increasing automation along with other recent advancements in the field of pathology has highlighted the importance of integrating e-learning technologies within the program Medical Laboratory Science (MLS). E-learning tools such as 3D virtual pathology laboratory, e-portfolio using Pebble Pad, and Raspberry Pi (RPI) have been added to the MLS program at Griffith University, Gold Coast Campus (GUGC). Incorporation of these e-learning tools has the ability to potentially improve learning outcomes and increase the chances of employability by aiding in the production of work-ready graduates. The aim of this chapter is to highlight the recent developments, issues, and possible solutions along with future directions in the development and integration of these e-learning tools in MLS.

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INTRODUCTION

Industrial automation has had a global impact on clinical laboratories and biopharmaceutical Science. The adaptation of total laboratory automation (TLA) and advancing technology alongside innovative information software, has not only changed the working environment for technicians and scientists but has also transformed the way students are being trained and educated (Sédille-Mostafaie, Engler, Lutz, & Korte, 2013). This chapter will discuss current implementation of technologies in health science education. It will also consider the future directions of the application of upcoming technologies in tertiary education. Industry demands for universally adaptive multi-skilled work ready graduates, which has challenged the need to educate our future health professionals to meet the demands of this global workforce. Recent advancements through applications of e-learning tools and 3D modeling have opened the gateway to potentially improve student engagement, accessibility and learning outcomes.

Alongside inclusive 24 hours access to classroom material, additional benefits also include the support of undergraduate employability through vertical and horizontal scaffolding, thereby linking core courses continually across year levels. Web-based electronic learning (e-learning) tools such as simulated virtual labs, demonstration videos and mobile micro-computing using Raspberry Pi are increasingly becoming a part of modern educational systems that can break down many traditional access barriers to learning resources. Access to current and expensive resources without the heavy financial burden, can provide an interactive learning environment for students to gain a wide variety of practical experiences within educational budgetary constraints.

The end product of the tertiary education system is to produce highly employable graduates. Integrating technology-based blended e-learning tools into various teaching modules can assist students in meeting the growing demands of an industry, which heavily relies on automation. Implementation of these techniques at GUGC, can demonstrate how information science and technology can be used in standardizing tertiary health education to produce graduates who are; better prepared, require less on the job training, are more globally aware and adaptable, and are equipped to further their own career development through self-directed life-long learning.

This chapter will describe an array of mixed models of e-learning tools being implemented and trialed in the MLS program at GUGC. It will discuss the benefits of some of the innovative ways of “taking the classroom to students” by enhancing

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