

Security Vulnerabilities and Security Elements of Frequently Used E-learning Platforms: A Review

PH_Perera^{1#}, SCM Sirisuriya¹ and HRWP Gunathilake¹

¹*Faculty of Computing, General Sir John Kotelawala Defence University, Sri Lanka*

#36-se-0001@kdu.ac.lk

E-learning has come to the fore with renewed interest and popularity among the student population worldwide. The sudden outbreak of Covid-19 compelled the traditional education system to shift to online education mode. Online education is provided via e-learning platforms which provide easy access to students around the globe to learn, communicate and interact with each other. However, the concerns at hand are how secure these e-learning platforms are for the users. If the use of e-learning systems causes security and privacy issues, the learners will be reluctant to be exposed to the platform. Therefore, it has become a major challenge to ensure that only authorized parties have access to the system. The purpose of this study is to investigate all possible security vulnerabilities in the current e-learning platforms and provides appropriate solutions to overcome the security threats. This study has undertaken a comprehensive review to filter the literature for the security elements, threats and vulnerabilities in e-learning platforms. When analyzing the existing research, it could be identified that Moodle, Blackboard and Sakai are the most commonly used platforms. Therefore, this study is based on the security threats and vulnerabilities of the platforms mentioned above. It is revealed that security vulnerabilities of the platforms, Blackboard and Sakai have not been addressed as much as Moodle. Furthermore, this study reveals that confidentiality and integrity are the most important security elements that need to be considered and prioritized within the e-learning environment.

Keywords: *security vulnerabilities, security elements, e-learning platforms*