

The Impact of the Internet of Things on Academic Institutions

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Abstract

Internet of Things (IoT) is an emerging technology transforming the digital environment. It is mainly based on increased connectivity, improved efficiency, and better accessibility. Globally, it is estimated that approximately fifty billion devices are connected to the internet through wired or wireless networks. IoT is progressively becoming a critical tool in academics. Its integration into the learning programs at various levels of education has significantly contributed to improved student performance. As a result, administrators in academic institutions have started to view IoT integration as a valuable opportunity to improve student performance and administrative efficiency. The main objective of this study is to explore the impacts of the IoT in monitoring students' health, energy management, enhancement of teaching and learning, classroom access control, and ecosystem monitoring. A case study of Riga Technical University will be used as the point of reference in analyzing various aspects of IoT integration in academic institutions. IoT technology in education improves the use of the technology in online streaming for sustainability and in monitoring students' health. It also enhances the easy connection between students, teachers, administrators, and sensors. It has promoted cloud computing in education, big data, wearable technology, and augmented reality. However, this has not gone without several challenges.

IoT is highly vulnerable to security threats, such as distributed denial of service attacks and malware attacks. This has made it critical for IoT service providers to improve IoT's cybersecurity capabilities continuously. It is essential to adequately secure the system and get the best out of this technology to enhance the use of IoT in education institutions. A detailed analysis of these aspects of IoT integration in academic institutions is based on a case study of Riga Technical University, Latvia, where literacy levels and educational technology are high. Latest findings (2019) indicate that 28 percent of IoT apps are attributed to other institutions; followed by libraries with 26 percent; with pre and postsecondary following third with 16 percent each, and secondary institutions with 14 percent.

Keywords: academic institutions, big-data, cybersecurity, devices, IoT, teachers, Latvia.