

Resilient Digital Learning Ecosystems: Positioning Cybersecurity as the Foundational Pillar of Education 4.0 for Learner Safety

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Abstract: *Education 4.0 represents a revolutionary paradigm shift from traditional classroom to a digital classroom that incorporates artificial intelligence, virtual learning environments and technology enhanced learning aids. This shift has promoted most adaptable learner centred classroom environment by providing educational opportunities beyond the conventional classroom boundaries. Although, the AI powered digital platforms accompanies serious cybersecurity concerns for the learner's safety in virtual spaces.*

As students spend more time in online learning space, they are facing excessive cyber risk such as cyberbullying, identity theft, privacy breaches, misinformation, digital addiction and exposure to inappropriate harmful content which ultimately hampers their social as well as cognitive health. Amid these circumstances, cybersecurity acts as a central part of education 4.0 aimed at protecting learner's digital world.

This study emphasises the importance of cybersecurity ensuring student's safety within the framework of education 4.0. it outlines the various cyber risks faced by students in current scenario and responsibilities of educational institutions and teachers to build secure digital environment. Additionally, this paper discusses the involvement of parents and policy level support to achieve digital protection.

The study also explores the importance of embedding cybersecurity awareness and digital citizenship with school curricula and teacher education programmes. Furthermore, national initiatives are examined to illustrate ongoing efforts for strengthening cyber safety awareness in education. It asserts that ensuring student's safety within the framework of education 4.0 necessitates a collective and forward-looking effort from educators, parents, institutions, and policymakers. Integrating cybersecurity education into the core of mainstream schooling is vital for fostering comprehensive student development and safeguarding learners in the expanding digital learning environment.

Keywords: Cybersecurity, artificial intelligence, digital environment, education 4.0

