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Child-Friendly Cybersecurity Education: Exploring Learning Methods, Engagement, And Future Stem Interest

Nidhi Srivastava

Oakland university

Abstract

The research paper investigates the process of creating age-specific cybersecurity education training among children, which involves the introduction of gamification, storytelling, teacher education and the inclusion of parents in the curriculum design process. There is a growing appropriate ways to strengthen cyber hygiene, improve awareness of online risk, and create responsible online behavior. The study also examines the effectiveness of various pedagogical methods and investigates the potential of co-designing security tools with children. It also considers whether early exposure to cybersecurity concepts can influence future interest in STEM fields or not. A Qualitative Exploratory Secondary Data Analysis methodology is adopted to synthesize existing research on child-centered cybersecurity education.

The qualitative analysis of secondary research will be supported with Python that will gather, clean, and thematically analyze text-based materials. To analyze the data, the tools to be used will be web scraping and API-based document retrieval (where possible), text preprocessing, analysis of word frequencies, mapping of key-word co-occurrence, topic modelling, clustering, and a simple visualization to determine patterns, trends, and pedagogical themes in child-focused cybersecurity education. The secondary data will be obtained with the help of various open-access academic and institutional repositories, such as Google Scholar, ERIC, IEEE Xplore, ACM Open, arXiv, and the UNESCO Digital Library, as well as publicly available datasets on such platforms as Kaggle and government open-data portals. Such a blend of Python-based text analytics and various and authoritative sources of data will render the research methodical, repeatable, and able to produce valuable results in the field of cybersecurity education, parental involvement, and STEM-related results among children.

Keywords: STEM, cybersecurity, Python, parental involvement, and pedagogy