

Research on authentication and information security solutions applied in educational data management

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Abstract: This study investigates authentication and information security solutions for managing educational data, addressing the critical need to protect sensitive student and institutional records in increasingly digital environments. Given the rise in cyber threats targeting educational systems, the research evaluates both traditional and advanced security mechanisms, including multi-factor authentication, biometric verification, and encryption protocols. A mixed-method approach was employed, combining a literature review of current security frameworks with a case study analysis of a Vietnamese educational institution's data management system. The findings reveal that while basic password-based authentication remains prevalent, it is insufficient against modern attacks. The study proposes a layered security model integrating role-based access control, blockchain for data integrity, and adaptive authentication methods. Results demonstrate that such a hybrid approach significantly reduces unauthorized access risks and enhances data confidentiality without compromising system usability. This research contributes to the field by offering practical, scalable solutions tailored to the specific constraints of educational environments, thereby supporting the secure digital transformation of academic administration.

Keywords: Authentication, information security, educational data management, security solutions