

Innovating Sri Lankan School Management: A Design Science Research Approach to Developing an Automated Web-Based School Management System

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Education is the cornerstone of societal development, fostering open-minded and innovative generations. Despite its significance, the majority of Sri Lankan schools still rely on outdated, paper-based management systems, with only a few integrating automated solutions that often have functional issues. This study addressed the limitations of these systems by developing an advanced web-based school management system specifically tailored for Sri Lankan schools, using the Design Science Research (DSR) methodology. The study began with a thorough analysis of existing systems, identifying critical issues and gaps. Objectives were set following an extensive literature review, which informed the design and development of the new system. The system's performance was evaluated using the ISO 25010 quality model, with a focus on functionality, usability, and reliability. The results indicate a high performance level, with an average score of 4.04 across the evaluated categories. The Agile Web Engineering (AWE) model guided the development process, ensuring flexibility and responsiveness to user needs. Key features of the system include automated attendance tracking using barcode readers, streamlined report card generation, and efficient character certificate issuance. These features significantly reduce manual workloads and error rates. The system was successfully implemented in a school transitioning from manual processes. This has the potentials to contribute to inclusive and equitable quality education aligning with the UN Sustainable Development Goal 4. Feedback from end-users—teachers, students, and parents—played a crucial role in refining the system, leading to marked improvements in school administration efficiency.

Keywords: *automated school management system, Design Science Research (DSR), Sri Lankan education, Agile Web Engineering (AWE), ISO 25010 quality model, UN Sustainable Development Goal 4*