

**DESIGN AND DEVELOPMENT OF A MOBILE
STUDENT ATTENDANCE APPLICATION USING
THE SCRUM METHOD AT SMK TARUNA BAKTI KERTOSONO**

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ABSTRACT

The manual attendance system still used at SMK Taruna Bakti Kertosono has several weaknesses, including recording errors, attendance manipulation, time-consuming recapitulation, and physical document storage that is vulnerable to damage or loss. Previous studies have developed attendance systems based on QR Code, RFID, fingerprint, and geolocation, but limitations remain, such as additional devices, third-party scanner applications, suboptimal interface design, and attendance validation that relies only on location without additional mechanisms. This study aims to design and develop a mobile-based student attendance application using Scrum at SMK Taruna Bakti Kertosono with the Flutter framework, integrated with a website system, and equipped with built-in QR Code scanning and GPS-based location validation. The development process was carried out gradually through four sprint cycles, while system testing used Functional Black-Box Testing with the Use Case Testing technique and Usability Testing with the Time on Task metric. The Use Case Testing results showed that all student and teacher features operated according to scenarios with a success rate of 100%. The Time on Task results showed that 32 students completed digital attendance in 157 seconds, with an average of 4.91 seconds per student. The tested features included authentication, schedule, QR Code attendance, attendance history, permission, notifications, profile, attendance management, discrepancy reports, announcements, and teacher activities. These results indicate that the application fulfilled the system's functional requirements and supported a more efficient, integrated, structured, and adaptive digital attendance process through Scrum implementation.

Keywords: Mobile Attendance App, QR Code, GPS Location Validation, Flutter, Scrum.