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ABSTRAK

Perkembangan teknologi informasi dalam bidang pendidikan mendorong perlunya pengelolaan laboratorium yang lebih efektif dan terintegrasi. Di SMKN 3 Bangkalan, pengelolaan laboratorium masih dilakukan secara manual sehingga menimbulkan kendala dalam inventarisasi barang, penjadwalan, peminjaman alat, dan pelaporan kerusakan. Penelitian ini bertujuan mengembangkan Sistem Informasi Manajemen Laboratorium (SIMLAB) dengan integrasi layanan *chatbot* serta mengetahui kualitas sistem berdasarkan standar ISO 25010. Metode yang digunakan adalah *Research and Development* (R&D) dengan model *Waterfall* yang meliputi analisis kebutuhan, desain, pengkodean, pengujian, dan pemeliharaan. Pengumpulan data dilakukan melalui observasi dan wawancara di SMKN 3 Bangkalan. Sistem dikembangkan berbasis web menggunakan *framework* Laravel dan basis data MySQL dengan fitur pengelolaan inventaris, jadwal laboratorium, peminjaman alat, pengajuan barang, pelaporan kerusakan, serta layanan *chatbot*. Hasil pengujian menunjukkan *functional suitability* sebesar 100%, *usability* sebesar 92,89%, *performance efficiency* dengan waktu muat halaman 1,8–3,4 detik, *reliability* sebesar 99,97%, *security* tanpa celah keamanan kritis, serta *compatibility*, *portability*, dan *maintainability* yang menunjukkan sistem berjalan baik pada berbagai perangkat dan browser, mudah dipelihara, serta mudah dikembangkan. Dengan demikian, sistem dinyatakan layak digunakan untuk meningkatkan efektivitas pengelolaan laboratorium dan kemudahan akses informasi di SMKN 3 Bangkalan.

Kata Kunci: sistem informasi manajemen laboratorium, *chatbot*, laravel, *waterfall*, ISO 25010.

Aniva Nubbu Watti. 2026. Development of a Laboratory Management Information Sistem with Chatbot Service Integration at SMKN 3 Bangkalan. Thesis, Informatics Education Study Program, Faculty of Teacher Training and Education, Trunojoyo University, Madura. Advisor: Nuru Aini, S.Kom., M.Kom.

ABSTRACT

The development of information technology in education has increased the need for more effective and integrated laboratory management. At SMKN 3 Bangkalan, laboratory management is still conducted manually, causing difficulties in inventory management, scheduling, equipment borrowing, and damage reporting. This study aims to develop a Laboratory Management Information System (SIMLAB) integrated with chatbot services and to evaluate its quality based on the ISO 25010 standard. The research employed the Research and Development (R&D) method using the Waterfall model, which includes requirements analysis, design, coding, testing, and maintenance. Data were collected through observations and interviews at SMKN 3 Bangkalan. The web-based system was developed using the Laravel framework and MySQL database, featuring inventory management, laboratory scheduling, equipment borrowing, item requests, damage reporting, and chatbot services. Testing results showed a functional suitability score of 100%, usability of 92.89%, performance efficiency with page load times ranging from 1.8 to 3.4 seconds, reliability of 99.97%, and security without critical vulnerabilities. Compatibility, portability, and maintainability testing indicated that the system performs well across various devices and browsers, is easy to maintain, and can be further developed. Therefore, the system is considered feasible for improving laboratory management effectiveness and information accessibility at SMKN 3 Bangkalan.

Keywords: *laboratory management information system, chatbot, laravel, waterfall, ISO 25010.*