

Ayu Agustyas Ningrum. *Pengembangan Sistem Pakar Berbasis Website untuk Identifikasi Gaya Belajar Siswa Menggunakan Metode Forward Chaining*. Skripsi, Program Studi Pendidikan Informatika. Fakultas Keguruan dan Ilmu Pendidikan. Universitas Trunojoyo Madura. Pembimbing: Nuru Aini

ABSTRAK

Peningkatan mutu pendidikan di Indonesia terus diupayakan melalui implementasi Kurikulum Merdeka yang menekankan pentingnya pendekatan pembelajaran berdiferensiasi. Salah satu aspek penting pendekatan ini adalah pengenalan gaya belajar siswa, yaitu kecenderungan individu dalam menerima dan mengolah informasi secara visual, auditori, atau kinestetik. Namun, di SMAN 1 Bangkalan, asesmen gaya belajar masih dilakukan secara manual dan terbatas, sehingga belum mengakomodasi kebutuhan belajar siswa secara optimal. Untuk mengatasi masalah tersebut, penelitian ini bertujuan untuk mengembangkan sistem pakar berbasis *website* dengan metode *forward chaining* untuk mengidentifikasi gaya belajar siswa secara cepat, dan akurat. Sistem ini memanfaatkan kecerdasan buatan untuk menghasilkan identifikasi yang dapat menjadi dasar guru dalam menentukan strategi pembelajaran yang sesuai.

Penelitian menggunakan model pengembangan *waterfall* yang terdiri atas lima tahapan: *requirement*, *design*, *implementation*, *verification*, dan *maintenance*. Hasil pengujian sistem menggunakan standar ISO 25010 menunjukkan tingkat *functional suitability* dan performansi algoritma sebesar 100% dengan kategori “Diterima”, *usability* sebesar 93,5% yang dikategorikan “Sangat Baik”, serta *performance efficiency* dengan *page speed* 87% (A), YSlow 97%, dan waktu muat halaman 1,8 detik. Evaluasi terhadap metode *forward chaining* dilakukan menggunakan *confusion matrix* dan menghasilkan tingkat akurasi sebesar 88,89%, dengan nilai *macro average precision* 88,4%, *recall* 88,1%, dan F1-Score 88,1%, yang menunjukkan bahwa sistem memiliki performa klasifikasi yang sangat baik dan konsisten. Berdasarkan hasil tersebut, sistem dinyatakan layak digunakan sebagai alat bantu guru dalam melakukan asesmen gaya belajar siswa dan merancang pembelajaran yang lebih efektif, adaptif, serta bermakna.

Kata-kata kunci: *Forward chaining*, gaya belajar, ISO 25010, sistem pakar, *waterfall*.

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ABSTRACT

Improvements in the quality of education in Indonesia continue to be pursued through the implementation of the Merdeka Curriculum, which emphasizes the importance of differentiated learning approaches. One important aspect of this approach is the introduction of student learning styles, which are individual tendencies in receiving and processing information visually, auditorily, or kinesthetically. However, at SMAN 1 Bangkalan, learning style assessments are still conducted manually and are limited, thus failing to adequately accommodate students' learning needs. To address this issue, this study aims to develop a web-based expert system using the forward chaining method to quickly and accurately identify students' learning styles. This system utilizes artificial intelligence to generate identifications that can serve as a basis for teachers in determining appropriate learning strategies.

The research uses the waterfall development model comprising five stages: requirement, design, implementation, verification, and maintenance. The system testing results using the ISO 25010 standard show a functional suitability and algorithm performance level of 100% with the category "Accepted," usability of 93.5% categorized as "Very Good," and performance efficiency with page speed of 87% (A), YSlow 97%, and page load time of 1.8 seconds. Evaluation of the forward chaining method was conducted using a confusion matrix and yielded an accuracy rate of 88.89%, with a macro average precision of 88.4%, recall of 88.1%, and F1-score of 88.1%, indicating that the system has excellent and consistent classification performance. Based on these results, the system is deemed suitable for use as a tool to assist teachers in assessing students' learning styles and designing more effective, adaptive, and meaningful learning.

Keywords: *Forward chaining, learning styles, ISO 25010, expert system, waterfall.*