

Implementasi Materi Pemrograman Berorientasi Objek Pada *Ametative Hypermedia Learning Environment (HLE)* Berdasarkan Klasifikasi Metakognitif & Learning Style Mahasiswa

*(Implementation of Object-Oriented Programming Materials on *Ametative Hypermedia Learning Environment (HLE)* Based on Metacognitive Classification & Learning Style of Students)*

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ABSTRACT

Education is a conscious and planned process to develop the potential of students optimally. However, in practice, the learning process in Indonesia still faces challenges, particularly related to the lack of application of diverse learning styles that are appropriate to the characteristics of students. The lack of identification and accommodation of learning styles leads to low motivation and poor learning outcomes. Learning style approaches such as the VARK model (Visual, Auditory, Read/Write, and Kinesthetic) have been proven to enhance the effectiveness of learning. With advancements in technology, e-learning has emerged as a medium that enables the integration of learning styles into digital learning. An adaptive e-learning system is necessary as it can tailor content to learners' learning styles and metacognitive abilities. This study aims to develop and implement Encapsulation learning materials in the Object-Oriented Programming (OOP) course through a website-based adaptive hypermedia learning environment (HLE) platform using the Laravel Framework and MySQL database. The material is presented adaptively based on the VARK learning style classification and students' metacognitive levels, and tested using the Black Box Testing method with results as expected and SUS Testing with a result of 83,5%. According to SUS interpretation standards, this score falls into the Excellent category. This means that the tested system has a very good level of usability and is well accepted by users.

Keywords: *Adaptive E-Learning, Black Box Testing, Encapsulation, Hypermedia Learning Environment (HLE), Learning Style, Programming Object Oriented (PBO), VARK*