

ABSTRACT

Distance Learning (DL) requires students to actively engage independently through the Learning Management System (LMS) platform. However, learning engagement is difficult to measure objectively because it relies on surveys or subjective responses. This research aims to automatically identify the level of student engagement with LMS log data.

Low engagement can impact academic achievement, especially for distance learning students who work or have family responsibilities. Meanwhile, survey based approaches do not reflect the actual behaviour of students. Therefore, a more objective and data driven method is needed.

This research builds a Learning Engagement classification system, with engagement features such as LMS access time, LMS access frequency, and interaction with quizzes and assignments. The data was labeled using K-Means to form three clusters: low, medium, and high, and then classified using Support Vector Machine (SVM). The validation process was carried out using Stratified K-Fold and hyperparameter tuning.

The best model was obtained from a linear kernel with a value of $C = 0.1$ for Kalkulus Lanjut and an rbf kernel with parameters $C = 1$ and $\gamma = 0.1$ for Pemrograman Basis Data. The evaluation of the test data in both courses resulted in a maximum accuracy of 100%. This result shows that the LMS log data based classification approaches is capable of objectively identifying Learning Engagement in the context of DL.

Keywords: Learning Engagement, LMS data logs, clusters, classification, SVM.