

Identification of varying standard of student based on Moodle Pattern Identification Business Intelligence Tool

J.R.K.C. Jayakody* and W.H.P. Allagalla

Department of Computing and Information Systems, Faculty of Applied Sciences, Wayamba University of Sri Lanka, Kuliyaipitiya.

*Corresponding author: kithsirij@wyb.ac.lk

Abstract

Learning Management Systems (LMS) takes place as an interaction in the internet environment, with different methods for retrieving class content, materials, subject related information, resources and student teacher interactions. Since the interaction details of the LMS such as Moodle is stored in its database as log files, those logs can be used to analyze and understand the weak and good students. Discussions, Forums, Assignments, wikis and the course are the main categories of the logs which are resided in the logs. This research was done to develop a Business intelligence (BI) tool to identify the able students and less able students log patterns with Moodle which is immensely helpful to identify the less able students very early and find remedies to improve their educational standard.

Moodle dataset of MSc Business Management students of University of Moratuwa was used for the research. Store procedures were written in java to extract the xml format data to store the log details to mysql server. BI capabilities such as organizational memory, information integration, insight creation and visualization were covered. Sql server 2012 was used as the main database to develop the data warehouse . Dimensions were created to generate the necessary cubes. Apart from that sql server integration services were used to enhance the Extract-Transform-Load (ETL) process. Data cubes were analyzed with Multidimensional Expressions (MDX) queries. finally dashboards were built using power BI too. Power Pivot graph and the power table were used to present interactive details to the end users. Number of patterns was realized to identify the less able students. Based on assignment submission, number of time a user used the system, number of times pages and resources were accessed, new patterns were identified and presented to the users to get the decision which is immensely helpful to the academics and the students.

Keywords: Business Intelligence, data warehouse, pattern recognition, multi-dimensional queries