

**EFFECTIVENESS OF MOBILE LEARNING PLATFORMS
FOR STUDY PROGRAM DELIVERY: A CLUSTERING
APPROACH TO ANALYSE STUDENT LEARNING
PATTERNS AND BEHAVIOUR**

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DECLARATION

I certify that this thesis is my own work and has not been submitted, in whole or in part, in any form for any other diploma or degree at any university or other institution. This thesis was prepared for the degree of Master of Science / Information Technology, by me under the guidance and supervision of Mr. Saminda Premaratne, Head, Department of Information Technology, and Senior Lecturer of the Faculty of Information Technology, University of Moratuwa. In respect of all the information taken from published or unpublished sources or authored by another person, due acknowledgment is made by citation in the text and inclusion in the list of references. .

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DEDICATION

This dissertation is dedicated to my beloved wife Wasanthi, daughter Thinara and son Thinura, who gave me endless courage and support to achieve my tasks whenever I discouraged.

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ABSTRACT

The need for wide use of Mobile learning environments as an educational technology component in undergraduate education, has particularly arisen at present due to its vast potential for expansion. Use of online methods for education started to expand exponentially with the spread of devastating COVID19 since early 2020. Due to countrywide or regional wise long-term lockdowns, people are compelled to use online methods, particularly for learning. Mobile learning though makes it possible for students to learn and share their thoughts and views among each other as well as the academics can disseminate their knowledge with the student's community with the support of internet and technology improvements, it is evident that the solution is still suboptimal when compared to traditional teaching systems. Both the study behaviour of the students and the existing study patterns of Learning Management Systems (LMSs) in undergraduate studies seem to be responsible for this status of affairs. The objective of the study was to examine the present m-Learning study behaviour of undergraduate students and with the help of the outcome, to develop an improved LMS. Back-end data of the LMS for the period of five years was analysed to understand the factors that are under performing, and to use such findings to develop a better performing LMS. The study used Data Mining techniques in respect of the Database of the undergraduate LMS of the Faculty of Medicine, University of Colombo to test the research hypothesis. Various data mining algorithms, such as K Mean Clustering algorithm, Correlation Algorithm, Association algorithm etc have been used. The study found that there does exist only a mix of positive, negative and absence of relations between students' strong study behaviour and favourable study patterns, in the use of LMS. Distributions are not equal both among and in-between of attributes with LMS and therefore students are unable to realize full technical potential of the LMS delivery. LMS is acting as a limitation that keeps the online option at a suboptimal level. Students do not show a strong study behaviour and favourable study patterns in the use of LMS.

The conclusion is that there is a wide gap between the actual outcome and the full potential of the LMS. This pattern and behaviour indicates that the students have neither attempted questions or examinations nor use the benefits of an integration with social media via LMS mode. There are unutilized potential areas which can be used or utility can be enhanced without any technical expansion by only giving more opportunities to students. Findings provide technical solutions to develop the LMS comprehensively to meet today's online learning needs with further investments.

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Abbreviations

CRISP DM	-	Cross Industry Process for Data Mining
CSV	-	Comma-Separated Values
e-learning	-	electronic learning
GCE/AL	-	General Certificate of Education, Advanced Level
KDD	-	Knowledge Discovery in Database
LMS	-	Learning Management System
m-learning	-	mobile learning
MBBS	-	Bachelor of Medicine, Bachelor of Surgery
Moodle	-	Modular Object-Oriented Dynamic Learning Environment
NOC	-	Network Operating Centre
pdf	-	Portable Document Format
PHP	-	Hypertext Preprocessor
SQL	-	Structured Query Language
UK	-	United Kingdom

Code Snippet

Code Snippet 4.0 - The SQL Query executed to prepare research Data set