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Blended Learning System

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Abstract
Present paper is related to Blended learning which is the combination of customary face-to-face (F2F) learning in classroom and E-Learning procedure. The paper shows work done for execution of model of combined learning by employing "Free and Open Source Software (FOSS)". The work done helps in making system cost effective. There are various tools or software that can be used to implement the work and therefore number of technologies has been studied to implement this work. Analysation has been done on the basis of benefits and drawbacks according to the application in real time. After all these consideration Moodle is chosen as a "Learning Management System (LMS)" and for server platform "GNU/Linux" is taken.

Keywords: *Moodle, Blended-learning, Free open source software (FOSS), LMS.*

I. INTRODUCTION

The term Blended Learning (BL) relates to the combination of customary face-to-face learning in classroom and online e-learning. Blended learning is fragment of the continuing junction of 2 typical learning surroundings. One of them is customary learning method that is being used since centuries. Other one is distributed method of learning that is continuously growing with time and exponentially developing with the introduction of new technologies [1]. Now here the main aspect cost, so the system should be cost efficient. FOSS known as Free Open Source Software helps in making system cost efficient that is why it is in trend over a time period and it provides various profits like stability, flexibility in license management, security and source code access etc. [2]. The present work in the paper is done on blended learning by employing FOSS software.

Second section of the paper considers different ways of modelling, Third section is implementation of system using FOSS software. Conclusion is explained in the 4th section of the paper.

II. MODELLING

There are 2 different ways to design the present paper:

1) First one when system would work with a *"Local Area Network (LAN)"* where the e-material would be provided by the instructors/educators and the learners are able to get the study material using the LAN.

2) Other when projected system would work with *"Wide Area Network (WAN)"* and internet is the way to access the required material by the teachers and students; thereby delivering accessibility 24 X 7.

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Fig. 1: Blended Learning Framework

III. "FOSS" AND SYSTEM

There are different technologies that can be used in the work for reducing the price to implement the project. Before writing the paper an analysis on these technologies has been done and initially Ubuntu, Red Hat, CentOS, Fedora type operating systems (OS) as a linux distribution versions in the server are used. On the other hand, a Learning Management System (LMS) on server side can be used. An LMS is an application software intended with the precise resolution of supporting tutors in getting their educational aims of providing learning material to learners. This *"LMS"* software may be either registered software or freely available software [3]. By the work done, aim of the paper to provide reduced cost is achieved after considering open source software. LMS that has been analyzed is: "OLAT (Online Learning and Training) which is an Open Source LMS", designed to consider the requirements of Educational institutions and Universities. This software is present in various tongues and it can deliver diversity in training and e-learning. "DOKEOS COMMUNITY EDITION" is also an open source E-learning solution which is freely available. The development in the technology results in large community taking together 100s of designers in more than five countries, and users or translators. This "open source e-learning solution" is dispersed over twenty languages and sixty countries worldwide [4] [5].

"E-Front" is deliberated to support the formation of communities based on online learning whereas proposing several chances for partnership and interface over a user interface based on icon. The stage proposes various tools to produce content, assessments building, projects management, reporting, inner messaging, chat, reviews, forum, calendar and others. LMS is an ATutor, which is generally employed for creating online courses and generating e-learning material. Moodle is one of the most famous and used type of LMS over the world. There are nearly 62,629 sites that are registered in two hundred twenty two countries and user's count is in order of 78,260,765. It's mentioned in "PHP" language and MySQL has been used to design the database explained.

After analysation, it is concluded that Moodle as an LMS is the best option. Some of the benefits that has been considered are:

1) Blended mode can be used in learning, whether in asynchronous, synchronous or both.

2) Study material can uploaded by the tutor based on different lessons in form of documents, ppt, pdf or video tutorial files.

3) Classes can be developed and enrollment to learners can be provided.

4) Study material can be opened by the learners by entering username and provided password only.

5) Assignment according to different lessons can also be given by the tutors online wherein learners need to acquiesce it online and can get feedback accordingly online.

6) In this Separate conversation forums also can be combined to each course wherein learners and tutors are able to converse about some of the topics regarding study asynchronously whether inside the class or outside.

7) Different group activities can also be provided online.

8) Performance of student can be tested by online assessment test.

9) Teacher can monitor each and every student based on their performance in tests taken and give them

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feedback according to their performance, feedback can be given either in a blended way or in directly in classroom. The operating system which has been used in the system is CentOS 7, as an application a "HP Prolient machine" is employed.

PHP version 5.3 and mysql version 5.5 are connected in the server. Moodle version 2.0 has been used in the server side LMS. 2 laboratories having total 80 computers in them and the server is linked with the computers in a LAN. Currently the procedure to implement this work with leased line linked server is under process and this application would be retrieved by the learners via connection of Internet. Therefore the trainers would connect easily with the learners in or out of the classroom twenty four by seven. A newest version of the Moodle is Moodle 2.9 recently presented various new modules and plug-ins to get better results in learning actions. Moodle 2.9 also comprises some of the themes of mobile somewhere via consistent expressions, various mobile devices can be identified by using this application.

Fig. 2: Blended Learning using FOSS: A Prototype

IV. CONCLUSION

Present paper has discussed about blended learning in combination with FOSS software framework for blended learning. Free open source software has been used in the system for making the system more reliable and cost efficient. Different ways to make the system cost efficient has been studied. According to analysis, 3 kind of prototypes are used in the work for the investigational purpose. Operating system that have been used are Ubuntu, CentOS, Fedora and Moodle, Atutor, Efront as "LMS". It is observed from the analysis that Moodle is best option.

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