



Implementation of a Portable Learning Management System (PLMS) without Internet for Skill Development in a rural Educational Institute's

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<i>Abstract</i>	
CC License CC-BY-NC-SA 4.0	<p>Skill development initiatives are critical for India's advancement since they reduce unemployment, stimulate economic growth, promote inclusion, and strengthen the country's worldwide competitiveness. By investing in skill development, India can capitalize on its demographic dividend and unleash the potential of its workforce for long-term growth and prosperity.</p> <p>The situation of education in rural India is frequently marked by several problems, particularly when it comes to accessing technology resources such as the internet and Learning Management Systems (LMS). Rural education infrastructure is often less developed than in urban areas, resulting in limited access to new technologies and digital resources.</p> <p>The Present research paper focuses on design and implement portable Learning Management System (PLMS) without internet for skill development in rural education Institutes.</p>

Objectives of Study :

1. Design and implement a portable Learning Management System (LMS) that enables students and teachers in resource-constrained contexts to access learning content, resources, and interactive activities without internet connectivity.
2. To conduct a cost-effectiveness study to establish the financial viability of deploying the portable LMS on a larger scale, considering the expenses of hardware, software, training, and maintenance.

Literature Review :

[1] The MOOCs for Development Conference summarizes some of the trends, difficulties, and possibilities that have been highlighted. One key point of agreement was the need to focus more directly on local MOOC utilizations that account for the diversity of learners and learning circumstances in various regions.

[2] The Researcher investigates a proposal for an offline e-learning platform that will allow digitally unconnected students and instructors to participate in today's ICT-intensive environment. This research paper,

consider the type of technology, connection, economics, support, and skills accessible in remote and developing locations. The solution seeks to fit into the world we have, rather than the one we wish we had in terms of infrastructure. It integrates modern digital learning courses into a portable and self-contained e-learning environment that does not require a constant network or Internet connection to function. The toolset is built using free and open-source components and can run on a variety of older hardware, making it economically feasible.

[3] The study emphasized the various obstacles and potential solutions of digital education in India such as Digital Education in the area of inequality of gender, caste, speed of internet, education, study environment etc. the researcher concluded that, The India requires excellent infrastructure for digital education. This will result in a significant increase in investment in infrastructure for the education sector as well as democratic government.

[4] The Skill Development Cell has been charged with the responsibility of training youth by providing them with skills through AICTE recognized colleges/registered facilitators, with the goal of improving their employment/self-employment chances. To achieve its goals, the cell is implementing a variety of approaches. Among the major schemes are the Pradhan Mantri Kaushal Vikas Yojana for Technical Institutes (PMKVY-TI), the Employability Enhancement Training Programme (EETP), the National Employability Enhancement Mission (NEEM), the AICTE-Startup Policy, the Skill Assessment Matrix for Vocational Advancement of Youth (SAMVAY), Leadership Development Programs, and so on.

[5] Academic institutions are using Learning Management Systems extensively. Moodle, the open-source learning management system is mostly preferred. It is another option to proprietary online learning solutions. In fact, student's performance cannot be evaluated and assessed only by right and wrong answers in online examination. In proposed experiment an attempt is made to make the examination assessment intelligent. Data mining which is very popularly used in various domains including business but less explored in academic domain. It can be effectively used to mine data generated from e-learning systems. The researcher explores the use of data mining algorithm with soft computing technique in question categorization. The Research decides the level of difficulty of questions. To categories the questions into different categories like as easy, moderate, and tough, fuzzy c-means clustering is used. Along with this, performance of students attempting easy, moderate, and tough questions is assessed.

Significance of Study:

India has a 43% Internet penetration rate. It is so low that it compels the use of features like online Learning Management System, security, and usability even when there is no internet connectivity. Therefore, the research is focused on the implementation of all features in a controlled setting.

PLMS - is an innovative Learning Management Solution for schools, colleges, and universities. It works on a pocket size computer with smart phone clients. It works with and without Internet (offline).

Hardware and Software Infrastructure

1. LMS for Courses Software
2. Single Board Pocket Computer
3. Router / Hotspot
4. Connector cables
5. Power supply / Power Bank

SOFTWARE SPECIFICATION

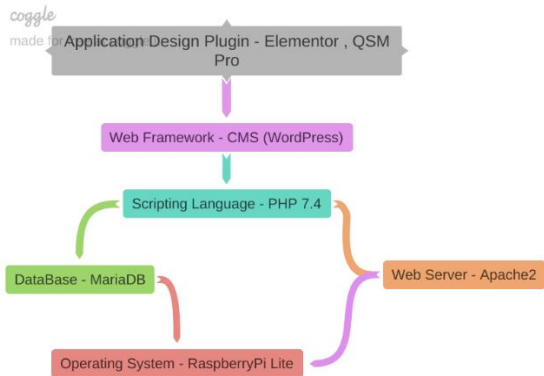
1. Raspberry pi 32 bit lite – Open-Source Operating System
2. LAMP Programming Module
 - a. Kali Linux -Open Source
 - b. Apache2 Server - Open Source
 - c. Maria-DB database – Open Source
 - d. PHP 7.4 - Open Source

Available online at: <https://jazindia.com>

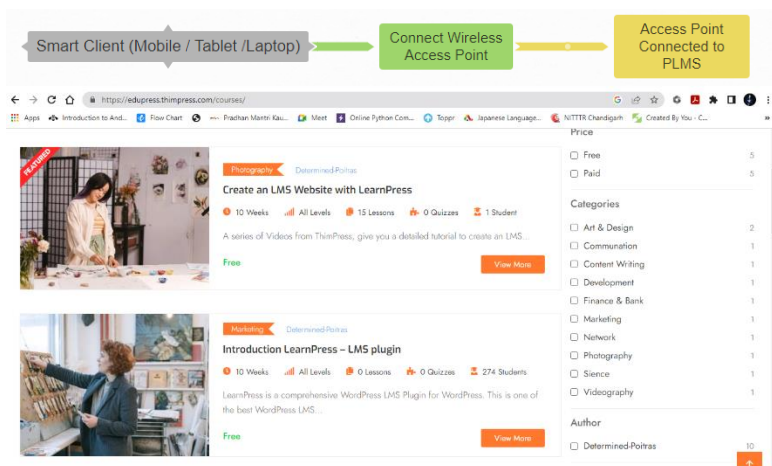
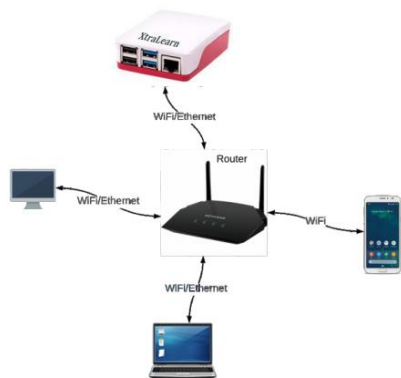
3. WordPress Content Management Application – Open Source
4. Elementor Designing Editor – License Application
5. QSM Pro - License Application

The user can connect one device with two or more Local Area Network using wired connection, but it is not possible with wireless connection. In wireless connection client can connect maximum one SSID hence we proposed wireless model. All the clients can connect with PLMS only through hotspot. Therefore, internet connectivity stopped automatically the as client connect with PLMS hotspot.

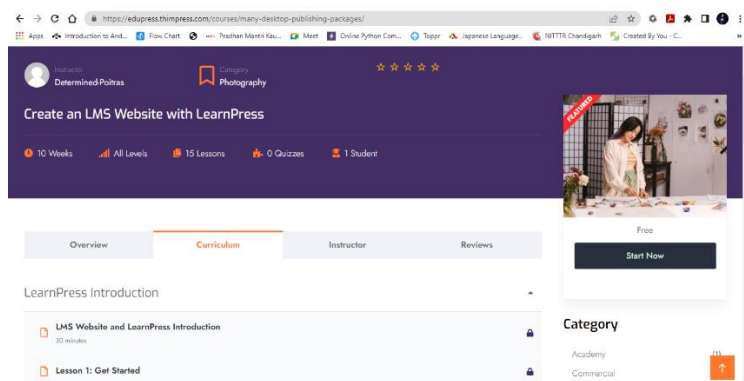
Architecture Diagram for PLMS



Smart Client Communication – Use case Diagram



Screenshot 1. User Visit Home Page and Select Necessary Course



Screenshot 2. Course Curriculum tab – will Visible only after Authentication

Conclusion

To ensure mobility, the Raspberry-pi 4b+ module and open-source software are used to construct the LAMP stack. As a result, an unlimited number of courses can be created and delivered to the Portable Learning administration system. This lowers the cost of the recurring domain and hosting. Because the application may be created using open-source software, the total cost for hardware is roughly ten thousand Indian rupees. The current model enables remote areas to run the LMS system without internet and easily meet the skill development goal. This approach contributes to the achievement of the goal of the Government of India's Mission Mode Project Skill India.

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Website References

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