

E-LEARNING MODEL IN HUE UNIVERSITY'S COLLEGE OF EDUCATION

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ABSTRACT

Through the process of deploying E-Learning model at Hue University's College of Education when switching to credit system for education training, based on the teaching situation and the difficult conditions on facilities, the author adopted 3 different models of E-learning system depending on conditions and the learning environment, various teaching objects in the College. From the statistical results and feedback from the trained audiences, the author evaluated the strengths and weaknesses in implementing these models. With the building of an experimental platform from the weaknesses evaluation on telecommunications network infrastructure, the stored data on one fixed server and limitations, the author promoted towards skills on information technology teaching and learning on E-learning system (internet and local network) in order to apply to the new system with the initial trials which bring hope to the future results.

Keywords: E-Learning system, E-Learning model, Credit system, Online Learning, E-Learning platform.

INTRODUCTION

In the past decade, along with the explosion of the Internet and the boom of the telecommunications - information technology industry, the application of Information Technology and Communication in the fields of life becomes easier and more convenient. In the field of education and training, other forms of e-learning are mentioned as a training methods for the future, supporting contents and innovative teaching and learning. E-learning has changed the way of teaching and learning anytime, anywhere, depending on learner's speed and acquiring capacity. Hue University's College of Education has been in the process of implementing the mechanism of training credits, additional forms of teaching and self-learning of students in the form of E-Learning then brings urgent effects.

Definition

E-learning, in the most common way to understand is the the process of learning through electronic means, the process of learning through the Internet and Web technologies. From technical perspective, "E-learning" can be defined to be a form of training with the support of electronic technology, the learning process through the web, via computers, virtual classrooms and a digital connection. The content is delivered to the classroom via the Internet, intranet/ intranet, audio tapes, videos, broadcasting, TV, CD-ROMs, and other electronic means (Definition [7]).

Model: [8]

Figure 1 – E-Learning Model



E-learning model consists of 4 components, conveyed to learners through the electronic media means.

With the development of Telecommunications - Information Technology, e-learning is understood intuitively rather than the learning process through the Internet and web technologies.

The outstanding features of E-learning over traditional teaching methods [8]

E-learning is considered the method of training for the future. In essence, E-learning can also be considered a form of distance learning and it has variously different characteristics compared to traditional training method. The outstanding features of e-learning compared to traditional training methods are:

- Unlimited by space and time: learning anytime, anywhere.
- Flexibility: according to learners' needs.
- Easy and random access: Students find their needed skills for their own with the help of the online documentation
- Updatability: The course content is regularly updated and innovated to best meet students' knowledge demand.
- Cooperation and coordination in learning: e-mail, chatting, forums, ...
- The initiative of students: the e-learning environment takes students centered, thus, promotes self-consciousness of learner's attitude.

E-learning will become an inevitable trend in the intellectual economy. Currently, E-learning is attracting special attention of countries in the world with the advent of so many organizations and companies operating in the field of E-learning. Therefore, the selection of E-learning models to promote the ability of information technology qualifications of teachers and learners, and the rational use of the existing infrastructure of the university is a very important step.

The objective of the report is presented into 5 chapters: Chapter I. Introduction of definitions, models, outstanding features of E-Learning; Chapter II: Introduction of e-learning applications in education and training and e-learning systems used in the Hue University's College of Education; Chapter III: Results and experimental environment deployed, analysis of the advantages and disadvantages; and from that, we proposed the deployment model and some initial results in Chapter IV. Final, we were conclusions and future development in Chapter V.

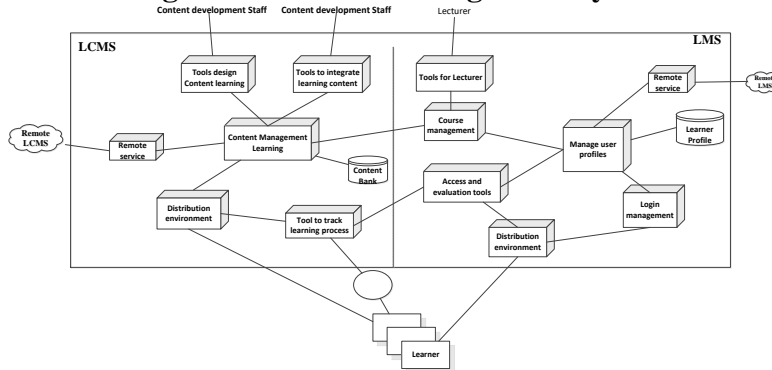
E-LEARNING APPLICATIONS IN HUE UNIVERSITY'S COLLEGE OF EDUCATION

Compositions, structure and model of a single e-learning system [8]:

Compositions of a single e-learning system

Course management systems as web applications, which means they run on a server and is accessed by a web browser.

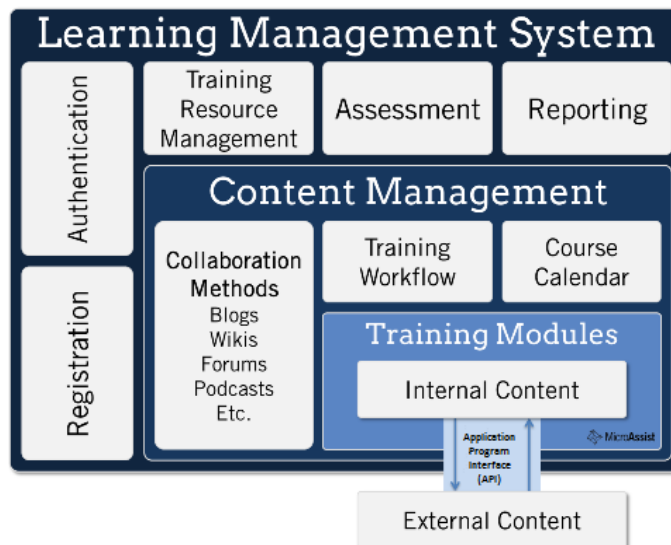
Figure 2 – Course Management System - CMS



Structure of a single e-learning system [10]:

E-learning systems are usually built based on LMS and using Web technology, with a structure below:

Figure 3 – Structure of a single e-learning system

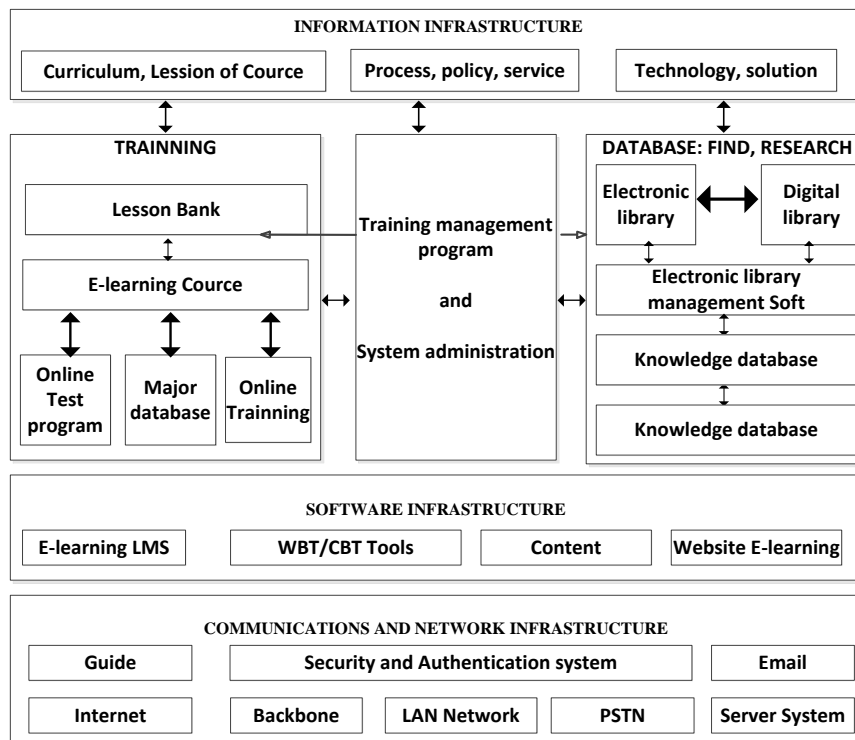


On the basis of the characteristics of web services, it was found that web services have the ability to perform better connective features, compatible with e learning system because:

- Information exchange between e-learning systems as LOM is a data model describing learning objects and digital resources used to support learning; IMS packets are encoded as XML.
- Structure of the model allows web development and usage via the Internet and Intranet.

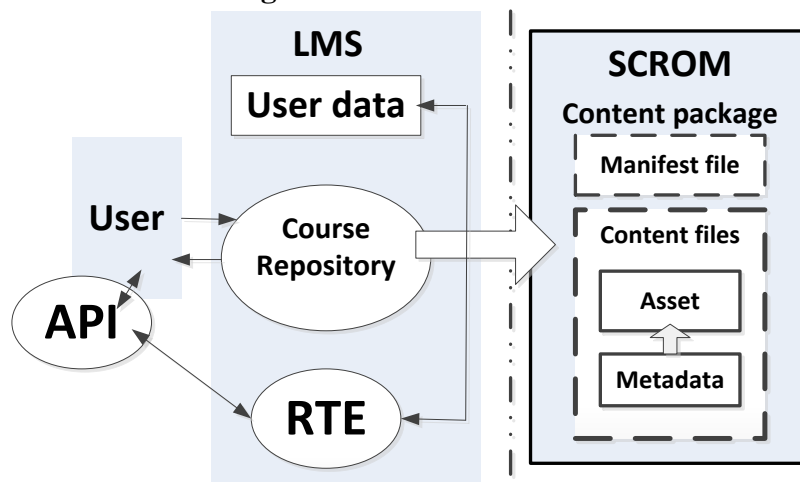
E-learning system: including 3 main parts: Communications and network infrastructure; Software infrastructure; Information Infrastructure.

Firgure 4 – E-learning system



Today, the standards of E-learning are best known as SCORM standards given by the ADL. SCORM model is a set of standards to adapt to a variety of sources to provide a comprehensive system of learning abilities, which allows access and re-use of knowledge on the web.

Firgure 5 – SCORM standard



SCORM is a reference model of technical standards, specifications and related guidelines launched by various organisations to meet the high requirements of learning content and systems through the following characteristics: accessibility, adaptability, affordability, durability, interoperability, and reusability [11]

The model applied at Hue University’s College of Education

Currently the application of information technology in teaching has been implemented in most of the provinces, regions and institutions. Particularly, the application of information technology in the universities has been imperative along with the switching from traditional

training mechanism to credit training. Enhancing students' self-learning is promoted so solutions to promote online learning applications are compulsory. There is many online teaching software widely used in 3 ways:

Using the complete system including: the system platform, system solutions, system applications attached, ... Currently the majority of institutions uses Moodle system [1]

Advantages: Suitable for course managers, course creators, course designers, etc.

Disadvantages

- Too many functions, slower due to too many modules, difficulty to bring efficiency over the equipment investment on the ability to upgrade transmission lines.
- The lecturers face design difficulties with too many features to be launched, the support of large systems requires synchronization system to keeps managers with course creators, lecturers and learners. It allows to integrate multiple software requiring teachers to have knowledge of the system software.
- Open source system software needs to be frequently reset leading to fault and concerns security issues over management issues.

Using available learning system: compactible and focused more on system security and management and organization solutions of teaching and learning rather than interested in the whole system as the foundation and system building techniques instead of content and interface lecture design.

Advantages

- No investment on equipment facilities, infrastructure and leverage of existing systems such as server, web, etc.
- Compactible and focused on content design solutions and course interface.
- High security based on copyrighted software, updated patches when necessary
- Ability to apply the method of online learning in the future: molie-learning or Unique Learning.
- Nice and intuitive web interface, easy designed lectures so decreasing unnecessary training and system management as a new system.

Disadvantages

- Depending on the manufacturer when you want to upgrade or add features.
- Having to choose the software and solutions to suit each selected system

Building system on our own

Advantages

- In accordance with the requirements of the user, independent on the upgrade, changes.
- Proactively working, the ability to secure well.

Disadvantages

- No support or integration as other system platforms or otherwise given no suitable solution for network topologies, congestion when multiple users simultaneously access, difficulty to integrate or synchronize the standards of design of the lectures (international normalized SCORM, etc.) or supporting software that specializes in designing lessons, quizzes are possible; the design of system and interface have to be done from a to z, likely leading to project delays in case of lack of or change of manpower as well as the coordination of the project members.
- Necessary to train the new system administrator, to provide documents, guide learning and teaching, equipment investment for the system and the process of teaching, learning.

The trials selected with 3 options**Using the complete system**

On the E-Learning system with elearning.dhsp hue.edu.vn domain, there are 30 lectures, in which the author of 11 lectures and regularly online learning activities. Our system supports: [9]

To the students

- Engaged and actively making proposals to exchange topics.
- Downloading the lessons and supportive software.
- Working in team
- Viewing and receiving feedback from other students or lecturers
- Holding and scheduling their activities during the learning
- Doing the online test and receiving results, answering questions via software editor: multiple choice and essay

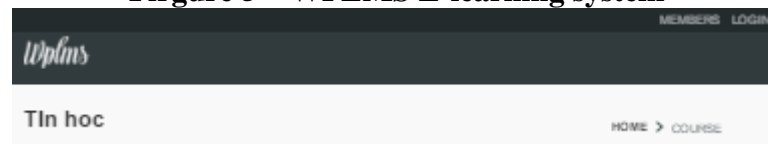
To the lecturers

- Composing lectures and using multimedia technology created by web tools
- Uploading documents, assignments, discussion.
- Tracking the overall progress of each student.
- Making online tests and viewing the results and supporting the necessary explanations.
- Allowing to create topics, homework. Student's uploading group exercises. Lecturer's comments and reviews by emails.
- Exporting and receiving scores into word, excel files during the reporting period.

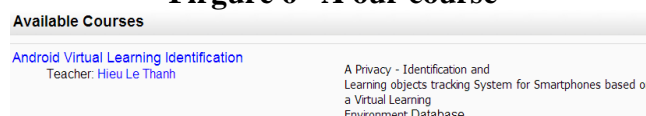
In addition, we was built and tested an online programmable learning support system is installed by Domjudge software at website address: <http://113.161.8.56/>. After that, we applied the System to olympic student group of Physics, Mathematics and IT Department of Hue University's College of Education who participate Informatics Olympics Examination in 2016. [6]

Using learning system on existing platform

To overcome the current difficulties in the network infrastructure and apply to regular 1st year students of College of Foreign Languages, Hue University, during the 2015-2016 academic year's second semester for the framework of the program the unique teaching of College of Foreign Languages, Hue University, we used the intranet through a local network) We selected learning system software copyrighted namely WPLMS [4] and web-familiar platform Wordpress [5] (75% of websites worldwide use).

Figure 5 – WPLMS E-learning system**Building system on our own: [10]**

We have built a website named mobile.ona.vn, allowing to create online learning environments with the following structure: A HOST with the following configuration: Moodle 1.9, PHP 4.3.0, Database: MySQL 4.1.16. In which we build a course in which the database components serve the work

Figure 6 –A our course**Figure 7 – Structure of Our system**

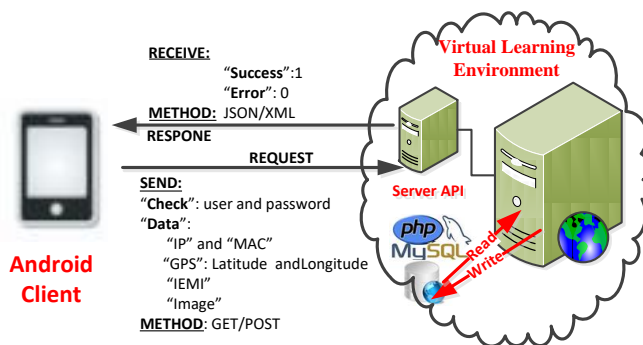
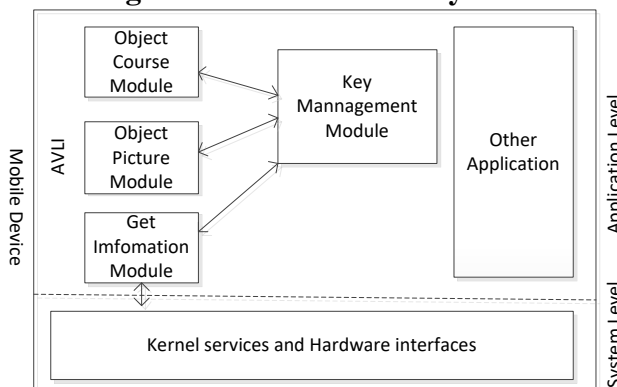


Figure 8 – Andoid client system



Our Andoid client system builds on an android mobile platform, AVLI (Android Virtual Learner Identity) including 3 modules: course participant certification Module (based on username and password), Module to get images directly from the camera. Both modules are encrypted, with the first module encrypted using MD5 encryption method (one-way encryption), in conjunction with salt; The second module is encrypted by the Base64 method.

EVALUATION RESULTS AND SOLUTIONS

Based on the install and test of the system with 3 above directions, with the actual object of teaching, time, contents and conditions of the facilities, we drew up a questionnaire to evaluate feedback as well as compare with the current traditional methods from 2009 to date, the response of evaluation data was stored on the system of learning with the author's name, Le Thanh Hieu [2] and test results course completion evaluation selected to be stored [3], in particular:

Using the complete system: [9]

Evaluation objects:

Regular specialized, in-service students training for computer science of Hue University's College of Education, at the training bases An Giang, Ba Ria-Vung Tau, Dong Nai, Quang Tri.

Regular, in-service students: for general and office computer science (collectively referred to as computer science) inside and outside the College.

Computer science regular specialized object

Table 1: 54 Student Survey (Are you excited about this new way of learning?)

Option	Unlike	Worry	Acceptable	Excited	Very Excited
Percentage	0%	2,1%	6,3%	20,8%	70,8%

Table 1 shows the percentage of students very excited and exited with the new learning method, accounted for 91,6%, an extremely high percentage.

Computer science irregular specialized objects**Table 2: 177 Student Survey (Are you excited about this new way of learning?)**

Option	Unlike	Worry	Acceptable	Excited	Very Excited
Percentage	1,1%	22%	15,8%	44,6%	16,5%

Table 2 shows Percentage students worry with the new learning method accounted for 23,3% as 1st year students have not accessed to computer much and have to change the habit now. The number of excited and very excited students accounted for 61,1 % as they accept the new method of learning.

Using available learning system

We provide the content of the lectures and exercises as a test together with the lesson contents, some are in class when the equipment is used by the Wifi intranet connection access on 30 fast-run machines without waiting the full page reloads.

Evaluation objects

Regular 1st year students of College of Foreign Languages, Hue University, we teach the contract during the 2015-2016 school year's second semester.

Results**Table 3: 112 student survey (This method brings many evaluation tools for teachers than traditional ways)**

Option	Unlike	Worry	Acceptable	Excited	Very Excited
Percentage	2%	1%	16%	62%	19%

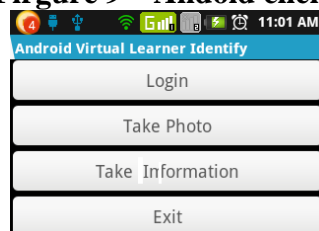
Table 3 shows that percentage of students very excited, excited with the new learning method is 80%, a very high percentage.

Building system on our own

We are finishing process-based system proposed in version 2.3 and proposed a number of measures as follows [10]:

Experimental objects

Android is an operating system currently popular on mobile, we are taking experiment AVLI module on Lenovo P70, Android 2.3 Gingerbread, 512MB of RAM with the Host domain system: mobile.ona.vn connected via wifi and programmed by Android java language

Figure 9 – Andoid client system**Solutions**

1. Using Camera to compare: Using file or directly using the memory. Transferring and converting image files
2. Confirming objects via GPS navigation is more efficient compared to the object identifying using the IP network address. In addition, a combination of the two forms are best to know where the student is?
3. We use security encryption when sending information: using MD5 + salt method and 64-bit encryption.
4. We implement the assessment test and troubleshoot: We conduct experiments on efficient of video transmission time from the device's camera.

Difficulties in implementing the test evaluation and troubleshoot

In the process of implementing e-learning system Moodle and system building on the institution's server via the internet, we found that the video transmission rate over the Internet met practical difficulties, the storage and handling of data has been slow compared to what happened when students were on the desktop. Therefore, we proposed some improvements as follows:

1. E-learning system Moodle we choose to customize and create one of the monitoring case studies or science fair to encourage students to use mobile devices with mobile phone interface for the mobile platform Android or iOS
2. The system testing has not received any feedback and ratings, but is expected to push up applications to cloud for better transmission, storage and data processing. With the signing of cooperation between provinces, we expect to allocate local video data database server and share in P2P.

CONCLUSIONS AND FUTURE DEVELOPMENT

From the results of the evaluation of learner feedback, analysis and on-class testing with all kinds of models, we found that:

- To deploy applications to support online learning within small classes, there is necessarily an internal network or the system which does not require a lot of functionalities, integrated system from other software, etc. Therefore, solutions for online teaching system installation as a web-based system as WPLMS should be chose and tested.
- The use of complete online learning management system (LMS) including platform with open source will help us to be able to change the interface, develop additional options to change the system into one of its own as the Moodle LMS system that we have been used to reach some success through the website: elearning.dhsphue.edu.vn
- For long-term direction, besides solutions to use the current system, we offer a separate platform in line with the needs and purposes of online learning institutions, from which we propose an online learning system including: platform, solutions, etc. allowing us to actively select communications infrastructure, solutions for data synchronization with other management systems in institutions.
- The selection of E-Learning model to apply in each case varies; besides the dependence on the level of application of information technology of faculties and students, also, depending on the conditions of the ICT infrastructure. In the Hue University's College of Education to overcome infrastructure constraints, we expect to switch to cloud: including system settings to use transmission lines, high-speed processing, purchasing data processing services on the mobile platform: Android or IOS meeting learning needs anytime, anywhere.

Selection of self-built solutions based on the platform and proposal and research framework that we conducted. With a team at the Department of Computer Science and IT systems of technical personnels in the IT Center, receiving funding from the World Bank to finance the deployment of infrastructure, staff trainings, we expect to bring the positive signals in the future.

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