

Developing E-Learning Courses for Teaching and Learning

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Abstract

The aim of this paper is to provide practical suggestions for learning and teaching to develop E-Learning courses. As a promising teaching medium, e-learning is an emerging field where you can study its impact on teaching activities. Primarily focusing on how theories, practices, assignments and assessments build to the online teaching and online learning. In doing this, it is hoped that can enhance universities and departments success in transitioning to teach online.

Keywords: E-Learning, online, online teaching, online learning.

1. Introduction

E-learning is an e-learning process conducted through the Internet or Intranet network using a management system. Among the most popular choices for eLearning system, we decided to choose Moodle that is the open-source system. Moodle is the one of software package and it is basically to create course on Internet-based website. It is also called Learning Management system (LMS). It enables teachers and students to make collaboration better. In this paper, we describe the exploration ways to develop effective e-learning website using Moodle. We also explain how teachers apply various functions in Moodle to provide interactive learning experiences in higher education like various technical universities.

2. E-Learning

E-learning is defined as a learning system using electronic devices to achieve via the Internet. It is also called online learning or online education. The 'E' in E-learning means for 'Electronic.' Therefore, the original term 'electronic learning.' E-learning is education using computer or other electronic devices to learn anytime, anywhere.

Generally, there are two methods of electronic learning. Asynchronous e-learning is basically email and discussion forums. It helps the working relationship between students and teachers even when they cannot be online at the same time. It is a key component of flexible online learning. Students can spend more time perfecting their contributions.

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Compared with synchronous communication, they usually think that these contributions are more thoughtful. Synchronous e-learning is usually supported through video conferencing and chat. It can help students build a learning community. Students and lecturers will experience synchronized e-learning by avoiding frustration by asking and answering questions in real time.

The following e-learning cycle model can represent the e-learning process.

- Skill analysis. The teacher can analyze the student's current skills and the skills established as learning objectives and obtains the necessary material information.
- Material development. Developers create material schematic structures and practice problems. Link to the material structure and the description page.
- Learning. Students participate in learning that is tailored to their needs, that is, they acquire knowledge through individual learning or in workshops through collaborative learning.
- Evaluation. Students practice and take tests using questions designed according to learning objectives. The learning administrator uses the results of the exercises and tests to evaluate each student.

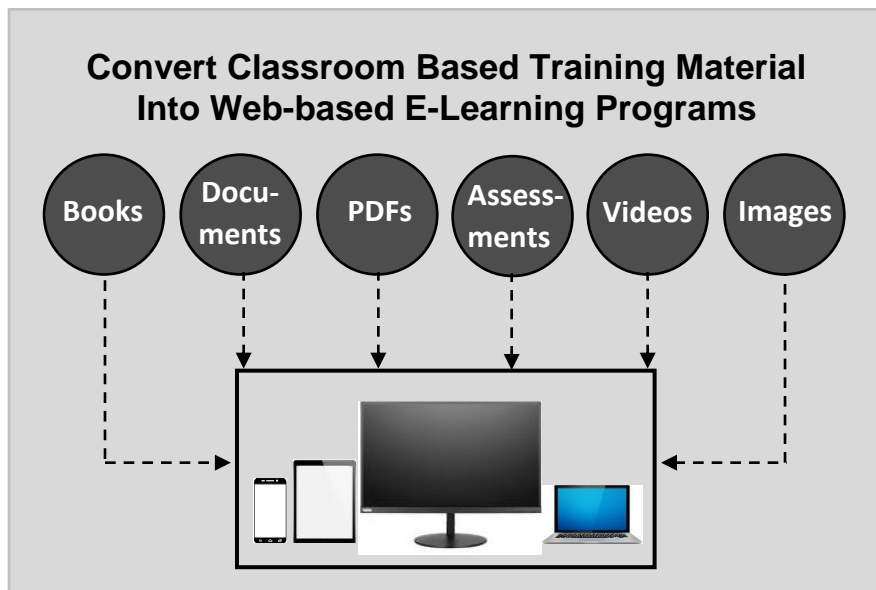


Fig.1 The e-Learning

3. Moodle for E-learning

The long term of “Moodle” is Modular Object-Oriented Dynamic Learning Environment. It is mainly based on an open source e-learning platform and an excellent platform for communication tools and resources. It was developed by computer scientist and educator Martin Dougiamas, who believed that course management system (CMS) should be created by educators rather than engineers.

To run, Moodle must first be installed on the main server. The administrator needs to setup username and password to allow accessing. Users can access Moodle using web browser via the Internet. Moodle is written in PHP and MySQL databases. Moodle will install updates from time to time, so it will be constantly modified and improved. It is a template-based system that can make the Moodle interface very easy to navigate. The entire application is displayed in "flat view" format. So, user can see in small blocks and divided into sections according to the template or weekly feed. Each section has its own tools, such as courses, quizzes, tasks and forums. All the blocks on the page can be arranged individually, and the elements in each section can be easily moved or hidden.

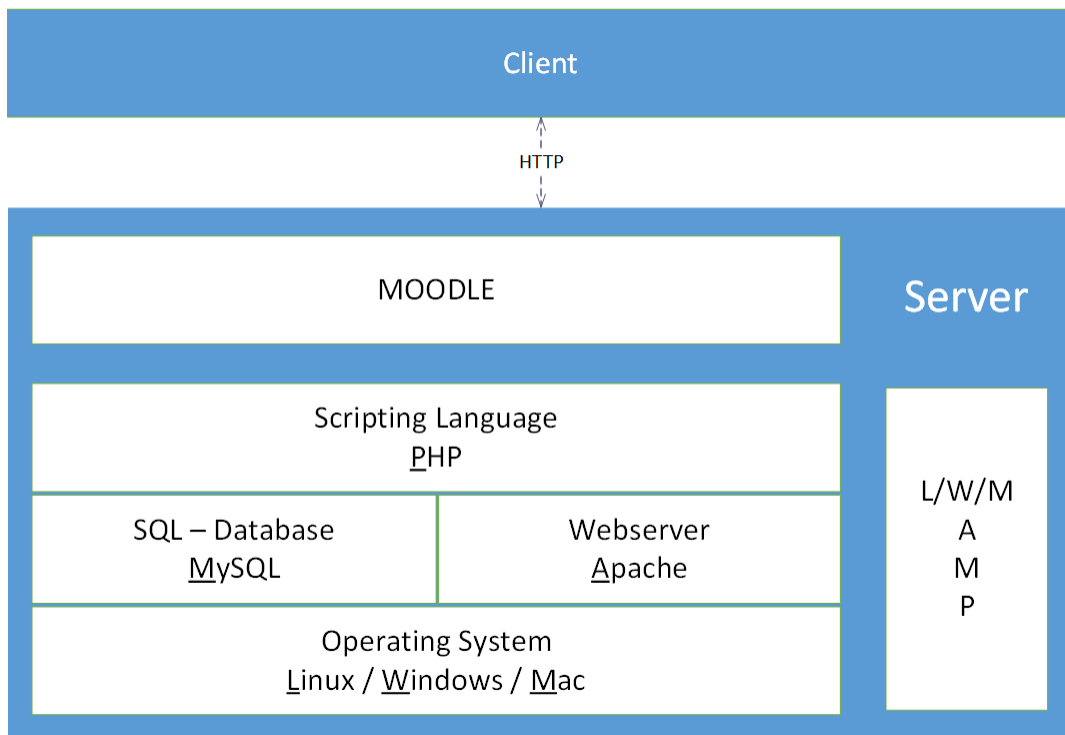
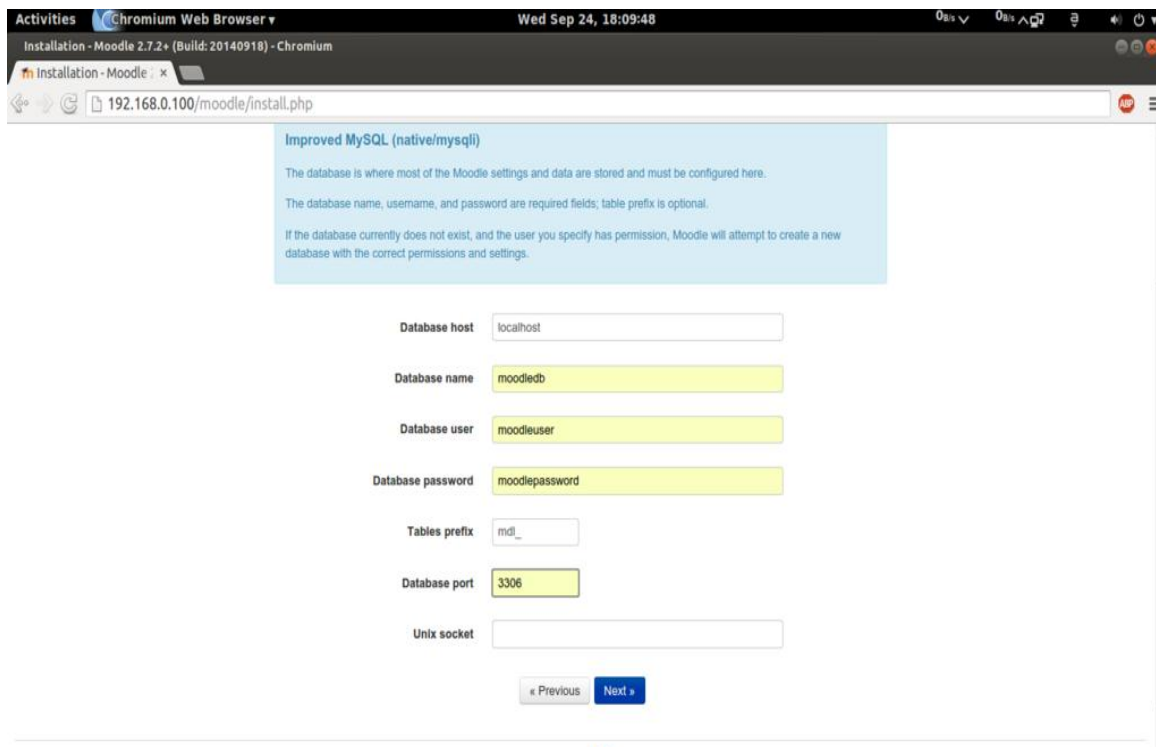


Fig.2 The architecture of E-Learning website based on Moodle

4. Technical Requirements

- Disk space: 400MB for the Moodle code, plus as much as you need to store content. 50GB is probably a realistic minimum.
- Processor: 2GHz dual core or more recommended.
- Memory: 1GB or more is recommended. 8GB plus is likely on a large production server
- Consider separate servers for the web "front ends" and the database. It is much easier to "tune"
- Moodle software package

All the above requirements will vary based on the specific combination of hardware and software and the type of use and load; busy sites will likely require additional resources. More guidance can be found in the performance recommendations. By adding hardware, Moodle can be easily expanded. For large websites, we better start with a little experiment and gain some experience and insight.



The screenshot shows the Moodle installation wizard in a Chromium web browser. The browser's address bar displays the URL `192.168.0.100/moodle/install.php`. The page title is "Installation - Moodle 2.7.2+ (Build: 20140918) - Chromium". The main content area is titled "Improved MySQL (native/mysqli)" and contains the following text: "The database is where most of the Moodle settings and data are stored and must be configured here. The database name, username, and password are required fields; table prefix is optional. If the database currently does not exist, and the user you specify has permission, Moodle will attempt to create a new database with the correct permissions and settings." Below this text are several input fields: "Database host" (localhost), "Database name" (moodledb), "Database user" (moodleuser), "Database password" (moodlepassword), "Tables prefix" (mdl_), "Database port" (3306), and "Unix socket" (empty). At the bottom of the form are two buttons: "Previous" and "Next".

Fig.3 The screen shot of basic installation

5. User Types and Access mechanism

After installing Moodle, we can get the administrator account and password. Administrator can create courses, add users to the system and manage other system

functions. Moodle uses a role-based access system and executes four major roles: administrator, course manager, teacher, and student. The user can receive any of these roles. The user can be a teacher in one course and a student in another course. Teachers can also be administrators or course manager. Only administrator can manage user permission and courses. Users will be assigned as a student role when they register for a specific course.

When students start to join the course, there are four type of mechanisms provided by Moodle.

1. No need authentication and allows any user to join the course.
2. The guest user mode, in which users can participate in courses but cannot participate in any activities.
3. The teacher must directly enroll each student one by one. In this mode, the teacher can fully manage for adding or deleting students. Registration and expulsion are all done through a simple interface.
4. Displays a list of all active users in the system and the current student list. All these operations can be done by selecting the "Setting" option on the Moodle course page.

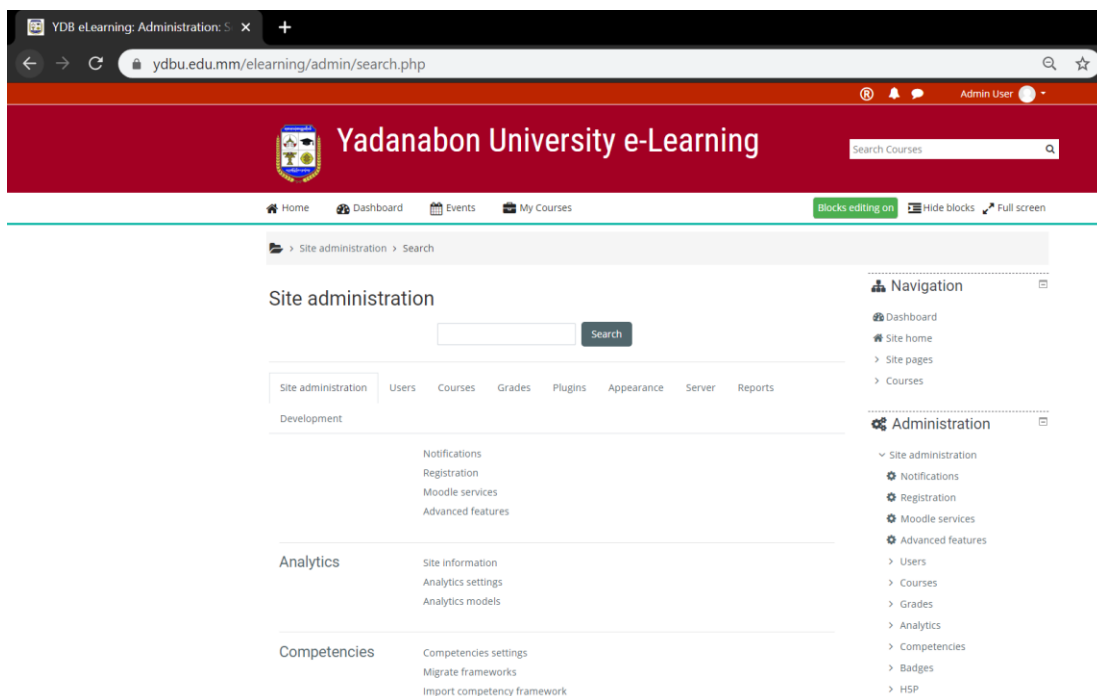


Fig.4 The screen shot of basic operations

6. Basic Features and Operations

There are tools to create resources and activities in the basic features of Moodle. These in turn provide a variety of useful options for instructors in management courses, as shown in Figure 5. The "Resources" tab provides teachers with options to create labels and text pages or web page. Another useful and collaborative part is the "Activities" tab is also useful because it includes task, chat and selection, the instructor creates the database and the following students complete the student form. Everyone can post in the forum in response to the discussion topic. A vocabulary is a dictionary created by the instructor that contains the terms used and their meanings. The course provides website flexibility, quiz interactivity, and branching functions. Questionnaires can create various types of questionnaires, surveys are questionnaires that collect student feedback, and wikis are collaboratively edited web pages. From here you can access the registration settings, as well as availability and language. You can manage roles and provide different types of access rights for different people.

7. Course Management

There are three different formats in the course. These are

1. Weekly: the weekly format organizes the course into several weeks, including assignments, discussion forums, tests, etc., all of which are conducted once a week.
2. Social: the social format is based on a forum, ideal for posting and discussion.
3. Topic: the topic format organizes all content by topic, regardless of duration. Our courses are in topic format.

Our students can use e-learning and use these resources by logging on to the university website <http://www.ydbu.edu.mm> and selecting the online learning link. Lecture notes can include lecture slides in content. We can organize content topics wisely or arrange courses wisely depending on the chosen format. The "Add Resource" link in each block provides many options for adding content. It provides file uploads, hyperlinks to web pages in other places, and preparations for creating your own web pages [Figure 5]. Teachers and administrators can change course management. They can fully control all course settings and restricting other teachers.

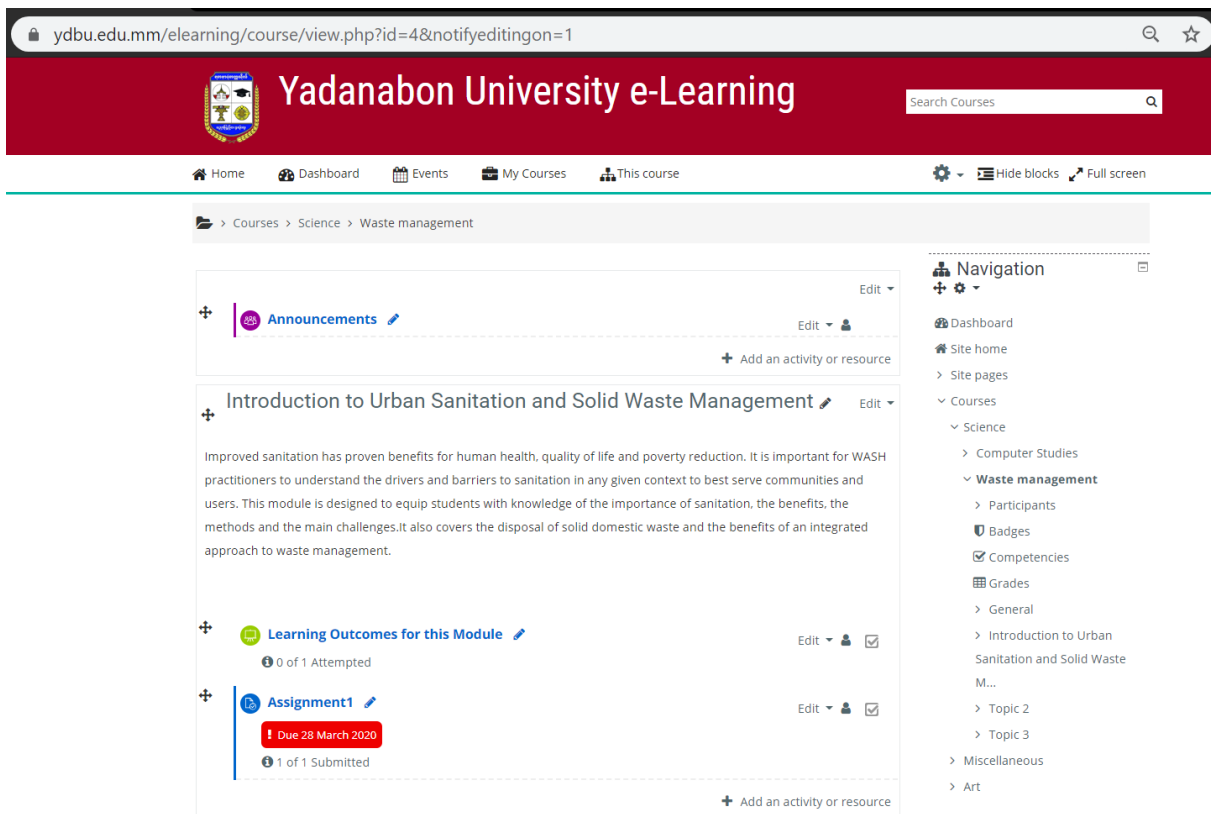


Fig.5 The screen shot of course management

8. Interaction

The interaction between the student and the teacher provides the efficiency of the e-learning system. In Moodle, all announcements related to the course are made through news forums. The people who can manage course can add such discussion forums through the "Add activity" link in each block. If you use forums carefully, forums are common tools for interaction and learning. We can ensure that we respond to student comments and participation through appreciation, related rebuttals, and constructive suggestions. As a strange medium, these little gestures can make students feel comfortable. You can also consider participating in the forum as points as part of an internal evaluation to further increase your interest. User can also use chat and mail for communication channel in Moodle. According to build a forum, system will send email to post owner when other user replies to his post. Teachers can ask questions to discuss and encourage students to ask questions online and answer them online. This can not only be used as an interactive library that other students can refer to and use but can also promote more interaction between students to clarify and improve discussions. Putting self-assessment questions in the main part of the course can also be used as student feedback.

9. Quiz

Quiz module is useful for teachers. They can design and build Quiz tests using that module. When teacher create a new question, it will be stored in the selected categories, and these categories can be "published" so that they can be accessed from any course on the website., We must select the question type from the drop-down menu to create a new question. We can choose to add, including: multiple choice questions; Random set; Random short answer; a short answer question; a number question; matching question; true / false questions; descriptive question; these questions are stored in the classification database, and It can be used repeatedly within courses or even between courses. The Quiz module includes identification tools. The Quiz is automatically scored and can be re-graded by changing the question. As shown in Figure 6, the questionnaire may not be available for a limited period of time. Quiz questions and quiz answers can be reorganized to reduce cheating. Attempts can be cumulative and can end in multiple sessions if needed.

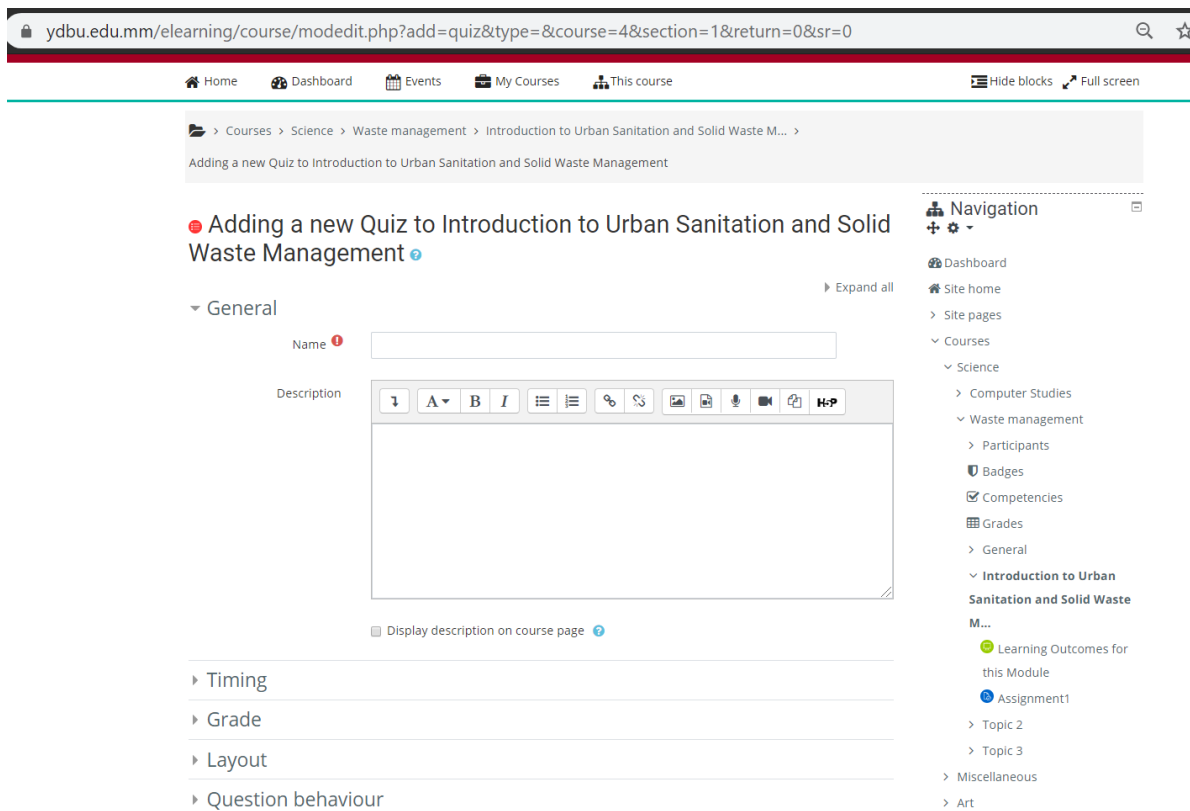


Fig.6 The screen shot of quiz module

10. Assignment

Assessment in any learning setting plays an important role in providing feedback to students on the student's position on the objectives of the subject and on the entire class, as well as the effectiveness in instructing the teacher on how to teach. To send tasks online, we can use the "assignment" option in the module's active menu to configure the tasks. In Moodle, you can specify the deadline and assign the highest grade. Students can upload their assignments to a dated server in any file format. Using a small enough file upload size will avoid loading large files and crash the system. For each specific task, the entire class (level and comments) can be evaluated on one page in one way. Teacher comments will be attached to each student's homework page and notification will be sent. The counselor may choose to resubmit the assignment after grading to complete the relevant issues. In the first, the teacher is more free to ask questions and the number of such tasks, but because students may not see any direct benefit, the answer may be less.

The screenshot shows the Moodle assignment module interface for a teacher. The page title is "Assignment1" and the breadcrumb trail is "Courses > Science > Waste management > Introduction to Urban Sanitation and Solid Waste M... > Assignment1 > Grading". The interface includes a search bar, navigation menu, and a table of student submissions.

Select	User picture	First name / Surname	Email address	Status	Grade	Edit	Last modified (submission)	Online text
<input type="checkbox"/>		Soe Soe ms	abc@gmail.com	Submitted for grading Graded	Grade 10.00 / 100.00	Edit	Saturday, 21 March 2020, 12:30 PM	(125 words)

Fig.7 The screen shot of teacher's assignment module

11. System Protection

Any kind of automation will bring related dangers. When a computer system is famous, it will be danger by virus attacks, spam, hackers, etc. Therefore, the Moodle server must be well protected through normal security measures on the Internet. In order to increase protection, the following points should be considered.

- Use the backup feature to package the course in a single zip file that can be restored on any Moodle server.
- By Setting the registration mode with the key after entering the place to prevent unwanted users from gain access to the course.
- Specify reasonable upload restrictions where students can upload files.
- Reduce the number of users with administrator roles to reduce system risk.

12. Conclusions

In this paper, we have learned Moodle for e-learning. We recognized Moodle as a great tool as it is an online collaboration platform for teachers and students to learn together. In addition to creating courses, it is also helpful to join the online community to stay in sync with the world and meet a group of academics who really live around the world. On the moodle.org website, they support many useful modules for expanding the Moodle website. These tools can help us improve teaching efficiency. Therefore, the implementation of information and communication technology in e-learning education through Moodle can improve the effectiveness of education. E-learning can enable students, teachers, and students to collaborate better, can improve student accessibility, usability, and collaborative learning, and can gain greater motivation among students and teachers through e-learning.

13. Acknowledgement

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