Study of the use and application of the moodle e-learning platform in high school

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Abstract. The study of the Moodle e-learning platform as a learning media was conducted in two cities, Bogor and Bandung. The purpose of this study is to find out whether high schools use E-learning applications as learning media between teachers, students and parents. Another goal is to facilitate the learning process that occurs in the classroom, the test process can be carried out easily, the value can be seen directly by students, and the development of students is known by parents, the method used is a direct review of the object of research, conducting interviews with the principal and find out whether schools use e-learning as a learning media in schools. The Moodle e-learning device created will be given to schools as an implementation of the results of this study. Moodle will be used as an e-learning platform to improve the learning spirit of students, and make it easier for teachers to deliver material in class.

1. Introduction
This research activity was conducted with the aim to find out whether schools use e-learning applications in the ongoing learning process. Learning that is carried out with the aim of increasing students' abilities and understanding must be carried out, learning activities must also follow developments so that capacity building can be obtained. Through Moodle, which is an e-learning system, it is expected that there is an interaction between teachers, students and parents to improve students' knowledge and progress. Moodle provides some convenience in learning activities by functioning as a useful repository for students in particular. Assessment can be done by the teacher easily through Moodle. Likewise, the implementation of training and examinations can also be done online through Moodle. With this e-learning application parents also get roles. Minoring online can also be done by parents to monitor the development of their children. The target to be achieved, namely the relationship between teachers, students and compact pouring people will create learning conditions for students that are comfortable and easy for teachers to provide their knowledge and teaching to be better, more perfect.

E-learning is a distance learning system used in electronic media and internet. E-learning can create a learning system for students or especially students to get material from the internet even from where the student was located without having to meet face to face with the teacher if not in the classroom. E-learning is a web-based learning. E-learning has a broad understanding, so many researchers who explain about e-learning conclusions from every point of view. Here is an explanation of e-learning is quite acceptable to some parties, e-learning is a process of teaching and learning that create and provide teaching materials to students by using the media of the Internet, or other computer network media. E-learning is also used in internet technology to deliver a variety of solutions to increase knowledge. E-learning must always consist of two basic elements of teaching, meaning acquiring new
knowledge or increasing existing knowledge\[1\], professional skills or competencies. Furthermore, technology, the use of information technology especially computer and internet make it easier to arrange distance learning / distance learning available to students in location and time of their own choice.

2. Method

E-Learning leads to the use of internet technology to provide solutions to increase the skills and knowledge. More details \[2\], \[3\] provides three basic criteria that exist in e-Learning, which is e-Learning is a network, capable and self-repair quickly, display or store back, provide, and provide learning and information. This is considered very important in e-Learning, so it can be mentioned that the e-learning network becomes an absolute requirement. E-Learning sends users through a computer using standard internet technologies. Web TV, Web Cell pagers, CD Room, and other tools\[4\]–\[6\]. If all media can be used as a learning message, then not necessarily can be classified into e-Learning. E-Learning focuses on a very broad learning mind-set, a way of learning that outperforms the traditional paradigm of training.\[7\]–\[9\]

Direct studies conducted at high schools in Bogor and Bandung by discussing with principals and seeing the needs of schools will be learning. Activities carried out for two months and seeking information about school readiness will use eLearning, so that Moodle eLearning will be appropriate to apply.

Research instrument in the form of a questionnaire\[10\] containing school knowledge in terms of eLearning, seeing the situation and needs of the school to discuss the eLearning function that will be used by the school. The school principal as a resource person gave an explanation of all school readiness information in using eLearning.

Moodle has been applied in a variety of conditions, one of which is experience applied to the accounting class, it is helpful because the quiz or short training at the beginning of the class as a motivational strategy for students to prepare the previous class, encourage timeliness, and help active participation in class discussions has used for decades with good results\[11\]

Learning scheme used in Moodle as follows\[12\]:

![Learning Scheme in Moodle](image1)

**Figure 1.** Learning Scheme in Moodle

![E-Learning Environment](image2)

**Figure 2.** E-Learning Environment

Figure 1 shows the outline of processing and data integration with Moodle. Views of subject matter that accumulate in the Moodle learning log can be downloaded in Excel format for further analysis. To collect and collect Moodle course logs, digital materials such as PDF or Word files must be prepared in Moodle first. Material files can be registered on Moodle and published to students according to the purpose of the lesson. Moodle is used for four main purposes: (1) make learning material available for browsing when explaining class content, (2) conduct quizzes during class, (3) refer to external web pages, (4) submit reports at the end of the term.

Referring to figure 2. Learning environment\[13\], to analyses the history of learning, it is expected to clarify the purpose of collecting the Moodle course logs. However, by using a pivot table, it is possible to carry out analysis through repeat and error testing. Furthermore, the results obtained can be given back to lesson preparation and lesson management to improve future learning.
3. Results and Discussion
Observations made on nine high schools in Bogor and Bandung are as follows for knowledge of e-learning in schools:

In Figure 3 the knowledge of e-learning in schools with a percentage of 55.6% or as many as five schools know of the existence of e-learning so that more than 50% are known to require learning for school learning. In Figure 4. About the knowledge of e-learning with Moodle is whether the school knows that Moodle is an eLearning management system platform used. Figure 5. Providing information that schools that have used Moodle are very few compared to others, but there are results that the majority in Bogor and Bandung are more familiar with the Phinisi platform, this is because there is empowerment from the local government as a plan for smart city as well as advancing school in the region. In figure 6. It shows that there are several schools that have used eLearning in their learning activities even though they are not comprehensive and only partially use them as at the time of UNBK. In figure 7. Informs that eLearning the expectations of the ELearning School that will be created and implemented will be used for the sake of learning activities between teachers, students and parents who are synergizing. Figure 8. Providing information about the constraints faced by the school
in the use of e-learning including the lack of counseling or training that is still insignificant in building and fostering the spirit of using e-learning in schools.

Once the required data on the learning is collected, the data are analyzed as the basis for system creation. Stages of this analysis is done if the process of data analysis includes the collection and checking of the data contained in the system. The data then viewed in accordance with the needs of E-Learning applications to be made, this data which will then become the identity to be used by the system. The results of the process of data analysis are as follows:

**Table 1.** Entities User Moodle.

| No. | Data          | Information                                           |
|-----|---------------|-------------------------------------------------------|
| 1.  | Lecturer      | List of lecturers using the application                |
| 2.  | Teaching Class| List of learning classes running                       |
| 3.  | College Student| List of registered students                           |
| 4.  | Study Card    | List of lessons that are being undertaken by students |
| 5.  | Courses       | List of courses at a college                          |
| 6.  | Lecturer      | List of coordinators on a lesson                      |
|     | Coordinator   |                                                       |
| 7.  | Material      | List of E-learning materials in a class               |
| 8.  | Task          | List of class assignments on a lesson                 |
| 9.  | Forum         | List of discussion forums from each class             |

Further analyzing the process related to learning e-Learning information system with Moodle. Process analysis is used by describing and identifying system components working and interacting. This process analysis activity uses an object-oriented approach, aiming to make it easier to create illustrations of system objects from various perspectives (such as behavior, structure, and interaction between objects). The analysis is performed using system security as well as data and information management related to the usefulness of e-Learning application. The result of process analysis obtained is as follows:

**Table 2.** Proses User Moodle.

| No | Process                  | Information                                           |
|----|--------------------------|-------------------------------------------------------|
| 1. | Login                    | Functional that needs to be faced before the user can use e-learning application, there is guest facility |
| 2. | Managing Classroom       | Lecturers manage the classes that are taught, where each teaching class can consist of several teachers (team) |
| 3. | Following Learning       | Students do the Learning given through e-learning     |
| 4. | Managing Learning Syllabus| The coordinator will manage the learning syllabus in accordance with the desired learning achievement course |
| 5. | Managing Learning        | Administrators will manage the Learning progress that is in progress |

To clarify the scheme then do the design use case to student, admin and teacher or lecturer, Use case diagrams are designed as follows[14]. As a student, it can do several things including list, update profile, choose field or learning materials, choose form material, respond or respond to a forum, interact with forum members or see forum members, also view and respond to quiz. As an administrator can then access by managing existing user accounts, can manage communication forums, also manage the outline of learning materials for example by uploading or deleting existing
material, the user as a teacher also has access rights such as enrolment such as students but more access rights, selecting fields, managing forums, providing forum material by uploading and downloading existing material, viewing forum members and giving exercises or quiz to provide value.

Created activity diagram that describes all activities on the system designed. Show that to be able to access further on dashboard, material, forum, quiz and value then must do login first, from the design it can be said that in Moodle time to provide a response to learning faster to get the answers than through a conventional forum. Getting answers directly gives the student the possibility to explain any aspect, which is not clear at first rejection of visibility in front of the class. Getting general e-mail with every new interaction on Moodle keeps students attentive. Another benefit is the lack of technical skills to interact with Moodle today is not a problem for students. If Moodle is used to post routine activities, students will use it regularly and can interact more, so Moodle provides convenience and benefits for students to get concise answers and practical work.

4. Conclusions
From the results of the analysis concluded that Moodle can be used well as a learning medium for students[15], Moodle is very strong with all the complex facilities so that the design is not too complicated and makes it easy for users such as lecturers, students or other entities to relate to Moodle and need information from Moodle web learning. This research was carried out with literature studies and reviews directly to high schools with the results of many schools that need eLearning as a learning medium. The main thing that becomes the goal with the application of Moodle is the ease of learning and assessment of the teaching and learning process based on student activities through Moodle as a means to increase knowledge and interaction between teachers, students and parents in the future can be more easily achieved. In addition, learning will also be carried out with training, this will make students become more confident before taking the exam.
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