

The Role of Graphic Design Elements and Cloud Computing in Designing Online Learning Media based on Moodle CSM

Makmum Raharjo¹, Diana Nomida Musnir², Suriani²

¹Faculty of Teacher Training and Education University of Sriwijaya, Palembang, Indonesia

²Sekolah Pascasarjana Universitas Negeri Jakarta, Jakarta, Indonesia

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Abstract: The main objective of this research is to develop the model and implement and determine the role of graphic design and cloud computing in planning online learning media based on Moodle CSM. This collaboration produced an application that allowed students and instructors to have a "digital classroom" in the form of a learning web. The methodology used in this study is a development model that is equipped with product testing and verification that is appropriate to the problem and learning objectives. The results of the Feasibility Evaluation of the Final Model from the Intensive Design Expert obtained a percentage of 84% while the Results of the Feasibility Assessment Final Model Graphic Media Experts obtained a percentage of 80% so that the assessment of experts on the feasibility of the model was 80%. While the assessment of the effectiveness of the model when applied to the System in General is 82.88%. for Learning Content at 85.06%. Learning Channel is 83.24%. Learning Place is 82.79%. Learning Time is 85.29%. Learning Stage is 84.82%. And Teacher Role is 83.68%. So that the overall recapitulation of the effectiveness of this model is 84% and is declared very effective.

1 INTRODUCTION

Graphic design is an art form with the aim of solving communication problems through a combination of graphic elements such as shapes, lines, colors, and so on. The visuals that are created are expected to be a means of delivering information or messages clearly and effectively, even being able to shape human perceptions of things. The scope of graphic design is all communication media that requires the translation of verbal language into visual design through text, images and symbols (Anita Woolfolk, 2004).

Design makes the process and communicates ideas or collaborations in visual form. Basic principles such as contrast (contrast), grouping, closeness, control (similarity), continuity (continuation), and unity (unity), provide the arrangement of elements for elements such as lines and fields, colors, textures, and spaces. The main objective is to combine all components in harmony to achieve a unity.

Design elements are objects such as logos, icons, text blocks, and photos that are included in a web page with a certain composition. These elements must be grouped and arranged to create a meaning in two-

dimensional space. Most designers classify or compile these elements based on a set of guidelines for designing two-dimensional fields called design principles. This design principle is used to be able to design interesting online learning media so that understanding of teaching materials can increase.

Understanding in learning can vary the level of success based on the media used to deliver related learning. Delivering learning through verbal symbols will provide low absorption compared to delivering through visual symbols, radio / recording, pictures / photos, films, and so on. Anderson and Smith as quoted by Woolfolk stated that only 20% of the ability to absorb information delivered to students was acceptable when the information was presented in verbal form. When the information is conveyed through media / images in visual form or other types, then students will have the ability to receive about 80%. This opinion is strengthened by what Wright argues that visual displays in the learning process will greatly help and motivate students in the learning process, with an understanding that what is seen by the eyes will have a stronger memory if only heard by the ears (I hear I forget, but I see I will remember) (Andrew Wright, 1999).

As information technology develops rapidly, the need for an effective concept and mechanism of learning and teaching is increasingly needed. So, the concept of technology and information-based learning and teaching also has an impact on the transformation of conventional education to digital-based education. The rapid development of information and communication technology (ICT) stimulates educational institutions to use it, especially in the use of ICT-based learning media for improving the effectiveness, efficiency, and flexibility of learning. So that it can create quality human resources in the 4.0 industrial revolution.

The development of electronic learning also becomes inseparable from the role of the internet as a popular media for delivering information. The internet gave birth to various types of multimedia learning, not only as a medium of communication, but also developing its function for managing content and evaluating learning through a web. The web is a site that can be accessed and viewed quickly by internet users.

This is where the internet becomes very important. The internet is a computer network that is interconnected throughout the world without recognizing territorial, legal, and cultural boundaries. The internet opens up human horizons, as a means of being able to connect humans with various information from other places, even from different parts of the world.

Cloud computing is a technology that makes the internet the center of data management and applications, where computer users are given access rights (login). The application of cloud computing has now been carried out by a number of leading IT companies in the world. Just mention, among others, is Google (google drive) and IBM (blue cord initiative). While in Indonesia, one of the companies that has implemented cloud computing is Telkom (Anggi, <http://pusatteknologi.com/>).

With the use of this system, the computer no longer needs to use a certain operating system, such as Windows, Linux, and so on. With this system, no hard drive is needed anymore, also no need to install software on the computer. Everything is on the Cloud Computing service.

The term Cloud Computing or cloud computing is indeed not yet familiar, but actually the existence of this system has been widely used by the wider community, such as the use of e-mail and various other social media. This cloud-based technology makes the internet the central server for managing data and user applications.

With cloud computing technology, users can run programs without installation, because this system allows users to access their personal data through computers with internet access. Because it works by using the internet as a server in processing data, the use of this cloud computing system allows users to log into the internet connected to the program and run the applications that are needed without having to do the installation first.

The way it works is more or less like this, the user stores data in a data storage medium virtually via the internet network with a command. Then the command continues to the application server. After the command is received by the application server, then the data is processed. In the final process, users will get a page that has been updated according to the instructions given.

Examples of how cloud computing works can be seen in the use of electronic mail, such as Gmail and Yahoo. Data from users stored on the server will be integrated globally without having to use software. Users only need to connect to the internet, then all data will be managed by Google or Yahoo. In other words, user data and software are not on the computer, but are integrated directly through the cloud computing system by using computers connected to the internet. Some examples of these system-based applications include, Google Docs or Google Drive from Google, Microsoft Azure from Microsoft Corporation, iCloud from Apple, and many other cloud applications.

With this cloud system, students can collaborate by creating groups to do tasks, especially group assignments. Students can create and edit office documents online on the internet, and can share files with other users. This cloud computing system also allows students and instructors to study and teach remotely without having to attend a particular location or class. For teaching materials, you can use an e-book that can be downloaded by each student.

Not only the world of education can take advantage of this cloud computing-based application, the business world can benefit. Many companies have benefited from the existence of this system, especially in terms of saving funds, because with this system, companies do not need to upgrade their computers regularly at no small cost.

However, the world of education in Indonesia will continue to grow. Conventional learning and teaching systems will be developed with a more modern learning and teaching system. There is a very effective application to support modern learning and teaching systems, namely Moodle (Modular Object-Oriented Dynamic Learning Environment). With this

technology, learning and teaching systems become unlimited in space and time. Teachers can teach from anywhere and easily make teaching material or quizzes for exams online. Likewise students, can learn from anywhere and anytime online.

Moodle CMS (Course Management System) is an application that can transform a learning media into a web form. This application allows students and instructors to enter into a "digital classroom". In digital classrooms, learning materials can be accessed, because with this Moodle CMS, learning materials, such as electronic journals, or quizzes are made. Various learning resources, such as manuscripts written in Microsoft Words, presentation material from Microsoft Power Point, Flash Animation, Photoshop, even material in the format of photos, audio and video can be attached to this application. This Moodle application was first developed by Martin Dougiamas in August 2002 with Moodle version 1.0. currently Moodle can be used by anyone in open source (Indonesian Moodle, <https://moodle.org/course/view.php?id=40>)

2 RESEARCH OBJECTIVE

1. This study aims to design and develop online learning models based on web cloud computing and Moodle CMS (Course Management System). With this learning design, it is expected that students can be more motivated to learn, thereby increasing the level of understanding of students and increasing the ability of learning outcomes.
2. This study aims to find out what graphic design elements influence the design and development of learning models through the assessment of graphic media design experts and the application of the feasibility of learning models to students.
3. This study aims to evaluate the extent of the role of cloud computing in the delivery of learning models through online learning.

3 LITERATURE REVIEW

The learning model is a teaching strategy prepared to achieve specific learning objectives. Learning models are intended for learners to be able to increase the effectiveness of learning through interactive learning methods. To find out the quality of the learning model must be seen from the process

and product. The process aspect refers to the ability to create pleasant learning situations and encourage students to be active and think creatively. The learning model is basically a form of learning that is illustrated from beginning to end which is presented specifically by educators. In other words, the learning model is a wrapper or frame from the application of an approach, method, and learning technique.

The term learning model has a broader meaning than strategy, method or procedure. In general the model is interpreted as an object or concept used to represent something (Trianto, 2009: 21). A model is something that describes a pattern of thinking. A model usually describes the whole concept that is interrelated. In other words the model can also be seen as an effort and to concretize a theory as well as an analogy and representation of the variables contained in the theory (Pribadi, 2010: 86)

According to Richey, research models should be more emphasized in the design and development of the research itself (Richey & Klein, 2007: 11). This definition gives an emphasis that research related to the model should be more focused on comparison with existing models. In the design of learning systems, models usually describe the steps or procedures that need to be taken to create effective, efficient and interesting learning activities. So a model in the development of learning is a systematic process in the design, construction, utilization, management, and evaluation of learning systems.

Learning development consists of at least five main activities, namely: (1) analyzing the conditions of learning and the needs of students; (2) designing a series of specifications that are effective, efficient, and relevant to the student environment; (3) develop all materials for all students and material management; (4) implementation of the results of learning design; (5) formative and summative evaluation of the results of development (Gustafon & Maribe, 2002: 12-13)

Based on the understanding of the learning model above, it requires at least five criteria that must be met in the learning model, namely: (1) having a goal; (2) harmony with purpose; (3) systematic; (4) have evaluation activities; and (5) fun. Therefore, the learning system can be likened to a production process consisting of parts of the input-process-output, which are mutually integrated. So that the learning model which is basically a conceptual framework can describe systematic procedures in organizing learning experiences to achieve learning goals. The function of the learning model is as a guide for learners in carrying out learning. The selection of

learning models is strongly influenced by the subjects or material to be taught, the objectives to be achieved in learning and the level of ability of students.

Graphic art is a branch of art that provides a lot of exploratory space that artists can use so they can achieve a certain aesthetic and have a distinctive character. The maturity of a graphic art work can be assessed from the quality of the artist's technical exploration and the ideas that are revealed. Graphic art, like all branches of art, is consciously using creative skills and imagination to create aesthetic objects (Supriyanto, 2005: 4).

Design is the process of making and communicating ideas or ideas in visual form. Basic principles such as contrast, grouping, proximity, similarity, continuation, and unity, provide arrangements for elements such as points, lines and fields, colors, textures and space. The main purpose of design is to combine all these components into a harmony to achieve a unity.

Design elements are objects such as logos, icons, text blocks, and photos that are included in a web page with a certain composition. These elements must be grouped and arranged to create a meaning in two-dimensional space. Most designers classify or compile these elements based on a set of guidelines for designing two-dimensional fields called design principles. So, elements are objects and design principles are guidelines for placing objects in a layout known as composition. These principles are referred to as "tools" from visual designers. However, as in every discipline, it's not enough to just follow the rules. A designer needs to know how to make meaningful compositions. Understanding design principles is only the first step in developing and creating a design.

In addition to the previously reviewed studies there are several relevant studies the authors can summarize in the following publications:

P. Kavitha. The results of the study show that web-based online learning innovations are indispensable in the field of online education (international research in innovative computer and communication engineering: India, 2007).

Wen-ling shin. The results showed that online learning online learning can improve the effectiveness of student learning, motivation to learn, and interest in learning, and encourage self-development and teamwork (National Sun Yat-sen University, Kaohsiung City: Taiwan, 2017).

Atiya Khan. The results of the study show that using ICT can develop professional English language teachers in Mumbai (RMIT University: Australia, 2017)

Renee Crowford, Louise Jenkins, The results of the study show that online learning can create flexible learning and reduce faculty budgets, and create the effectiveness of teaching and learning (Australasia journal of educational technology: Australia, 2017).

Kwok-wing Lai, Lee A. Smith. The results showed that about 90% of students at Smith University of Otago in New Zealand conducted informal learning to support formal learning, digital technology used in formal learning, namely lap-top, computers, and cell phones, while informal learning was used to access the internet and use tools. online tools such as Google and Wikipedia (Australasian journal of educational technology: New Zealand, 2017).

Ching Sing Chai, et al. The results of the study showed that from 223 teachers in Singapore, TPAK's (pedagogical abilities and technological abilities) were related to the belief and distinctive design skills of teachers, this study showed that teachers' beliefs about learning and their design capacity would change with the success of their TPACK (Australasian journal of teacher education: Singapore, 2017).

4 METHODOLOGY

The research method used is development research, also known as R & D (Research and Development). In the field of education, R & D is directed at developing products that are effective for school needs, and are applied research. This research emphasizes change and improvement (what works better), rather than why, and emphasizes its usefulness in education. (Gall et al, 2007: 186-187). Borg & Gall stated that research and development procedures basically consisted of two main objectives, namely developing products and testing the effectiveness of products in achieving goals. The first goal leads to development and the second goal as a validation function (Gall et al, 2007: 589-590).

To get the data needed in this study, data collection techniques are used in the form of interviews, questionnaires, observations, and tests or testing of student learning outcomes. Whereas to analyze data used qualitative data analysis.

Analysis of qualitative data is presented by using words in the form of narrative texts, graphs and charts. While the process is based on three lines of activities that are intertwined in an integrated manner, namely; data reduction, data presentation, and conclusion or verification.

The results of analysis of all student work will be used as the basis for revising the product model of online learning web-based cloud computing and Moodle CMS. Then the results of this analysis are consulted by the expert review, so that the resulting product is truly valid. The product produced is considered practical and effective if it has a positive effect on student learning outcomes.

This study used a limited population of 37 respondents consisting of 9 male respondents and 28 female respondents to explore the depth of the research results. The study was conducted at the PGSD FKIP UNSRI which had adequate computer facilities and infrastructure with an internet / LAN network to implement lessons. web-based online learning cloud computing and Moodle.

5 RESULT AND FINDINGS

5.1 One-to-one with Experts

5.1.1 Validity of Instructional Design Experts

Based on the results of questionnaires that have been distributed for expert validation, it was found that according to the validation of instructional design experts stated that in the opening activity on the development of web-based cloud computing online learning model and CMS model in art courses it was good. Whereas the presentation activities are also considered good. This is because in the web display lecturers and students can interact with each other on the internet lecturers can upload materials related to lectures, both lecture assignments and lecture activities. While students can access the web to get information that is given by the lecturer.

Furthermore, the validity of instructional design experts on the closing activities of web-based cloud computing online learning models on art education courses is still considered to be lacking because web-based learning is unique but serious. A serious word is used to express that designing up to implementing web-based learning is not as easy as imagined. This web-based learning requires an instructional model that is specifically designed for that purpose.

Next, the validity of instructional design experts also states that the procedural sequence in the online learning model is still lacking, this is because the content in the web is not regularly organized which causes students to be confused to get and access lecture material. This can be seen from the

preparation of content in navigation that is still randomly arranged and placed.

Based on the validity of instructional design experts, it was stated that the suitability of learning objectives with examples of questions, assignments, exercises and evaluations was also considered to be lacking, this is because giving material is not the ultimate goal of web-based learning. In developing an online learning system it is necessary to pay attention to two things, namely students who are targeted and expected learning outcomes. Understanding of students is very important, namely, among others, their hopes and goals in participating in online learning. One thing that should be remembered is how this web technology can help students learn in mastering their lecture materials. So the need for instructional design in this online learning model so that the learning process can be effective.

Table 1: Results of Feasibility Assessment of Final Models of Instructional Design Experts

No	Rated aspect	Validator answer				
		1	2	3	4	5
1	Opening activity					5
2	Presentation activities				4	
3	Closing activity				4	
4	Sequence of procedural activities				4	
5	Suitability of purpose				4	
Total					16	5
Total Score $16 + 5 = 21$						

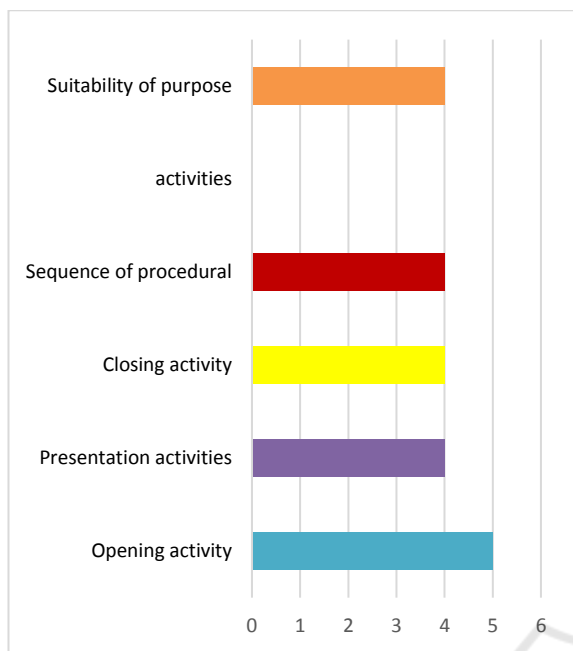


Chart 1: Results of Feasibility Assessment of Final Models of Instructional Design Experts

The total score obtained by the score is 21 points from the total score maximum of 25 points, then the score obtained is divided into 100 so that the percentage number is 84% so it is feasible to be tested.

5.1.2 Validation of Graphic Media Experts

Based on the validity of graphic media experts, it was found that the suitability of the image with the material content of the online learning model in art education subjects was good, this was due to the compatibility of the background in the web of education as well as the background of a painting.

With this background students can immediately understand that this is content for art education material. This will make it easier for students, especially art students, to access and download assignment materials provided by art lecturers. The material provided by the lecturer is the first key for students to do the assignments given by the lecturer. An important moment occurs when the lecturer gives an explanation of the assignment given. At this time students must be able to dig up as much information as possible related to the assignment given so that they know the core of the problem and have an idea to find a way to solve the problem.

Whereas for the accuracy of letters or typography in the online learning model is also good, this is because online learning subject matter can be

packaged in a text-based form, the material is packaged in written form and accompanied by a few pictures, just like in the book .

As for the clarity of images, graphics and photos in the online learning model it is considered good. This is because in the web display above it has tried to include images and photos that can facilitate students and lecturers to interact with each other on the internet.

Whereas regarding the background color in the online learning model mentioned above it is considered still lacking. This is because the background color in the web is still dominated by white, so that students tend to be bored to use online learning media because it is considered monotonous. There are some people who prefer to learn by making pictures or colors, seeing pictures, slides, videos or films. People who have this hobby, usually have a certain sensitivity in capturing images or colors, are sensitive in making changes, arranging and reading cards (Uno, 2006: 183-184).

While the animation and consistency of web slides is considered still lacking. This is because the web elarning above is still lacking in the use of animations and web slides so that it is less attractive and tends to be boring. This has an effect on the interest of students' interest in interacting on the web media.

Multimedia learning is one form of computer-based learning aids that are supported by various multimedia components such as text, sound, images, and videos. The program supports individual learning. Multimedia learning programs can be implemented with various instructional strategies such as: tutorials, drill and practice, simulations, instructional games, and problem solving. Multimedia is a new technique in the development of applications that aims to attract user interest through its elements (text, images, sounds, videos and animations) that are presented interactively. A multimedia application consists of text, images, sounds, videos and animations that are combined and presented interactively using programming.

While the web menu in the model according to gisraf media experts is considered good because the preparation of online learning materials should use a learner-centric method or based on the students' own mindset. At learner-centric, material is structured in such a way as to be able to provoke curiosity of students to want to learn more. The order of the subject topics or the basic concepts of the lesson itself need not be overlooked.

While the navigation buttons in the web according to the validation of graphic media experts are still

insufficient because there is still no compatibility of the contents of the navigation buttons with the contents of the material displayed besides the navigation buttons are still rigid so it is less attractive for students all of whom are still teenagers, there are even students who don't know the meaning of the language because the navigation buttons are still in English.

Furthermore, graphic media experts validate the updates of the web learning model which is considered good because in the creation of the web above, Moodle CMS is a CMS used to create online learning applications. In the Moodle CMS, online learning features are very complete, starting from online tests, forums and others. This CMS management is a bit complicated, and an understanding of how to use it must be needed.

After being evaluated and corrected based on the assessment and input of the instructional design experts, the feasibility assessment of the final model was obtained from the instructional design experts as follows:

Table 2: Results of Feasibility Assessment of Final Models of Graphic Media Experts

No	Rated aspect	Validator answer				
		1	2	3	4	5
1	Suitability of the image with the contents of the material				4	
2	The accuracy of the selection of letters				4	
3	Clarity of images, graphics and photos				4	
4	Background color				4	
5	Animation used				4	
6	Consistent web slides				4	
7	Web menu in the model				4	
8	Navigation key				4	
9	Web update				4	
Total Score					36	

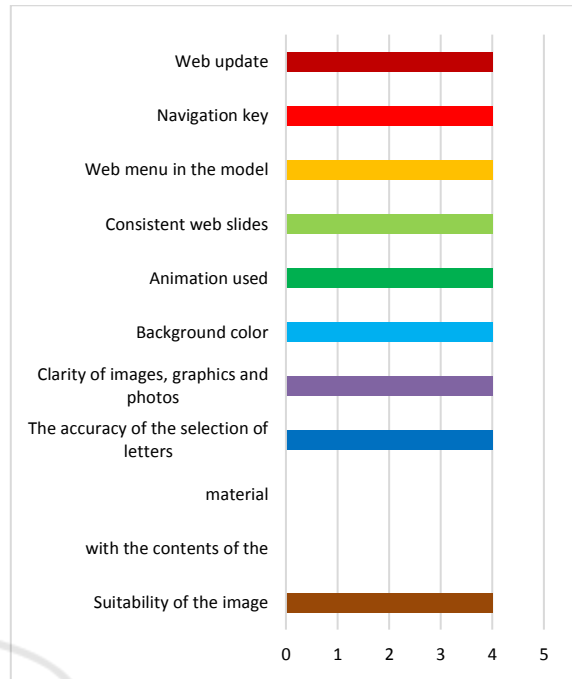


Chart 2: Results of Feasibility Assessment of Final Models of Graphic Media Experts

The total score obtained by the score is 36 points from the total score of a maximum of 45 points, then the score obtained is divided into 100 so that the percentage number is 80% so it is worth testing.

5.2 Field Trial

To find out the effectiveness of the online learning model in art education courses at the FKIP UNSRI PGSD, it is necessary to first conduct a trial in the field with 37 respondents consisting of 9 male respondents and 28 female respondents.

The results of testing the overall effectiveness of the model consisted of 7 groups namely the general system (6 questionnaires), learning content (8 questionnaires), learning channels (4 questionnaires), learning place (6 questionnaires), learning time (5 questionnaires), learning stage (7 questionnaires), and teacher roles (11 questionnaires). All of which include 47 instruments / questionnaires can explain the overall evaluation process and results based on data at the time of implementation of the effectiveness of this online learning model as follows:

Table 3: Recapitulation of Overall Final Model Effectiveness Test Results

Assessment by Respondents	Score	Max score	Results	Information
1 General System Assessment Results	920	1.110	82,88%	Very effective
2 Learning Content assessment results	1.259	1.480	85,06%	Very effective
3 Learning Channel Assessment Results	616	740	83,24%	Very effective
4 Learning Place Assessment Results	919	1.110	82,79%	Very effective
5 Learning Time Assessment Results	789	925	85,29%	Very effective
6 Learning Stage Assessment Results	1.096	1.292	84,82%	Very effective
7 Teacher Role Assessment Results	1.703	2.035	83,68%	Very effective
Total	7.302	8.692	84 %	Very effective

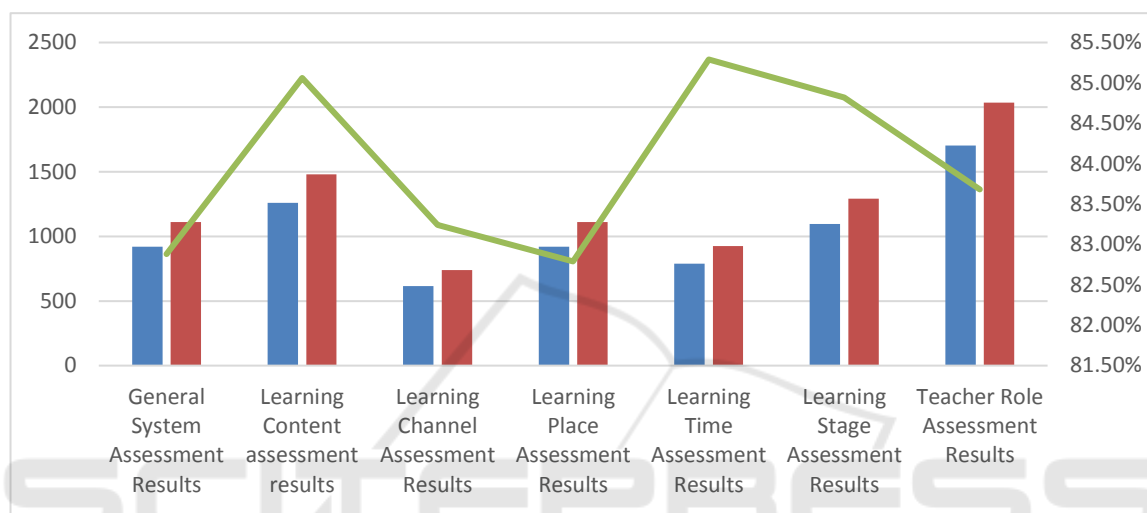


Chart 2: Recapitulation of Overall Final Model Effectiveness Test Results

For the overall total score in the General System assessment, a total score of 82.88% is obtained, this means that the display of the system in online learning models is very effective to be implemented for students of the PGSD FKIP UNSRI subject.

While the Learning Content assessment based on the results of the questionnaire found a total score of 85.06%, this means that learning content in the display of online learning methods in the PGSD FKIP UNSRI fine arts education subject was declared very effective.

Overall based on the questionnaire obtained a total score of 83.24%, this means that the Learning Channel display on the display of online learning methods in the subjects of art education at UNSRI was declared very effective.

While overall according to the results of the Learning Place assessment questionnaire it was obtained as much as 82.79%, this means that the appearance of learning place on the display of online learning methods in the PGSD FKIP UNSRI fine arts education subject was declared very effective.

Meanwhile, according to the results of the Learning Time assessment questionnaire, the total

score was 85.29%. This states that the online learning method in the subject of art education PGSD FKIP UNSRI according to the results of the questionnaire was stated to be very effective.

While the Learning Stage assessment score from the results of the questionnaire was obtained at 84.82%, this means that the use of learning stages in online learning methods in the PGSD FKIP UNSRI art education subject according to the results of the questionnaire was declared very effective and the results of the questionnaire were obtained

Teacher Role's assessment found a total score of 83.68%, this means that the teacher role in online learning methods in the PGSD FKIP UNSRI fine arts education course was declared very effective.

So from the recapitulation of the results of testing the overall model effectiveness of all the above data obtained 84% results so it can be concluded that the overall effectiveness testing of Web-based Online learning Model Development with Cloud Computing Applications and Moodle CMS (Course Management System) in Art Education Courses in the FKIP PGSD UNSRI was declared very effective.

6 DISCUSSION

The implementation of the online learning model is for students to find out the assignments given by the lecturer, and can download lecture materials. As for lecturers, lecturers can upload materials and study assignments on the screen of art and craft education. Besides that, the screen is also equipped with audio-video media which can create a more interesting online learning atmosphere. In this implementation it has been proven effective because students have started to get used to this learning model, and student participation also continues to increase with the existence of this online learning model. This is proven to be able to help lecturers in compiling their learning schedule because all of their learning is documented in this web.

In additions students can download material and assignments through online learning methods, students can also see the results of their studies. This can be seen from the results of formative tests that can be seen on the web too. With the results of this value students become more motivated to be able to cover their shortcomings if they get a less than perfect score. And for parent students can also see the results of their children in learning. In addition, lecturers can see reports on how many students are active in online learning. From here the lecturer can monitor how the development of the materials and assignments uploaded to the online learning web so that it can be evaluated on what material is in accordance with the interests of the students and this can also be the foundation for the university in compiling future curriculum program. All report reports formative test results, tasks are all stored in Google Drives. So that it is more effective, no need to move and can be printed in the form of word, excel or pdf.

In general, this research is to design and develop web-based online learning models in cloud computing and Moodle CMS (Course Management System). With this learning design students are expected to be more motivated to learn the subjects of art education courses, improve the ability of learning outcomes and the level of understanding of students.

The input from the validators is expected to be used as the next basis in revising the product of cloud computing web-based learning models and Moodle CMS (Course Management System) in the future. Regarding the design of products and products themselves, as well as the process and results of learning using online learning models based on web cloud computing and Moodle CMS (Course Management System). So that the products produced are truly valid and the products produced are

considered practical and effective for students and have a positive effect on learning outcomes, especially in art education courses.

In developing web-based online learning models cloud computing and Moodle CMS (Course Management System) in art education courses at the FKIP UNSRI PGSD are still relatively simple so that further development and improvement is needed to improve the online learning program. Further development programs are expected to have greater bandwidth in order to accommodate many users and can upload images and videos smoothly.

Furthermore, in its development it is also necessary to apply it to a smart phone so that it can be more practical so that students can access anywhere, and if it is accessible with a smart phone, it can also be cheaper in their internet usage.

7 CONCLUSIONS

At least there are three conclusions from the online learning function that can be taken in the learning process at the UNSRI FKIP PGSD, including:

First as a supplement (additional), that is if students have the freedom to choose, whether or not to use electronic learning material. In this case there is no obligation for students to access electronic learning material. Even though it is optional, students who use it will certainly have additional knowledge or insight.

Secondly as a complement (complement), that is if electronic learning material is programmed to complement the learning material that students receive in the classroom. As a complement means electronic learning material is programmed to supplement enrichment or remedial material. It is said to be enrichment, if students who can quickly master / understand the subject matter delivered at face-to-face are given the opportunity to access electronic learning materials that are specifically developed for them. The goal is to further strengthen the level of mastery of subject matter that has been accepted in class. It is said to be a remedial program, if students who have difficulty understanding the subject matter at face-to-face are given the opportunity to utilize electronic learning material that is specifically designed for them. The goal is for students to more easily understand the subject matter presented in class.

Third is substitution (substitute), that is if online learning is done as a substitute for learning activities, for example by using models of learning activities. There are 3 (three) alternative models that can be

chosen, namely: (1) fully face-to-face (conventional), (2) partially face-to-face and partly via the internet, or even (3) entirely through the internet.

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