



## Development of Web-Based Learning Model using Flock on Additive Substance Material at SMPN 10 Manado

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**Abstract:** The reason for using web-based learning and Flock is that the process of providing information to teachers and students is not only through direct learning as a way of delivering learning material but can also be accessed directly by students wherever and whenever. The objective of this research is to identify the validity, the effectiveness, and the practicality of the product. The validity scored at 4.825, the effectiveness has fulfilled the research hypothesis by using paired sample t-test, the practicality scored at 90.09%.

**Key words:** learning methods, web-based learning, flock.

### Introduction

Education with technology complements each other in terms of developing the quality of learning. This means that every student and teacher have the right to receive quality learning with the help or use of existing technology, one of which is the Internet.

The internet itself is something that is used every day by humans, including teachers and students, in looking for information about learning. This is also realized by the implementation of the *Merdeka Belajar* Curriculum which tends to lead to internet digitalization.

Currently there are many applications and websites that can be used as Learning Management Systems, one of which is Flock. Flock is an application that can be used in web-based learning (WBL) interactive e-learning because it provides chat and video channels, and can also contain information. Researchers are encouraged to develop and make Flock an e-learning platform that is used as an alternative for science learning.

Rusman (2013) explains that web-based learning or what is popularly known as web-based education (WBE) is part of e-learning and can be defined as the application of web technology in the world of learning for an educational process. In simple terms, it can be said that all learning is carried out using internet technology and as long as the learning process is felt by those participating in it, the activity can be called web-based learning. Web-based learning is a development of the e-learning model as explained by Zainal Aqib (2013) that the development of an e-learning model needs to be carefully designed for the desired goal.

The advantages of e-learning according to Bilfaqih & Qomarudin (2015), Improving the quality of education and training by effectively utilizing multimedia in learning, Increasing the affordability of quality education and training through providing online learning, Reducing the costs of providing quality education and training through the use of shared resources.

Apart from the advantages above, there are also weaknesses in using e-learning. Putra (2020) stated that the disadvantages of using e-learning: Face-to-face interactions that occur between students and teachers or between students and students are minimal. The learning that is carried out tends to be training rather than education. Business or commercial aspects are more developed than social and academic aspects. Teachers are required to be more proficient in learning techniques. by using technology, information and communication (ICT), internet facilities are not evenly available in places where there are problems with electricity, telephones and computers.

Munir (2008: 213) also outlines several principles in creating good web learning media, including formulating learning objectives, introducing learning materials, providing assistance and convenience for students to study learning materials, learning materials that are delivered systematically and are able to provide learning motivation. A good website must have two elements, namely dynamic and interactive. The following is an explanation of the meaning of a dynamic and interactive web.

## RESEARCH METHOD

The research method used in this research refers to the Research and Development Model with a 4D model (Thiagarajan, 1974) which consists of five stages, namely Define, Design, Develop, Disseminate.

In the Define stage, researchers carry out the following activities: Front-end analysis, specifying instructional objectives and concept analysis. The steps in the Design stage are: format and media selection and initial design. In the Develop stages, the activities are: expert appraisal and development testing. The last stage Disseminate, this research collects positive response data which will be filled in by users, namely students.

## RESULTS AND DISCUSSION

The following table is the result of valid aspect.

Table 1. Valid Aspect

| o. | Vali<br>dator       | S<br>core | Cat<br>egory  |
|----|---------------------|-----------|---------------|
| .  | Mate<br>rial Expert | 4<br>.87  | Ver<br>y Good |
| .  | Medi<br>a Expert    | 4<br>.78  | Ver<br>y Good |
|    | AVG Total<br>Score  | 4<br>.825 | Ver<br>y Good |

Because the score reached the very good category, the learning media design was declared very valid and can be used.

For the effectiveness aspect, this research used paired sample t-test to determine the difference in the average learning outcomes between Flock-based Web-based Learning with the conventional method. This research found out that the Sig(2-tailed) significance value of the experimental class students' learning outcomes obtained was smaller than 0.001. So based on the statistical hypothesis test decision making, there is a significant difference in the average learning outcomes taught using Flock-based Web-based Learning. Next, the researchers tested the initial research hypothesis to see whether there was an increase in the learning outcomes of students who used Flock-based web-based learning, higher than students who did not use this learning. The test carried out was comparing the average post-test score for the experimental class and the control class that can be seen in Picture 1.

**Post-test Eksperimen dan Kontrol**

Hasil Belajar Siswa

| Kelas                    | Mean  | N  | Std. Deviation |
|--------------------------|-------|----|----------------|
| Post-test Eksperimen 7.8 | 84.85 | 33 | 7.340          |
| Post-test Kontrol 7.9    | 49.85 | 33 | 7.550          |

Picture 1. Post-test Experiment and Control Class

Based on the data above, the average score for the experimental class is 84.85, higher than the average score for the control class, 49.85, so it can be concluded that the learning outcomes of students who use Flock-based web-based learning are higher than students who do not use this learning.

The decision on the practicality aspect of the product was taken from the results of the students' positive responses in the questionnaire distribution and the questionnaire was filled out by 33 students as respondents, to see and analyze their responses to the products that had been designed and developed.

The following table is the result of practical aspect.

Table 2. Practical Aspect

| No.             | Aspects                            | Score  | Category      |
|-----------------|------------------------------------|--------|---------------|
| 1.              | Quality of content and objectives  | 9.54   | Very Positive |
| 2.              | Technical quality                  | 9.0    | Very Positive |
| 3.              | Learning and instructional quality | 9.1    | Very Positive |
| AVG Total Score |                                    | 9.4825 | Very Positive |

From the total average results obtained, it can be concluded that Flock-based web-based learning products are practical.

Rosana (2022) discusses the influence of using web-based learning in secondary schools using creative thinking strategies with the following conclusions: (1) Web-based learning, which is often used in previous research, takes into account creative thinking strategies, the majority of which are in the form of e-learning. (2) Online web-based creative thinking assessment systems have rarely been used before. (3) The main findings of previous research show that web-based creative thinking learning can increase students' creativity in solving problems.

Rahmawati & Sugianto (2016) studies that Web-based learning uses four levels of metacognitive awareness quoted from Swartz and Perkins. The four levels are take-it use, aware use, strategic use and reflective use. The data obtained after the learning was carried out showed that the post-test results had increased compared to the pre-test which had been carried out before the learning.

Handoyo (2023) in research on the development of Web-based Learning using the Chamilo Learning Management System (LMS) at SMK Negeri 1 Sawahlunto tested the practicality and validity of the product being developed. The results obtained were Content (Material) = 0.81 in the Valid category and Instructional = 0.83 in the Valid category. As for the Practicality Results from teachers and students, teachers with an average of 91.67 in the Very Practical category, and students with an average of 84 in the Very Practical category.

### Conclusion

It can be concluded that the Flock-based Web-Based Learning learning product on Additive Substance Material at SMP N 10 Manado, the quality of the product produced is in accordance with theoretical and internal consistency (valid), the product developed is easy to use (practical) and the product that has been created and developed provides good results for its users (effective).

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