

# Student's Perception of Blended Learning Implementation for Plant Structure and Development Courses and Their Influence on Student Grades in Biology Department of Andalas University

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## ABSTRACT

Nowadays, information technology (internet) has a major influence on the world of education. The application of various learning media or “blended learning” has been carried out in the Plant Structure and Development course in the Biology Department, Andalas University. In its application, several obstacles were encountered so the research was carried out on student opinions regarding the use of various learning media. The study aim is to determine the learning media preferred by students. Data collection was carried out by using a questionnaire method which asked student’s satisfaction in using each learning media used in blended learning and then analyzed using the SPSS3 program. Students are also asked to explain briefly the reasons for choosing the preferred learning media. In this study, students are generally preferred face-to-face compared to using other learning media. The implementation of blended learning (non-face-to-face) affects, namely a decrease in the percentage of students who get an A grade, an increase in the percentage of students with a B and a D grade.

**Keywords:** *Biology, blended learning, perception, structure and plant development.*

## 1. INTRODUCTION

Education can be defined as a process of communication and information from information sources/educators to students. Educators are the main source of information who are assisted by supporting media as a means of presenting ideas, ideas and educational materials; and the education process was previously carried out face-to-face in the classroom. [1] predicts that future education will be flexible, open, and accessible to anyone who needs it regardless of gender, age, or previous educational experience. Tang [2], [3] argues that future education will be determined more by information networks that allow interaction and collaboration, not school buildings. Recently, e-learning programs are becoming trending in the world of education, as technology increases in influence learning methods and will become more and more. To switch from a face-to-face learning model or meet in person to online learning does need effort and cost. However, this can start with the Blended Learning model as a solution. The blended learning model is an excellent combination of learning both face-to-face and virtually. The word Blend means "a mixture together to improve the quality to improve" (Collins Dictionary), or the formula of a combination or combination (Oxford English Dictionary) [4], while Learning has a general meaning of learning, thus At first glance, it means learning patterns that contain

elements of mixing, or combining one pattern with another [5].

According to [6], [7] mixed blended learning has two main elements which are conventional face-to-face learning (classroom lessons) and online learning. It means as learning that is conventionally carried out in the classroom combined with learning that is carried out online both independently and collaboratively, using information and communication technology infrastructure [8].

Blended learning involves classroom (or face-to-face) and online learning. This method is very effective on adding efficiency to classroom instruction and allowing for increased discussion or review of information outside the classroom. The course of Plant Structure and Development with Bio 4201 as the code in the Biology Department, Faculty of Mathematics and Science has tried to apply blended learning.

In carrying out this Plant Structure and Development lecture, images are mostly in the form of photos and tables. This is very necessary to be able to understand the form of cells, tissues, and other parts of plants that are in microscopic size [9], [10], [11], [12]. When learning is done face-to-face, there are many conveniences. In face-to-face lectures, pictures can be displayed with a projector or written on a board clearly, in attractive size and a clear voice of explanation from the lecturers. This kind of situation, lecture material is quite easy to understand. When lectures use a variety of virtual media, the

convenience of studying like one can get disrupted face-to-face.

The discomfort when learning is carried out online using various media is felt by lecturers and students. Complaints when implementing blended learning appear to vary for each person involved. To find out the student's views on blended learning that has been applied to SPT courses and its impact on student grades, a study was conducted as written in this paper.

**2. METHODS**

The research was conducted by collecting student opinion data in the form of an assessment of the questions posed in the questionnaire. Regarding the choices they put forward, further explanation is asked. Data collection was carried out after blended learning was applied and the course scores had been obtained by each student. The form of the questionnaire used is as follows:

Give value by writing numbers like the instructions on each learning media in Table 1. Students are asked to provide a brief reason for the value they like the choice.



**Figure 1.** The results of student answers to the questionnaire using WhatsApp

**Table 1.** The questionnaire used in the present study

No.	Zoom	MS Team	WhatsApp	E-mail	iLearn	Face-to-face
1.						
No.	Score	Mean				
1	0-25	Dislike				
2	26-50	Ordinary				
3	51-75	Likes				
4	76-100	very likes				

Data is collected in the form of answers from students through WhatsApp as Table 1.

Furthermore, the data obtained is analyzed using the SPS3 program.

**3. RESULT AND DISCUSSION**

The application of blended learning in the Plant Structure and Development course in the Biology Department of Unand is carried out with several learning media including Zoom, MS Team, WhatsApp, E-mail, ilearn, and face to face. Each type of learning media has its advantages and disadvantages that are different from one to another. The suitability of learning media to be able to meet the achievements of a course is for lecturers and students. The following are the results of student assessments of learning media that have been used in blended learning in the Plant Structure and Development course.

**3.1. Zoom**

The Media Zoom used is free. One usage duration is 45 minutes, so if online lectures are conducted for more than 45 minutes, it is necessary to re-create a new schedule. Lecturers and students can share materials alternately if they use this media. One of the drawbacks of using free zoom for online lectures is that the number of students participating in lectures is very limited. When using the zoom, you often get weak or intermittent signal interference so that the sound cannot be heard properly, such as intermittent and noisy. One of the advantages of using free zoom is that it is very easy to use by both lecturers and students. Such media would be better used with a subscription system funded by the University.

**3.2. MS Team**

As has been explained, if you use Zoom for lecture media, the MS Team lecture media is not too different if you look at the problem, usually it's the signal problem. The problem is getting heavier because students are in

rural villages where there is a chance for them to not get proper signal. The advantage of using the MS Team media is that student participants can be in large numbers and do not recognize time limits. In this medium there is also a blackboard feature so we can write something necessary while explaining.

**3.3. WhatsApp (WA)**

WhatsApp media is currently the most favorite media for everyone. For learning purposes, this media can be used easily. Interaction can be carried out between two people such as conversations together or with several people by creating a group called WhatsApp Group (WAG). The drawback of this media when used in learning is the limited file size when sent via WA.

**3.4. E-mail**

Even though E-mail has been used for decades, it can still be used as a learning medium. With E-mail, large files can be sent. However, when compared to the media previously described, E-mail media seems impractical and time-consuming and cannot interact with many people at the same time.

**3.5. iLearn**

This learning media has been provided by Andalas University. There are many conveniences for learning using this media. However, due to a large number of uses at the same time, server problems often occur. The university is currently increasing its service capacity with this media so that more users can accommodate at the same time. In Figure 2 you can see the appearance of the front page of iLearn Andalas University.



**Figure 2.** Front page of iLearn Andalas University

The basics in this iLearn media, besides being able to accommodate teaching materials in the form of writing and images, it can also be in the form of videos. Learning in the form of this video has been recommended by LP3M Andalas University. To facilitate the procurement of video teaching materials, lecturers are given selective grants. In

the following picture, you can see one of the videos used as teaching material in the course of plant structure and development.

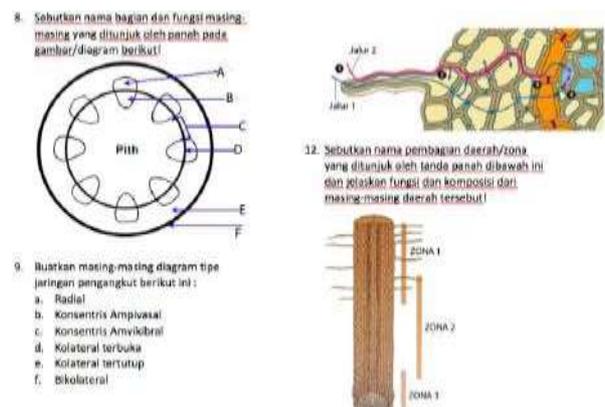


**Figure 3.** One example of a lecture material in the form of a video in iLearning

**3.6. Face-to-Face**

Even though many media can be used as a learning medium, face-to-face is still the most favorite learning medium. This can be caused by several things such as being unfamiliar with online media, face to face makes explanations easier to understand, being able to know someone's feelings, easily asking and answering questions and so on.

The following is an example of teaching materials and face-to-face SPT lectures. It can be seen in the picture that there are so many components that must be taught which are sometimes difficult to understand properly if only with explanations in the form of writing only.



**Figure 4.** Examples of teaching materials for the structure and development of plants that use lots of pictures

3.7. The preferred learning media in Blended Learning

If students are asked to choose which media is good for use in blended learning, the results of the answers can be seen in Figure 5.

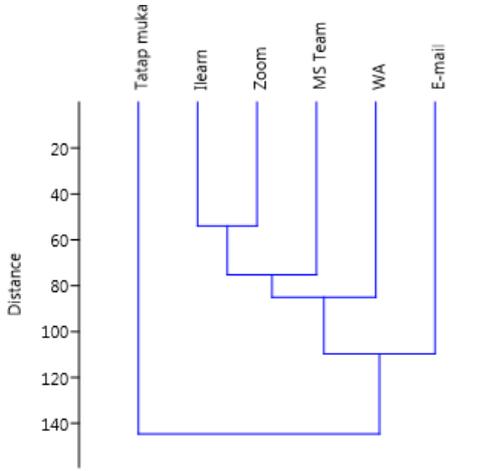


Figure 5. Phenogram analysis results of student preferences for learning media used in blended learning

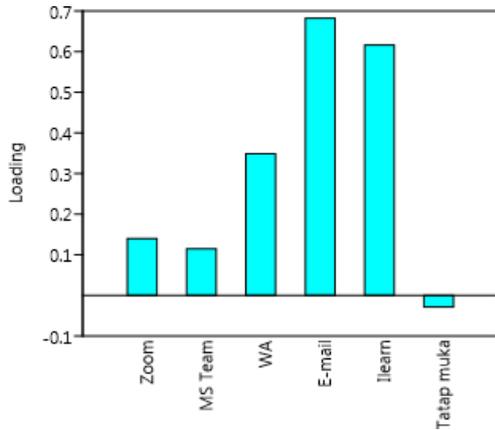


Figure 6. The results of the multivariate analysis of student's preferences for learning media used in blended learning.

It can be seen in Figure 5 the media used in the blended learning system is separated into two main groups, there are the face-to-face group and the non-face-to-face group (zoom, MS Team, WA, and iLearn). From the results of the Multivariate analysis in Figure 6, it appears that the face-to-face component has a weak effect on the variation of choice or it means that students agree to choose face-to-

face media as the most preferred choice to be used as a learning medium. From the results of the questionnaire, it can be seen that the face-to-face component is the most preferred learning media compared to other media used in blended learning as in Figure 7.

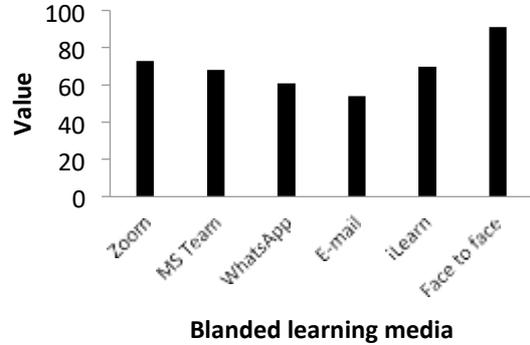


Figure 7. Comparison of student preferences to various learning media used in blended learning

If the face-to-face component is not included in the learning media being assessed, the results can be seen in Figure 8.

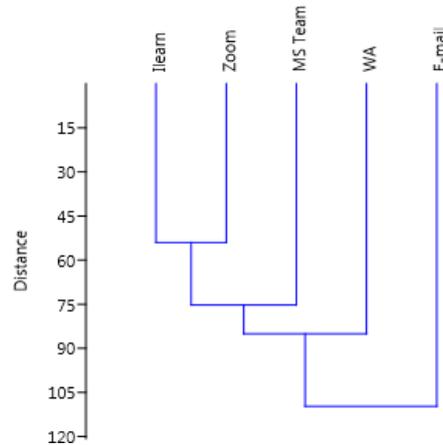
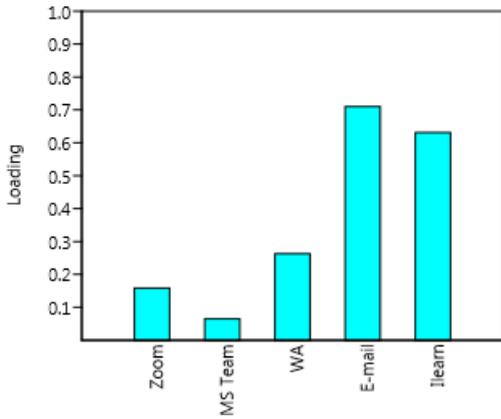


Figure 8. Phenogram analysis results of student preferences for learning media used in blended learning without face to face choice.

From Figure 8 and Table 1, it can be seen that there is no learning media chosen by students. It can be interpreted that the advantages and disadvantages of media that have been used in blended learning are not different from one another. These results need a deeper study of what problems cause students not to feel satisfied in using this learning media that has been applied.

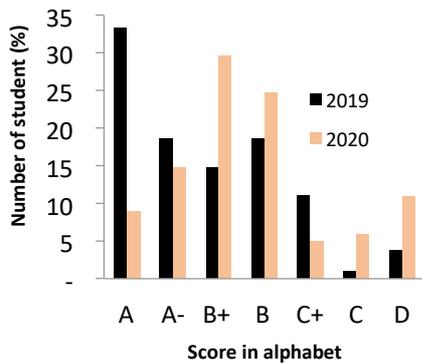


**Figure 9.** The results of the multivariate analysis of students' preferences for learning media used in blended learning without face to face choice.

Furthermore, although there is no learning media chosen by student users, from the results of the multivariate analysis (Figure 9) the use of MS Team tends to be chosen by students compared to other media. As previously explained, this can be caused because the MS Team can be used by many people and the usage time is unlimited.

**3.8. The effect of blended learning on value**

After the application of blended learning in the course of plant structure and development, it can be seen the comparison of student scores before and after implementation as shown in Figure 10.



**Figure 10.** Comparison of student scores before (2019) and after the implementation (2020) of blended learning in the course of plant structure and development.

After the application of blended learning in the structure course, it can be seen in Figure 10. That there is a shift/decrease in the percentage of students who get grades A (A and A-) to score B. better than other media is because it is easier to understand lecture materials with face-to-face media. From the results of the decrease in the percentage of students getting an A and an increase in D, scores can be caused by the perception given by students as above, namely with media other than face-to-face it is more difficult to understand lecture materials.

**4. CONCLUSIONS**

From the present study that has been carried out on the course of plant structure and development, it can be concluded that:

- a. Face-to-face media is still the most preferred in blended learning.
- b. Media MS Team is relatively chosen by students as a medium of learning other than face to face because it can be used in large number of students and unlimited time.
- c. Learning media other than face-to-face still caused difficulties in understanding teaching materials and can reduce the quality of learning and student grades.

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