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Botanical Concepts Understanding of Biology Education Students

Khusnul Khotimah[1], Mucharommah Sartika Ami[2*], Fatikhatun Nikmatus Sholihah[3]
[1,2,3]Biology Education, Universitas KH. A. Wahab Hasbullah
*Email: sartika.ami@gmail.com

ABSTRACT
This study aims to identify the botanical concepts understanding of biology education students at Universitas KH. A. Wahab Hasbullah. 36 sample students were given a test with two tiers questions (multiple choice with confidence level). The students involved were students who had taken a botany courses. Test results were analyzed descriptive qualitatively. The findings revealed that there were 36,1% of students who understood the concept; 36,1% of students experienced misconception; and 27,8% of students did not understand the concept.

Keywords: *Botanical concept; Biology education student; Concept understanding.*

INTRODUCTION
Concept is a mental picture of an object, process, or whatever exists outside of language, which is used by the mind to understand other things (KBBI Daring, 2016). Understanding the concept is something that is important in the learning process. Students must understand the concept well in order to achieve good learning outcomes (Amanda et al., 2022) and avoid misconceptions (Ariska et al., 2021). Lecturers need to identify the level of understanding of students' concepts so that they can design effective learning. Identification of students' level of understanding of concepts can be done through analysis of student learning outcomes (Adhani & Rupa, 2020) or through diagnostic tests (Hadi et al., 2015).

One of the concepts that must be understood by students of biology education is the concept of botany. Botany is a branch of biology that studies the structure, properties, physiological processes and classification of plants (Steere et al., 2023). The first botanical concept students must understand is plant structure. Understanding plant structure will become the basis for understanding other botanical concepts (Widodo, 2012). The concept of plant structure can be divided into two, namely morphology and anatomy. Morphology is related to the shape and arrangement of plant parts in general, while anatomy is related to the microscopic structure of plant parts (Villee, 2023).

Biology education students must understand the concept of botany well, because the will become biology teachers. Biology teachers must have professional competence, namely mastering the science of biology, including botany. This study aims to identify the understanding of botanical concepts by biology education students at Universitas KH. A. Wahab Hasbullah. This research was conducted because based on the results of interviews with lecturers in the botany course, these students had never been identified with specific understanding of botanical concepts.

METHOD
This research was a descriptive study that used a test instrument as a data collection tool. The instrument used was valid and reliable. The sample in this study were 36 biology education students at Universitas KH. A. Wahab Hasbullah who has taken a course in botany. Student test results data were analyzed in a quantitative descriptive manner. The instrument was in the form of multiple-choice questions with a confidence level. Correct answers get a score of 1, while wrong answers get a score of 0. The average students answer was calculated by formula (1). The confidence level of the answer has a score range of 1 – 5. The mean level of confidence in the answers given by students was calculated by the formula (2).

$$r = \frac{S}{N} \quad (1)$$

$$x = \frac{P}{n} \quad (2)$$

Description:
r = average answer from one student
S = total score obtained from one student
N = maximum total score
x = the average level of confidence in the answer of one student
P = total confidence level of one student's answer
n = number of questions

Student test results were interpreted according to the criteria in Table 1. Student answers were categorized as correct if they get an average value of >0,5; and categorized as wrong if it gets an average value of ≤ 0,5. The value of 3 was used as a reference because the level of confidence in the answers uses a scale of 1 – 5.

Table 1. Interpretation of student test results

No.	Answer	Confidence Level	Criteria
1.	Correct	> 3,0	Understand
2.	Correct	≤ 3,0	Guessing
3.	Wrong	> 3,0	Misconception
4.	Wrong	≤ 3,0	Not understand

(Firmasari & Nopriana, 2020)

RESULT AND DISCUSSION

Result

The research data obtained in this study are the category of understanding the concept of botany in biology education students at Universitas KH. A. Wahab Hasbullah (Fig 1). These results indicate that the students who understand the concept is the same as the number of students who experience misconceptions, namely 13 people. Even so, the number of students who did not understand was less (10 people) than the number of students who understood the concept.

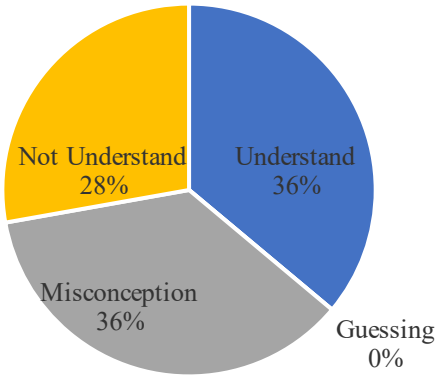

Figure 1. Percentage of botanical concepts understanding of biology education students at Universitas KH. A. Wahab Hasbullah

Discussion

Biology education students are prospective biology teachers who must master biology teaching materials (Mulyani, 2017), including botany. As many as 13 students out of 36 students taking the test were included in the criteria for understanding the concept. The answers given are correct and they believe in these answers. Most of the students who gave correct and confident answers had background

knowledge of biology at their previous level of education (participating in the science program at secondary school). Initial knowledge (prior knowledge) becomes important in learning. Good initial knowledge will reduce student learning difficulties, so that understanding of the concept will also be better (Takaendengan et al., 2022).

The number of students included in the misconception criteria was 13 people. Misconception is a pattern of thinking that is consistent in a situation or problem that is different but the pattern of thinking is wrong (Didik et al., 2020). Misconceptions can come from students, lecturers, or the learning resources used (Mujib, 2017). The results of interviews with test takers revealed that they tended to be embarrassed to ask the lecturers when they had difficulty understanding concepts. One of the causes of students being embarrassed to ask is low communication skills (Syazali & Nursaptini, 2022). Questioning skills are included in the basic teaching skills that must be mastered by prospective teacher students (Sundari & Muliyawati, 2017). Lecturer needs to train the questioning skills of biology education students so they can reduce misconceptions.

Ten students classified as criteria do not understand. The results of interviews with students who fall under this criterion reveal that they have difficulty understanding botanical concepts because many scientific terms are in foreign languages. Latin is a foreign language that is often used in biology terms. Previous research also revealed that students tend to have difficulty understanding Latin terms (Kameswari, 2022). Students' difficulties in understanding foreign terms can be overcome by meaningful learning methods, so that students can connect terms with their meanings or analogies. Inquiry-based learning and projects that utilize local potential are known to increase students' understanding of concepts (Faridah et al., 2017). Learning media such as Latin dictionaries can also be used to overcome these difficulties (Dinihari et al., 2022).

CONCLUSION

Botanical concept understanding of biology education students at Universitas KH. A. Wahab Hasbullah can be categorized into three criteria, namely understand, misconception, and not understand. The number of students who understand is the same as the number of students who experience misconception, namely 13 people or 36,1%. The number of students who do not understand is less than the number of students who understand, namely 10 people or 27,8%.

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