

Exploring The Barriers of Biology Education Students in Writing Scientific Papers

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ABSTRACT

Scientific papers at this time are something that must be mastered by a student. Scientific articles produced by someone contribute new knowledge to the world of Education. This study aims to analyze the obstacles experienced by students when writing scientific articles. The research was conducted on biology education students at the Open University who are in their final semester and take scientific work courses as one of the graduation requirements. There were at least 13 students who were the research samples taken purposively. To obtain data, the researcher provided a questionnaire and conducted interviews with a sample of students. The data were then analyzed descriptively and resulted in the discovery that the main barriers of biology education students in writing scientific papers are lack of student experience in writing scientific papers especially in the components of scientific papers. They found it difficult when creating an introduction (54%), method (46%), and presenting results and discussions (54%). The recommendation from this study is the need to develop learning strategies in scientific work courses that can train students to get used to developing ideas and process these ideas into original articles and free from plagiarism.

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1. INTRODUCTION

Writing is one of the skills that must be mastered by students. Writing ability is an ability with the process of pouring ideas, ideas and thoughts as well as experiences in the form of writing (Suratman, 2021). Students cannot produce writing without a thought process (Kuswandari, 2018). writing skill is also important to be mastered in order to maintain a good communication with other people (Junipis & Purnami, 2022). Writing skills also involve students's cognitive abilities in the form of ideas that are manifested in the form of a series of words arranged in symbol and written form (Huber et al., 2020). Writing that results from the scientific thinking process is called scientific papers.

Writing scientific papers is a fundamental component in the academic world that allows students to communicate the results of their research and critical analysis. A scientific paper is a report or written

study of a problem by a person or team by fulfilling scientific ethics that are affirmed and obeyed by the scientific community (Seran et al., 2020). Scientific papers have various types, including articles, theses, dissertations and papers, (Kurniadi, 2017). Following the guidelines that have been set and agreed upon which cover the fields of science, technology, and art is the writing of scientific papers that are carried out in accordance with scientific procedures (Razi et al., 2018). There are several characteristics of scientific works, including: precision and accuracy, objectivity, structural suitability, scientific language, consistency and cohesion, proper references, and writing ethics (Mukhlis et al., 2023) (Saputra, 2021)

Scientific writing is also one of the graduation requirements for a student, but for many students, writing scientific writing is not only a mandatory task, but also an opportunity to contribute to knowledge in their field of study (Budhyani & Angendari, 2021). Writing skills are mechanical. The skill will not be mastered only through theory but must be implemented through regular practice and practice (Abdan, 2018). Scientific papers can be written based on the results of research. The systematics of writing scientific papers from the results of the research is that it has the following parts: (a) an introduction that contains the background of the problem that explains what and how the research problem, the identification of the problem and the limitation of the problem being researched, the formulation of the problem, namely the submission of research questions and the purpose and benefits of the research, (b) a review of the literature which contains a description of the variables being studied, the relationship between the research variables, relevant research results, research framework and hypothesis formulation if the research uses a hypothesis, (c) research methods whose content describes research methods and designs, instruments or tools for collecting research sample data and data processing and analysis techniques, (d) research results and discussions and (e) conclusions and suggestions (Zulmiyetri et al., 2019).

Writing scientific papers is not something difficult, however, the writing process does not always run smoothly and is often faced with various challenges and barriers. These barriers can vary from technical constraints such as difficulty in finding relevant resources, to more complex problems such as uncertainty in formulating clear hypotheses and a focused focus of research (Agustina & Ikhlas, 2022). One of the main obstacles that students often face is time constraints. In a busy academic schedule, students often have to manage various tasks and other obligations, making it difficult to provide enough time to write scientific papers in depth and structure. In addition, the difficulty of accessing quality literature and valid data is also a significant challenge, especially for those who do not have easy access to comprehensive academic libraries or databases. In addition to technical and logistical barriers, psychological factors also play an important role in the process of writing scientific papers. Lack of self-confidence, fear of failure, and a tendency to procrastinate are often big barriers. Students may feel intimidated by the complexity of this assignment and lack confidence in their ability to produce quality work. This article aims to explore these barriers in depth and offer practical strategies to overcome them, so as to help students improve their scholarly writing skills and achieve higher academic success.

2. METHODS

This study aims to analyze what are the obstacles experienced by biology education study program students at the Universitas Terbuka in producing scientific articles as a graduation requirement. This study uses a quantitative descriptive survey design. In this study, there were 13 students of the biology education study program in the final semester who were the subjects of the research. The sampling was carried out by purposive sampling. Purposive sampling according to Sugiyono (Sugiyono, 2018) is sampling using certain considerations in accordance with the desired criteria to be able to determine the number of samples to be studied. The research subjects are final semester students who have participated in learning in scientific work courses and successfully graduated with good grades.

3. FINDINGS AND DISCUSSION

Writing scientific papers by students of the Biology Education Study Program is a challenge for students to be able to integrate the field of biology education into a systematic and quality thinking. This quality scientific work is indeed not easy to produce by students. Some students even repeat this course. The following Figure 1 shows the distribution of students who were sampled in the study.

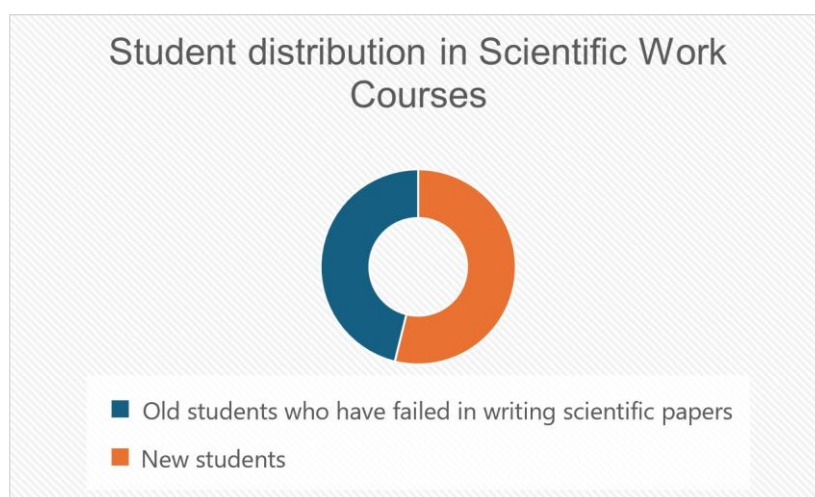


Figure 1. Students distribution in Scientific Work Courses

Referring to Figure 1, the research sample consisting of 13 students of the Biology Education study program are mostly old students, meaning that they have previously taken this course but have not graduated or have not been able to produce scientific papers in accordance with the predetermined standards. The results of the interviews as supporting material explained the fact that most of them did not pass the scientific paper course due to high plagiarism scores (according to some of them, their turnitin scores reached 75%). Of course, this is a concern because plagiarism is urgent when a scientific paper is created.

Plagiarism is defined as the unethical use of the work of another person/party because it does not give attribution and credit to the person/party who owns the work (Harliansyah, 2017). Plagiarism that usually appears in the writing of scientific papers consists of three forms, namely (1) direct plagiarism by the way the author quotes or copies the source directly word for word without mentioning who the author or owner of the source is, (2) plagiarism because the quotation is unclear or incorrect and (3) mosaic plagiarism, where the author correctly quotes but replaces part of a word or several words in a sentence with his own words without mentioning the credit of the source author (Ruslan, Hendra, 2020). In the scientific realm, manuscripts that are proven to be plagiarized can lead to withdrawal or cancellation of publication, even up to lawsuits (Jirge, 2017). Therefore, it does take skills in producing scientific works that are free from plagiarism by paying attention to all ethics in writing.

There are several reasons that cause these students to plagiarize, including because they have poor writing skills, rush to write within urgent deadlines (because they usually do assignments close to deadlines, lack of understanding of how to rewrite original references, and so on. Below is an analysis of the difficulty level of students on several components of scientific work.

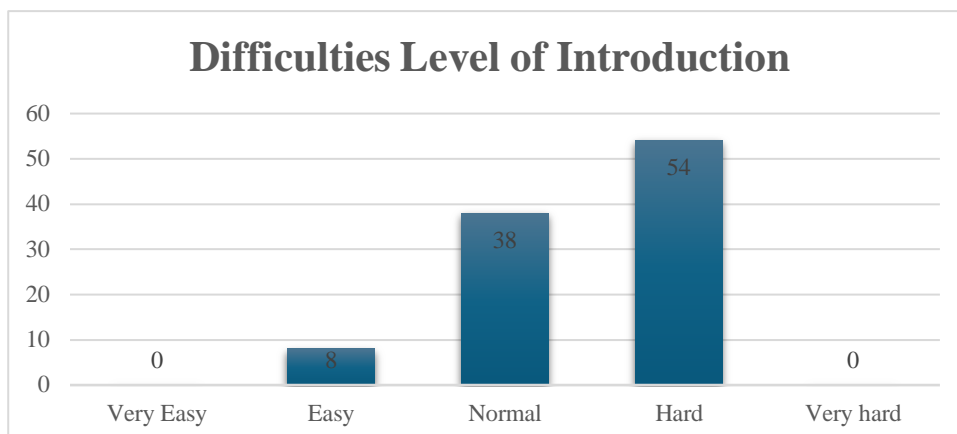


Figure 2. Difficulties level of Introduction

The results of the analysis of the difficulty level of students in developing the introduction component in scientific papers show that most students (54%) find it difficult (with a hard difficulty level) when developing the introduction component. In this component, students must find an original idea, develop original work ideas, explain the background of why they want to develop the idea and the purpose of writing the scientific paper. Their barriers in developing the preliminary components are shown in the results of the analysis in the following figures.

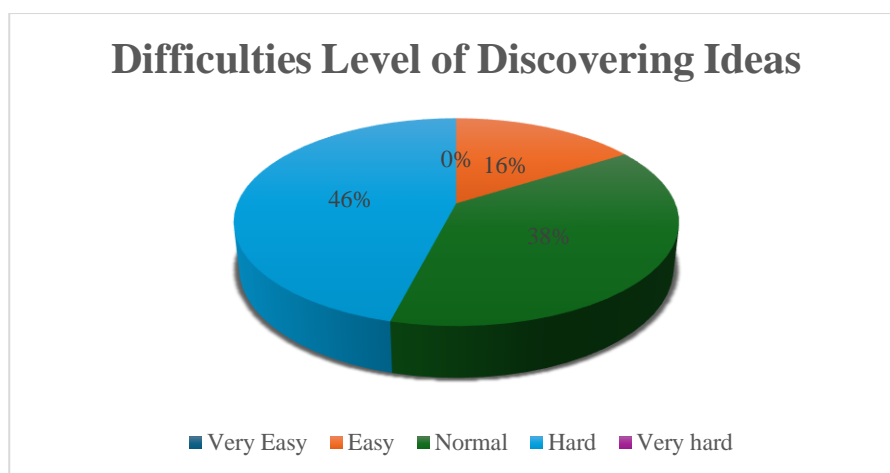


Figure 3. Difficulties Level of Discovering Ideas

Students in general (46%) find that it difficult to find original ideas. This is because the idea of a scientific work should be something unique and different from previous works, Thus, most of these students take a long time to find a suitable idea.

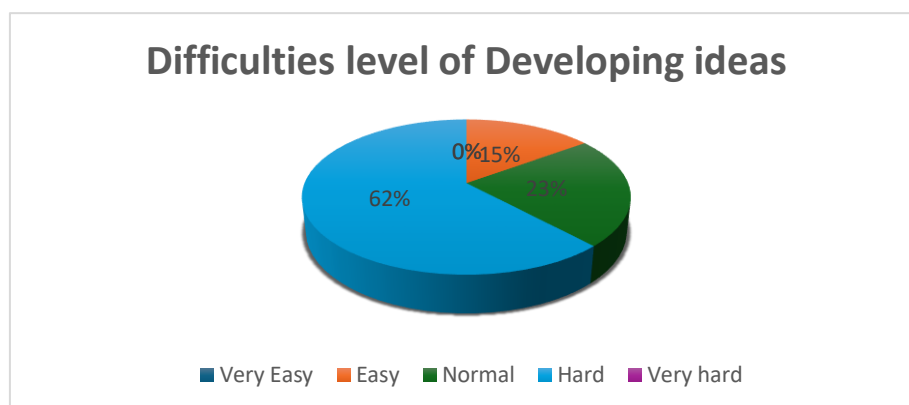


Figure 4. Difficulties Level of Developing Ideas

In addition to finding original ideas, developing ideas is also not an easy thing for students. 62% of them said it was difficult to develop their ideas into a complete and sustainable scientific work.

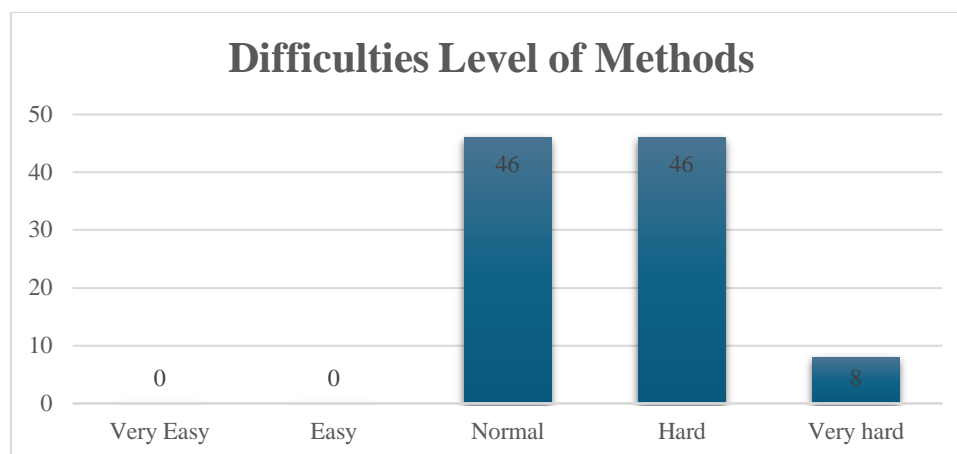


Figure 5. Difficulties Level of Methods

Methods in scientific papers contain ways of conducting research, how to obtain data, compile instruments and questionnaires and how to process research data. Figure 4 shows that 8% of the students find it very difficult to make research methods. This is because their knowledge of research methods is still lacking, so they are still confused in determining how to determine samples, make instruments and analyze data.

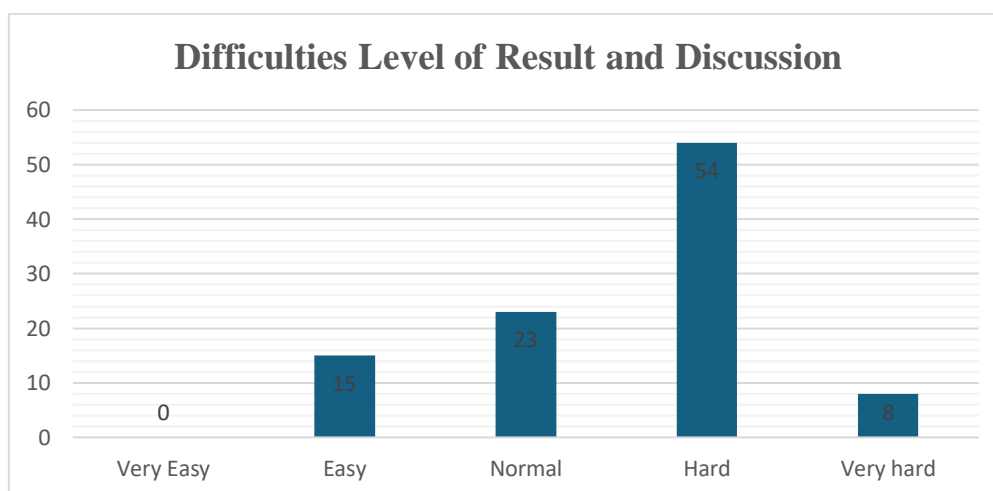


Figure 6. Difficulties Level of Result and Discussion

The most difficult part of making a scientific paper is the part of presenting the results of research analysis and also making discussions. Most students (54%) find it difficult and even another 8% find it very difficult to presenting the results of data analysis and make discussions. Data processing is the most important activity in the research process and activities, because mistakes in choosing analysis and calculations will have fatal consequences for conclusions, generalizations or interpretations. (Rahim, 2020). From the results of the interviews, it is known that the students conducted a type of classroom action research (quantitative research) that produced quantitative data related to learning outcomes. Quantitative research is research that uses data in the form of numbers which are then analyzed in such a way using certain formulas exactly. Quantitative research uses verifiable deductive logic. This research produces discoveries that can be achieved (obtained) using statistical procedures or other methods of quantification (measurement) (Sujarweni, 2014). The discussion of research results is a form of student scholarship, because in this component students can express their opinions freely

based on applicable scientific principles (Sumardjono, 2020). Discussions need to be made to describe the findings holistically so that the meaning of research emerges. In the discussion, it is also necessary to discuss the suitability or inconsistency of the findings with existing theories. This is what will attract other readers to read someone's scientific work.

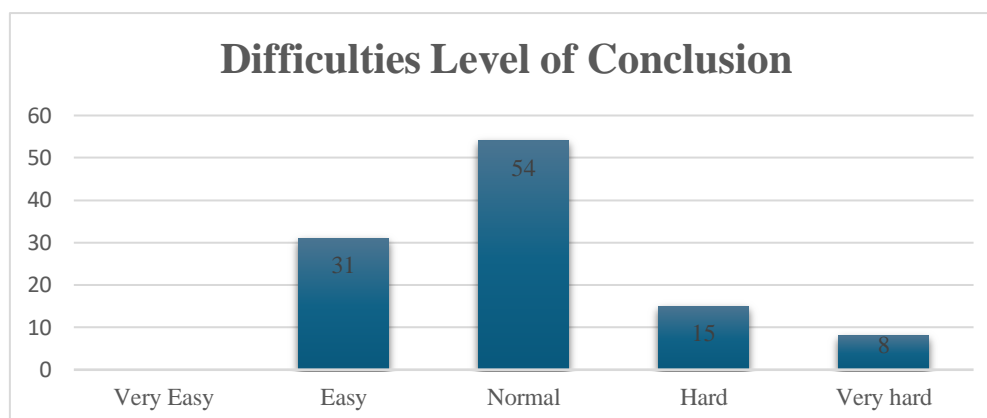


Figure 7. Difficulties Level of Conclusion

Based on the results of the data analysis in Figure 7, it is known that most students (54%) consider that making scientific conclusions is not difficult, even so, 15% of them find it difficult and even 8% of them think it is very difficult. The conclusion is a description of the author's answer to the formulation of the problem and the purpose of the research expressed in the introduction. Actually, it wasn't too difficult to draw conclusions, it was just that the students needed to practice more.

4. CONCLUSION

Based on the results of an in-depth analysis of the obstacles of biology education students in writing scientific papers, it was concluded that the main obstacles for students are because students are not used to and trained in writing scientific papers, especially in the components of scientific papers. They found it difficult when creating an introduction (54%), method (46%), and presenting results and discussions (54%)

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