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# Inquiry based learning on the ability to write scientific material on plant physiology in pre-service biology teachers

J Jumrodah<sup>1\*</sup>, and N Lestariningsih<sup>2</sup>

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**Abstract.** The aims this research are to determine the effect of the inquiry learning on the ability of scientific writing pre-services Biology teachers. This research used quasi experiment method. The subject was consists of 29 pre-service teacher on 5th semester in one of university in Palangkaraya. The results showed that the ability to write scientifically on student plant physiology material averaged 77.257% with good criteria. It is suggested to develop inquiry-based learning toward to improve of scientific writing skills on other subject matter in college.

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## Introduction

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### Experimental Method

This research is a qualitative descriptive research at one of the universities in Palangkaraya. This research involved 29 sixth semester pre-service teachers. Research subjects were taken with the consideration that they were enrolled in plant physiology courses. The instruments used in this study included questionnaires on student responses to quality in writing articles and the assessment of article writing using scores based on indicators of writing style, substance content and novelty values. The Data analysed using quantitative descriptive technique.

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### Result and Discussion

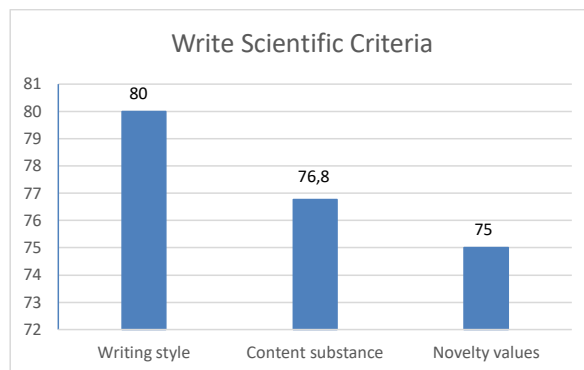
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**Figure 1.** Pre-service teachers the inquiry learning on the ability of scientific writing

Figure 1 shows the 5th semester writing biology teacher's scientific writing skills in the Tadris Biology Program. As shown in Figure 1, the criteria for writing style are 80% with very good categories. In general, pre-service biology teachers can do the aspects of writing style, including: the effectiveness of the title, the inclusion of the author's name and institution, abstracts, key words, systematic preparation of chapters, the use of supporting instruments, reference and citation and references to references, instructions for prospective writers, terminology and language. Learning plant physiology applies a research-based inquiry model in the practicum. Plant physiology material consisting of basic plant physiology and advanced plant physiology is associated with actual phenomena that occur in the environment or the surrounding environment in everyday life. Inquiry learning models that uses an

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The results of the assessment on aspects of the writing style obtained a higher percentage than the assessment of substance content and novelty values, the assessment of the writing style with criteria is very good. Pre-service biology teachers' , at five semester they have taken the research methodology and have also been taught to make articles, so that they get very good grades on aspects of writing style. Based on the results of the questionnaire pre-service biology teachers' prefer to write articles rather than writing lab reports by hand writing.

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This finding is in line with the results of previous studies that pre-service biology teachers' have weaknesses in expressing ideas, students lack confidence and fear of starting in making articles explaining and concluding [11]. the aspect of assessment of novelty value and content substance, it is necessary to add training in article writing including looking for literature to compare and find the novelty value from scientific articles that have been made [12]. Scientific writing is an important part of the academic field. Improving scientific writing skills requires skills and habits pre-service biology teachers. Developing scientific article writing skills needs to be done in special classes, such as attending workshops accompanied by reviewers or lecturers who already have many scientific publications. Pre-service biology teachers should be accustomed to reading and writing scientifically, learning about new research topics, increasing conclusion, knowing publication roadmaps and getting feedback and direct experience with expert writers [11].

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#### Conclusion

Based on the result of data analysis, it can be concluded that generally the ability to write scientifically on plant physiology material averages 77.25% with good criteria. It is recommended implement inquiry-based learning to develop pre-service biology teachers' scientific writing skills in other subjects in study programs, faculties, and institutions. Evaluation and improvement need to be done to improve the ability to write scientifically by having a special workshop class that focuses on academic writing to improve the quality of content substance and novelty value.

#### Acknowledgments

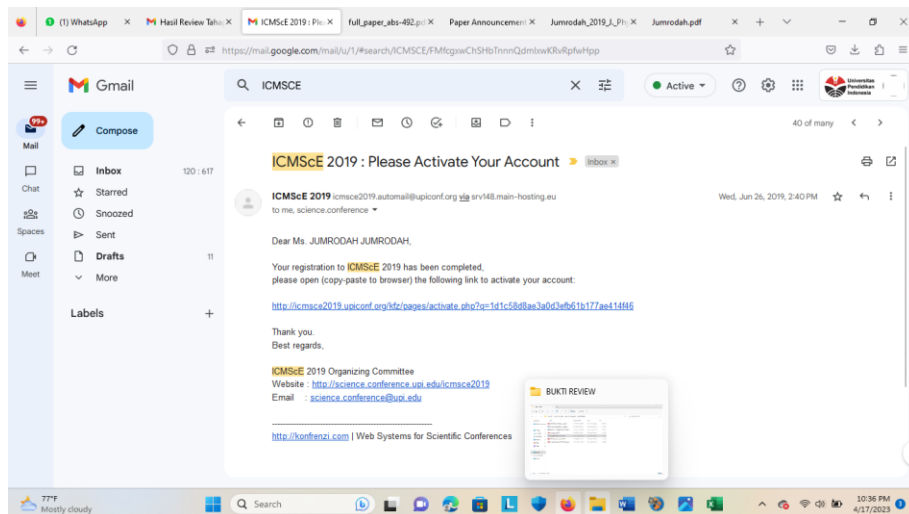
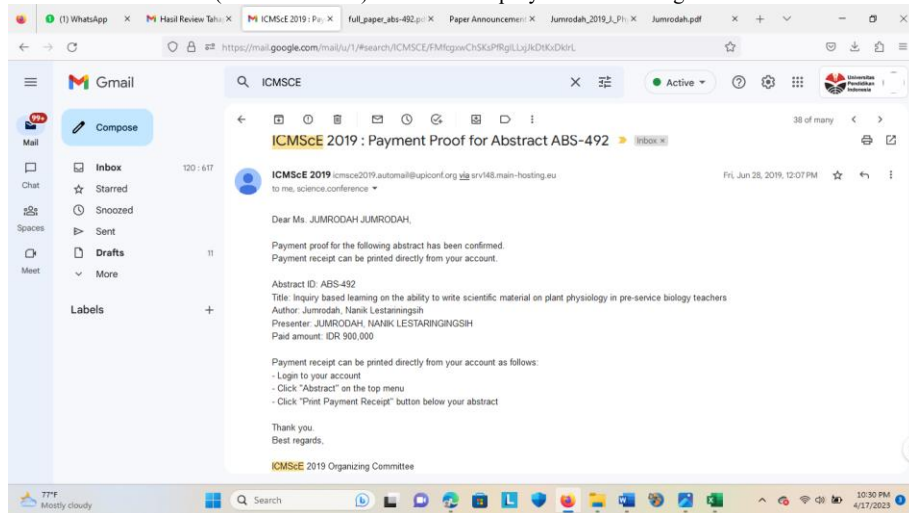
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*by* J Jumrodah

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**Word count:** 2320

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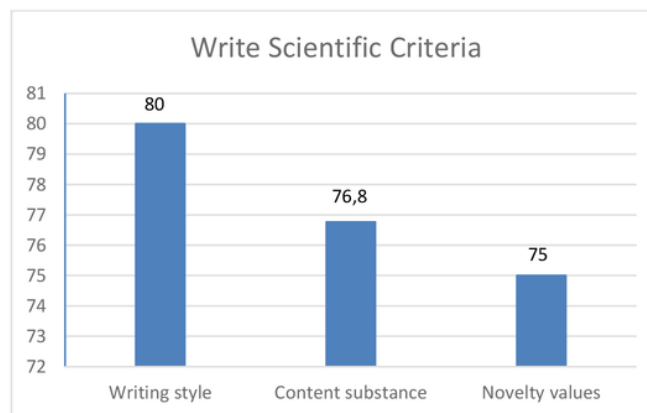
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