

The Development of News Based Bioconservation Teaching Material Supplements to Embedding Environmental Awareness

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Abstract

Teaching material supplement of News based bioconservation is compiled based on environmental news in the newspaper in North Maluku. This study has purpose to identify the feasibility, readability and effectiveness of the news based bioconservation teaching material supplements. This study applied a Research and Development (R&D) approach. The subjects in this study were the fifth grade students of SD Inpres Aru Irian and SD BPD Falila, Morotai Island Regency. The data collection technique was carried out using expert validation questionnaires, student response questionnaires and cognitive tests. The data obtained by expert validation showed a score of 90.79%, indicated that the news based bioconservation teaching material supplement was very suitable to be used in the learning. The effectiveness of teaching material supplements was determined based on the classical completeness and N-gain values. The classical completeness of students in the pretest test was 29%, meanwhile, in the posttest test was 86%. Based on the classical completeness requirements $\geq 80\%$, indicated that students completed classically. The N-gain test obtained was 0.75 with high criteria or classified $g \geq 0.7$, it was concluded that the teaching material supplement of news based bioconservation teaching was effective in improving student learning outcomes. The understanding of environmental awareness was obtained using an environmental awareness questionnaire, the criteria obtained were high with a mean score of 73.88%. Based on the result of the study, then, it can be concluded that teaching material supplement of news based bioconservation is appropriate to be used as teaching materials in the learning and effectively embedding the student learning outcomes and the understanding of environmental awareness.

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INTRODUCTION

Morotai Island is one of the outer islands in Indonesia, this causes the lack of access to Morotai Island which has an impact on various fields, one of which is education in the form of limited teaching materials. Schools on Morotai Island accounted for 60% of them still using the KTSP textbook (Morotai Island Education and Culture Office, 2018). The implementation of conservation oriented education in schools requires appropriate teaching materials. The use of conservation oriented teaching materials can increase one's interest in learning and taking wise actions in increasing students' knowledge and attitudes (Dimopoulos *et al.*, 2009). The lack of community awareness of the environment has resulted in the increased levels of environmental damage (Rarasandy *et al.*, 2013).

The Ministry of National Education (2008) states that teaching materials have several functions, namely as (1) guidelines for teachers in directing the learning process, (2) guidelines for students as well as being a part that must be learned or mastered, and (3) as an evaluation tool for learning achievement. Teaching materials play an important role in a learning process, which is as a medium in the delivery of information (Paramita & Rusilowati, 2016), (Kurniasih & Sani, 2014). The supplements of teaching materials that are developed are not only useful for students, but also beneficial for teachers. The selection of appropriate teaching materials can produce the maximum learning.

The results of observations and interviews conducted with the fifth grade teachers of SD Inpres Aru Irian and SD BPD Falila, South Morotai Subdistrict regarding Natural Science learning (IPA) show the results that supplementary news based bioconservation teaching materials are not yet available in these schools. Teaching materials used by teachers in the learning process are only in the form of textbooks obtained from publishers.

The initial survey of students in Aru Irian Elementary School and Falila BPD Elementary School showed that only a small number of students carried out environmentally friendly actions such as, (1) maintaining cleanliness, (2) not littering, (3) walking to school (4)) reduce

paper usage. These results were supported by the results of interviews with grade V teachers at SD Inpres Aru Irian and SD BPD Falila showing data that at the school most students still did not really understand the importance of protecting the environment. Bioconservation oriented teaching materials that are not yet available make the learning process of teachers only use books provided by the government.

Conservation biology is an effort to maintain the survival of living things and stop the loss of biodiversity (Champbell & Reece, 2008). Leksono *et al.*, (2015) research results in conservation biology teaching materials can help students understand the material, improve biodiversity process skills and care for the environment. Similar research by Sukarjita *et al.*, (2015), and Indriawati *et al.*, (2016) learning science using a contextual approach, and multimedia effectively improve students' knowledge about the environment.

Textbooks written based on local conditions of an area are able to make a high contribution to biodiversity conservation and can improve communication skills (Primack *et al.*, 2013), (Rahayu & Sudarmin, 2015). Similar research by Yanti *et al.*, (2015) shows that learning using a contextual approach nearby the students can foster the literacy and environmental awareness. Environmental awareness is a person's ability to realize the relationship between human activities and the surrounding environment to create a safe and healthy environment (Laksmi, 2015).

News based learning is an approach in learning that uses news from newspapers. News based learning provides an opportunity for students to understand the news contained in newspapers. News-based learning models can improve scientific literacy, critical thinking, and student creativity (Kartini *et al.*, 2018). Context-based science learning by utilizing newspaper news contributes and increases motivation in achieving the learning objectives (Khun & Muller, 2014).

Based on the background, the formulations of the problem in this study are (1) how is the feasibility of news based bioconservation teaching material supplements? (2) how is the effectiveness of using news based bioconservation teaching material supplements on the students learning

outcomes? (3) how effective is the use of news based bioconservation teaching material supplements to improve the students' environmental awareness?

The purpose of this study was to identify the feasibility and effectiveness of the news based bioconservation teaching materials supplement for the inculcation of environmental awareness of Morotai Island elementary school students.

The results of this study provide the following benefits: (1) increase the learning resources, (2) improve the student learning outcomes, (3) increase the understanding of environmental awareness of students to maintain and preserve the environment.

METHOD

The research method used in this study was the Research and Development (R&D) method to produce and test the effectiveness of product. The steps of the study are presented in Figure 1.

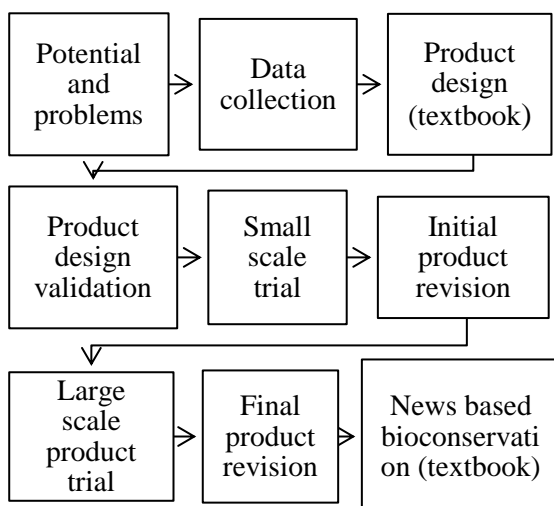


Figure 1. The Steps of The Study Using R&D.

The subjects in this study were grade V students of SD Inpres and SD BPD Falila in the second semester of 2019/2020, with the total number of 28 students. The instruments used in the study were expert validation sheets, test sheets, and environmental awareness questionnaire sheets. The instruments were validated by experts before applying it in the study.

The learning tool that will be used were tested using validity (construct validity, content validity, and item validity). The data collection technique used in this study were compiled based

on the formulation of the problem under study: the validation sheet was used to obtain data about the feasibility of the teaching material supplements, the student response questionnaire was used to obtain data on the readability of the teaching materials, the test sheets were used to obtain the data on the learning outcomes. Then, pretest and posttest, environmental awareness understanding questionnaire sheets were used to obtain data about the understanding of environmental awareness of students after using the teaching material supplements.

RESULTS AND DISCUSSION

The results of the validation of the news based bioconservation of teaching materials supplement can be seen in the following Table 1.

Table 1. The Result of Feasibility Test of News Based Bioconservation Teaching Supplements by experts

Validator	Institution	Score (%)	Criteria
1	Lecturer of UNNES	90.79	Very feasible
2	Lecturer of UNNES	89.47	Very feasible
3	SD Inpres Aru Irian	92.11	Very feasible
Average		90.79	Very feasible

Based on the results of the feasibility test of teaching materials supplement obtained an average percentage of 90.79% with a very feasible criteria, therefore, it can be interpreted that the news based bioconservation teaching material supplements can be used for the learning. The results of the acquisition of feasible criteria are in accordance with the results of research conducted by (Zainuddin *et al.*, 2012; Izzati *et al.*, 2013; Kurniawati, 2013; Septianu *et al.*, 2014) which states that after conducting the validation stage, the teaching materials developed are feasible to be used as a learning medium.

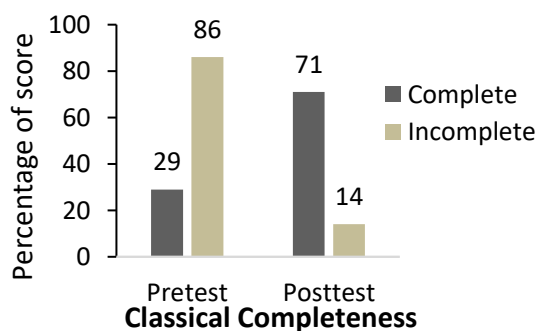
The results of the readability analysis of news based bioconservation teaching material supplements are presented in the following Table 2.

Table 2. Results of Analysis of Redability of Teaching Material Supplement

Assessment Criteria	Score of Readability (%)
Material feasibility	88.13
Language	83.48
Presentation	85.04
Graphics	87.95
Average	86.15

The average score of the readability analysis of teaching material supplements was 86.15%. The score obtained in the form of the feasibility of the material was 88.13%, the language was 83.48%, the presentation was 85.04%, and graphic was 87.95% had fulfilled the evaluation criteria. Based on the readability score, it can be concluded that the news based bioconservation teaching material supplement developed can be used for the learning using the theme of “environment is our best friend” (*lingkungan sahabat kita*) in the fifth grade elementary school of Morotai Island.

The effectiveness of news based bioconservation teaching material supplements on “environment is our best friend” (*lingkungan sahabat kita*) themes was determined based on the value of (a) classical completeness, (b) N-gain. The results of the analysis of the percentage of students' mastery learning are presented in the following Figure 2.

**Figure 2.** Score of The Completeness of Students Learning Outcomes.

The classical completeness of student learning outcomes in the pretest test were 29%, meanwhile, the posttest test were 86%. Based on the classical completeness requirements $\geq 80\%$, the cognitive assessment results of students were completed classically. These results are consistent with the research by (Estiwi *et al.*, 2015; Istikomah *et al.*, 2013) which states that the development of findings-based learning tools for science

understanding in Kindergarten B Children is said to be effective with the acquisition of an average score of learning outcome of 83%.

The cognitive learning outcomes of students were obtained from the results of the pretest and posttest. The student cognitive learning outcomes after learning has increased. The recapitulation of the pretest and posttest of learning outcomes conducted is presented in the following Table 3.

Table 3. Score of N-Gain of Students Learning Outcome

Score	Average	Maximum	Minimum
Pretest	32.75	50	9
Posttest	83.75	88	79
N-gain	0.75	0.87	0.64

Based on the N-gain analysis of student learning outcomes obtained a score of 0.75, which are in the high criteria ($<g> \geq 0.7$). It can be concluded that the news based bioconservation teaching materials supplements using theme of “environment is our best friend” (*lingkungan sahabat kita*) was effectively improve the learning outcomes of students in SD Inpres Aru Irian and SD BPD Falila.

The analysis of environmental awareness understanding was obtained by using a student questionnaire response sheet. The results of the environmental awareness analysis are presented in the following Table 8.

Table 8. The Analysis of the Understanding of Environmental Awareness

Respondent	Total Score	Score (%)
SD BPD Falila	146	74.87
SD Inpres Aru Irian	164	72.89
Average		73.88 Good

The understanding of students' environmental awareness based on table 7, at SD BPD Falila was 74.87% and SD Inpres Aru Irian was 72.89%, therefore, the average percentage score obtained was 73.88% with good criteria.

CONCLUSION

Based on the result of the study, it can be concluded that the development of the news based bioconservation teaching material supplements using the theme of “environment is our best

friend” (*lingkungan sahabat kita*) is appropriate to be used as teaching materials in the learning and effectively embedding the students learning outcomes and their understanding of environmental awareness.

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