Research Article

Development of *sasi* culture based mangrove forest conservation instruction package to improve ecological knowledge of Amahai State Society, Central Maluku District

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ABSTRACT

Instructional Package is one of the learning media that can be used in the learning process and can increase public knowledge. This research aims to determine, (1) Development of an Instructional Package for Mangrove Forest Conservation Based on Sasi Culture in Amahai Region, (2) Knowing the Effectiveness of this Instructional Package in Improving Community Knowledge About Mangrove Forest Conservation Based on Sasi Culture in Amahai Region. And analyzed qualitatively and quantitatively. This research is development research using the dick and Carey model to produce an instructional package which will be tested in Amahai and Sehati villages with a sample for each village of 30 people using a test instrument to measure knowledge both pre-test and post-test, the behaviour group used the instructional package while the control group did not use the instructional package. The mean values obtained in the behavioral group were: for the pre-test 25% and the post-test 29%, while the mean scores for the control group were 25% for the pre-test and 26% for the post-test. To find out the effectiveness of the instructional package, normality is tested using Kolmogorov Smirnov with pre-test and post-test data, and the gain scores are declared normal, and the variance homogeneity test using levena is the value of the two groups is homogeneous and the test is different (t-test). with the significance value used is α 0.05. Thus, it can be concluded that the instructional package is effective and feasible to be used as a learning resource and can be used in the learning process.

To cite this article:
Wonley, E. M., Leiwakabessy, F., & Melay, S. (2021). Development of *sasi* culture based mangrove forest conservation instruction package to improve ecological knowledge of Amahai State Society, Central Maluku District. *Bioedupat: Pattimura Journal of Biology and Learning,* Vol 1(1), 32-38. *DOI: https://doi.org/10.30598/bioedupatv1i1pp32-38*

INTRODUCTION

   Local wisdom is a legacy passed on by ancestors from a long time ago, with the values of a life that contain forms of religion, culture, and customs (Pattinama & Pattipeilohy, 2003). One form of inheritance that is still known and carried on by the people of Maluku is sasi. Sasi is a form of local wisdom that plays a role in managing natural resources and the environment (Zulfikar, 2008). Sasi was enforced to prevent environmental damage (Fatma, 2015). Some coastal natural resources in Maluku where the management system applies sasi, for example, sasi for coastal resources such as Lola, action rock, sea cucumber, algae, fish, coral reefs and

mangrove forests, etc. However, in this paper, the author focuses more research on forest natural resources, Mangroves.

Mangrove forest is a woody plant that grows around the coastline and has high adaptation to brackish salinity, and continues to live with the environmental conditions it occupies (Dahuri, 2003). Efforts to maintain mangrove forest conservation need to be done with the aim that millions of mangroves will not be exhausted and even damaged due to continuous exploitation without thinking about future generations (Putrawan, 2014). So that there need to be activities that must be carried out to maintain the conservation of mangrove forests, one of the activities is to provide understanding to the community about knowledge of conservation concepts through the development of instructional packages.

The instructional package contains learning materials for mangrove forest conservation based on sasi culture in the form of useful textbooks for the community. With the consideration that so far there have not been any textbooks (pocketbooks) or instructional packages as a source of knowledge about mangrove forest conservation based on the sasi culture so that it makes people see that the conservation actions that have been implemented so far are only a habit (Melay, 2018). Therefore, it is necessary to make a pocketbook so that basic ecological knowledge is owned and improved. Knowledge of local wisdom is very important because knowledge of local wisdom contains knowledge, practices, and beliefs about the relationship between living things and their environment that develops and is culturally inherited. Thus the people of Maluku, especially the Amahai region, have traditional various ways to manage the environment to maintain the quality of natural resources. So that it will further support efforts to improve the welfare and quality of human life, and can preserve the ability and utilization of living natural resources and their ecosystems in a harmonious and balanced manner. One of the conservation strategies is to use culture or local wisdom as learning materials (Knapp et al., 2013). The objectives of this study were: 1. To develop an instructional package for mangrove forest conservation based on the Sasi culture in Amahai region. 2. Knowing the effectiveness of this instructional package in increasing community knowledge about the conservation of mangrove forests based on the Sasi culture in Amahai region..

METHODS

The stages that will be carried out are based on the references used in the outline are: (1) Information collection, namely by gathering information and needs analysis to determine the goals to be achieved from the resulting product. (2) Product Formulation and Development, namely by identifying and formulating objectives, determining the potential to be achieved by learners, designing model designs. Instructional package and develop instructional package material made. (3) Field testing, namely by testing the effectiveness of the instructional package produced through the quasi-experimental method. The results of field trials are used as material for dissemination and recommendations.

Instructional package development steps In general, the steps for developing an instructional package in this study are as follows:

1. Planning Stage

   The planning stage is the initial stage for the Instructional Package product development activities. The steps for the activities carried out are:

   a) Observation, which aims to gather information about conservation knowledge and the learning tools developed. The data obtained is used as material to formulate goals to be achieved from the instructional package developed.

   b) Analysis and assessment of the need to develop a basic framework for the material based on the Cultural Conservation Instructional Package.

2. Development Stages

   This stage is the preparation of the design and development of the Instructional Package and compiling a draft of conservation ecology material. The Instructional Package development procedure refers to the Dick and Carey model, with the following steps:

   a) Identify objectives and formulate competencies and learning outcomes, and develop the points of the Instructional Package.

   b) Designing Instructional Package model designs and Instructional Package material framework.

   c) Develop an instrument (benchmark reference test) to measure people's knowledge based on the objectives to be achieved, then validate the benchmark reference test.

   d) Develop Instructional Package material on the concept of conservation ecology based on the Instructional Package design.

3. Effectiveness Test Phase

Testing of the effectiveness of the Instructional Package was carried out through an experimental method with the design of the pre-test and post-test control and behavioral groups. The experimental design is as follows:

Tabel 1. Research design

O	X	O
O	C	O

Note:
X = Behavior, using the developed Instructional Package
C = Control
O = Observation / Pre-Test and Post Test

Data analysis in this study was carried out quantitatively and qualitatively. Qualitative data analysis was carried out to process data from observations. After the data is obtained, then the data is summarized, selected, and focused on according to the Instructional Package variables, which are then used as the basis for developing an effective instructional package for the community. Data can be related to needs analysis, trends in the development of Instructional Package materials, the results of content feasibility evaluation, and presentation of the instructional package model developed. Testing the instrument validity, reliability, and effectiveness of the Instructional Package used quantitative data analysis. The effectiveness test data is the result of an assessment of public knowledge about conservation based on Sasi culture in the experimental group and the control group. The learning outcomes were tested for differences using the t-test at the significance level (α) 0.05 (Shirley, 2004). Before being analyzed, the normality test was carried out using the Kolmogorov Smirnov (KS) test, and the homogenetic test using the Levena test at the significance level (α) 0.05. Quantitative data analysis was carried out with the SPSS version 16 program.

RESULTS AND DISCUSSION

Based on the results of the pre-test that has been obtained, it describes that the two groups of people already have an initial knowledge about mangrove forest conservation based on sasi culture even though the value of the control group is higher than the behavior group. However, the post-test or the final test experienced very different changes. It can be seen based on the gain score that the behavior group given the dominant instructional package was higher than the control group. To see the difference in the effectiveness test of the ecological instructional package for mangrove forest conservation based on sasi culture in the behavior group and the control group, an analysis was carried out. The following is the presentation of data for the knowledge of the behavior and control groups that have been calculated statistically.

Tabel 2. Description of pretest and post test score data from the treatment group and the control group related to public knowledge about the ecology of conservation based on sasi culture

		Group	
		Experiment	**Control**
Skor pre-test	Total	30	30
	Mean	25	25
	Modus	27	26
	Median	26	26
	Score Range	10	13
	Deviation Standard	2.816	2.949
	Variance	7.066	8.133
Skor post-test	Total	30	30
	Mean	29	26
	Modus	28.29 and 30	27
	Median	29	27
	Score Range	4	10
	Deviation Standard	1.1 65	2.515
	Variance	1.5	6.3
Gain score	Total	30	30
	Mean	4	1.26
	Modus	2	1
	Median	3	1

Score Range		7	3
Deviation Standard		2.079	0.639
Variance		4.36	7.86

Data analysis of effectiveness test results

To test the effectiveness of the t-test the data must be tested for normality and homogeneity first. In this study, the t-test was carried out in the control group and the treatment group to know the difference in knowledge between the two groups.

Normality test

In the normality test of the pre-test, post-test and gain score data for each treatment group and control group, the Kolmogorov Smirnov test was used based on the following hypothesis testing:

counted ≤ dtab: Data are normally distributed

counted ≥ dtab: Data are not normally distributed

If the results of the normality test obtained are normally distributed data, the data for the pre-test, post-test, and gain scores for the control and treatment groups can be tested further, namely the normal test and the difference test (t-test).

Tabel 3. The results of the analysis of the Normality Test using Kolmogorov Smirnov in the treatment group and the control group on the score data on the public's answer to the knowledge of mangrove forest conservation based on sasi culture

Test Group	N	Statistic Test	
		d-hit	d-tab(0,05)
Pre-test Experiment Group	30	0.161	
Post-test Experiment Group	30	0.178	
Gain Skor Experiment Group	30	0.207	0.24
Pre-test Control Group	30	0.135	
Post-test Control Group	30	0.232	
Gain Skor Control Group	30	0.238	

The table above shows that the data for the pre-test (initial test), post-test (final test) and gain scores for the control and treatment groups were declared normal because based on the Kolmogorov Smirnov test the results obtained were calculated ≤ in the table.

Homogeneity test

The variance homogeneity test used levena to the control and treatment groups consisting of pre-test and post-test with the following test conditions:

H0: $\sigma_1^2 = \sigma_2^2 = ... = \sigma_k^2$ (homogeneous data)

H1: there is at least one σ_i^2 which is not the same

Table 4. The results of the analysis of the homogeneity test using the Levena test in the treatment and control groups on the score data on the community's answer about conservation knowledge based on sasi culture

Test group	N	Statistic test	
		f-hit	f-tab (0,05)
Pre-test Experiment Group	30	0.254	
Post-test Experiment Group	30	0.273	
Gain Skor Experiment Group	30	0.827	2.76
Pre-test Control Group	30	0.617	
Post-test Control Group	30	0.485	
Gain Skor Control Group	30	0.693	

The table above shows that the data for the pre-test score (initial test), post-test (final test), and score gain for the control and treatment groups are stated to be homogeneous because based on the Levene test the value of Fcount ≤ Ftable is obtained so that H0 is accepted.

Different test (t-test)

The different test (t-test) is applied if the data analysis aims to determine the differences in certain variables in two groups. The results of this test analysis were carried out to test the hypothesis of the difference in the parameter between the treatment group and the control group as a comparison test between two independent samples. The hypothesis used for the different test (t-test) in this study is:

H0: $\mu1 = \mu2$

H0: $\mu1 \neq \mu2$ or one of them is not the same

The test criteria are determined based on the results of the calculation of the test statistic value with the following conditions:

H0: Accepted if $\left| t_{count} \right| < \left| t_{table} \right|$

H0: Rejected if $\left| t_{count} \right| > \left| t_{table} \right|$

With a significant level $\alpha = 0.005$

Table 5. Analysis results in different tests in the behavior group and the control group on conservation knowledge based on sasi culture

Test Group	Db	Statistic Test	
		t-hit	f-tab
Pre test-post test Experiment group	29	6,410	
Pre test-post test Control group	29	1,790	
Post test Experiment and Control group	29	4,117	1,699
Gain score test Experiment and Control group	29	5,791	

**p<0,05

In the table above, the different test results (t-test) have been presented. These results show that the test scores for the pre-test and post-test between the experimental group and the control group are very significantly different. High post-test scores were obtained by the experimental group because the experimental group was given treatment while the pre-test scores for both groups were almost the same. The following shows a graph of increasing knowledge in the form of differences in the pre-test and post-test scores in the treatment group and the control group, as well as a bar histogram for the gain scores of the treatment group and the control group.
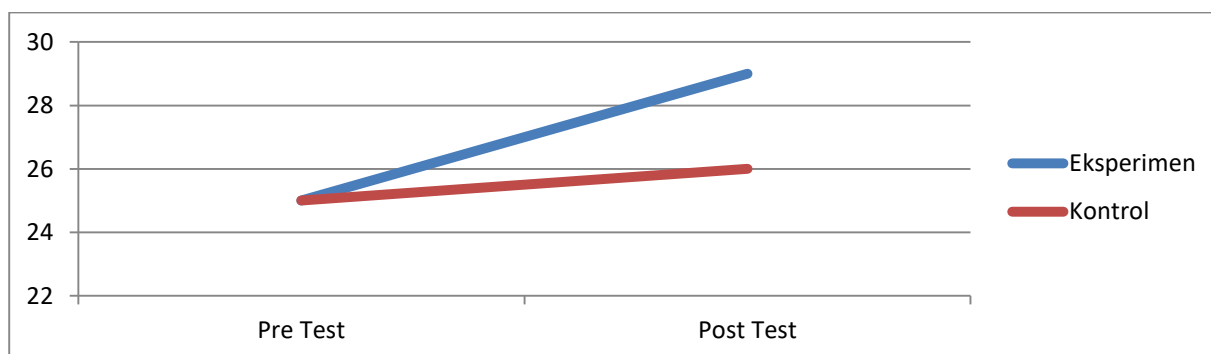
Figure 1. Graph of increasing knowledge in the form of differences in the pre-test and post-test scores in the treatment group and the control group
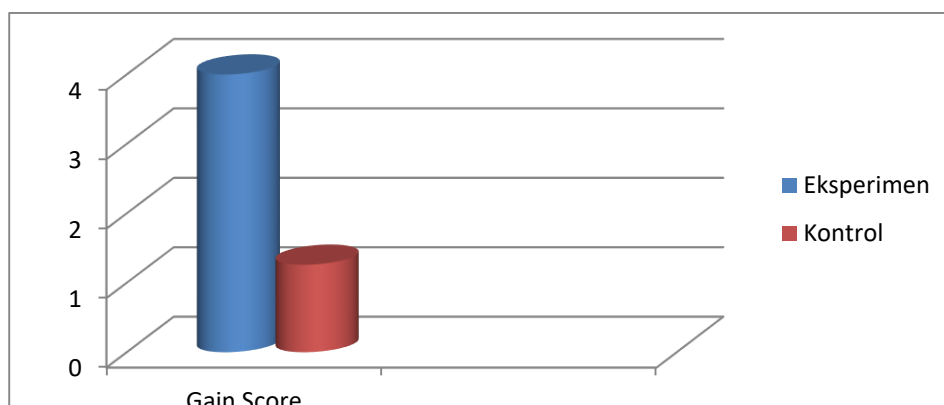
Figure 2. Bar histogram for the gain scores of the treatment group and the control group

The development of an instructional package for mangrove forests based on the Sasi culture in increasing the ecological knowledge of the Amahai people of Central Maluku district is the title of this research. The instructional package contains materials to conserve natural resources in Maluku, especially in an Amahai region so that it is maintained and not threatened with extinction. KOMA BUSA is the result of the development of an Instructional Package which is designed in the form of a pocketbook, the KOMA BUSA being developed is expected to make readers understand the contents of the reading comprehensively and conceptually. Also, at the end of the instructional package, there is information about the existence of mangrove forests in Amahai region and the contents of the instructional package contain efforts to actualize knowledge related to the ecological concept of mangrove forest conservation, the actualization effort is to present moral messages in the instructional package.

Several prominent Indonesian studies have examined traditional knowledge which greatly influences the use of natural resources. These studies include 1. Utilization of Indonesian Traditional Knowledge Based on Regional Potential as Development Capital (Heryanto), 2. Legal Protection of Intellectual Property Rights to Traditional Knowledge Against Legal Economic Benefits Gaining (Karlina Softarto), 3. Protection of Community Traditional Knowledge On Utilization of Genetic Resources (SDG) (Nurhayati Qodriyatun). In this case, the community is the main actor in managing the environment and utilizing natural resources, so good and broad knowledge is needed from the community. If the broader the knowledge, the better and correct the management of natural resources and vice versa if there is less knowledge from the community, the less way the community manages natural resources. Thus, information sources and socialization are needed to increase public knowledge. This research proves that information sources can increase knowledge, as seen in the t-test conducted between the treatment group and the control group, which illustrates the difference in the level of knowledge the community has regarding the concept of mangrove forest conservation based on sasi culture, where the treatment group uses the instructional package as a source. Learning has a much higher value than the control group which was not given an instructional package as a learning resource.

For the instructional package that has been developed, the authors feel that this product is easy to learn because it uses language that is clear and simple so that it is sufficiently influential and effective in increasing public knowledge regarding the ecological knowledge of mangrove forest conservation based on the sasi culture in Amahai region that previously the community did not know. The importance of mangrove forests for the next generation and the community only carries out sasi as a customary tradition or habit which is carried out from generation to generation to protect natural resource products. However, with the presence of sasi, the government and residents have also made mangrove forests in the Amahai region a tourist place for nature-loving visitors and facilities and infrastructure for learning, as well as improving the economic standard of living for the coastal communities of Amahai State..

CONCLUSION

The development of an Instructional Package for Mangrove Forest Conservation Based on the Sasi Culture in the Amahai State Community of Central Maluku Regency was successfully developed with the development stages of Borg and Gall which were carried out in ten stages. The framework of the instructional package for mangrove forest conservation based on sasi culture begins with a strengthening of the concept, then contains materials, namely: ecology and scope, conservation, sasi culture, mangrove forests, the instructional package that is made ends with information about the existence of mangrove forests in the amahai country. Then the Instructional Package Effectiveness Test in Increasing Public Knowledge about Mangrove Forest Conservation Based on the Sasi Culture which was tested for normality, homogeneity, and t-test differences with the results achieved between the treatment and control groups, namely the treatment group was very satisfying because it was given an instructional package. So it is effective if KOMA BUSA is used in the learning process.

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