

The Effectiveness of Using Lectora Based on Aceh Culture on Linear Equation System Material

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Abstract

*The aim of this study to analyze the effectiveness of using Lectora based on Aceh culture on Linear Equation System Material. This research uses a quantitative descriptive research approach. The research design used was the One Group Pretest-Posttest Design. The conclusions of this study are as follows: 1) the results of the observation of the teacher's ability in managing learning were 83.92% with good categories; 2) the results of observations of student activities during the learning process were quite active with a percentage of 73.08%; 3) The results of the percentage of student response questionnaires were 51.67%, which means that most students responded well to the use of Aceh culture-based lectora media on the material of linear equation systems; 4) Statistical test with *t* test obtained *t* count = 30,11865 and *t* table = 1,729133 ($\alpha = 0,05$), *t* count > *t* table means that the use of media is effectively used; and 5) Aceh Culture-Based Lectora Media is effectively used in learning linear equation systems. The results of the overall data analysis indicate that the use of Aceh Culture-Based Lectora is effective for student learning outcomes on linear equation material.*

Keywords

effectiveness; lectora; Aceh culture; systems of linear equations



I. Introduction

The development of education and the current digitalization system has an impact on the fading of the existing cultures in Indonesia, Indonesian culture is the national identity that we must protect and preserve. So it takes an effort to renew education that is able to implement the cultural values of the nation (Hildigardis, 2019).

The implementation of cultural values can be done by utilizing various educational facilities, by integrating the cultural values as outlined in learning (Anhoreini, 2018), learning mathematics for example, in this learning can be given cultural elements ranging from local culture and national culture, a culture that is often applied in mathematics learning is usually called ethnomathematic.

Ethnomatematics is Mathematics is practiced among identifiable cultural groups, such as ethnic groups, labor groups, children of certain age groups, professional classes, and so on. Its identity is heavily dependent on the focus of interest, motivation, and certain codes and jargon that do not belong to the field of academic mathematics (Hammond, 2000).

Mathematics learning materials that can be used in culture-based learning as in learning linear equations. The material of linear equations covers the problems that exist in everyday life, in this material there are many mathematical models that can be applied by adopting national culture and history, so as to remind students of national culture, after recalling national culture, enthusiasm will grow. Student nationalism towards the nation and state.

Mathematics is an educational tool used to convey concepts so that humans more easily solve problems. By learning mathematics, humans increasingly know how to provide opportunities to develop good mindsets, increase self-confidence, beautify and improve the quality of life values, sharpen objective attitudes and be open to the times. Mathematics is generally formed from human experience in an empirical world. Then the experience is processed in the world of ratios, processed analytically by reasoning in the cognitive structure so that mathematical concepts are formed so that these concepts are easily understood by others and can be manipulated appropriately, so use mathematical language or mathematical notation of global value (Tarigan et al, 2020).

Teaching in the context of the standard educational process is not just about delivering subject matter, but also as a process of regulating the environment so students learn. Other meanings of teaching are often termed learning. This implies that in the teaching and learning process students must be used as the center of the activity. This is intended to shape the character, civilization, and improve the quality of life of students. Learning is a complex process that occurs in everyone and lasts a lifetime, from a baby (even in the womb) to a hole. One sign that someone has learned something is a change in behavior in him. Changes in behavior are related to changes that are knowledge (cognitive) and skills (psychomotor) and those involving values and attitudes (affective). The learning process will occur well through interactive processes between students and teachers, students with students, and students with learning materials. Besides that students learn naturally, and mental processes occur where students connect new information to relevant concepts (Rangkuti and Hasibuan, 2019).

Ethnomatematics can be implemented by utilizing technology and information (Maryati & Prahmana, 2018), also can use applications that can make it easier for teachers and students to apply, applications that can be used in integrating cultural values in mathematics learning include Lectora Inspire. The Lectora Inspire application is a software that can be used to create interactive learning media (Tambunan and Purba, 2017). The Lectora Inspire application is also easy for teachers and students to use, this application can be used as a media for presentation and making questions based on Acehese culture.

The importance of maintaining culture and history in order to grow the spirit of national nationalism, it must be implemented as early as possible so that it is not as bad as being eroded by the current of modernization, with fun mathematics learning and combined with the use of national cultures with the help of Lectora learning media. as well as the growing love for the nation's culture, the authors conducted further research related to "The Effectiveness of Using Acehese Culture-based Lectora on the material of linear equation systems". The purpose of this study was to analyze the effectiveness of using Acehese culture-based Lectora in the linear equation system material for class X students of MAN Banyak Payed Academic Year 2020/2021.

II. Research Methods

This research is quantitative descriptive. The research design used was the One Group Pretest-Posttest Design. The design was used for a research group that was given treatment. Population is a generalization area consisting of: objects / subjects that have certain qualities and characteristics that are determined by researchers to study and then draw conclusions (Sugiyono, 2018). As for the population in this study were all class X students of MAN Banyak Payed, Aceh Tamiang in the academic year 2020/2021.

In taking the sample using simple random sampling technique, namely the technique of taking sample members from the population is carried out randomly without paying attention to the strata in the population, this is done if the population is considered homogeneous (Lestari & Yudhanegara, 2018). The sample in this study consisted of one class, namely 20 students of class XA.

The data collection instrument in this study was through tests on the material of linear equations, observation sheets and student response questionnaires. The test to be used is tested for validity and reliability first. Observation of teacher management in learning is carried out by paying attention to the following aspects: 1) The pre-learning stage; 2) Mastery of the material; 3) The use of learning strategies and media; 4) Assessment of learning processes and outcomes; and 5) Closing Activities. Observation of student activities is carried out during the learning process in order to observe student activity with indicators: 1) observing the problem; 2) asking questions; 3) respond to other people's opinions; 4) do the job well; and 5) dare to appear to express an opinion. Student response questionnaires use a Likert scale with answer options Strongly Agree (SS), Agree (S).

To obtain maximum learning outcomes in the learning process it is necessary to do creative and innovative efforts by the teaching staff. These efforts can be carried out in various ways, including the activities of analyzing and updating learning devices, such as; methods, techniques and provision of teaching materials or learning media as well as periodic reviews of the curriculum so that they can be adapted to the development and needs of the community in the ever-expanding world of education (Suroso et al, 2018).

To observe the ability of teacher management in learning, observation of student activities and student response questionnaires, a percentage formula is used with each category as follows:

Table 1. Category Results Analysis of teacher management observations in learning

Category	Criteria
Very good	$P \geq 90\%$
Well	$80\% \leq P < 90\%$
Enough	$70\% \leq P < 80\%$
Less	$P < 70\%$

(Nasiroh, 2014)

Table 2. Category Results Analysis of student activity observations

Category	Criteria
Active	76% - 100%
Enough Active	51% - 75%
Less Active	26% - 50%
Not active	0% - 25%

(Sugiyono, 2015: 144)

Table 3. Category Results of the student response questionnaire analysis

Interpretation	Criteria
Nobody	$P = 0\%$
Fraction	$0\% < P < 25\%$
Almost half	$25\% \leq P < 50\%$
Half of it	$P = 50\%$
Most of the	$50\% < P < 75\%$
Almost all of it	$75\% \leq P < 100\%$
All of it	$P = 100\%$

(Lestari, 2018: 335)

III. Result and Discussion

The results of data analysis in testing the effectiveness of media use *Lectora* Aceh culture based on the system of linear equations were described as follows.

3.1 Observation Results on the Ability of Teachers to Manage Learning

Observations were made by two observers, namely 2 teachers in the field of mathematics studies at MAN Manyak Payed, Aceh Tamiang for 3 meetings during the linear equation material. The following is the result of the percentage of the observation sheet on the teacher's ability to manage learning.

Table 4. Results of the analysis of teacher management observations in learning

Observer	Meeting		
	I	II	III
1	83%	85%	85.5%
2	82.5%	83.5%	84%
Average per meeting	82.75%	84.25%	84.75%
Final Average	83.92%		
Category	Well		

Based on the results of the analysis in Table 4, the observation of teacher management ability in learning has increased during three meetings and categories **Well**. The use of Acehese culture-based *Lectora* media provides an effective use of time and student achievement in mastering the material provided by the teacher.

3.2 Observation Results of Student Activities during the Learning Process

Observation of student activities related to student activity according to the indicators obtained by the percentage as follows.

Table 5. Results of the analysis of student activity observations

Observer	Meeting		
	I	II	III
1	68%	73%	76%
2	69.5%	74.5%	77.5%
Average meeting per	68.75%	73.75%	76.75%
Final Average Category	73.08% Pretty active		

The average percentage of student activeness in the moderately active category was 73.08%. In addition, there was also a significant increase in student activity during the meeting.

3.3 Results of Student Response Questionnaires

The average percentage strongly agree 51.67%, agree 35%, disagree 10% and strongly disagree 3.33%. These results indicate that most students agree to the use of *lectora* in mathematics learning, especially in the material of linear equation systems.

3.4 Student Test Results on the Material of Linear Equation Systems

The following are the test results on 20 students who have studied the linear equation system material.

Table 6. Students' test results on the material for linear equation systems

Total value	1437
Average Value	71.85
Standard deviation	10.66857
Number of samples (n)	20

Based on the formula in the methodology, it is obtained t count = 30.11865 and t table = 1.729133 ($\alpha = 0.05$). Because, t count > t table means that the use of Aceh Culture-Based *Lectora* media is effective in learning linear equation systems.

The use of multimedia learning is one of the factors driving student interest and motivation in learning mathematics material (Supardi, 2014). In addition, through the use of media, it will give students the freedom to be active in learning, encourage students to convey ideas and opinions, be brave and responsible and provide student insights through the use of technology in learning (Sullivan, 2011).

Mathematics learning that links material with everyday life is also a starting point for students not to provide a "fortress of separation" between the school world and their daily life. According to Yudha (2019), the role of mathematics education can train competencies such as analytical, interpersonal, acting, processing information and managing change. Mathematics learning must have a character that will be able to be applied in everyday life in society.

Hence, the use of media *lectora* Aceh-based culture is effectively used in linear equation material. This bridges mathematical materials that are considered abstract to become problems in daily life that are more contextual.

IV. Conclusion

Based on the description of the results and discussion, the conclusions of this study are as follows.

1. The results of the observation of the teacher's ability in managing learning were 83.92% with good categories;
2. The results of observations of student activities during the learning process were quite active with a percentage of 73.08%;
3. The results of the percentage of student response questionnaires were 51.67%, which means that most students responded well to the use of Aceh culture-based lectors media on the material of linear equation systems;
4. Statistical test with t test obtained t count = 30,11865 and t table = 1,729133 ($\alpha = 0,05$), t count > t table means that the use of media is effectively used; and
5. Aceh Culture-Based Lectors Media is effectively used in learning linear equation systems.

The results of this study are expected to be motivation in developing other media to improve students' cognitive, affective and psychomotor abilities in learning mathematics. In addition, it can also be the basis for further research on other mathematical materials.

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