

Building Students' Analysis through the Application of GOLD (Guided, Organizing, Leaflet, Discovery) Models with Lontara Bilingual Applications based on Android

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Abstract—This research is based on the real fact in the learning process that is the low ability of students' analogy. Because of the learning process is still dominated by the role of teachers, so that teachers give less opportunity to students, especially to build analogy ability. Therefore, it is necessary to apply interesting learning models that can build students' analogy ability; one of them is the GOLD model with the application of Bilingual Lontara based on Android. In Lontara Aksara application, the researcher develops this application by applying an Indonesia Lontara script. The type of research used was quantitative research by using an experimental quantitative method. The research design used was a Quasi-Experimental Design with a Non-equivalent Control Group Design. The results of the research based on the output test of normality test indicated that the data was not normally distributed, but in the homogeneity test indicated that the data came from the data that had the same variant, so it was necessary to test the Mann-Whitney to know the average difference of the two groups. Based on the result of the Mann-Whitney test it can be known that the value of Asymp. Sign. (2-tailed) was $0.000 < 0.05$. So it can be concluded that is received and is rejected that the application of GOLD learning model with the application of Lontara Bilingual based on Android can build the students' analogy ability.

Keywords—analogy, GOLD learning model, Lontara script bilingual and android

I. INTRODUCTION

Dewi [1]; Ntim [2] explains that reasoning is one aspect of high-level thinking skills in the latest curriculum which is categorized as the basic competencies must be mastered by students. However, this is inversely proportional to the real facts that exist in the field based on the result of a survey conducted by the *global institute* which shows that, only 5% of students in Indonesia are able to work on reasoning problems in high category and ironically, 78% of students in Indonesia are able to work on questions that require memorization. Meanwhile, the study conducted by Kariadinata [3]; [4] in high school students found that the quality of students' abilities in analogy reasoning had not

achieved satisfactory results. This is in line with the results of the observations made by the researchers at SMAN 6 Bone obtained the fact that the use of the students' analogy in the process of teaching and learning in the classroom was still relatively low. This was caused that the learning process was still dominated by the role of the teacher both in the delivery of the learning material and the discussion of question practice so that the teachers gave fewer opportunities to students especially to build analogy skills.

In the teaching and learning process, the teacher still dominated the expository method by applying the material and then gave an example to the students, so that in the learning process the teacher did not attempt to build students' analogy skills. This caused most of the students did not use analogous reasoning either in the learning process or in working on questions so that it had an impact on the students' analogy reasoning abilities. These problems were caused by the students' habits in learning were always glued to the teacher. Therefore, students did not have many ideas about the problems given by the teacher.

The solution to solve the problem required the development of a model to obtain theory, which corresponds to the material. The process and the quality of learning need creativity in developing the concept of education and new learning thoroughly [5]. One learning model that is able to build students' analogy skills, namely the *GOLD* learning model which is a learning model that is able to provide opportunities and encourage students to practice their analogy reasoning skills.

One of the techniques used in supporting the success of the *GOLD* learning model is the application of Android-based *bilingual* Lontara. Utari, Degeng & Akbar [6] explained that the Android-based *bilingual* Lontara learning technique is an important investment to give students the skills, abilities, and quality of self without leaving their identity or national identity. Where the Lontara script is one of the Bugis characters that need to be developed because the development of technology certainly causes a huge change in human life in various fields. One of the most significant advances in information and communication

technology at the moment is the advancement of *mobile* technology, like *Mobile, Smartphone, Android, Tablet PC* and others [7].

Seeing the rapid development of *mobile* technologies like *Android* makes researchers interested in developing *Android*-based Lontara script learning so that Bugis people can balance technological developments.

Based on the demand of the situation as described above, it is necessary to have a supporting application for students to understand better the learning material provided. Therefore, researchers try to develop a learning system that is more interesting and easier to understand with the simulation by utilizing technological developments, especially on *smartphones* or *tablet* PCs with *Android* operating systems. This application is used as a complimentary book in the learning process at schools because most *Android* applications are used for *games, facebook, twitter, whatsapp, BBM* and so on. However, starting from these problems, researchers are motivated to develop *Android*-based applications that are feasible to use to support the learning process in schools. The use of the *android* application is ultimately expected to be a learning media that can build students' analogy skills. The use of *Android*-based learning media that has been made is not only accessible on *smartphones* but also can be run on laptops (desktop) or computers.

GOLD learning model with *Android*-based *bilingual* Lontara application makes it easier for students to master the learning material taught because students not only study at school but also students can access it whenever and wherever and are able to become partial information formed from the material and can be used as the key to facilitating students in learning.

II. RESEARCH METHODS

The type of research used was a *Quasi-Experimental Design*. Sugiyono [8] states that a *Quasi-Experimental Design* is a design that has a control group, but cannot fully function to control external variables that affect the execution of experiments. *Experimental Quasi Form The design* used is a *Non-equivalent Control Group Design*. *Non-equivalent Control Group Design* there are experimental groups and control groups that are not randomly selected. The design patterns used in this study are as follows:

TABLE I. RESEARCH DESIGN OF NON-EQUIVALENT CONTROL GROUP DESIGN

Experimental Class	O1	Race	O2
Control Class	O3	-	O4

Information:

- O1 : Initial test (*pretest*) in the experimental class
- O2 : Giving the final test (*post-test*) in the experimental class
- O3 : Initial test (*pretest*) in the control class
- O4 : Giving the final test (*post-test*) in the control class
- X : Provision of *treatment* (application of learning models) in the experimental class

The research instruments used were observation, interviews, written tests, questionnaires, and documentation. Observation guide, which is a data collection technique carried out by researchers by observing directly the

environmental conditions of the research objects that support the research activities. Interview guidelines used to determine students' attitudes toward economic learning at SMAN 6 Bone, especially class X. Written tests are tests of student learning outcomes that are done twice, namely tests before treatments and after treatment. The questionnaire is an information collection technique that allows analysis of the attitudes, beliefs, behaviors, and characteristics of several people [9]. The questionnaire used was a *Likert* scale. Meanwhile, the documentation examination aims at revealing facts or facts during the implementation of the action, because the documentation provides concrete evidence of the research conducted.

The instrument analysis tests used in this study were validity, reliability, distinguishing power and difficulty level test. Meanwhile, to test data analysis used normality, homogeneity, *Mann-Whitney U*, GPA, and gain of normality test. Indicators of analogy that were used: (1) Looking for similarities in the processes of economic tasks without any calculation; (2) Identifying the process of similarities that occur between several economic materials in the same subject; (3) Identifying the similarity of process that occur between several economic materials in different subjects, and (4) Looking for similar processes between economic material if linked to everyday life.

This research began with the preparation of the instrument that would be used to support the learning process in schools. However, before the researchers conducted field trials, the researchers first conducted an expert validation, including RPP validation, material, media, and LKS to get the instruments that were ready to be tested.

III. RESULTS AND DISCUSSION

The results of this study, in the form of *GOLD (Guided, Organizing, Leaflet, Discovery)* learning models with *Android*-based *Bilingual* Lontara Script application. The *GOLD* learning model is the result of combining the steps of the *Guided Discovery* learning model with *Organizing* and *Leaflet* learning media. The *GOLD* learning model is one of the learning models used to develop students' participation skills in the learning process. *GOLD* learning model with *Android*-based *bilingual* Lontara application can create a cognitive accommodation process that starts from students' knowledge into a new knowledge that can be applied in everyday life so that students can become independent in utilizing information and communication technology. The *GOLD* learning model stages are:

- a. *Guided*, guiding students by asking questions related to the learning material to build their analogy abilities;
- b. *Organizing*, divide students' learning groups heterogeneously, facilitate students to be able to build their analogy abilities;
- c. *Leaflets*, namely directing students to compose sentences in the form of *leaflet puzzle games* that have been provided to form a *leaflet*. Sentences that have been compiled contain sentences that contain statements with questions that direct students to be able to build their analogy abilities, and
- d. *Discover*, asking one group to present their findings in front of the class; then the teacher directs the other groups to ask questions to the group who are presenting their findings.

The analysis phase in this study, first the researcher conducted a validation process by several experts before the researcher carried out the data collection in the field. In the study examined the validation process was carried out by media experts, syllabus experts, RPP experts, material experts and LKS experts that used expert validation sheets.

Validation results in the form of suggestions, comments, and input that can be used as a basis for analyzing and revising the developed media and as a product testing on students.

Validation results from 4 validators show that the average results of each validation sheet are in the valid category. Whereas, the recapitulation of media validation analysis shows that the average validation results of validator 1, namely 4.07 (very valid) and validator 2 are 4.09 (very valid). The results of the recapitulation of RPP validation analysis shows an average score of 3.62 (very valid) by the validator team 1 and the validator 2 team shows an average score of 3.56 (very valid), material validation shows an average score of 3.66 (very valid) by Validator 1 team and validator 2 team shows an average score of 3.55 (very valid), LKS validation shows an average score of 3.69 (very valid) by the validator team 1 and the validator 2 team shows an average score of 3.5 (very valid) The following is the average result of none of the validators.

TABLE II. RESULTS OF VALIDATION ANALYSIS RECAPITULATION

Instrument type	Average V1	Category	Average V2	Category
Media	4.07	Very valid	4.09	very valid
RPP	3.62	Very valid	3.56	very valid
Material	3.66	Very valid	3.55	very valid
LKS	3.69	Very valid	3.5	very valid

Validation results from 4 validators, namely 2 validators who work as lecturers and 2 validators who work as high school teachers. The results of the validation analysis recapitulation can show that the average results of each validation sheet are in the valid category. The results of the recapitalization of the 4 validators can be said that, GOLD learning model with the application of Bilingual Lontara script based on Android is included in the category of very valid and practical to be used in the activities of the teaching and learning process as well as being an alternative in helping student learning outside of the learning process as students can access the learnings wherever and whenever.

A. Normality test

Asfar & Aspikal [10] states that the normality test can be used to select statistical tests that will be used in research. Therefore, researchers used the normality test to see whether the data is normally distributed or not before testing the hypothesis. The calculation of the normality test in this study using the Shapiro-Wilk test with a significant level of 0.05. The result of data normality test in this study can be seen in table 3.

TABLE III. TEST DATA NORMALITY

	Value	Shapiro-Wilk		
		Statistic	df	Sig.
Control and experiment	Pre Test control	.925	31	.033
	Post Test control	.834	31	.000
	Pre Test experiment	.951	34	.132
	Post Test experiment	.960	34	.249

Based on the SPSS output from the above normality test can be concluded that the sig value of the control class at the time of the initial test (*pre-test*) was 0.033 < 0.05 means that the data from the *pre-test* value includes abnormal data and the sig value in the final test (*post-test*) was 0.000 < 0.05 means that the data is in the category of abnormal data. Whereas the sig value of the experimental class based on the test value of the test (*pretest*) was 0.132 > 0.05 which means that the initial test value is in the normal data category and the final test value (*posttest*) was 0.249 > 0.05 which means that the data comes from the normal data category. Based on the rules of decision of the normality test, if the sig value > 0.05 means that the data is normal and if the sig is < 0.05 means that the data is not normal. So, the value of the control class comes from data which is not normally distributed while the data from the experimental class comes from data which is normally distributed.

B. Homogeneity Test

The homogeneity test calculation used the Levene Statistic test with a significant level of 0.05. the result of the homogeneity test can be seen in table 4 as follows:

TABLE IV. TEST DATA HOMOGENEITY

Test of Homogeneity of Variances			
Control and Experiment			
Levene Statistic	df1	df2	Sig.
3.983	1	63	.050

(Adapted: From data treated SPSS research)

Based on the SPSS output from the homogeneity test. The result of the control class and experimental class *pretest* shows the significance value amounts 0.050 \geq 0.05 that means that the data has the same variant.

C. Mann-Whitney U Test

This study used the *Mann-Whitney U Test*, as the normality test showed abnormal data, but the homogeneity test data showed a homogeneous (having the same variant). Therefore, researchers used a non-parametric test, namely the *Mann-Whitney U Test* which is a testing technique used to test the mean differences between the two groups, namely the experimental class and the control class. The calculation of the *Mann-Whitney U Test* with a significant level of 0.05 can be seen in table 5.

TABLE V. MANN-WHITNEY U TEST

Test Statistics	
	Control dan Experiment
Mann-Whitney U	214.500
Wilcoxon W	710.500
Z	-4.129
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: Kelompok

Based on the test output statistics in the Mann-Whitney test above can be concluded that Asymp. Sign, (2-tailed) is $0.000 < 0.05$ that means, H_1 is accepted and H_0 is rejected as the basis of the Mann-Whitney test decision making. Thus, the application of the *GOLD* learning model (*Guided, Organizing, Leaflet, Discovery*) with the application of Android-based *bilingual* Lontara is able to build students' analogy skills.

D. Analogy Ability

In the learning process of the control class (X IPS 1) used a direct learning model. Whereas in the experimental class (X IPS 4) used the *GOLD* learning model with the application of Android-based *bilingual* Lontara. The ability of students' analogy in the learning process can be described in the following table 6.

TABLE VI. PERCENTAGE OF STUDENT ANALOGY ABILITY SCORES

Category	The ability of student analogy				
	Very low	Low	Enough	Good	Very good
Pre test control	1	7	20	2	1
Post test control	-	23	7	1	-
Pre test experiment	-	22	12	-	-
Post test experiment	-	4	30	-	-

Based on the result score percentage of the students' analogy ability above, it can be concluded that the value of the ability of analogy students about *post-test* on the control class is the majority at a low category. It is seen that there are 23 students who are in the low category. While in the *posttest* value in the experimental class is the majority in the sufficient category. It shows that as many as 30 students who are in the category analogy are sufficient. This also indicates that the *GOLD* learning model with the application of Android-based *bilingual* letters is able to build the students' analogy skills.

IV. CONCLUSION

Based on the result of the research and exposure above, it can be concluded that the *GOLD* learning model with Android-based *bilingual* Lontara application can be used as an alternative in the learning process in schools either in

improving students' analogy skills or in developing innovative and interactive learning media in balancing the challenges of globalization. This can be seen based on the increase of the students' analogy ability after the application of the learning model is equal to 46.81, while in the previous test result is equal to 37.91. It shows that the application of the *GOLD* learning model is able to build students' analogy skills. While the result of the recapitulation of the validation sheet used shows very valid result, based on the responses of the four validators. This is used to support the success of the *GOLD* learning model with the application of Android-based *bilingual* letters.

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