ISSN No:-2456-2165

Development of Learning Instructional Based On 3R (Reduce, Reuse, & Recycle) to Improve Learning's Outcome on Fourth Grade of Elementary School on Environmental Preservation's Material

Priliya Dwi Nurisdiana[1] Z.A. Imam Supardi[2] Sifak Indana[3]
Graduate Program of Elementary Education Department,
Universitas Negeri Surabaya

Abstract:- This study aims to (1) produce learning instructional based on 3R that is valid, practical, and effective to improve learning's outcome of elementary school fourth grade students, (2) describe the validity, practicality, and effectiveness of learning instructional based on 3R to improve student learning's outcome on Themes 4 Sub Theme 1 Learning 1.

This research is a study of the development of learning instructional using the 4-D development model. Learning instructional based on 3R are validated by experts in their fields. The validation results state that learning instructional can be applied. The validated learning instructional was tested on fourth grade students at SDN Wonokusumo I/40 Surabaya.

The results of limited trials show that (1) The learning instructional developed get very valid categories, (2) Practical learning instructional based on the feasibility of lesson plans with very good categories and active students in learning activities, (3) Learning instructional are declared effective based on domain learning's outcome knowledge who get completeness of 88.2%, in the attitude domain get results 90% of students have very good attitude, and completeness of 85.3% in the skill domain, and get excellent student responses.

Thus it can be concluded that learning instructional based on 3R are valid, practical, and effective to be used to improve learning's outcome of 4th grade elementary school students on environmental preservation's material.

Keywords:- *Learning Instructional, 3R (Reduce, Reuse, and Recycle), Learning's Outcome.*

I. INTRODUCTION

The problem of waste is one of the problems that until now has not been resolved. The amount of garbage is increasing every day. Most of the waste is inorganic waste that takes a long time to decompose. Inorganic waste is dominated by plastic waste originating from food or beverage packaging of a product and plastic bag. Plastic waste can pollute the environment if it is not treated properly. Plastics contain toxic additives, coloring agents, and are also not environmentally friendly. Organic chemicals such as dissolved plastics can cause death in fish and other aquatic organisms (Darmono, 2006).

At present there is a vigorous implementation of plastic waste management by implementing environmentally friendly life. These activities can be carried out through the use of waste into goods that have use value as an effort to preserve the environment 3R, namely Reduce, Reuse, and Recycle. 3R activities up to now are still the best way to manage and handle waste with a variety of problems. Waste management with the 3R system can be implemented by everyone in their daily activities.

Based on the results of observations, the results showed that environmental preservation activities for fourth grade students of SDN Wonokusumo I/40 Surabaya had gone quite well. This is because students are actively involved in maintaining cleanliness and environmental sustainability. Scheduled students have already carried out the "Ngosek Bersama" activity, community service, and activities that support zero waste. In addition, students also have a responsibility to maintain class cleanliness and care for plants in the classroom environment. But another fact was found, namely that there were still many trash piles in the trash and not infrequently there were still many students who did not care about the environment. The increasing amount of waste is a problem that still cannot be found a solution.

Meanwhile, based on the results of interviews with fourth grade teachers in SDN Wonokusumo I/40 Surabaya, data on student learning's outcome in science subjects were obtained in environmental conservation material, which amounted to 71,5. This shows that the learning's outcome

of class IV students are still considered low because they obtain grades under the minimum completion criteria that have been set by the school, which is 75 in science subjects.

Based on the problems found in fourth grade students of SDN Wonokusumo I/40 Surabaya, 3R activities are suitable to be inserted in learning activities. This is because 3R-based learning will be able to improve student learning's outcome on environmental preservation material. Therefore the researcher wants to conduct a research "Development of Learning Instruction Based on 3R (Reduce, Reuse, & Recycle) to Improve Learning's Outcome on Fourth Grade of Elementary School on Environmental Preservation's Material".

II. METHOD

This research is a development research using a 4-D model without the dissimination stage. This study developed learning instructional based on 3R (Reduce, Reuse, and Recycle) to improve the learning's outcome of 4th grade elementary school students on environmental preservation materials.

The study was conducted at SDN Wonokusumo I/40 Surabaya in 4th A 2018/2019 school year, which amounted to 34 students, consisting of 15 male students and 19 female students.

Trial of learning instructional developed using One Group Pretest-Posttest Design. The trial design in this study using one group will be given a pretest and posttest after being treated. The research design by Fraenkel, Wallen, and Hyun (2012) is described as follows:

Pretest	Treatment	Posttest
O_1	X	O_2

Fig 1

Data analysis techniques are carried out to process data obtained from the results of trials so that the learning instructional used in learning activities can be known validity, practicality, and effectiveness. Data from the research results analyzed include the validity of learning instructional, learning's outcome tests, student response questionnaires, readability of teaching materials, observation sheet of lesson plan implementation, student activity sheets, and obstacles that arise during learning activities

Data from the research results to be analyzed are as follows:

A. Analysis of Learning instructional Validation Results

Validation of learning instructional consists of Syllabus, Lesson Plan, Teaching Materials, Student Activity Sheets, and Learning's Outcome Test. The results of the validation of the learning instructional were then analyzed in quantitative descriptive, by calculating the average score of the assessment from the validator. The average score obtained is converted using the following conditions:

Validation Score Interval	Category	Information
$3{,}6 \leq SV < 4$	Very Valid	Can be used without revision
$2{,}6 \leq SV < 3{,}5$	Valid	Can be used with a slight revision
$1{,}6 \leq SV < 2{,}5$	Less Valid	Can be used with many revisions
$0{,}6 \leq SV < 1{,}5$	Invalid	Cannot be used, it still requires consultation

Table 1:- Criteria for categorizing the validity of learning instructional
(Ratumanan & Laurens, 2011)

B. Readability Analysis of Teaching Materials

The reading of teaching materials is done by filling out the questionnaire and to measure the readability of teaching materials the following formula is used.

$$P = \frac{\sum K}{\sum N} \times 100\%$$

Information:

P = Readability percentage
$\sum$ K = Number of students who choose yes or no answers
$\sum$N = Number of students who fill in the questionnaire

C. Analysis of Lesson Plan

Data on the implementation of the lesson plan was analyzed descriptively quantitatively, namely by calculating the score of the observations and then looking for percentages related to the implementation of the learning stages in the lesson plan carried out by the teacher during the learning activities. Calculation of the percentage of implementation of lesson plan is calculated using the following formula:

$$P = \frac{\text{the number of settlement lesson plan that were successfully implemented}}{\text{the total stages of the lesson plan}} \times 100\%$$

Information:

P = Percentage of Implementation from Lesson Plan

The criteria related to the percentage of implementation of the lesson plan use the provisions in the table below.

Interval	Category
0% ≤ P ≤ 25%	Not implemented
25% ≤ P ≤ 50%	Poorly implemented
50% ≤ P ≤ 75%	Well done
75% ≤ P ≤ 100%	Very well done

Table 2:- Criteria for Percentage of Implementation of Lesson Plan
(Riduwan, 2012)

D. Analysis of Student Activities

Student activity data is taken from student activities seen during the learning activities. The percentage of student activity is calculated using the following formula.

$$P = \frac{TSe}{N} \times 100\%$$

Information:

P = Percentage of Student Activities
Tse = Number of activities shown by students
N = Number of all activities
(Akbar, 2012)

E. Analysis of Learning's Outcome Tests

In determining the improvement of student learning's outcome, used Normalized Gain student learning's outcome. The increase or gain is calculated using the following formula.

$$g = \frac{(S_{post}) - (S_{pre})}{Skor\ max - (S_{pre})}$$

Information:

g (gain) = Increased Learning's outcome
S_{pre} = Pretest score (initial learning result)
S_{post} = Posttest score (final learning result)
(Hake, 1999)

The categories related to gain scores refer to the following table.

n-gain	Category
(g) > 0,7	High
0,7 ≥ (g) ≤ 0,3	Medium
(g) < 0,3	Low

Table 3:- N-gain category

III. RESULTS AND DISCUSSION

The validity of the developed learning instructional is obtained from the validity of the validator. With the following description, the syllabus has a very valid category with a percentage of agreement of 91.8%, lesson plan has a very valid category with a percentage of agreement of 95.9%, teaching materials that have a very valid category with a percentage of agreement of 89.6%, student activity sheets has a very valid category with a percentage of agreement of 95.9%. Meanwhile knowledge learning's outcome test developed has a very valid category with a percentage of agreement on aspects of content validation at 98.1%, while 96.2% on aspects of language and question writing. Attitude domain learning test results get a very valid category with a percentage of agreement of 91.4% and skill domain learning's outcome tests get a valid category with a percentage of agreement of 89.3%.

The practicality of learning instructional is seen based on the implementation of lesson plan in learning activities. The implementation of the learning instructional was observed by two observers in 3 meetings. All stages of activities listed in the lesson plan were carried out in the trial with percentage of agreement amounting to 92.9% with a very good category. The activities of students get a very good category with the percentage of student activities amounting to 86.3%. While the readability of teaching materials generally gets a positive response from students of 93.25%.

Meanwhile, to measure the effectiveness of learning instructional, learning test results are used. Learning's outcome tests are given to students before learning activities in the form of pretest questions and after learning activities in the form of posttest questions. The results obtained from the pretest and posttest are presented in table 4 below.

ISSN No:-2456-2165

Student's Code	*Pretest*		*Posttest*		N-*gain*	K.
	Value	Ket.	Value	Ket.		
S1	80	T	100	T	1.0	High
S2	80	T	100	T	1.0	High
S3	67	TT	93	T	0.8	High
S4	40	TT	93	T	0.9	High
S5	47	TT	100	T	1.0	High
S6	33	TT	93	T	0.9	High
S7	40	TT	80	TT	0.7	High
S8	47	TT	80	T	0.6	Medium
S9	40	TT	87	T	0.8	High
S10	27	TT	67	TT	0.5	Medium
S11	67	TT	100	T	1.0	High
S12	53	TT	87	T	0.7	High
S13	60	TT	93	T	0.8	High
S14	60	TT	93	T	0.8	High
S15	27	TT	93	T	0.9	High
S16	80	T	100	T	1.0	High
S17	60	TT	93	T	0.8	High
S18	33	TT	80	T	0.7	High
S19	80	T	93	T	0.7	High
S20	80	T	100	T	1.0	High
S21	33	TT	93	T	0.9	High
S22	47	TT	93	T	0.9	High
S23	73	TT	100	T	1.0	High
S24	53	TT	100	T	1.0	High
S25	27	TT	67	TT	0.5	Medium
S26	67	TT	100	T	1.0	High
S27	33	TT	73	TT	0.6	Medium
S28	67	TT	87	T	0.6	Medium
S29	47	TT	80	T	0.6	Medium
S30	80	T	93	T	0.7	High
S31	27	TT	93	T	0.9	High
S32	33	TT	93	T	0.9	High
S33	33	TT	87	T	0.8	High
S34	33	TT	80	T	0.7	High
The number of students who did not complete		**28**	**The number of students who did not complete**		**4**	
The number of students who complete		**6**	**The number of students who complete**		**30**	
Percentage of completeness (%)		**17,6%**	**Percentage of completeness (%)**		**88,2%**	

Table 4:- Result of Pretest and Posttest

Information:

T = Complete
TT = Incomplete
Ket. = Information
K = Category

The minimum completion criteria set at 4th SDN Wonokusumo I/40 Surabaya in 4th grade is 75. In table 4 shows that the percentage of mastery learning at pretest is 17.6%, which means that most students have not reached the specified minimum completion criteria. Meanwhile after the implementation of learning activities by applying learning instructional based on 3R (Reduce, Reuse, and Recycle), there was an increase in the percentage of completeness, 88.2% of students who achieved minimum completion criteria were seen from the posttest results.

Learning's outcome in the attitude domain are given to students in the form of filling in the self-assessment sheet by each student. The acquisition of student learning's outcome in the attitude domain is divided into two, namely spiritual attitudes and social attitudes. In the spiritual attitude, results show that 90% of students have very good attitude. Whereas in the social aspect, it was found that 85% of students had good attitude, so it could be concluded that the majority of students had attitude categories both on spiritual attitudes and social attitudes.

ISSN No:-2456-2165

Learning's outcome in the skill domain are obtained from the assessment of posters that have been made by students in groups during learning activities. The results obtained from are presented in the following table.

Student's Code	Rated Aspect			Score	Value	K	Ket.
	Poster Contents	Poster Clarity	Complete of Poster Information				
S1	4,0	4,0	3,0	11,0	91,7	SB	T
S2	2,0	3,0	3,0	8,0	66,7	C	TT
S3	2,0	3,0	3,0	8,0	66,7	C	TT
S4	4,0	3,0	4,0	11,0	91,7	SB	T
S5	4,0	3,0	4,0	11,0	91,7	SB	T
S6	4,0	4,0	3,0	11,0	91,7	SB	T
S7	4,0	3,0	3,0	10,0	83,3	B	T
S8	2,0	3,0	3,0	8,0	66,7	C	TT
S9	4,0	3,0	3,0	10,0	83,3	B	T
S10	2,0	3,0	3,0	8,0	66,7	C	TT
S11	4,0	4,0	3,0	11,0	91,7	SB	T
S12	4,0	4,0	3,0	11,0	91,7	SB	T
S13	4,0	3,0	4,0	11,0	91,7	SB	T
S14	4,0	4,0	3,0	11,0	91,7	SB	T
S15	4,0	3,0	4,0	11,0	91,7	SB	T
S16	4,0	4,0	3,0	11,0	91,7	SB	T
S17	4,0	4,0	3,0	11,0	91,7	SB	T
S18	2,0	3,0	3,0	8,0	66,7	C	TT
S19	4,0	3,0	4,0	11,0	91,7	SB	T
S20	4,0	3,0	3,0	10,0	83,3	B	T
S21	4,0	4,0	3,0	11,0	91,7	SB	T
S22	4,0	4,0	3,0	11,0	91,7	SB	T
S23	4,0	3,0	4,0	11,0	91,7	SB	T
S24	4,0	3,0	4,0	11,0	91,7	SB	T
S25	4,0	3,0	3,0	10,0	83,3	B	T
S26	4,0	3,0	3,0	10,0	83,3	B	T
S27	4,0	3,0	4,0	11,0	91,7	SB	T
S28	4,0	3,0	3,0	10,0	83,3	B	T
S29	4,0	3,0	4,0	11,0	91,7	SB	T
S30	4,0	3,0	3,0	10,0	83,3	B	T
S31	4,0	4,0	3,0	11,0	91,7	SB	T
S32	4,0	3,0	3,0	10,0	83,3	B	T
S33	4,0	3,0	3,0	10,0	83,3	B	T
S34	4,0	3,0	3,0	10,0	83,3	B	T
The number of students who did not complete					**5**		
The number of students who complete					**29**		
Percentage of completeness					**85,3%**		

Table 5:- Learning's outcome of Skill Domain

Information:

K	=	Ket	=
Category		Information	
SB	= Very	T	= Complete
Good		TT	=
B	= Good	Incomplete	
C	= Enough		

Based on the data in table 5, the results show that 85.3% of students have achieved minimum completion criteria in the skill domains learning's outcome. This shows that most students can participate in learning activities well and can achieve learning goals.

The response of the students in question is students towards learning activities by applying learning instructional based on 3R. Student responses are measured using a questionnaire given when learning activities end. The results of student responses by applying the 3R-based learning instructional in 4th grade SDN Wonokusumo I/40 Surabaya generally received a very good response with the percentage of student responses of 94%. This shows that overall learning activities by implementing learning

instructional based on 3R can attract students motivation in learning activities.

IV. CONCLUSION

The validity of the learning instructional developed is seen from the results of the validity carried out by the validator. The learning instructional developed was declared valid and feasible to use after getting advice and input from the validator. The practicality of the learning instructional developed can be seen from the implementation of the lesson plan, as a whole the learning activities went very well. The most dominant student activity in 3R-based learning activities is working with group members. While the obstacles found when research can be overcome through discussion with observers.

The practicality of learning instructional based on 3R (Reduce, Reuse, and Recycle) in the study was declared practical based on the feasibility of lesson plans, student activities, student responses, and readability of teaching materials. The implementation of learning received a very good category with a percentage of agreement of 92.9%. The activities of students get a very good category with the percentage of student activities amounting to 86.3%. While the readability of teaching materials generally gets a positive response from students of 93.25%.

The effectiveness of the learning instructional developed can be seen from the completeness of the learning's outcome of student learning's outcome tests in the knowledge realm of obtaining completeness of 88.2%, the attitude domain obtaining 90% of students having very good attitude, and 85.3% of students achieving minimum completion criteria in the results learning skill realm. Meanwhile the responses of students get a very good category with the percentage of students' responses amounting to 94%.

Based on the findings of the research results it can be concluded that the learning instructional based on 3R (Reduce, Reuse, and Recycle) that are developed are feasible to improve student learning's outcome.

SUGGESTION

Based on the results of the research that has been carried out, there are several suggestions as follows.

- Need evaluation in managing time allocation in learning activities.
- The development of learning instructional based on 3R (Reduce, Reuse, and Recycle) needs to be developed and implemented consistently.

REFERENCES

[1]. Akbar, Sa'dun. 2013. *Instrumen Perangkat Pembelajaran*. Bandung: Rosdakarya.
[2]. Darmono. 2006. *Lingkungan Hidup dan Pencemaran : Hubungannya dengan Toksikologi Senyawa Logam*. Jakarta: UI – Press.
[3]. Fraenkel, J.R., Wallen, N. E., Hyun, H. (2012). *How to Design and Evaluate Research in Education 8th Edition*. New York: Mc Graw Hill.
[4]. Hake, Richard R. (1999). American Educational Research Association's Division D, Measurement and Research Methodology: Analyzing Change/Gain Scores. http://www.psysicsindiana.edu/sdi/Analyzing-Change-Gain.pdf.
[5]. Mahanal, Susriyati, dkk. 2009. *Pendidikan Lingkungan Hidup Untuk Sekolah Dasar Kelas V Jilid 5*. Malang: Pusat Penelitian Lingkungan Hidup Lembaga Penelitian Universitas Negeri Malang.
[6]. Ratumanan, T. G., & Laurens, T. (2011). *Penilaian Hasil Belajar pada Tingkat Satuan Pendidikan Edisi 2*. Surabaya: Unesa University Press.
[7]. Riduwan. (2012). *Skala Pengukuran Variabel-Variabel Penelitian*. Bandung: Alfabeta.
[8]. Utaya, Sugeng, dkk. 2009. *Pendidikan Lingkungan Hidup Untuk Sekolah Dasar Kelas VI Jilid 6*. Malang: Pusat Penelitian Lingkungan Hidup Lembaga Penelitian Universitas Negeri Malang.
[9]. Yurimoto, Katsumi. 2017. *Oh, ternyata Kita Bisa Melakukan Kegiatan 3R (Reduce, Reuse, dan Recycle) untuk Mengurangi Sampah!*. Jakarta: PT Gramedia Pustaka Utama.