Developing Guided Inquiry-Based Science Student Worksheet to Improve Student's Science Process Skills and Learning Outcomes on Thematic Learning of Maintaining the Health of Human Respiratory Organs in Elementary Schools

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ABSTRACT

In Science learning in elementary school, the guided inquiry has commonly been implemented to train students to discover Science phenomena. This research aimed to analyze the process, outcomes, and effectiveness of implementing a Science student worksheet based on guided inquiry. The design employed was descriptive-quantitative. The research involved 79 fifth grade students of SDN Bangsalsari 02 in Jember. The data analyses, which was carried out in a descriptive qualitative manner, was in the form of an interview with the students, the questionnaire, and the students' learning outcomes. The test involved a large group class containing 39 students and a small gorup class containing 40 students. There were prêt-test and post-test given to both the small gorup and the big group. The experimental study used 12 children in the small gorup and 39 children in the big group. The research instrument consisted of a questionnaire, interview, observation, pre-test and post-test. The analysis was done by testing validity, practicality, effectiveness, normality, homogeneity, and t-test. The result of the research showed that the Guided-Inquiry-based Science Student worksheet that had been developed was valid, practical, and effective. The level of validity based on the validation results is 79.5%, the level of practicality based on implementation validation is 81.0%, the effectiveness level for improving science process skills is 94.82%, and the effectiveness level for improving learning outcomes is 95%. It can improve the science process skills and learning outcomes on the thematic learning of maintaining the health of human respiratory organs on the students of SDN Bangsalsari 02 Jember, Indonesia.

INTRODUCTION

Science is one of the subject matters taught at school ranging from elementary school to high school level. Science is a need that provides a way of thinking as a complete knowledge structure. Mainly, Science uses an empirical approach to find out natural explanations about observable phenomena of the universe. Science is divided into some disciplines. The essence of each lies in the method and the question about the results continuously.

Science process skill is a skill or ability the students learn when they carry out scientific discovery, which includes observing, classifying, interpreting, predicting, communicating, asking questions, hypothesizing, planning experiments, using tools or materials and applying concepts. Science process skills can be divided into two groups: basic process skill, which is fundamental to learning integrated process skill. Basic process skills include observing, inferring, measuring, communicating, classifying, and predicting. Finally, integrated process skills include controlling variables, providing an operational definition, formulating hypotheses, interpreting data, experimenting, and formulating models.

Table 1. Science Process Skills Indicators.

Indicator	Characteristics
Observing	- Using as many senses as possible (sight, smell, hearing, taste, touch) when observing. - Collect or use relevant and adequate facts.
Classifying	- Recording each observation separately - Looking for differences, similarities - Contrasting features - Comparing - Connecting observation results
Interpreting	- Connecting observation results - Finding patterns in a series of observation - Drawing conclusion
Predicting	- Using patterns of observation - Expresses what might happen in an unobserved state
Questioning	- Asking what, how and why - Asking to ask for an explanation - Asking questions with a hypothetical background
Formulating hypothesis	- Knowing that there is more than one possible explanation of an event - Realizing that an explanation needs to be verified by obtaining more evidence or using problem solving methods
Experimenting	- Determining the tools/materials/sources used - Determining the variables/determining factors - Determining what is measured, observed, recorded - Determining what will be carried out in the form of work steps
Using tools/ media	- Using tools/materials - Knowing the reasons why use tools/materials

Indicator	Characteristics
Applying concept	- Knowing how to use tools/materials - Using concepts that have been learned in new situations - Using concepts in new experiences to explain what is going on
Communicating result	- Describing empirical data from experiments or observations with graphs or diagram tables - Compiling and submit reports systematically - Explaining the results of experiments or research - Reading tables/graphs or diagrams

One learning approach requiring students' active participation in the learning process is the guided inquiry approach.. The approach is a series of learning activities that involve maximally all students' abilities to search and investigate systematically, critically, logically, and analytically so that they can formulate their findings confidently. Inquiry learning is appropriate to be implemented to the fifth-grade students of SDN Bangsalsari 02 Jember. This is in line with the previous study that Student worksheet product based on guided inquiry that has been developed was effective in building students' critical thinking in five elementary schools in Raden Intan at Bumi Nabung.

Table 2. The Stages of Guided Inquiry Learning

Phase	Teachers' Attitude
Providing questions or problems	The teacher guides the students to identify problems and then written it down on the blackboard. The teacher divides the students into groups.
Formulating hypothesis	The teacher provides opportunities for the students to brainstorm in formulating hypotheses. The teacher guides the students in determining hypotheses that are relevant to the problem and prioritizes the hypotheses of investigation.
Designing experiment	The teacher provides opportunities for students to determine the steps which are in line with the hypothesis that will be investigated. The teacher guides the students to sequence the experimental steps.
Conducting experiment to obtain information	The teacher guides the students to get information through experiments.
Collecting and Analyzing Data	The teacher gives an opportunity for each group to present the analysis results of the collected data.
Drawing conclusion	The teacher guides the students in drawing conclusion.

The teacher must compose the learning instruments which are in line with the student's abilities or potentials. A good learning instrument is one that, when applied, could make the students active in the learning process and understand the material taught by the teacher [7]. One of the learning instruments needed is a student worksheet. Based on the needs analysis questionnaire, it was known that 66% of students stated that the worksheet used already was not attractive. In comparison, 81% of students mentioned that the student worksheet was challenging to finish. As many as 68% of students stated that the student worksheet used did not contain activity steps to guide them in solving problems. As many as 92% of students wanted a

worksheet that can guide and ease them in solving problems. From the explanation above, the problems studied in this study were formulated as follows; **First**, how is the validity level of the development of guided inquiry-based science worksheets with the theme of maintaining the health of human respiratory organs in elementary school to improve Students' Science Process Skills and Learning Outcomes? **Second**, how is the practicality level of developing a guided inquiry-based science worksheet with the theme of maintaining the health of human respiratory organs in elementary school to improve Students' Science Process Skills and Learning Outcomes? **Third**, how effective is developing a guided inquiry-based science worksheet with the theme of maintaining the health of human respiratory organs in elementary school to improve Students' Science Process Skills and Learning Outcomes?

Based on the background and problem described above, the aims and objectives of this research were as follows; **First**, to produce a guided inquiry-based science worksheet with the theme of maintaining the health of human respiratory organs in elementary school to improve valid Students' Science Process Skills and Learning Outcomes. **Second**, to produce a guided inquiry-based science worksheet with the theme of maintaining the health of human respiratory organs in elementary school to improve science process skills and practical students' learning outcomes. **Third**, to produce a guided inquiry-based science worksheet with the theme of maintaining the health of human respiratory organs in elementary school to improve science process skills and effective student learning outcomes.

METHODOLOGY

The research and Development method is a research activity employed to produce specific products and test the effectiveness of the product. Data were analyzed by consisting of quantitative statistical data analysis and qualitative descriptive. This research was conducted at SDN Bangsalsari 02 Jember in the odd semester of the 2020-2021 academic year. The research subjects were the 5th-grade students; they were selected using a sampling technique that was purposive sampling. Class 5-A was a large group with 39 students, of which 12 students were taken as samples. Meanwhile, class 5-B was a small gorup with a total number of 40 students. The total number of 5th graders at SDN Bangsalsari 02 was 79 students.

Table 3. Student Data of Class V at SDN Bangsalsari 02 Jember

Class	Gender		Total
	M	F	
Students of class 5-A (Big group)	17	22	39
Students of Class 5-B (Small gorup)	22	18	40

The instruments used in the research were validation sheets, tests (pre-test and post-test), questionnaires, observations and interviews. The test was intended for the pre-test and post-test in the form of an essay with 20 questions. The validation sheet was used to refine the results, includes five categories, such as very valid (score 5), valid (score 4), valid enough (score 3), less valid (score 2), and invalid (score 1). The questionnaire sheet contained statements with closed answers using the Likert scale with five categories of exciting (score 5), attractive (score 4), interesting enough (score 3), less attractive (score 2), and not attractive (score 1). Finally, the interview was equipped with an open-ended questionnaire. The study began by determining two classes of 5th-grade students, one class as a large group of 39 students and the other class as a

small gorup of 40 students. After the group class was formed, the next step was developing a pre-test and post-test.

This research encouraged students to be able to improve their science process skill and their learning outcomes. The tasks of science process skills given to students such as :
Based on the following picture, please name the human respiratory organs!

Answer ;
a : nose
b : pharynx
c: larynx
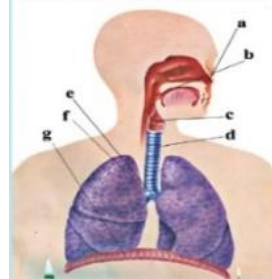d: trachea
e: bronchus
f : lungs
g : diaphragm

Figure 1. The human respiratory organs.

By using these guided inquiry-based science worksheets, the teacher acted as a mentor and motivator who guided the students to find and made their own conclusion of the knowledge they learnt; thus, they were open to the opportunities of learning actively as the final form of the knowledge itself were not provided.

Quantitative data analysis was used measure the validity level of worksheet through the values obtained from the validator after the validation activities were carried out. The questionnaire given was in the Likert form of scale one to five in which it consisted of score one to five, and the assessment was done in checklist ($\sqrt{}$).

RESULT AND DISCUSSION

Testing the effect of guided inquiry on increasing science process skills and student learning achievement and the assumptions that must be met before testing, must be tested first using SPSS. Based on the pre-test data for both classes, the Sig value was obtained. = 0.061. From this it can be seen that according to the Leavene Test homogeneity test, the value of Sig = 0.061> 0.05, so it can be concluded that the pre-test data of the two classes is homogeneous.

Table 4. Test of Homogeneity Pre-Test Data.

		Levene Statistic	df1	df2	Sig.
Pre tes	Based on Mean	3.625	1	77	.061
	Based on Median	3.303	1	77	.073
	Based on Median and with adjusted df	3.303	1	74.621	.073
	Based on trimmed mean	3.690	1	77	.058

Then, a different test will be carried out on the two classes. The value taken is Sig. (2-tailed) on the equal variances assumed line because the homogeneity assumption is met, so the value of Sig. (2-tailed) = 0.280 > 0.05, it can be concluded that the two classes are equivalent.

Table 5. Test of Independent T-Test Data Pre-Test.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Pre test	Equal variances assumed	3.625	.061	1.087	77	.280	1.16090	1.06777	-.96530	3.28709
	Equal variances not assumed			1.084	71.563	.282	1.16090	1.07121	-.97473	3.29653

Based on all the results of the SPSS test, the results can be seen the Sig value was obtained. = 0.207. From this it can be seen that according to the Leavene Test homogeneity test, the value of Sig = 0.207> 0.05, so it can be concluded that the post-test data is homogeneous.

Table 6. Test of Homogeneity Post-Test Data

		Levene Statistic	df1	df2	Sig.
Post tes	Based on Mean	1.620	1	77	.207
	Based on Median	1.058	1	77	.307
	Based on Median and with adjusted df	1.058	1	74.570	.307
	Based on trimmed mean	1.794	1	77	.184

The last step in testing the effect with independent t-test. Hypothesis testing: (a) H0: There is no difference in the average, and (b) H1: There is a difference in the average.

Table 7. Independent T-test of Post-Test Data.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Post test	Equal variances assumed	1.620	.207	-7.418	77	.000	-6.22821	.83964	-7.90015	-4.55626

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Post test	Equal variances assumed	1.620	.207	-7.418	77	.000	-6.22821	.83964	-7.90015	-4.55626
	Equal variances not assumed			-7.403	74.570	.000	-6.22821	.84132	-7.90435	-4.55206

In details, the developing stages of guided inquiry-based Student Worksheets whose theme was maintaining the health of human respiratory organs to improve Students' Science Process Skills and Learning Outcomes and testing the effectiveness of the processes and results of the worksheet product which was in line with Borg and Gall research and development procedures; the results are shown as follows :

1. Information Collection

This stage was done by observing both of teacher's and students' activities online (through Zoom application, Whatsapp group) and offline (face to face by creating small gorups at students' houses), conducting interviews and giving questionnaires to the students to identify the problems they faced during learning, and collected the sources/literature review. It was intended to collect the preliminary data used as the development basis.

2. Planning

At this stage, the researcher selected "maintaining the health of human respiratory organs" as the lesson theme taken from various sources that were previously adjusted to the Curriculum 2013 syllabus of elementary school of grade V; the students' competencies were classified into 2, covering the basic competencies and indicators. At this stage, the validation test was done by experts and small gorup trials to validate the product. The test was administered to validate worksheet by the expert subjects, the lecturer of material expert, media experts, and linguists, as well as the field practitioners who did the validation also gave suggestions. Several students with high, medium, and low abilities were chosen to be given the small gorup trials. The results of the validation (assessment) activities done by experts who were competent or validators on the attractiveness questionnaire instrument and the implementation of Science worksheet is shown in table 8 :

Table 8. The results of Validity Test of Interest Questionnaire of Science Worksheet.

No	Aspect to be Examined	Validator		Average
		1	2	
I	**The design aspect of book cover** 1. The font size of the title	4	3	3,5

No	Aspect to be Examined	Validator		Average
		1	2	
	2. The pictures	4	4	4
	3. The color of picture	4	4	4
	4. The font used	3	3	3
	The design aspect of book content			
	1. The separation between paragraphs	4	3	3,5
	2. The placement of layout elements	3	3	3
II	3. The pictures and its captions	4	4	4
	4. The variation of font	5	4	4,5
	5. The Font size	4	4	4
	6. The color used	4	4	4
	The Total Score	**39**	**36**	**37,5**
	Mean	**3,90**	**3,60**	**3,75**
	The alue of P-Validity	**78,0**	**72,0**	**75,0**

The table above revealed that on the assessment, validator 1 assessed the validity and obtained 78.0% with valid criteria and no revision were needed. The assessment done by validator 2 obatined 72.0% of validity with valid criteria and no revision was needed. Thus, the overall validation assessment reachd up to 75.0% with valid criteria and no revision was needed. The results of the validation activities (assessment) done by the experts who were competent or validators on the questionnaire instrument for the implementation of Science worksheet is provided in table 9 :

Table 9. The Results of The Questionnaire Validation Test in Implementing The Science Worksheet.

No	Aspect to be Examined	Validator		Average
		1	2	
1	The problems given by the teacher at the beginning of learning is based on the problems found in Science worksheet	4	4	4
2	The problems given by the teacher at the beginning of learning are able to dig the students' initial knowledge	4	4	4
3	The activities provided on the guided inquiry-based science worksheet are able to foster the students in finding out the concepts they are currently studying	4	4	4
4	The students understand each learning activities provided in the guided inquiry-based science worksheet	3	4	3,5
5	The students are able to do the exercise provided in the guided inquiry-based science worksheet	4	4	4
6	The student are able to make conclusion a certain concept of the activity they are doing	4	4	4
7	The students do all queations provided in the guided inquiry-based science worksheet	4	4	4
8	The students do all activities in the guided inquiry-based science worksheet	5	5	5

No	Aspect to be Examined	Validator		Average
		1	2	
9	The learning implementation is in accordance with time allocation provided in the lesson plan	4	4	4
10	Overall, in the guided inquiry-based science worksheet is used in the learning process	4	4	4
The Total Score		**39**	**40**	**41**
Mean		**3,90**	**4,00**	**4,10**
The Value of P-Validity		**78,0**	**80,0**	**82,0**

The overall validation assessment above obtained was 82.0% with valid criteria and no revision was needed.

3. Revising the Main Product

After being tested validity by experts and instruments by the students, the weaknesses of the product and instrument design were finally figured out. Based on the inputs and suggestions from the results on the initial field trials, some revisions or improvements were made to the main products and test instruments for science process skills and learning outcomes. The revised initial product brought up the main instruments in which they were ready to be carried out on further tests. The revised worsheed of pretest question was based on the assessment results and the comments and suggestions for improvement given by the validator.

4. The field trial of main product

As many as 39 students were undergone the field trial. On this trial, the guided inquiry-based science worksheets were given to 39 students of class V-A at SDN Bangsalsari 02 Jember. They were then given the questions about science process skills test and learning outcomes with validated instruments.

5. The trial of small group

The implementation of the guided inquiry-based Science worksheet product trial was conducted to 12 out of 40 students of grade 5-B at SDN Bangsalsari 02, Jember. The results of trial in small gorups are revealed in table 10 :

Table 10. The Results of Trying Out The Science Worksheet in Small Gorup.

No	Aspects to Examined	The Average of Studen's Assesment
I	**Format :**	
	1. The clarity of material division	4,25
	2. Interesting	3,50
	3. The numbering system is clear	3,92
	4. Layout arrangement	3,25
	5. The type and size of the font are appropriate	3,92
	6. The suitability between physical worksheet and the students	4,83
II	**Language :**	
	1. Grammatically correct	3,83
	2. The suitability of the sentence and thinking level	3,42
	3. Fostering the interest in doing the work	4,42

No	Aspects to Examined	The Average of Studen's Assesment
	4. The simplicity of sentence structure	3,92
	5. The question does not have multiple meaning	4,67
	6. The clarity of instructions and directions	4,08
	7. The communicative nature of language used	3,25
III-	**Content :**	
	1. The validity of the content/material	4,08
	2. The important material/task	2,75
	3. Classified in logical section	4,00
	4. The suitability with guided inquiry science learning	4,00
	5. The suitability with the order of material	4,00
	6. Having role play to encourage the students in finding	4,00
	7. The feasibility as learning instruments	4,08
The total score		**78,17**
Mean		**3,91**
The value of P-Validitty		**78,2**

From the table above it can be seen that the average value obtained from the responses of 12 students was 78,2%. So it can be stated that the guided inquiry-based Science worksheet can be applied in learning.

6. *The trial of big group.*

The field trial of guided inquiry-based Science worksheet involved 39 students in 5-A class of SDN Bangsalsari 02 Jember. The field test result can be seen in table 11 :

Table 11. Field Test Results of Big Group Science Worksheet.

No	Rated Aspect	Average of Student Rating
I	**Formats:**	
	1. Clarity of material distribution	4.33
	2. Attractive	4.18
	3. Clear numbering system	4.18
	4. Room arrangement/layout	3.44
	5. Appropriate font type and size	4.31
	6. Suitability between worksheets and students	3.90
II	**Language :**	
	7. Grammatical correctness	4.03
	8. Suitability of the sentence with the level of thinking	3.87
	9. Encouraging interest in doing the worksheet	4.21
	10. Simplicity of sentence structure	4.38
	11. The question does not have a double meaning	3.46
	12. Clarity of instructions and directions	4.26

No	Rated Aspect	Average of Student Rating
	13. Communicative nature of the language used	3.69
	Contents:	
	14. Validity of content/material	3.95
	15. An essential material/task	4.77
III	16. Grouped in logical sections	3.90
	17. Suitability with guided inquiry science learning	3.67
	18. Suitability with material order	4.46
	19. Play a role in encouraging students to find	3.92
	20. Appropriateness as a learning tool	4.10
Total Value		**81.00**
Average value		**4.05**
P Validity Value		**81.0**

From the table above it can be seen that the average value obtained from the responses of 39 students was 81,0%. So it can be stated that the guided inquiry-based Science worksheet can be applied in learning.

7. *Operational product revision*

After the product trial, it can be seen how effective the product is, then the product needs to be revised to fix the weaknesses that still exist in the product. In accordance with the results of the analysis of student needs regarding the use of guided inquiry-based Science worksheet with the theme of how to treat human respiratory organs to improve science process skills and learning outcomes in class V SDN Bangsalsari 02, it can be stated that : (1) The use of worksheets in learning was quite attractive, easy to understand, the questions presented were not difficult to answer ; (2) The teacher always provided guidance in solving the problems contained in the worksheet ; (3) The worksheet used helped to make a conclusion on the activities done ; (4) Students strongly agree about the worksheet which can be used to guide and make learning easier.

8. *Field implementation test*

The operational field test was conducted on 40 students with data collected through interviews, questionnaires, and data analysis. At this stage, guided inquiry-based science worksheets were given to 40 students in class V-B of SDN Bangsalsari 02 Jember as an big group. The results of the validation activities by experts on the questionnaire instrument of the Science Process Skills and Learning Outcome Tests that have been done can be seen in table 12 :

Table 12. Validation Test Results of Science Process Skills.

No	Science Process Skills	Indicator Items (Question Number)	Validator 1	Validator 2	Average
		1	3	3	3
		8	4	3	3,5
1	Communication	5	5	4	4,5
		7	4	5	4,5
		20	3	3	3

No	Science Process Skills	Indicator Items (Question Number)	Validator 1	Validator 2	Average
2	Interpretation	12	4	3	3,5
		14	3	3	3
		17	3	3	3
		13	4	3	3,5
3	Hypothesis	2	4	4	4
		6	3	3	3
4	Prediction	4	3	4	3,5
		9	4	2	3
		19	4	3	3,5
5	Applying the concept	3	4	5	4,5
		15	4	3	3,5
6	Planning an Experiment	11	5	4	4,5
		16	4	5	4,5
		10	4	5	4,5
		18	4	3	3,5
Total Value			**76**	**71**	**73,5**
Average Value			**3,80**	**3,55**	**3,68**
P Validity Value			**76,0**	**71,0**	**73,5**

The overall assessment of the validation obtained by 73,5% with a valid criteria and did not need revision.

9. Final product revision

This revision was made based on the results of the field test. The field test results obtained can be used as feedback for improvement and refinement of the developed product. Revision II which is the final revision of the product of the guided inquiry-based science worksheets for fifth grade students at SDN Bangsalsari 02 Jember can be seen in table 13 :

Table 13. The second Revision of Guided Inquiry-Based Science Worksheets

No	Comments and Suggestions	Revision II
1	The title of the material has been added to worksheet 1	
2	The title of the material has been added to worksheet 2	

No	Comments and Suggestions	Revision II
3	The title of the material has been added to worksheet 3	

10. Dissemination and implementation

The presentation of the results of the development (process, program, product) of *guided inquiry*-based science worksheets to professional users through meeting forums like TWG (Teacher Working Group) both at the School and District and even at the Regency level. In addition, the implementation of *guided inquiry*-based science worksheets development results can be written in the form of national or international journals or in the form of books or handbooks. Meanwhile, *guided inquiry*-based science worksheets that have been conducted can be distributed through the school library at SDN Bangsalsari 02 Jember or other schools in Jember Regency.

DISCUSSION

The results we found in this development research showed that the process of developing guided inquiry-based science worksheets with the theme of maintaining the health of human respiratory organs in elementary schools to improve science process skills and student learning outcomes based on several analyzes are as follows:

1. *Validity data analysis of guided inquiry-based Science worksheets*

To measure the level of validity of this guided inquiry -based Science worksheet, the data analysis needed was quantitative data analysis of the values obtained from validators 1 and 2 after validation activities. Assessment of the validator 1 reached 78,0% with valid criteria and did not need revision. Assessment of validator 2 obtained 81,0% with very valid criteria and did not need revision. Referring to the results of both validators, the overall assessment of the validation obtained by 79,5% with a valid criteria and did not need revision.

2. *Practical data analysis of guided inquiry-based Science worksheets*

The level of practicality of the worksheet was measured by using qualitative descriptive data analysis. To find out the practicality of guided inquiry -based Science worksheet, it can be known through two instruments that are interview guide sheets conducted with the teacher and also through student response sheets. From the results of interviews conducted with teachers and students, it can be concluded that teachers and students stated that the guided inquiry-based Science worksheets were quite attractive, easy to understand, the questions presented were not difficult to answer.

3. *Effectiveness data analysis of guided inquiry-based Science worksheets*

Quantitative data analysis of science process skills for the small gorup got an N-Gain score of 69.9% in the medium effectiveness category, and for the big group an N-Gain score of 94.82% in the high effectiveness category. Analysis of quantitative data on student learning outcomes based on the percentage of completeness for the small gorup scored 58.9% in the fairly good category, and the big group with 95% in the very good category.

From all the calculation results of increasing science process skills and student learning outcomes using the guided inquiry-based Science worksheets in small gorups and large groups can be converted into the following graph :
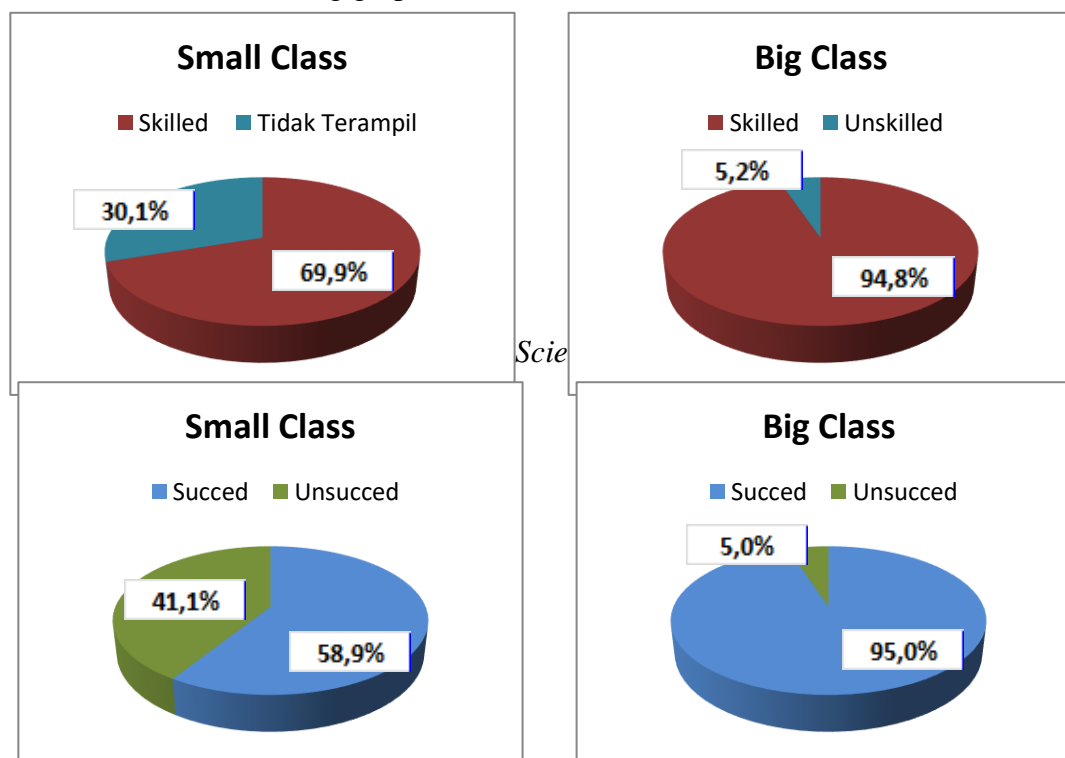
Small Class

Skilled ■ Tidak Terampil

30,1%

69,9%

Big Class

Skilled ■ Unskilled

5,2%

94,8%

Scie

Small Class

Succed ■ Unsucced

41,1%

58,9%

Big Class

Succed ■ Unsucced

5,0%

95,0%

Figure 3. The Percentage of Students' Learning Outcomes.

CONCLUSION

Based on the results of the research and discussion that have been described, it can be concluded that; **First**, the validity level of the results of the development of guided inquiry-based Science worksheet theme of maintaining the health of the human respiratory organs to improve the science process skills and learning outcomes of fifth grade students at SD Ngeri Bangsalsari 02 Jember showed that earned overall ratings of 79.5% validation criteria was valid and did not need revision. Thus, this research has produced a valid guided inquiry-based science worksheet on the theme of maintaining the health of human respiratory organs in elementary schools to improve students' science process skills and learning outcomes. **Second**, practicality level of the results of the development of guided inquiry-based Science worksheet theme of maintaining the health of the respiratory organs of man to improve the science process skills and learning outcomes of fifth grade students of SDN Bangsalsari 02 Jember measured by using analysis descriptive qualitative data can be known through two instruments, they were the interview guide sheet conducted with the teacher and also through the student response sheet. The results showed that teachers felt the presence of guided inquiry-based science worksheet can improve the students' science process skills and learning outcomes. Thus, this research has produced a guided inquiry -based science worksheet that is practical in the theme of maintaining the health of human respiratory organs in elementary schools to improve students' science process skills and learning outcomes. **Third**, the effectiveness level of the results of the

development of guided inquiry-based science worksheet in theme of maintaining the health of the human respiratory organs to improve the science process skills and learning outcomes of fifth grade students of SDN Bangsalsari 02 Jember showed that earned overall ratings of the level of science process skills of students obtained an N-Gain score of 94.82% with a very effective classification, and the percentage of completeness of student learning outcomes was 95% with a very good category. Thus, this research has produced an effective guided inquiry - based science worksheet on the theme of maintaining the health of human respiratory organs in elementary schools to improve students' science process skills and learning outcomes.

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