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Learning Development of Guided Inquiry and Reflective Thinking to Increase Critical and Creative Thinking Skill in Static Fluid Material for Senior High School Students

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Abstract:- This research was aimed to develop proper learning material using guided inquiry and reflective thinking can be used to practice critical and creative thinking skills. This research was conducted 4-D models, i.e. define, design, develop, disseminate. This type of research is descriptive quantitative research design with one group pretest posttest design. The samples used in the study were eleventh grade students of SMAN 20 Surabaya. The parameter of this research measured validity, practical, and effectiveness of the learning package. Research result: validity syllabi, lesson plan, reflective thinking paper, students worksheet, attitude paper, psychomotor paper, knowledge paper, so generally the result validity of learning material is proper. The practical of using learning material can be seen from what lesson plan had been done on proper category. The effectiveness of learning material can be seen from scores pre-test and post-test which has n-gain. N-gain in the pretest and posttest is declared increased: 0,87 for critical thinking skill and 0,83 for creative thinking skill are means high rate. Based on this research, guided inquiry and reflective thinking can be used to practice critical and creative thinking skills. The validity, practically and effectiveness of learning material shows that the learning package using guided inquiry and reflective thinking is proper and can be used to increase the critical and creative thinking skills of students.

Keywords:- *Guided Inquiry, Reflective Thinking, Critical and Creative Thinking Skills.*

I. INTRODUCTION

There are four competencies (4C) must be to be have for the students in 21's century. (1). Critical Thinking, with critical thinking, people can think by rationality to solve the problem; (2) Collaboration, people can work together and build networking for reaching success; (3) Communication, people can communicate and be adapted for technology; and (4) Creativity, people can survive for competition by creating innovation . If these competencies is not owned by student, so must be sure students can't sure for 21's century.

PISA is international assessment which be designed for OECD (*Organization for Economic Cooperation and Development*) which provides information for how much school equip student to face real life situation. PISA in 2015 focused on scientific literacy competencies namely; (a) possess scientific knowledge and use that knowledge to explain natural phenomena, obtain new knowledge, draw conclusions based on scientific evidence; (b) applying science and scientific thinking based on evidence. The factors determining the level of difficulty of scientific literacy questions are: context complexity; the level of familiarity of ideas / ideas related to scientific material, processes and terminology; the length of the logic flow and the level of dependency from one step to another; the extent to which abstract scientific ideas or concepts are needed in constructing answers; the level of reasoning, insight, and generalization ability associated with conclusions. Based on the facts obtained from the 2015 PISA results, In general the ability of Indonesian students is very low in: (1) understanding complex information; (2) theory, analysis and problem solving; (3) use of tools, procedures and problem solving; and (4) investigating. This can be understood because learning in Indonesia tends to aim to complete the material and generally use the time available to practice questions related to UNAS (National Examination). Learning systems like this make children less practice in developing thinking processes. Based on the above facts, it is necessary to have a change in learning by the teacher which later is expected to encourage the improvement of critical thinking skills, creativity, and build students' independence to solve problems.

George Bernard Shaw in (Rose, C & Nicholl, J. Malcolm, 2003) said that: "A human who thinks and knows how to think can always defeat ten people who don't think and don't know how to think". The 2013 curriculum was developed with refinement of the following mindset: teacher-centered learning patterns become learner-centered learning, passive learning patterns become active learning, self-learning patterns become group learning (team).

Wardiman Djojonegoro, former Minister of Education and Culture, during the opening of the Quark Science Olympics said that science and technology were needed to advance this nation. Therefore, children's creativity needs to

be facilitated so that the child's imagination and desire to experiment can continue to develop. However, based on the reality in the field, students often experience problems in learning physics because the delivery of physics material is not contextual, is too theoretical, more nuanced mathematical and often ignores physical meaning. Students cannot make the connection between what is learned and how the knowledge will be applied. Students also lack the ability to think critically and creatively. The same thing was experienced by students at SMAN 20 Surabaya.

Inquiry learning is learning that prioritizes students' thinking processes. Inquiry learning emphasizes high-level thinking patterns, the collection, analysis and presentation of information and data from various sources and views. The inquiry cycle consists of: 1) observation, (2) asking questions, (3) proposing a hypothesis, (4) collecting data, (5) conclusions. Inquiry learning that only produces basic concepts will make students feel less motivated to dig deeper into the knowledge they build. Simple learning creates a support pole for more complex learning. Therefore, when students have finished investigating inquiry learning, students should conduct reflections (reflective thinking) to process and develop the basic concepts that they have.

Reflective thinking is a complicated form of cognition, first defined by John Dewey. According to Dewey, reflective thinking is: "active, persistent, and careful consideration of any beliefs or supposedly from knowledge in the light of the grounds that support it and the conclusion to which it tends". Lee (2005) identifies the components that exist in reflective thinking, namely: recall, rationalization, and reflectivity. In a recall activity, someone describes what he experienced, interpreted the situation based on his experience, and tried to imitate the ways he observed. In rationalization activities, one connects the experience gained with the learning practices encountered, interprets the situation based on things that make sense (rational), and generalizes observations based on the results of data processing with rational reasoning. While the reflectivity activity is carried out in the form of tracing what has been done, comparing the observed learning practices with the experience and expected ideal conditions, and analyzing the situation faced in various perspectives. Reflective thinking is also the heart of the keys of individual competence (PISA, 2015). Based on Piaget's operational stage, reflective thinkers can create intricate intellectual systems by crossing opposing ideas or considerations. Reflective thinking is also an interwoven and interdependent process between critical and creative thinking (Elianawati, Rusdiana D, Sabandar J; 2015). Thus reflective thinking is an alternative tool or process that can be used to practice critical and creative thinking skills.

Critical thinking is defined as the ability and tendency to draw conclusions and make judgments based on evidence (Ennis, 1996). Learning to think critically means using cognitive processes such as; pay attention, categorize, select, and assess / decide. The critical thinking activities namely: the ability to focus, obtain information, organize, analyze, and generalize or make conclusions. A number of attitudes and tendencies related to critical thinking, namely: the desire to obtain information and look for evidence, open-minded attitude, tendency to delay judgment, respect for other people's opinions, tolerance for ambiguity (Eggen & Kauchak, 2012).

Creative thinking is thinking consistently and continuously producing something creative / new according to the needs. Munandar (2012) states that creative thinking is an ability that reflects fluency, flexibility and originality in thinking and the ability to elaborate, develop, enrich, elaborate an idea, information, concept, experience or knowledge (elaboration) . Creative thinking also has the definition of creating improvements to existing products, developing new products, asking questions, taking risks, being flexible and being open-minded. By making product designs, students are expected to be creative in producing something as a result of the thought process. When students find interesting problems, make choices and accept responsibility; then students are expected to be able to find information, plan, investigate, question, make decisions, and conclude and relate academic content to the context in life situations.

Through the guided inquiry learning model and reflective thinking, students are expected to think deeply, interact, share ideas, and work together in solving problems encountered so as to improve their critical and creative thinking skills. Therefore, researchers develop guided inquiry learning tools and reflective thinking to practice critical and creative thinking skills.

II. METHOD

The subjects in this study were three classes with each class consisting of 36 class XI students in the even semester of SMA Negeri 20 Surabaya in the 2016/2017 academic year who took physics lessons with static fluid material for 6 meetings in addition to the pretest - posttest. The procedure of this study was divided into 2 stages, namely the first stage of developing learning tools and the second stage was the application of learning devices in class. The implementation phase in class uses the One Group Pretest-Posttest Design research design, which is described as follows:

The implementation phase in the class used the One Group Pretest-Postest that adopted from Arikunto (2006: 85), which is described as follows :

O_1 X O_2

Information:

O_1 : Pretest, to determine the ability of students' knowledge before learning takes place

X : Treatment (treatment), using guided inquiry learning models and reflective thinking

O_2 : Final test (Posttest), to determine the ability of students' knowledge after learning takes place

❖ The research instruments used consisted of:

- Validation Sheet, used to assess the feasibility of the Physical learning tools that have been developed. These learning tools are in the form of lesson plans, student worksheets, reflective thinking sheets, and learning achievement tests. This learning tool is validated by two reviewers who are experts in their fields.
- Lesson Plan Observation Sheet Implementation, used to collect data about the implementation of the stages of learning through the guided inquiry learning model and reflective thinking according to those listed in the lesson plan. The filling out of the observation sheet was carried out by two observers by putting a check mark (√) in the column corresponding to the learning stages carried out by the teacher, and giving scores and ranges of 1-4 accordingly.
- Student Activity Observation Sheet, used to observe student activities while implementing guided inquiry learning and reflective thinking using the developed learning tool.
- Reflective Thinking Sheet, is a sheet containing directed questions consisting of Recall, Rationalization, and Reflectivity. Reflective Thinking Sheets are used so that students deeply interpret their knowledge and practice critical and creative thinking skills.
- Learning Outcomes Test, made in the form of multiple choice and essay or description. This test was developed by researchers with reference to the learning indicators developed.
- Observation sheet on constraints in learning process, in the form of constraints found during learning process and alternative solutions used to overcome these constraints. This instrument was filled by observers.
- Student Response Questionnaire, used to find out students' opinions on the learning tools used in learning activities.

A. Data Collection Technique

The activities carried out in the collection of research data include several techniques including:

- Validation The learning device with the guided inquiry learning model and reflective thinking is carried out by the reviewers to get input, improve the equipment, and produce learning devices that are worth testing.
- Observation is used for two things: (1) observing the implementation of learning in accordance with the stages that have been designed by the teacher in the learning implementation plan, (2) obtaining and measuring data about activities and a collection of students' knowledge and skills for the whole set the activities to be measured in the study, (3) obtain information about the constraints during the teaching and learning process.
- Tests are made in the form of multiple choice and essays or descriptions. This test was developed by researchers with reference to learning indicators. The initial test (pretest) is given before learning begins, while the final test (posttest) is given after learning is carried out.
- The questionnaire was used to obtain data on the level of readability of student worksheets and student responses. worksheet readability questionnaire and student responses were given after the learning process ended.

B. Data Analysis Technique

The purpose of data analysis in this research is to answer research questions or determine variable value which further formulate conclusions. The following research data will be analyzed:

- *Validation Analysis of Learning Device*

Validated instruments are lesson plan, worksheet, reflective paper, and pretest-posttest. The analysis was done by calculating the average rating by predetermined reviewers on each device developed. Analysis of the results of the learning device validation data is presented in the following rating scale.

Good: 4 (good quality, easy to understand, according to the context of the explanation)
Good enough: 3 (good quality, easy to understand, context needs to be improved)
Not good: 2 (good quality, difficult to understand, need to refine the context of explanation)
Not good: 1 (quality is not good, difficult to understand, needs to improve the context of explanation)

Furthermore, the average score from the assessment is described as follows.

$1.0 \leq SV \leq 1.59$ = Not usable yet and still requires consultation
$1.60 \leq SV \leq 2.59$ = Can be used with many revisions
$2.60 \leq SV \leq 3.59$ = Can be used with minor revisions
$3.60 \leq SV \leq 4.00$ = Can be used without revision
(adapted from Ratumanan and Laurens, 2011)

- *Device Reliability Analysis*

Reliability is the consistency of a series of measurements or a series of measuring devices. In this study conducted by two assessors, to determine the reliability of the instrument used the percentage of agreement formula:

$$Percentage\ of\ agreement = 100\ \% \left[1 - \frac{A-B}{A+B}\right]$$

Information:
A = frequency aspect observed by observers with the high frequency
B = frequency aspect observed by observers with low frequency
(Borich, 1994 in Ibrahim, 2005)

- *Learning Implementation Analysis*

The implementation of the steps in learning activities was observed by two observers who were trained by paying attention to the lesson plan. Presentation of the implementation in the form of choices, namely carried out and not carried out. Percentage scale to determine the feasibility of learning using the following formula:

$$\%\ \text{implementation} = \frac{many\ step\ implemented}{many\ step\ planned} \text{ x } 100\%$$

The implementation of the lesson plan is said to be positive if for every aspect observed in each lesson plan a percentage of ≥ 75% is obtained. The data reliability of observing the implementation of the lesson plan was tested using the following formula:

$$R = \left(1 - \frac{A-B}{A+B}\right)$$

(Borich, 1994: 385)

Information :
A = frequency of behavioral aspects observed by observers who provide high frequencies.
B = frequency aspect of the behavior observed by the observers giving a low frequency

➢ *Analysis of student activities*

Student activity was observed by two observers during the learning activity by giving a sign in accordance with the activity category. to calculate the percentage of student activity activities are as follows:

$$P = \frac{\sum R}{\sum N} \text{ x } 100\%$$

(Arikunto, 2009)

Note:
P = Percent of student activity
Σ R = Number of student activities observed
Σ N = Total student activity total

The calculation of the level of reliability using the Percentage of Agreement equation with the provisions of the instrument is said to be reliable if the reliability obtained is ≥ 0.75 (75%). The formula is as follows:

$$R = \left(1 - \frac{A-B}{A+B}\right)$$

Note :
A: The highest frequency of the observer
B: The lowest frequency of the observer

➢ *Analysis Learning Outcomes*

Results / Test scores for student learning outcomes (individually) are calculated using the following formula:

$$\text{Value} = \frac{Obtain\ Score}{Maximum\ Score} \text{ x } 100\&$$

Students are declared complete learning if the number of correct answers of students ≥ 75%, referring to the minimum completeness criteria (KKM) at SMAN 20 Surabaya, which means 75 students are said to have completed when they have reached a minimum grade of 75, and a class is said to be complete learning (classically) if the class contained ≥ 85% of students who had completed their studies.

➢ *Sensitivitas of test*

To find out how far each item the measured learning effect has given, sensitivity needs to be calculated. The effective sensitivity index is between 0.00 and 1.00. The equation for calculating item sensitivity is as follows:

$$\text{Sensitivity} = \frac{Ra-Rb}{T}$$

Information:
Ra = number of students who answered correctly on the final tes
Rb = number of students who answered correctly on the initial test
T = number of students taking the test

According to Aiken (in Trianto, 2012), items were stated to be sensitive if the sensitivity number was between 0 and 1, and items were sensitive to learning if S ≥ 0.30 was obtained.

➢ *Analysis of Critical Thinking Skill*

The ability to think critically is determined from the results of practicum and learning achievement tests. The assessment criteria adapted from Gronlund (1981) can be seen in the following table.

Score Prosentase (%)	Value Span	Letter Value	Category
95-100	95-100	*A*	Verry High
85-94	85-94	*B*	High
75-84	75-84	*C*	Average
65-74	65-74	*D*	Low
<65	<65	*E*	Very Low

Table 1:- Description of Critical Thinking Score

A student is said to be able to think critically if he gets a score of ≥ 75% or a value ≥ 75%. (Gronlund, 1981; Majid, 2008).

➢ *Analysis of Creative Thinking Skill*

The ability to think creatively can be observed through the activity of asking questions, raising opinions / ideas / ideas, making connections, synthesizing and designing / making products. The percentage of thinking ability is expressed by the formula:

$$\%\ Score = \frac{obtained\ score}{maximal\ score}\ X\ 100\%$$

The creativity criteria from the percentage score results are presented in the following table.

Score Interval Rate	Category
81,6% - 100%	Very Creative
61,2% - 81,5%	Creative
40,8% - 61.1 %	Creative Enough
20,4% - 40,7 %	Low Creative
0,00% - 20,3 %	Not Creative

Table 2:- Description of Creative Thinking
(Khanafiyah ,2010)

➢ *Gain Score*

Techniques to determine the increase of critical and creative thinking skill by guided inquiry and reflective thinking learning model using normalized gain techniques. The use of this technique is due to know the average value of G (normalized gain) of each group so that it can determine the effectiveness of remediation improvement results from each group with the following formula:

$$g = \frac{S_{post} - S_{pre}}{100 - S_{pre}}$$

Information:
$g_{(gain)}$ = increase in learning outcomes / academic skills
S_{pre} = average pretest or initial skill
S_{post} = average posttest or final skill (Hake, 1998)

Score interval	Category
> 0.7	High
0.7 - 0.3	Medium
<0.3	Low

Table 3:- Criteria of N-gain (Utomo, 2013: 70)

➢ *Obstacles During Learning*

The obstacle faced are a description of various things such as time, supporting facilities / infrastructure, and other things that are not in accordance with the plan found to be obstacles to the smooth learning of each meeting, and the alternative solutions used to overcome various kinds of obstacles. The obstacle described come from the researchers or information from students.

III. RESULT AND DISCUSSION

A. Lesson Plan Assessment

Based on analysis that has been done, the lesson plan that is developed is valid and can be used in learning with little revision and is ready to be tested in the field.

B. Students Worksheet Assessment

The worksheets developed by researchers were worksheets with a guided inquiry model. worksheet includes activities to identify of problem, make hypotheses, identify variables, take experimental data, analyze data, and make conclusions.

The results of the analysis stated that the worksheets developed were categorized as good and suitable for used. Some suggestions from researchers that can be used by researchers to improve worksheet.

C. Reflective Thinking Assessment

Reflective thinking sheets are developed by researchers to dig deeper into students' knowledge by giving difficult, ambiguous, and complex questions. Reflective thinking sheets are validated by 2 researchers with valid categories and are suitable for use in learning

D. Implementation of Lesson Plan

All the steps listed in the lesson plan that have been developed can be implemented well by the teacher. Aspects observed in the assessment of the implementation of lesson plans with a guided inquiry model and reflective thinking to train students' critical and creative thinking skills include preliminary activities, core activities, closing, class atmosphere, and time management.

The average value of the two observers to the lesson plan of 3.52 good category with a reliability of 94.04%. This shows that the teacher in carrying out all learning activities using guided inquiry models and reflective thinking to train students' critical and creative thinking skills is carried out well.

E. Students Activities

During the learning process, observations were made on the activities carried out by students and it was found that the frequency of activities during the learning activities: asking 8.29%, proposing ideas / opinions / ideas 12.78%, conducting experiments / designing products 26.94%, collecting data / information 27.90%, analyzing data 20.91%, making a relationship of 8.55%, and applying information to produce something (can be a conclusion / product) 8.68% with a reliability of 99%. Based on the results above the smallest percentage is in the questioning activity. This is because asking questions is a characteristic of someone's thinking, but asking good questions is far more difficult than finding definitive and correct answers. The questions intended here are questions that are reasoning and relationship. The biggest percentage is in the activities of carrying out experiments, collecting and analyzing data.

F. Students Response

Based on the questionnaire students' responses were obtained. As many as 90% of students expressed interest and felt new to the way learning was taking place, 100% of students wanted to take part in teaching and learning activities as had been followed at this time, 85% of students agreed that the way learning took place could practice critical thinking skills and creative.

The results of the questionnaire responses given to students showed that in general students gave positive responses to guided inquiry learning and reflective thinking.

G. Students Learning Outcomes

➢ *Attitude Assessment*

Attitude assessment is obtained through observation of each face to face learning activities. The attitude assessment developed by the researcher is measured through an attitude assessment sheet accompanied by a rubric with reference to the learning indicators, namely inquisitive attitude, critical behavior, creative. The final score on attitude assessment is the mode score or value that most often appears. Based on observations that can be seen in the appendix assessment of student attitudes obtained results that guided inquiry learning and reflective thinking can train students' curiosity, critical and creative attitude.

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➢ *Psychomotor Skill Assessment*

Based on research in general students already have a good ability in psychomotor skills, namely: arranging tools and materials, observing, and using tools.

➢ *Knowledge Assessment*

The learning process begins with a pretest. The results obtained for both individual and classical completeness is 0%. This is because grade XI students have not received static fluid material. After the pretest, the learning process is carried out six times face to face using guided inquiry and reflective thinking. After the learning process is completed for six times face-to-face then the next meeting is conducted posttest. The mastery of learning outcomes classically obtained a average percentage of 90,3% with mastery learning individually can be expressed with an average n-gain for all three classes of 0.85 with a high category which means there is an increase in mastery learning outcomes are high from before the process was held learning.

H. Critical Thinking Skill

Research on critical thinking skills of students is obtained during learning process by worksheet with indicators: formulating problems, making hypotheses, analyzing data, and making conclusions. In addition to the above indicators critical thinking skills can also be observed when students work on pre-test and post-test (learning outcomes test) with the realm of C4 (Analyze), and C5 (Evaluate / Synthesize).

From the observations and data analysis, it was found that in practicum 1 with hydrostatic pressure material, there were 66.67% of the number of students who received either good or very good categories. In general, children who get less grades are caused by not being able to analyze data and make conclusions. In practicum 2 with Pascal's law, there are 75% of the number of students who get good or very good categories. There is an increase compared to practicum 1, but there is one child, who at meeting 1 was able to formulate the hypothesis correctly, but at meeting 2, the student could not formulate the hypothesis correctly. This is due to students starting to think what if the two piston used have different diameters. This needs to be appreciated because it is precisely the student starts develop thinking skills by asking questions that are not present in practicum activities, but which are relevant. In practicum 3 with Archimedes's law there were 91.67% of the total number of students who received good or very good categories. Based on the results obtained from 3 practicum meetings, the results obtained as a percentage of achievement indicators of critical thinking skills as follows.

Meeting (TM)	Problem Identified	Hypothesis	Data Collection	Data Analysis	Conclusion
TM 1	3.64 97%	3.25 79%	3.59 100%	3.46 78%	3.21 75%
TM 2	3.69 97%	3.32 79%	3.71 100%	3.58 83%	3.5 88%
TM 3	3.88 99%	3.58 85%	3.83 100%	3.87 97%	3.76 93%

Table 4:- Critical Thinking Skill Obtained

Based on the table.4 above, it can be concluded that there is an increase in students' critical thinking skills at every face-to-face.

The Learning Outcomes Test used to measure critical thinking skills is found in C4 (Analyzing) and C5 (Evaluating) questions. From the test results the learning outcomes obtained n-gain of 0.87, with a high category. Thus it can be concluded learning by using guided inquiry and reflective thinking can improve students' critical thinking skills.

I. Creative Thinking Skill

Indicators of students' creative thinking skills in this study can be demonstrated through the following indicators: (1) asking questions; (2) generate ideas / ideas; (3) making a relationship; (4) applying information, ideas and imagination to produce something / product that is new and different.

In indicator 1, namely asking questions, observations were made at each meeting. The results show that there are only a few students who ask deep and creative questions. Students generally ask questions on questions they cannot work on / understand. This proves Robert Fisher's statement that: "Asking good questions requires that students think harder than giving good answers" (Rose. C & Nichol Malcolm, 2003: 271). Good questions are questions that encourage students to analyze, evaluate, assess, and solve problems. The students' questions that arose at several meetings conducted were:

a. Is the thickness of the dam only affected by the depth of the river?
b. Is the dam thickness calculation only divided into 3 parts based on river depth? If you divide more, how?
c. In Pascal's law it says "The pressure applied to the fluid in a closed room will be continued at the same level", what if the fluid is flowed in two piston whose diameter is not the same ?. (This happened at the time of Pascal's law practicum using 2 piston of the same diameter)
d. What caused the ship to sink?
e. How do you determine the maximum load of a ship?

Although only a few students ask profound and creative questions, this should still be valued because education is a long process to produce bright students.

In indicator 2 that is generating ideas / ideas, observations are made as students work: design the thickness of the dam on the material hydrostatic pressure, make a product design application of Pascal's law, and design the determination of the maximum load of the ship. The best way to have a good idea is to have lots of ideas (Rose. C & Nichol Malcolm, 2003: 285). In addition, indicator 2 is also obtained from the results of designing dams. Although it is still simple, without calculating the speed of water flow and soil structure on the surface of the river and the river bed, students can design and determine the thickness of the dam based on the division of river depth that they design based on their respective groups. Everything can work correctly. In the design of product with Pascal's law, a group was formed, each group consisting of 4 students. Students can make the application of Pascal's law by proposing ideas / simple tools and materials that can be used. In general students make hydraulic bridges, but there are groups of students who modify it into a weight-bearing device such as a forklift. For Archimedes's law, In the design of determining the maximum load of the ship, students design / determine the ship's material and volume of the ship, then calculate the maximum load of the ship. Everything can do it right even though it takes longer. The pretest and posttest conducted to measure indicator 2 are essay question (how to determine the purity of gold) and essay question (a. Determine the maximum load of the pontoon bridge and b. what to do if you want to float a load with more mass big again).

In the matter of the pretest, very few answered correctly. In posttest questions, 83% of the total number of students were able to work correctly on essay test. Thus the percentage of students' abilities in creative thinking is 83%, so based on the creativity criteria table adapted from Khanafiyah, these children can be classified as creative children.

In indicator 3, which is to make information relations, essay question connects Pascal's law and Hooke's law. Apparently all students cannot do it during the pretest. At the time of the posttest there were 78.7% of the number of students who could do it correctly.

In indicator 4, which is making products on the design of Pascal's law, Students are creative when making products, apparently students find that when the hose and piston are not filled with water or only contain air, it turns out the hose and the piston containing air also have characteristics such as a hydraulic system. Through product creation, students can ask questions, discover new ideas, make connections and conclude.

From the results mentioned above, it can be concluded that guided inquiry learning and reflective thinking can improve students' critical and creative thinking skills, this can be seen from students being able to ask questions, generate ideas, be able to connect information and make products. In this study also found that the n-gain or increase in students' creative thinking skills by 0.83 with a high category.

J. Research Finding

Based on research that has been done, with a guided inquiry learning device and reflective thinking on static fluid matter, there are some findings as follows:

1. Physics learning material (lesson plan, worksheets, Reflective Thinking Sheets, and Learning Outcomes Tests) guided inquiry learning models and reflective thinking on the static fluid matter of high school students that have been developed can be declared valid and used
2. Practicality of Physics learning devices that have been developed seen from:

a. The implementation of the lesson plan is an average of 3.5; this shows that lesson plan can be implemented well.
b. Student activities in following all the steps of learning during the learning process reached 96.9% and the most dominant activity was observing and discussing.
c. Obstacle faced during learning activities can be overcome without experiencing significant disruption.

3. The effectiveness of Physics learning tools that have been developed can be seen from:

a. Positive student responses to the device of guided inquiry learning and reflective thinking.
b. Student learning outcomes have increased with the value of n-gain of 0.83 which is categorized high, as well as student learning completeness of 90.3% after following the process of guided inquiry learning and reflective thinking.
c. Critical thinking skills of students increased with an n-gain of 0.87 which was categorized high.
d. Students' creative thinking skills increased with an n-gain value of 0.83 which was categorized high

IV. CONCLUSION

Based on the analysis of research data, it can be concluded that the learning device for guided inquiry learning and reflective thinking (lesson plan, worksheets, reflective thinking sheets, and learning outcomes tests) is suitable for use in teaching and learning activities.

V. SUGGESTION

Some suggestions can be put forward by researchers based on the results of research that has been done are as follows:

1. The application of learning material using guided inquiry learning models and reflective thinking in learning activities is good, but teachers must be more able to manage time so that activities provide a clear picture to students about the stages of learning to be carried out.
2. Before conducting learning activities need to train students to further develop the ability to observe, ask questions, formulate problems, hypotheses, and identify variables so that the learning process students do not experience difficulties.

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