JSER

Journal of Science Education Research

Journal homepage: www.journal.uny.ac.id/jser

The Development of Student Worksheets With A Contextual Approach to Improve Students' Science Literature Capabilities

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Keywords:
Development Research, LKPD, Contextual Approach, Scientific Literacy, Excretion System in Humans.

ABSTRACT

The aims of this study: (1) analyze the feasibility of LKPD with a contextual approach, (2) analyze the practicality of LKPD with a contextual approach, (3) analyze the effectiveness of LKPD with a contextual approach to improve students' scientific literacy skills. This study uses the Thiagarajan 4D (Four-D Model) development model, consisting of four stages, namely the definition stage, the design stage, and the development stage. The dissemination stage was not carried out, this research was only limited to testing the feasibility and effectiveness of the product. The results showed that: (1) LKPD with a contextual approach was feasible, judging from the results of the material validator 3.54 (very good), the results of the media validator 3.89 (very good), and the results of the teacher validator 3 (very good), (2) the results of the analysis of the students' responses are 3.12 (very good), (3) based on the results of the analysis of N-Gain and Effect Size, LKPD with a contextual approach is effective in improving students' scientific literacy skills (N-Gain 0.56 (moderate) Effect Size 1.22 (height)). Based on the analysis of the Paired Sample T Test, there is a significant difference between the pretest and posttest scores.

INTRODUCTION

The development of the world in the 21st century occurs very rapidly following the era of globalization which is marked by the increasingly intertwined science and technology. The rapid development of science and technology can affect various fields of life, one of which is in the field of education. Especially in science education today, students are directed to be able to prepare for life in order to be successful in the 21st century. One of the skills needed by students in the 21st century is scientific literacy (Liu *et al.*, 2009).

The results of the evaluation of Trends in Mathematics and Science Study (TIMSS) in 2011 for the field of science/science class VIII, Indonesia ranks in the top 5 from the bottom (along with Macedonia, Lebanon, Morocco, and Ghana). Indonesia's ranking (39/42 with a score of 406) is below Palestine, Malaysia, and Thailand. The value obtained by Indonesia decreased compared to the results in 2007 which was ranked 36 out of 49 countries that participated with a score of 427 (Hariapsari & Astriani, 2015).

The 2009 PISA data shows that Indonesia's ranking has only been able to occupy the bottom 10 of the top 10 of 65 countries. There are three aspects studied by the Program for International Student Assessment (PISA), namely reading skills, mathematics, and science. The results of the 2009 PISA survey showed reading skills at 57, mathematics at 61, and science at 60. This predicate reflects that Indonesian children are still low in scientific literacy skills, including identifying scientific problems, using scientific facts, understanding living systems, and understand the use of science equipment (Hayat, 2011).

Based on PISA data (Program for International Student Assessment), the scientific literacy ability of students in Indonesia is still very

low, as quoted from the OECD (2010) Indonesia's ranking in 2009 was ranked 57 out of 65 countries with a score of 383. In 2012 as shown quoted from the OECD (2013) Indonesia's ranking is 64 out of 65 countries with a score of 382. Furthermore, in 2015 as quoted from the OECD (2018) Indonesia's ranking is 64 out of 72 countries with a score of 403. The acquisition of the scientific literacy score experienced improvement but still below the average set by the OECD. Based on these data, it can be concluded that the scientific literacy of students in Indonesia is still low. This is reinforced by the results of Pantiwati's research (2014) which states that students in Indonesia have not been able to apply science concepts that are understood in everyday life.

Scientific literacy according to Choi et al. (2011) which is about the depiction of individuals who have an integrated understanding of big ideas from science, can appreciate cultural diversity and values, participate in the development of social values through cooperation and communication with others, take responsibility for taking action on issues global issues related to science, and ultimately develop character and values as members of the world community.

Some domains of scientific literacy according to The Organization for Economic Cooperation and Development or OECD (2013) are the context of knowledge, competence, and attitudes. The competency domain contains three main aspects that can represent other domains, namely explaining phenomena scientifically, evaluating and designing scientific investigations, interpreting scientific data and evidence. Scientific literacy according to Gultepe & Kilic (2015) is a skill that is used at a time when scientific knowledge is used as a basis in everyday life.

It turned out that in the aspect of explaining the phenomenon scientifically, class VIII A students of SMP Negeri 1 Yogyakarta had difficulties in identifying the kinds of joints and their direction of motion based on a simple model or picture. In addition, students also have difficulty identifying the names of bones from a skeletal model. In the aspect of interpreting data and evidence scientifically, students also experience difficulties in interpreting straight motion data into a graph. Based on the acquisition of the average learning outcomes of class VIII A students at SMP Negeri 1 Yogyakarta for science subjects on motion and movement systems is 75. This value is below the school's KKM score. This shows that students' scientific literacy is still low in learning science.

According to Holbrook & Rannikmae (2009), the factors that can affect the low scientific literacy ability of students are the lack of science learning that is associated with the context of problems in everyday life so that they cannot handle simple problems because they are unable to relate the concepts of knowledge they have acquired in school with problems in everyday life.

Regulation of the Minister of Education and Culture Number 22 of 2016 concerning the learning principles used in the 2013 curriculum that learning from students is told to students to find out (learning by active students is further strengthened by a science approach learning model). So, good learning is that students can build and find their own concepts, the teacher only plays a role in directing and guiding students. In addition to finding their own concepts, science learning must be meaningful for students, where in the learning process the teacher connects the material with applications in life.

Contextual learning is learning that is based on the ability of students to understand the meaning of the material received and understand the meaning of school assignments in forming new information with the knowledge and experience that students already have before (Johnson, 2002). Absorbing and understanding academic material is not difficult, but how students are able to understand the meaning of the material received and relate it to the tasks given by the teacher is what is difficult. Teachers are required to be able to create learning that encourages students to link the information received on scientific material with problems that occur in real life. Presenting the problems of everyday life in science learning is one way to quickly achieve this goal. Problems of daily life can be presented through discussion activities, practicum, project assignments, or presented in questions done by students.

According to Muslich (2007), awareness of the need for contextual learning is based on the fact that currently most students are not able to connect what they learn with how they are used in real life. Shamsid-Deen and Smith (2006), researched that contextual learning can be used as a family and science teacher initiative to increase knowledge and familiarize children with learning according to daily activities. This can be used as encouragement by science teachers to apply contextual learning to optimize students' scientific literacy.

To improve students' scientific literacy skills, it is necessary to improve the learning process through the learning teaching materials used, so that students are expected to achieve optimal competence. According to the National Center for Vocational Education Research Ltd in Nugraha & Binadja (2013), teaching materials are all forms of materials used to assist teachers/instructors in carrying out learning activities in the classroom.

The teaching materials used have a position as a teacher's tool in teaching. For example, printed

teaching materials consist of textbooks, modules, pictures, brochures, leaflets, and worksheets. The use of teaching materials in the teaching and learning process can also generate new desires and interests for students, arouse students' learning motivation. In order for learning activities to take place properly, it is necessary to have a learning device that supports the creation of a conducive atmosphere. The learning tools are in accordance with the 2013 curriculum.

One of the efforts to create learning tools that are in accordance with process standards, it is necessary to use a Student Worksheet (LKPD) that optimizes learning activities. LKPD is a form of teaching material that contains instructions, a list of tasks, and guidance on carrying out activities. A good LKPD must be able to encourage active participation of students, and develop a culture of reading and writing. In addition, LKPD is also prepared taking into account the interrelationships and integration between KI, KD, learning materials, and learning activities. The use of LKPD is expected to increase the independence of students in learning, confident, disciplined, responsible, and able to make decisions. LKPD can also be used at the concept planting stage or at an advanced stage of concept planting.

Student Worksheets (LKPD) of science subjects used in learning at SMP N 1 Yogyakarta are contained in textbooks, so teachers only rely on textbooks in the learning process. Textbooks that in the field have not been able to achieve scientific literacy and emphasize scientific knowledge (Chiappetta & Koballa, 2010). The worksheets contained in the textbook only contain guidelines for carrying out experiments and questions that are reminiscent of the concepts that have been learned. According to the Ministry of National Education, a good LKPD structure consists of titles, learning/student instructions, competencies to be achieved, supporting information, tasks and work steps, and assessments.

With this, the solution that can be done is to develop LKPD with a contextual approach to improve students' scientific literacy skills. One of the relevant lessons to optimize students' scientific literacy skills is contextual learning. The learning process carried out is expected to improve students' scientific literacy skills, so that students can have sensitivity in solving the problems they face. The LKPD developed is expected to include scientific literacy indicators so that it can facilitate educators and educational units to add teaching materials used.

Based on the background of the problem, research on the development of LKPD teaching materials was carried out with a contextual approach. With the aim of improving students' scientific literacy skills. Because of this, LKPD was developed with a contextual approach through a thesis entitled: "Development of Student Worksheets (LKPD) with Contextual Approaches to Improve Students' Scientific Literacy Ability".

METHOD

Types of Research

This type of research is research and development (R&D). The development model used is the R&D model according to Thiagarajan, et. al (1974: 5).

Research Time and Place

This research was conducted from March 2 to March 23 in the 2020/2021 academic year. LKPD results of this development research were tested at SMP Negeri 1 Yogyakarta, which is located at Jl. Cik Di Tiro No.29, Terban, Kec. Gondokusuman, Yogyakarta City, Special Region of Yogyakarta 55223.

Target/Research Subject

The subjects in this study were 25 students of class VIII A of SMP Negeri 1 Yogyakarta to carry out the learning process with the IPA LKPD which was developed and tested the effectiveness of the IPA LKPD to improve students' scientific literacy skills.

Procedure

The research procedure consists of four stages, namely the define, design, develop and disseminate stages. At the define stage includes the initial stage, students, assignments, concepts and formulation of learning objectives. At the design stage (design) includes the preparation of instruments, media selection, format selection and initial product design. The develop stage includes the expert assessment stage and development trials. Then in the disseminate stage, it is only done in a limited way. The research design is the one group pretest-posttest design. This design is a pretest and posttest design which is carried out in one group without comparison (Taniredja & Mustafidah, 2012: 55).

Data, Instruments, and Data Collection Techniques

Validation data includes expert validation questionnaire data (material experts and media experts) and teachers, as well as LKPD practicality questionnaire data with a contextual approach. Data on the results of the implementation of learning with a contextual approach in terms of the activities of teachers and students. Data on students' scientific literacy abilities include pretest and posttest data. Research instruments include questionnaire sheets,

observation sheets, and written test questions. Data collection techniques include questionnaires, observations, and written tests.

Data analysis technique

The feasibility and practicality of LKPD with a contextual approach were analyzed by converting scores using a scale of 4 (Mardapi, 2008: 123). The implementation of learning with a contextual approach was analyzed using the Interjudge Agreement (IJA) equation (Pee, 2002). The effectiveness of LKPD with a contextual approach to improve students' scientific literacy skills was analyzed by using the paired sample t test (Troia & Graham, 2002), gain score (Hake, 1999: 1), and effect size (Cohen, 1992).

RESULT

The results of this study are LKPD with a contextual approach to improve students' scientific literacy skills. The development of Student Worksheets (LKPD) with a contextual approach aims to produce products that help the learning process. The LKPD developed must have a level of validity, practicality, and effectiveness that meets the criteria.

The LKPD is composed of 4 meetings, each meeting consisting of the title of the material, basic competencies, indicators of competency achievement, learning objectives, instructions for use, LKPD activities, learning materials, and evaluation. Activity 1 contains learning activities based on contextual stages on kidney material as an excretory organ, activity 2 contains learning activities based on contextual stages on liver and skin as excretory organs, activity 3 contains learning activities based on contextual stages on lung material as excretory organs, and activity 4 contains learning activities based on contextual stages on excretory organ disorders and how to maintain the health of human excretory organs.

The format for the preparation of the LKPD refers to the format for the preparation of the LKPD proposed by the Ministry of National Education (2008) and Prastowo (2013: 274) which consists of titles, instructions for use/learning instructions, basic competencies and indicators of achievement of learning outcomes, concept maps, supporting information, tools and materials used. used, work steps, assignments, and assessments.

In addition to referring to the format for preparing LKPD, the researcher also emphasizes a contextual approach which includes 7 components, namely constructivism, inquiry (finding), questioning (asking), learning community (learning community), modeling (modelling), evaluation, and authentic assessment (assessment that is carried out). actually). LKPD also contains material related to the excretory system in humans.

The design of the LKPD cover display uses an image of the kidney as an illustration of the contents in the LKPD. The cover on the LKPD consists of two, namely the front cover and the back cover. The cover color is designed in full color with a light blue base color for the front cover and pink for the back cover. Plus the supporting characteristics of the cover which consists of several components such as the title of the LKPD material, the approach of the LKPD, LKPD users, and the identity of the LKPD compiler.

LKPD content design with a contextual approach using a general font size of 12 pt with the theme Arial Rounded MT Bold and Times New Rowman, margin size with arrangement (top 2.45 cm, right 2.45 cm, left 2 .45 cm and bottom 2.45 cm). In the LKPD with a contextual approach there are several pictures of the kidneys and their constituent structures, internal anatomy of the kidney, malpighian body structure, kidney nephrons, stages of the urine formation process, sweating people, skin anatomical structure, lung structure in humans, liver anatomic structure, chart the process of breaking red blood cells, crystals (stones) in the kidneys, viral hepatitis, in addition to pictures related to the human excretory system, there are also some motivational pictures. The LKPD content design in the content section consists of 4 meetings, where each meeting consists of user identity, learning objectives, instructions for use, and learning based on the stages of the contextual approach.

The feasibility of LKPD with a contextual approach is known from the assessments of material expert validators, media, and teachers. The effectiveness of LKPD with a contextual approach to improve students' scientific literacy skills is known through limited trials in the field.

Tabel 1. *Interpretation of Ideal Assessment Criteria with a 4 Scale*

No.	Quantitative Score Range	Category
1.	$X \geq 3$	Very Good
2.	$2{,}5 \leq X < X + 0{,}5$	Well
3.	$2 \leq X < 2{,}5$	Not Good
4.	$X < 2$	Very Not Good

(Mardapi, 2008: 123)

Tabel 2. *Average Material Validator Assessment Results*

Assessment Aspect	Rating Result	Category
Kelayakan Isi	3,78	Very Good
Kebahasaan	3,61	Very Good
Hakikat Kontekstual	3,22	Very Good
Rata-rata	3,54	Very Good

Based on table 2, the average result of the material validator's assessment of the LKPD with the contextual approach developed is 3.54 which is in the very good category. The results concluded that the LKPD with a contextual approach could be used with a slight revision.

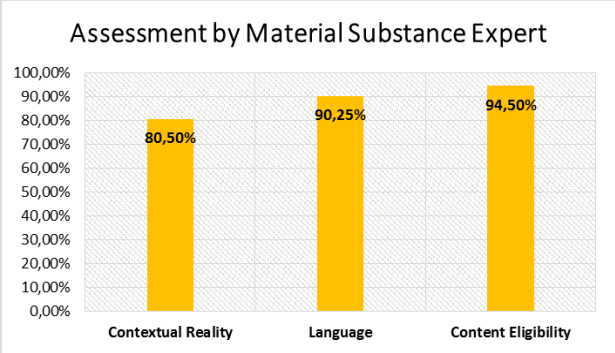

Figure 1. *Assessment by Material Substance Expert*

Overall, the average value of all specs that have been assessed by material substance experts is 3.54 with a feasibility percentage of 88.5%. This percentage indicates that the LKPD quality criteria with a contextual approach are very feasible. With aspects of contextual nature 80.50%, linguistics 90.25%, and content feasibility 94.50%.

The contextual nature aspect gets a lower score between the linguistic aspects and content feasibility. This is because the contextual component in the LKPD before it was revised, for the part of constructivism had not yet appeared. Constructivism should arise because of the experiences that students gain by discovering themselves. However, in the LKPD, which was previously revised, the material concept had been presented, so constructivism did not appear.

At the first meeting of the LKPD, in the constructivism section, an article on kidney function was displayed. Then, after being revised, the article was changed to an article discussing bad habits such as eating petai too often without being balanced with drinking enough water can cause impaired kidney function.

At the first meeting of the LKPD, in the inquiry section, students were asked to conduct a simple experiment in analyzing the filtration process or blood filtration in the kidneys. From this experiment, the water that has been mixed with a handful of rice is initially cloudy (not clear), after the water is filtered by gauze the water becomes somewhat clear.

This simple experiment, describes the working mechanism of the kidneys in the filtration process. Rice and the washing water represented as a model of blood in the renal artery, funnel and gauze represented as a model of the malpighian body and glomerulus. In accordance with the working mechanism of the kidney, the process that occurs in the kidney is first the blood enters the kidney through the renal artery, then the blood enters the glomerulus and Bowman's capsule (malpighian body), and undergoes a filtering process called the filtration process. Furthermore, the filtered fluid is referred to as primary urine.

At the second meeting of the LKPD, in the constructivism section, an article was presented on the function of the skin to excrete sweat. Then, after being revised, the article was changed to an article that discussed the habit of wiping sweat which can cause acne. When the condition of the body is sweating, you should avoid wiping using the back of the hand. This will allow dirt and bacteria to mix with the sweat, which will clog the pores.

In addition, the LKPD at the second meeting also displayed articles discussing the liver as an excretory organ. Then, after being revised, the article was changed to an article discussing smoking, which is one of the strongest triggers for liver cancer (a disorder that occurs in the liver).

At the third meeting of the LKPD, in the constructivism section, an article was presented about the appearance of puffs like smoke from the mouth when breathing in cold weather, this indicates that there is gas being released by the lungs. Then, after being revised, the article was changed to an article discussing the dangers of smoking for lung health.

At the third meeting of the LKPD, in the inquiry section, students were asked to experiment with chalk. This experiment was conducted to prove that the excretion products released from the human respiratory system are water vapor and carbon dioxide gas.

Lime water contains calcium hydroxide, which is a chemical compound that is produced when you mix water with lime. When we blow air into lime water, the carbon dioxide contained in the air we blow will react with calcium hydroxide in lime water and produce calcium carbonate, a compound that causes lime water to become cloudy. Based on the results of this experiment, it can be

concluded that the air we breathe contains carbon dioxide. This proves that carbon dioxide is the result of excretion from the human respiratory system.

Tabel 3. *Average Media Validator Assessment Results*

Assessment Aspect	Rating Result	Category
LKPD Size	4	Very Good
LKPD Cover Design	4	Very Good
LKPD Content Design	3,83	Very Good
Rata-rata	3,89	Very Good

Based on table 3, the average result of the media validator's assessment of the LKPD with the contextual approach developed is 3.89 which is in the very good category. The results concluded that the LKPD with a contextual approach could be used with a slight revision.

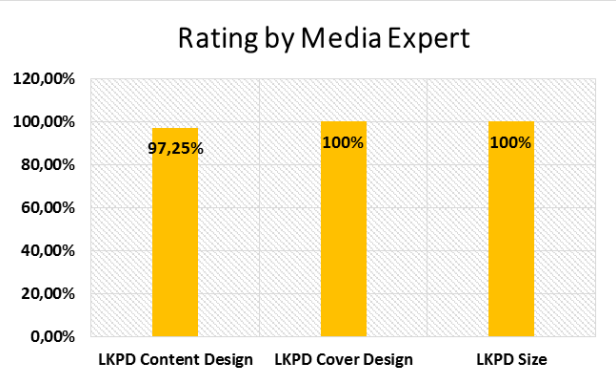

Figure 2. *Rating by Media Expert*

Based on Figure 2, the LKPD size aspect and LKPD cover design get a higher percentage, namely 100% because the LKPD size is large and easy to read. As for the content design aspect of LKPD, the percentage is 97.25%, this is because there are some words that are not in accordance with PUEBI.

Tabel 4. *Average Teacher Validation Assessment Results*

Assessment Aspect	Rating Result	Category
Content Eligibility	3	Very Good
Language	3	Very Good
Contextual Reality	3	Very Good
Rata-rata	3	Very Good

Based on table 4, the average results of the teacher validator's assessment of the LKPD with the contextual approach developed are 3 which are in the very good category. The results concluded that the LKPD with a contextual approach could be used.

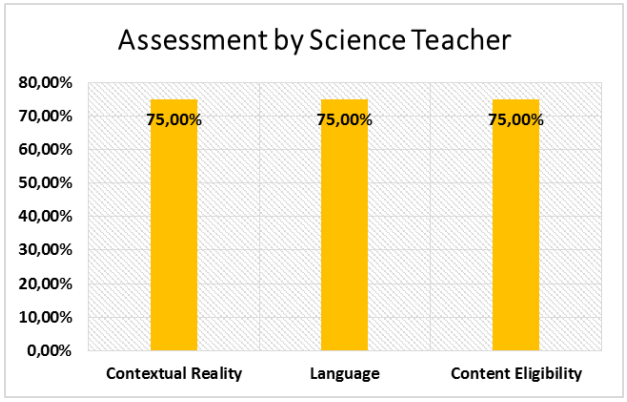

Figure 3. *Assessment by Science Teacher*

The overall average of all aspects is 3 with an eligibility percentage of 75%. This percentage indicates that the LKPD quality criteria with a contextual approach are feasible.

The product is said to be valid if it includes several components, namely (1) the content feasibility component includes the suitability of the SK with KD, needs, substance truth, benefits, moral values, and social values. (2) The presentation component includes the clarity of the objectives to be achieved, the order of presentation, the provision of motivation, attraction, interaction (providing stimulus and response) and completeness of information. (3) The linguistic components, including limitations, clarity of information, conformity with Indonesian language rules, effective and efficient use of language, then all of these components will be assessed by the validator on the validation sheet to determine the level of product validity based on the validity criteria (Desmiwati et al., 2017).

All aspects of the assessment are in the valid category, so the Student Worksheet with a contextual approach can be used in field trials in classroom learning to measure its effectiveness.

The level of practicality of the LKPD with a contextual approach can be seen from the results of the student response questionnaire which contains a statement of responses to the LKPD developed by the researcher.

Tabel 5. *Student Response Results Data*

Assessment Aspect	Rating Result	Category
Interest in LKPD	3,05	Very Good
Contents		
Material	2,95	Well
Language	3,37	Very Good
Rata-rata	3,12	Very Good

Based on table 5, it can be concluded that the assessment categories obtained from the results of student questionnaires are very good for the developed LKPD and students are interested in participating in learning activities with the help of LKPD with a contextual approach. Thus, the practicality criteria of LKPD with a contextual approach can be said to be achieved.

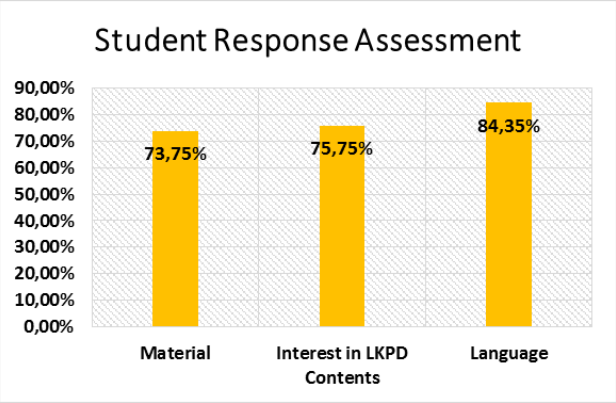

Figure 4. *Student Response Assessment*

The overall score of all aspects is 77.89%. This percentage shows that students are interested in LKPD with a contextual approach. The percentage of the material aspect is 73.75%, the interest aspect of the LKPD content is 75.75%, and the language aspect is 84.35%.

The level of effectiveness of the LKPD with a contextual approach can be seen from the results of the scientific literacy test after the LKPD has been tested. The test given is in the form of multiple choice questions totaling 20 items. Scientific literacy tests are given to students to determine the level of students' scientific literacy skills on the material provided by using LKPD with a contextual approach.

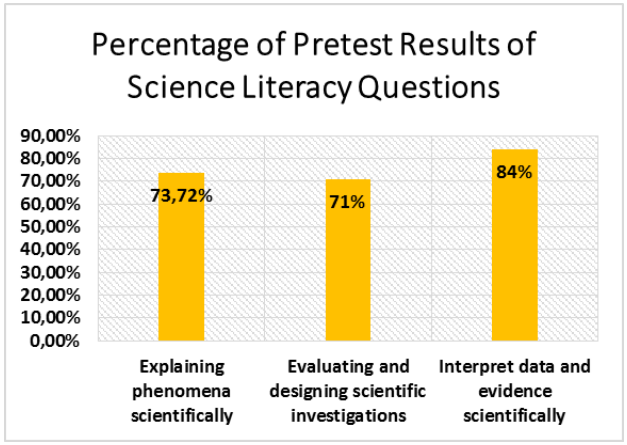

Figure 4. *Percentage of Pretest Results of Science Literacy Questions*

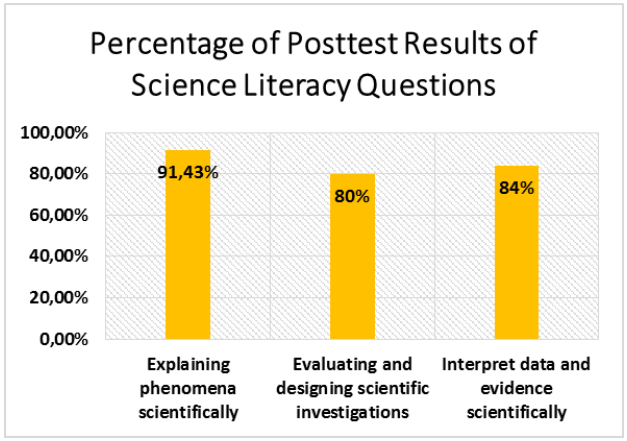

Figure 5. *Percentage of Posttest Results of Science Literacy Questions*

Based on figure 5, the percentage of aspects of explaining phenomena scientifically is 91.43%, then aspects of evaluating and designing scientific investigations are 80%, and aspects of interpreting data and evidence scientifically are 84%. From the results of the pretest and posttest, there was an increase in the percentage for aspects of explaining phenomena scientifically and aspects of evaluating and designing scientific investigations. This shows that the LKPD with a contextual approach is able to help students to improve their scientific literacy skills.

In order to determine whether there is an influence of LKPD with a contextual approach on the scientific literacy ability of students, the data on the pretest and posttest scores of students are tested using the paired sample t test using the SPSS version 22 application or program.

The paired sample t test is part of the comparative hypothesis test or comparison test. The paired sample t test aims to determine whether there is a difference in the average of two samples (two groups) that are paired or related.

The results of the pretest showed an average value (mean) of 73.00 from 25 data. The distribution of data (Std. Deviation) obtained is 14.58 with a

standard error of 2.92. The posttest results have an average value (mean) of 88.40 from 25 data. The distribution of data (Std Deviation) obtained is 10.77 with a standard error of 2.15. This shows that the posttest on the data is higher than the pretest. However, the posttest data distribution range is also getting wider and with a higher standard error.

The correlation coefficient value (correlation) is 0.543 with a significance value (Sig.) of 0.005. Because the value of Sig. 0.005 < 0.05 probability, it can be said that there is a relationship between the pretest variable and the posttest variable.

The significance value (2-tailed) obtained was 0.000 ($p < 0.05$). So that the results of the pretest and posttest experienced a significant difference (meaning). Based on descriptive statistics, pretest and posttest proved to be higher posttest. It can be concluded that the Student Worksheet (LKPD) with a Contextual Approach can improve students' scientific literacy skills.

The way to find out how much influence the LKPD with a contextual approach has on students' scientific literacy skills is to do a test with an effect size. The effect size test is a follow-up statistical test with the aim of knowing how big the effect of the treatment is.

Tabel 6. *Table to Provide Interpretation Value of Effect Size Value*

No.	Coefficient Interval	Relationship Level
1.	0,00 – 0,199	Very low
2.	0,20 – 0,399	Low
3.	0,40 – 0,599	Currently
4.	0,60 – 0,799	Strong
5.	0,80 – 1,000	Very Strong

(Source: Cohen, 1992)

Based on the calculations obtained using the effect size is 1.22. When viewed based on the interpretation table of the effect size values, the effect size values obtained show that the LKPD with a contextual approach has a very strong influence on students' scientific literacy skills.

The results of the calculation of the effect size of 1.22 with a sample of 25 students can be said that the LKPD with a contextual approach belongs to the scientific literacy ability of students in the high category of influence. This shows that the LKPD with a contextual approach has a high influence (high effect) on students' scientific literacy skills in learning science in class VIII A SMP Negeri 1 Yogyakarta.

To find out the increase in understanding or mastery of students' concepts after learning is carried out by the teacher, the N-gain test is carried out. Gain is the difference between the students' posttest and pretest scores. The results of the calculation of the gain value obtained an average pretest of 73 and an average of 88.4 posttest. So that the gain is 0.56. This means that students experience an increase in the results of scientific literacy skills in the medium category because the N-gain is in the interval $0.7 > g\ 0.3$.

Based on these data, it can be said that there is an increase in students' scientific literacy skills on excretory system material in humans using LKPD with a contextual approach. From the discussion above, it can be concluded that the LKPD with a contextual approach is effective on the scientific literacy skills of students in science subjects with excretory system materials in humans.

CONCLUSION AND SUGGESTIONS

Conclusion

LKPD with a contextual approach developed in this study is valid and feasible to use in science learning. LKPD with this contextual approach is also effective for improving students' scientific literacy skills. Conclusions can be a generalization of research findings according to the problems. It can also be a recommendation for the next step or other studies.

Suggestion

A good LKPD is one that suits the needs of students. So that the learning process, the level of activity, and student learning outcomes continue to increase. To the researchers themselves and further researchers to understand more deeply about learning with a contextual approach used so that the resulting products are better and of higher quality and can help the learning process. It is better to try out the product developed not only in one class so that it can involve large numbers of students. It is better to determine what science material is suitable for learning with a contextual approach. This is because not all science is suitable to be delivered using a contextual approach.

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