



Journal of Educational Sciences

Journal homepage: <https://jes.ejournal.unri.ac.id/index.php/JES>



P-ISSN
2581-1657

E-ISSN
2581-2203

Practicality of Life Skills-based Student Worksheets to Improve Critical Thinking in Respiratory System Material of Senior High School

Lilis Setiawati*, Sri Wulandari, Evi Suryawati

Faculty of Teacher Training and Education, Universitas Riau, Pekanbaru, 28293, Indonesia

ARTICLE INFO

Article history:

Received: 08 Dec 2019

Revised: 30 June 2020

Accepted: 30 June 2020

Published online: 24 July 2020

Keywords:

Critical Thinking

Practicalities

Respiratory System

Student Worksheet

ABSTRACT

This study aims to determine the practicality of life skill based student worksheets (LKPD) of class XI of high school on respiratory system material. The method used in the study was a research and development. The data source of this research was from two science teachers and thirty one students of class XI. The LKPD practicalities data was obtained through questionnaires practicalities of the device which was given to teachers and students. The analysis of the data used descriptive analysis that is to categorize the average score on learning process. Based on the analysis of the data, practicality of LKPD through three assessment data, it showed that the first observation data with an average 97,4 % in a good category, the second data questionnaire responses of teachers with an average 95 % in a good category, and the third data questionnaire responses of students with an average 91% in a good category. Based on the analysis of the data, the practicality of the student worksheets has an average with the excellent category for all aspects. This shows that life skill based worksheet can be used as a biology learning medium in high material school.

1. Introduction

Education is a process of influencing humans to adapt themselves as best they can to their environment, so that it will cause changes in him to be realized in social life. Changes in terms of improving education necessary in anticipation of future interests. The purpose of education to produce a generation of achievers can be achieved if the learning process that takes place is in accordance with the thinking ability of students, so that the material received by students will be easy to understand in the learning process.

* Corresponding author.
E-mail: lilissetiawati194@yahoo.com

The ability to think critically is logical and reflective thinking that is limited to the decision making process according to the rationale. As for indicator of critical thinking that is formulating the problem, giving arguments, making observations, doing induction, doing evaluation and deciding, doing deduction. According to Satria (2014) Learning is only done with theory in class rarely practicum causes students to not have experience in finding concepts independently so that students' critical thinking skills become low, those skills provide arguments and perform deduction, each of which is only 10%. The low critical thinking skills will influence the level of thinking of students towards the concept of biology.

The concept of biology is felt difficult for students there is in respiratory system material, this can be seen from the results of pre-research that has been done at YLPI Pekanbaru High School in class XII science 1 students that had been studying the material of the respiratory system it is known that critical thinking in the low category seen from the indicators formulate the problem 45,4%, provides argument 51,5%, perform deduction 36,3%, perform induction 54,5%, perform evaluation 42,4%, takes decision and determines action 57,5%, this matter in cause students have not been able to resolve the problem based on theories and real concepts that are connected in everyday life. Learning biology requires the ability to think critically so that students are expected to be able to solve problems from given problems or situations, so that learners understand the concept on respiratory system material.

Breathing is one of the characteristics of living things learned in class XI of high school, this concept is learned on Basic competencies 3.8 that is analyzing the relationship between the structure network organs compiler on the respiratory system and associate it to with bio-process so that it can explain the process of breathing and impaired functions that may occur in the human respiration system.

According to Dini et al. (2016), overall students have difficulty in understanding biological concepts, like the concept of respiratory mechanism. Mastery of students' concepts that are which is abstract abouts respiration concept shows an average of only 28.9%. In addition to being abstract, this concept is also related to daily life contained in human organs.

Respiratory System material that are characteristic Abstract is not only memorized, should be applied in students' worksheet teaching materials to help students understand biological concepts. Life Skill is the ability to dare to face the problem life and in a creatively looking for solutions so able to overcome it. Aspects of Life Skills (personal and social skills) can be innovated and developed through the Student Worksheet in which questions are equipped with indicators such as digging information, cooperate and communicate (Tajalli et al., 2010).

According to Prastowo (2015) Student worksheets are sheets containing assignments that must be done by students. Each student worksheet contains, among others a title, a brief theory, tools and materials, procedures, observation,

questions and conclusions. Student worksheets allow each student could give outideas and his opinion in criticizing biological problems.

Measuring the level of practicality of the student worksheet seen from whether the teacher considers that the material is easy and can be used by teachers and students. Therefore, the practicality of Student Worksheets was tested on a limited basis using observation sheets, and questionnaire sheets that in the form teacher response and student response. The purpose of the material instrument, summary, and instructions for the implementation of learning tasks that must be done by students that refers to the basic competencies that must be achieved (Nieveen, 1999).

In developing worksheets students, something need applied model is guided inquiry model. The guided Inquiry Model is a series of learning activities that emphasize critical thinking processes and analysis for searching and finding own answer from something problem that be questioned. Learning uses learners worksheets with a purposeful guided Inquiry model for learners get knowledge and skills in determining the right solution or answer on the problem of learning biology (Yono, 2015).

Development of student worksheets also required an appropriate development model that is ADDIE. The ADDIE model stage consists of five stages, namely the analysis phase, the design stage, the development stage, the implementation stage, and the evaluation stage. In the development of worksheets students are limited to the implementation stage, namely to see the practicality of the implementation of learning, and see students' understanding by using the worksheets of students.

Practicality is the level of product usage by students and teachers. This trial aims to determine the level of implementation of lesson plans and student worksheets based on life skills. In this study the practicality of the product is known from the implementation of lesson plans, teacher and student responses (Annisa et al., 2017).

One of the materials taken by researchers is the respiratory system material class XI high school. Respiratory system is material that is abstract. Based on the description above, this study explores how to develop student worksheets in practical learning of respiratory system biology. Then, the aim of the research is to improve critical thinking skills.

2. Methodology

This type of research used the research and development that aims to see the quality of products that practical. The product developed in this study was the student worksheet (LKPD). Development phase of this student worksheet used the ADDIE model namely analysis, design, development, implementation, and evaluation. The development phase of this Student Worksheet is limited to the

Implementation stage which is to see the practicality of the student worksheet with limited trials.

The study was conducted at SMA YLPI Pekanbaru. The object of this research was the development of student worksheet (LKPD) based of life skill. The research data were sourced from observation sheets and practicality questionnaires. The instruments used to collect data were observation sheets, questionnaires teacher responses and student responses. Practicality of LKPD based on life skills by two biology teachers and thirtyone students in YLPI high school pekanbaru.

At the implementation stage of the study, the trial was conducted in class XI MIPA of amount thirty one students. This research was conducted only one meeting, and finally the teacher meeting was given an observation sheet aimed at knowing the implementation of learning in accordance with the design of learning devices. The aspects observed in the observation sheet are in accordance with the learning device design (RPP) that was designed, namely introduction, core activities, and closed. questionnaire sheets the teacher's response is given to find out the success of learning. The aspects observed in the teacher's response questionnaire were content, language, and presentation. While the student response questionnaire aims to determine student understanding. The questionnaire uses a Likert scale according to the choice of answers or responses in a measuring scale that is strongly agree (ST), agree (S), disagree (TS) and strongly disagree (STS).

Practical data analysis techniques Worksheet Students can use the formula by Riduan (2007) in Lasmi Lestari (2018: 172) as follows:

$$P = \frac{\text{skor item yang diperoleh}}{\text{Skor}_{\text{Maksimum}}} \times 100\%$$

Categorizing the observation sheet assessment, the teacher questionnaire sheet, and the student questionnaire sheet for each of the aspects used for the student worksheet in Table 1.

Table 1. Practical Categories of Student Worksheets

Value (%)	Criteria
$80 < x \leq 100$	Very Practical
$60 < x \leq 80$	Practical
$40 < x \leq 60$	Quite Practical
$20 < x \leq 40$	Less Practical
$0 < x \leq 20$	Not Practical

3. Results and Discussion

Research development of student worksheets in respiratory system material using the ADDIE model is aimed to see the practicality of the student worksheet.

Observation sheet aims to determine the implementation of learning in accordance with the design of learning devices. Observed aspects on Observation sheet in accordance with the design of learning devices (RPP) that was designed, namely the preliminary aspects, aspects of the core activities, and closing aspects. The results of the observation sheet of learning activities using the student worksheet in Table 2

Table 2. Observation Sheet Results

Aspects	The value of practicality (%)	Criteria
Preliminary	97,91	Very Practical
Core activities	97,50	Very Practical
Closing	96,87	Very Practical
Average	97,42	Very Practical

In Table 2 above it can be seen that the results of observations carried out by the observer show the results in the category of very practical with an average value of 97.3%. This is because in the learning process the implementation of the RPP well makes students enthusiastic to learn because the RPP is developed by researchers who use syntax or steps, by implementing guided inquiry learning models and lecture methods which are corroborated by discussions between groups of students, this is clearly seen in the activities preliminary and activities core in the learning process. It can be concluded that the lesson plan is practically used by the teacher in the learning process, because the lesson plan is already in accordance with the actual learning situation and can be used as a guide for teachers the learning process. The opinion of this researcher is reinforced by Mulyasa (2007: 217) say "RPP must arranged in a manner intact and thorough, with several possibility adjustments in the actual learning situation".

Teacher response questionnaire aims to find out the success of learning. The aspects observed in the teacher's questionnaire were content, language, and dishes aspects. Results questionnaire responses teachers use student worksheet on respiratory system material in Table 3.

Table 3. Observation Sheet Results

Aspects	The value of practicality (%)	Category
Content	97,9	Very Practical
Language	93,7	Very Practical
Serving	95,0	Very Practical
Average	95,5	Very Practical

In Table 3 above it can be seen that the results of teacher' questionnaire responses to the workshet student based on life skill showed a very practical category with an average value of 95.5%. this is due to the student worksheet used give out ease for the teacher that is, the material presented is easy to understand, the use of LKPD according to the available time allocation, the appearance and illustration of images are in accordance with the description of the material, the language used is easy to understand and in accordance with enhanced spelling. Besides this developed LKPD can help teachers to activate students in the learning process

seen in the aspects of personal life skills able to improve thinking skills and social life skills show students are able to communicate and cooperate in the learning process. According to Majid (2012: 177), student worksheet (LKPD) can facilitate the teacher in preparing and implementing learning, helping students learn to understand the material and carry out things in writing. So, it can be concluded that the responguru questionnaire on the Student Worksheet for respiratory system material is said to be practical.

Student response questionnaire aims to determine student understanding. The aspects observed in the student response questionnaire were aspects of skills, aspects of material, aspects of attractiveness, aspects of language, and aspects of time. Results questionnaire responses of students using the Worksheet of respiratory system material in Table 4

Table 4. Results of Student Response Questionnaire

Assessment Indicators	Average (%)	Category
Display student worksheet interesting to learn	95,9	Very Practical
Student worksheet has an attractive color display	94,3	Very Practical
The type face used in student worksheet is interesting	94,3	Very Practical
Student worksheet has a clue use clear	89,5	Very Practical
Student worksheet supports being active in studying respiratory system material	93,7	Very Practical
student worksheet makes it easy to find concepts on the material	93,7	Very Practical
The life skill indicator in student worksheet is clearly displayed so that it can link concepts in daily life	89,5	Very Practical
Indicators of generic science skills in student worksheet are clearly displayed so that can improve thinking skills	89,5	Very Practical
Activities in student worksheet can be done according to the time of the lesson	93,7	Very Practical
Images in student worksheet can increase understanding of the material	89,5	Very Practical
Image size is corresponding	84,6	Very Practical
The student worksheet can facilitate understanding of respiratory system material	89,5	Very Practical
Practicum activities in student worksheet are easy to understand	89,5	Very Practical
The question in LKPD is in accordance with the learning objectives	94,3	Very Practical
Average	91,5	Very Practical

In Table 4 above it can be seen that result of questionnaire student responses to the Workshet Student based on life skill showed a very practical category with an average value of 91.5%. This conclusion was taken by the researcher based on score student responses and what students stated in the response questionnair . Students suggested that LKPD's appearance was interesting to learn and made it easier for student to find concepts in the material. This meant that students were helped in filling in the worksheets because they were supported by teaching

materials and the strengthening of the concept of materials assisted by learning media in the form of power point slides. In addition, students also put forward a color display that appeals to him. Students give comments that the size of the picture is still too small. The questions in the worksheet refer to personal and social life skills that lead students to find concepts regarding respiratory system material. According to Sumiati and Asra (2007) student worksheet (LKPD) can help students to process learning outcomes (find and prove concepts learned) in accordance with their abilities.

Figure 1 shows the overall results of the practicality of the student worksheet respiratory system material has been practically seen from the results of the observation sheet instrument, teacher response questionnaire, and student response questionnaire.

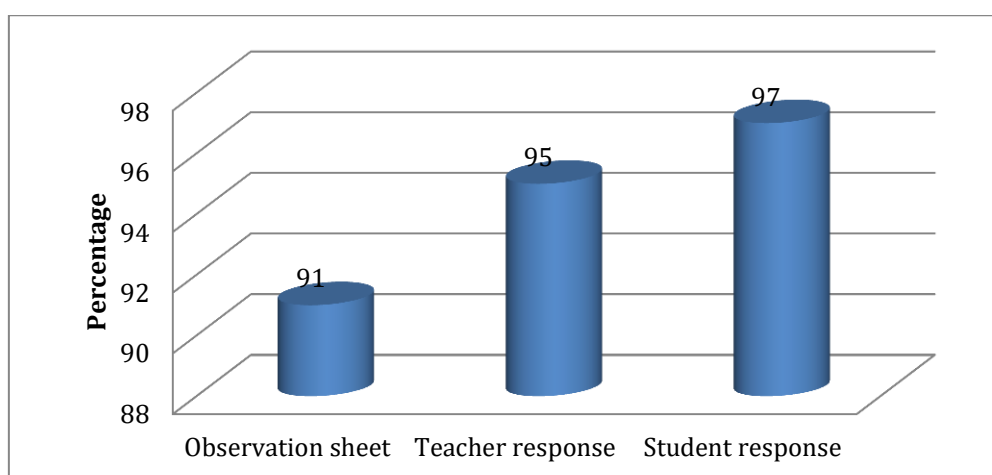


Figure 1. Percentage overall practicality of student worksheets

Increased Critical Thinking

Indicators of critical thinking ability that are assessed include formulating the problem, giving an argument, doing a deduction, conducting an induction, conducting an evaluation, and making decisions and determining actions. Data analysis of students' critical thinking skills is done by looking at the scores obtained from the assessment rubric.

Absorbency power critical thinking skills students' in KD 3.8 material in the experimental class and the control class before and after treatment can be seen in Table 5.

Table 5. Results of the Critical Thinking Assessment based on pre-test and post-test in the control and experimental class at YLPI Pekanbaru High School

Indicators of Critical Thinking	Pre Test		Average	Post Test		Average
	Control	Experiment		Control	Experiment	
Formulate the problem	36,2	51,5	43,8	63,6	80,2	71,9
Giving argument	36,0	47,2	41,6	61,5	80,4	70,9
Doing deduction	39,6	53,7	46,6	63,4	77,7	70,5
Doing induction	37,9	51,3	44,6	60,9	79,4	70,1
Doing Evaluation	38,2	51,0	44,6	61,9	82,1	72,0
Take decision and determine			41,4			71,3
Actions	36,1	46,7		61,4	78,3	
Average	37,3	50,2	44,9	62,1	80,1	71,1

In Table 5 above shows the results of power critical absorbency thinking in the absorbency experimental group and the control group before and after given treatment (pretest and posttest). For the experimental class to using life skill-based LKPD with the guided inquiry model, the mean pretest score was 50.2% and the post test was 80.1%. this is due to students being able to solve a problem and find concepts with teacher guidance. Model Inquiry is learning activities that emphasize the process of thinking critically and analysis to find and find their own answers to a problem in question (Sanjaya, 2006: 194). Whereas, the critical thinking ability of students in the control class obtained a pretest score of 37.3 % and a post test of 62.1 %. One of the reasons was that the students did not use the Life Skill-based LKPD and the learning model did not fit the research design. This is also caused by the process data collection as when process working on the pretest and posttest questions that done by students. Thus, the control group produced a not so good value compared to the experimental group using life skill based LKPD.

The results of this study indicate that the student worksheet developed can assist students in practicing critical thinking. Fom the six indicators to think critically that most high is indicator doing evaluation, it because students are quite able to make an overview or conclude in overcoming a problem. According to Rugerio (2012), students who can think critically can doing evaluation to his mind and compare the data with facts of opinion and thoughts from other people.

Analysis of N-Gain Critical Thinking

Data enhancement the posttest mean values in the control and experimental class showed different mean values. Therefore, an analysis of n-gain values was performed on both of these class. Based on the analysis results obtained n-gain between the control class and the experimental class. The value of n-gain can

indicate the value of the effectiveness of critical thinking. The results of the n-gain analysis can be seen in table 6.

Table 6. Results of the N-Gain Analysis Critical Thinking

Material	Experimen Group		N-Gain (categori)	Control Group		N-gain (categori)
	value average pretest	value average posttest		value average Pretest	value average Posttest	
KD 3.8	50,2	80,1	0,5 (medium)	39,7	62,1	0,3 (low)

Based Table 6 Shows the average normalized gain (N-gain) in the experimental group was 0.5, which is included in the medium category. As for the control group each was 0.3 included in the low category. This matter means it the learning process that uses Life Skills-based LKPD using the guided inquiry learning model is better than the group that does not apply learning with the inquiry model (control group). Students are actively involved in the learning process, it can be seen from the seriousness of students in expressing opinions, asking and answering, collaborating in groups and participating in observation activities. Lodia Johanis (2015), said that the guided inquiry learning process teaches students to actively participate in finding concepts in a manner individuals with guidance and motivation from the teacher.

Test the Critical Thinking Hypothesis

Hypothesis testing conducted is the t test for critical thinking variables in the control class and the experimental class. Test conducted on the pretest and posttest for the experimental and control class. Data related to testing the critical thinking hypothesis can be seen in Table 7.

Table 7. Independent Test T-Test for Critical Thinking

	N	Df	Sig.	T-Count	T-Table
<i>Pretest</i>	61	59	0,000	12,468	2,001
<i>Post test</i>			0,000	7.863	2,001

Based on Table 7. shows that the value of t count > t table is in the pretest of the control class and experiment $12.468 > 2.001$ and post test control class and experiment $7.863 > 2.001$. Based on the conclusions drawn the hypothesis shows that if t arithmetic > t table, then H₀ is rejected and H₁ is accepted. it means student worksheet life skill based that developed take effect on critical thinking of students both in the pretest and post test control class and experimental class.

4. Conclusion

Based on the results of research conducted shows that the Life Skills-based Student Worksheet on practical categories can be seen from three data. The first observation data students obtained with a very practical category. The second data

is the teacher questionnaire data with very practical categories. The third, student response questionnaire data with very practical category. Furthermore, the responses given by the teacher and students to the assessment data from the observation sheet, teacher response questionnaire, and student response questionnaire. In general, teacher responses to Student Work Sheets that have been used in learning are good teacher responses and student responses are very good. means stating the developed Student Worksheet is practical.

Acknowledgement

Thank you, Dr. Sri Wulandari, M.Si and Dr. Evi Suryawati, M.Pd who has guided in the research that has been done. This research was funded independently by researchers.

References

- Abdul, M. (2012). *Perencanaan Pembelajaran*. Bandung: Rosda Karya
- Annisa, D. F., Muh, K. M., & Ainul, U. T. (2017). Pengembangan Media Gambar Berbasis Potensi Lokal Pada Pembelajaran Materi Keanekaragaman Hayati Di Kelas X di SMA 1 Pitu Riase Kab. Sidrap. *Jurnal Pendidikan Dasar Islam*, 4(2), 14-28.
- Asra, S. (2007). *Metode Pembelajaran Pendekatan Individual*. Bandung: Rancakek Kencana.
- Dini, P. H., Raharjo., & Nur, K. (2012). Pengembangan LKS Berorientasi Kecakapan Hidup (Life Skill) Untuk Sma Kelas XI Pada Materi Sistem Peredaran Darah Manusia. *Jurnal BioEdu*, 1(2), 28-29.
- Eva, R., Rezky, R., & Linda, R. T. (2018). Praktikalitas Lembar Kerja Siswa Pada Pembelajaran Matematika Materi Statistika. *Jurnal Gantang*, 3(1), 41-45.
- Fisher, A. (2009). *Berpikir Kritis Sebuah Pengantar*. Jakarta : Erlangga.
- Lasmi, L., Heffi, A.Y., & Laila, R. (2018). Validitas dan Praktikalitas Lembar Kerja Peserta Didik (LKPD) Materi Kingdom Plantae Berbasis Pendekatan Saintifik untuk Peserta Didik Kelas X SMA/MA. *Jurnal Eksakta Pendidikan (JEP)*, 2(2), 170-177.
- Lodia, J. (2015). Penerapan Strategi *Guided Inquiry* Untuk Meningkatkan Hasil Belajar Siswa Ambon Konsep Sistem Pernapasan Manusia Kelas XI Sma Negeri 12 Ambon. *Jurnal Biopendix*, 1(2), 170-178.
- Mislaini. (2017). Pendidikan dan Bimbingan Kecakapan Hidup (Life Skill) Peserta didik. *Jurnal Ilmiah Pendidikan*, 1(1), 148-149.
- Mulyasa, E. (2007). *KurikulumTingkat Satuan Pendidikan*. Bandung: Rosda Karya.
- Nieveen, N. (1999). *Prototyping to Reach Product Quality*. Dalam Plomp, T; Nieveen, N; Gustafson, K; Branch, R.M; dan van den Akker, J (eds). *Design Approaches and Tools in Education and Training*. London: Kluwer Academic Publisher.
-

-
- Ridwan. (2007). *Skala Pengukuran Variabel-variabel Penelitian*. Alfabeta. Bandung
- Rosmala, S. (2015). Validitas Lembar Kegiatan Siswa (LKS) Berorientasi Life Skill. *Jurnal BioEdu*, 4(1), 783-786.
- Ruggiero VR. (2012). *Beyond feelings. A guide to critical thinking (Ninth ed.)*. New York, NY:McGraw-Hill.
- Safira, P. D., & Ari, W. (2017). Analisis Konsepsi Siswa dalam Materi Sistem Respirasi. *Seminar Nasional*. FKIP Universitas Sriwijaya.
- Sanjaya, W. (2006). *“Strategi Pembelajaran Berorientasi Standar Proses Pendidikan”*. Bandung: Kencana.
- Satria, T.P., & Martini. (2014). Pengembangan Lembar Kerja Siswa (LKS) Berorientasi Inkuiri Untuk Meningkatkan Keterampilan Berpikir Kritis Siswa SMP Kelas IX Pada Tema *Virgin Coconut Oil (Vco)*. *Jurnal pendidikan sains*, 2(1), 2252-7710.
- Siti, M. F. P., Samingan., & Evi. A. (2014). Penerapan Pendekatan Pembelajaran Berbasis Masalah Terhadap Peningkatan Kemampuan Berpikir Kritis Pada Konsep Sistem Pernapasan Manusia. *Jurnal Biotik*, 2(1), 1-76.
- Teuku, M.F., Adlim., & M. Ali, S. (2013). Perbedaan Keterampilan Berpikir Kritis Siswa Melalui Penerapan Media Pembelajaran Laboratorium Virtual Pada Konsep Sistem Pernapasan Manusia di SMA Negeri Unggul Sigli. *Jurnal Biotek*, 1(2), 67-136.
- Wiwin, P. M. (2017). Pengembangan Tes Kognitif Pada Materi Sistem Pernapasan. *Jurnal Biotek*, 5(2), 109-121.
- Yono, E. K. (2015). Pengaruh Model Pembelajaran Inkuiri Terbimbing terhadap Kemampuan Berpikir Kritis dan Hasil Belajar IPA Siswa Kelas VII SMP. *Jurnal Pendidikan dan Pembelajaran*, 22(2), 197-208.

How to cite this article:

Setiawati, L., Wulandari, S., & Suryawati, E. (2020). Practicality of Student Worksheets Based on Life Skills to Improve Critical Thinking in Respiratory System Material High School. *Journal of Educational Sciences*, 4(3), 632-642.
