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The Development of a Reading Literacy Ability Test Refers on Problem-Based Biology Learning

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Abstract

Reading literacy is a prerequisite for achieving 21st century skills. This study aims to develop a reading literacy test instrument refers on Problem-Based biology learning and AKM test model. This study is Research and Development (R&D) with a 4-D model. The qualitative data is the design result of a reading literacy test. The quantitative data includes the validity of the content of the instrument, the characteristics of the question items, the implementation of Problem-Based biology learning, and the level of student literacy. The data is analyzed descriptively. The instrument was in the form of multiple choice (6 items), complex multiple choice (12 items), matching (3 items), short answer question (2 items) and essay (7 items). The instrument is very valid (93.14%) with "medium" difficulty level (P value=0.671), "good" criteria differentiating index (Rpbis 0.380), and very high reliability criteria (Alpha 0.854). The choices functioned well (good). The implementation the Problem-Based biology learning is very high (100%). The reading literacy level of Godong 1 Public SHS is dominated by the proficient (54%) while Semarang 12 Public SHS are dominated by advanced (46%). It can be concluded that the reading literacy test developed is very valid to measure high school students' literacy.

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INTRODUCTION

The 21st century skills are fundamental to students. Students must have 21st century skills in order to go through the learning process well. The 21st century skills include four competencies, that is communication, collaboration, critical thinking, and creativity (Kemdikbud, 2017). The Center for Assessment and Teaching in Indonesia known as Pusmenjar stated that reading literacy is one of the prerequisites to be able to achieve 21st century skills. The ability to read literacy is not defined literally as the ability to read without understanding the content or meaning of the text. Reading literacy ability is the ability to analyze a reading and understand the concepts behind a text.

The text on reading literacy is an important aspect as a stimulus in the process of measuring students' reading literacy skills. The text that used on the test can be literary texts or informational texts. Pusmenjar (2020) mentioned that literary texts are texts that are presented using symbolic meaningful words whose truth cannot be equated with the real world, while informational texts are texts written based on factual data and events whose truth can be scientifically proven.

The Program for International Students Assessment (PISA) is an international student assessment program to test and compare student achievement worldwide. The results of PISA's research in 2019 stated that Indonesia is ranked 72 out of 77 countries for reading, ranked 72 out of 78 countries for mathematics, and ranked 70 out of 78 countries in science. Based on the results of PISA research, it shows that Indonesia still has low literacy skills in reading scientific information texts.

Test instruments for measuring reading literacy skills have been developed quite a lot, nonetheless the question form is limited to the multiple-choice questions and essays. One of them is Pratiwiningtyas et al. (2017) who developed an assessment instrument based on the Progress in International Reading Literacy Study (PIRLS) model to measure reading literacy skills in elementary school students. Reading literacy test instruments are also limited in certain contexts and have not been widely associated with specific learning models.

The Ministry of Education and Culture strive to measure students' literacy skills. To support this goal, the Ministry of Education and Culture created the Minimum Competency Assessment well-known as AKM (Kemdikbud, 2019). AKM specifically contains 5 different types of question forms, specifically multiple choice, complex multiple choice, matching, short answer question, and essays. AKM can be categorized into 2 types, to be precise is the AKM national survey and the AKM class. The difference between the two types of AKM is on the percentage of the form of the question and the implementation. AKM national surveys are conducted by the government while AKM classes are conducted by teachers. The implementation of classroom AKM is one of the challenges for teachers as educators. If it is related to the 21st century skills, teachers are expected to be able to develop reading literacy test instruments that can achieve communication, collaboration, critical thinking, and creativity competencies.

Reading literacy ability test instruments also need to be associated with specific learning models. The learning model used must be able to support 4 competencies in 21st century skills. The learning model must be able to bring out the ability to communicate, collaborate, think critically in problem solving, innovate, and think creatively. In line with this, Problem-Based learning is one of the innovative learning models that uses students' reasoning skills to solve problems and not based on rote memorization. Problem-Based learning is considered to be able to support achieving 21st century skills.

Problem-Based learning has five stages of learning, that is: (1) Orienting students to problems, (2) Organizing students to research, (3) Assisting in independent and group activities, (4) Developing and presenting work, and (5) Analyzing and evaluating the problem-solving process. According to Zhai et al. (2014) the third and fourth stages of Problem-Based learning can train students' literacy skills, especially in the aspect of explaining scientific phenomena.

Based on pre-research analysis at Godong 1 Public Senior High School (SHS), it is known that biology teachers had not developed a classroom AKM that could be used to measure students' reading literacy skills. In biology subjects, it is necessary to develop test instruments that correspond to the context and characteristics of biology subjects. In biology subjects if associated with AKM, test instruments to measure reading literacy ability must be made with a scientific context.

Based on the description above, it is necessary to develop a reading literacy test refers on Problem-Based biology learning. With the development of a reading literacy ability test refers on Problem-Based biology learning, it is assumed that the measurement of reading literacy ability for students will be more measurable.

RESEARCH METHODS

The population in this study was all class XI students of Godong 1 Public SHS and Semarang 12 Public SHS. The samples used in this study were 2 classes XI at Godong 1 Public SHS and 3 class XI Semarang 12 Public SHS, samples were randomly selected using purposive random sampling. The type of research used is Research and Development (R&D) with a 4-D model. This development research model is composed of four stages, specifically define, design, develop, and disseminate stage.

The define stage is wascarried out to establish and define the terms of development. In the design stage, it was determined how the reading literacy test is developed starting from the review of question items, question assembly, digitization of questions, trials, scoring, analysis, and reporting on instrument development. The develop stage was divided into 2 stages, that is expert appraisal and developmental testing. The expert appraisal stage aimed to validate or assess the validity of the reading literacy ability test design by expert validators who are competent in their fields. The data obtained from the expert appraisal stage is the result of assessing the validity of the contents. Analysis of the validity of the contents of the test using descriptive statistics based on the percentage of assessment scores of expert validators. At the developmental testing stage, the test instrument was tested to determine the characteristics of the question items. The disseminate was a stage of broadcasting as a means to test instruments on a large scale. In the disseminate stage, the percentage of implementation of Problem-Based biology learning and the level of students' reading literacy ability were measured.

RESULTS AND DISCUSSION

The results of the research on the development of a Problem-Based biology literacy test for class XI high school students included the design of development products, the validity of the content of the test instrument, the characteristics of the test question items, the implementation of Problem-Based biology learning, and the level of reading literacy ability in class XI students of Godong 1 Public SHS & Semarang 12 Public SHS.

Design of a Reading Literacy Ability Test Refers on Problem-Based Biology Learning

The product for developing a reading literacy test refers on Problem-Based biology learning reference was designed using the AKM question development design guide from the Center for Assessment and Learning or Pusmenjar. The guide contains 3 aspects, that is the form of the questions, the content of the text, and the context of the text.

a) Questions Form

The reading literacy test refers on Problem-Based biology learning developed totaled 30 questions which were divided into 6 multiple-choice questions, 12-item complex multiple choices,

3-item matching, 2-item short answer question, and 7-item essays. Each question item is composed of 3 parts, specifically the stimulus text, the subject matter, and the answer choice.

Khaerudin (2016) who stated that the form of multiple-choice questions has advantages and disadvantages. Murti & Hartono (2018) mentioned that multiple-choice questions have the advantage of being time efficient and can be used to test a large number of testee. On the other hand, the form of multiple-choice questions has a drawback, that is the possibility of students guessing the correct answer, if they guess it then the test assessment is invalid and cannot measure the student's actual ability.

The answer choices in multiple-choice questions are generally 3-5. In this test, the number of answer choices have five answer choices. This aims to reduce students' chances of guessing answers. The comparison of correct answer choices with incorrect answer choices is 1: 4, so each answer choice has a percentage probability of 20% as a correct answer and 80% as an incorrect answer choice. If the student guesses, then the chances of answering the wrong choice are much greater. This is in line with Arifin's statement (2019) which states that the answer choice of 5 will reduce the chance of guessing or the possibility of guessing from the testee.

The second form of the question is complex multiple choice. In this study, the complex multiple choices used were complex multiple choice (true-false) and complex multiple choice (other answers choices). In this study, there were 9 complex multiple-choice questions (true-false) in this study. In accordance with the design guidelines for the development of AKM questions by the Pusmenjar of the Ministry of Education and Culture of the Republic of Indonesia, the questions are scored dichotomously (score 1 if the answer is correct and score 0 if the answer is wrong). Students must put a tick on the correct answer choice. There are 3 questions that have complex multiple-choice questions (other answer choices) that are question items. The three question items are scored polytomous.

The third form of the question is matching question. The purpose of the matching question form is to match and connect between the statement on the first lane and the second lane statement. The first lane is the stimulus or premise of the question while the right lane is the response or answer from the first lane. The form of matching questions has advantages and disadvantages. The advantages of the form of matching questions include a wide scope of material, the arrangement of items is relatively easy and concise. The matching question item is scored using polytomous scoring.

The weaknesses of the matching question form include that there is a high probability of guessing the answer, students tend to use the ability to remember, homogeneity of answer choices is difficult to achieve (Tamrin & Faridathul, 2019). There is this study the shortcomings of the form of matching questions are overcome by paying attention to each constituent element of the question item which includes the reading text as a stimulus, the subject matter, and a good and homogeneous answer choice. Stimulus reading texts are selected that make students bring out the ability to find information, understand, and evaluate not just the ability to remember.

The fourth form of the question is a short answer question. Febyronita & Giyanto (2016) states that short answer questions have 3 forms of variation, such as short answer with command sentences, short answer with question sentences, and short answer with incomplete sentences (fill-in-the-blanks question). Variations that are often used are short answer with question sentences and short answer with non-complete sentences or fill-in-the-blanks question. In this study, the short answer question items used variations of short answer with question sentences and variations of short answer with incomplete sentences or fill-in-the-blanks question. This variation was chosen because the question item became easier to understand, this is in line with the opinion of Febyronita & Giyanto (2016).

The form of short answer questions also has advantages and disadvantages. Sudjana (2014) conveyed the advantages of short answer questions, including the possibility of guessing small

answers, questions are relatively easy to compile, students can answer short, and the scoring is quite objective. The lacks of the short answer question form is that higher abilities are difficult to measure, the scoring is quite long when compared to multiple choice, and there is confusion about the answers given by students. The lack of short answer question forms is minimized by making the questions as clear as possible and providing stimulus texts that can trigger students to bring out their literacy skills so that high reasoning abilities can be measured.

Khaerudin (2016) said that the form of the description question or essays is included in the subjective question. The description test is chosen to be one of the forms of test questions developed because the questions can measure high reasoning ability and students do not guess the answers as in the form of multiple-choice questions. This is in line with Wachidah et al. (2020) which states that the essay test can make students convey their thoughts, another advantage is that the preparation of a relative description test takes a short time.

Wallerstedt et al. (2012) state that the weakness form of essay questions is that more exam time is needed, sometimes only allowing a few questions to be tested. This has an impact on the scope of material content that cannot be displayed in its entirety. Wachidah et al. (2020) convey the lacks of the form of the description question, namely the scoring that is less objective because it is influenced by both the bad and the short length of the answer. In this study, these lack were minimized by the use of *Google Form* as a test medium, so that good and bad writing is not a problem. The lack of less objective scoring due to the length of the answers is overcome by creating a rubric of scoring guidelines for the description. With the scoring guidelines rubric, there will be no difference in scoring even if someone else does the scoring.

b) Text Content

The text content used in the development of the Problem-Based biology learning reading literacy test is informational text content. The content of the informational text can be seen in each reading of the stimulus text present at the beginning of the item questions. The form of informational text used is in the form of articles, scientific research, and infographics. Pusmenjar mentioned that in AKM, for the class XI high school level, ideally it is composed of 70% information texts and 30% literary texts. In this study, the reading literacy ability test with Problem-Based biology learning was modified to 100% informational text. This was done in accordance with the advice of the biology teacher of Godong 1 Public SHS in filling out the pre-research questionnaire to consider the complexity and characteristics of biology subjects.

The content of the informational text in the developed test discusses the material of the excretory system. The excretory system material contains information texts related to the relationship between the structure of the organ constituent tissues, bioprocesses, the influence of life patterns, and disturbances in the excretory system and its relation to technology. The information text was also chosen because it has alignment with the Problem-Based learning model used in this study. Hotimah (2020) in research on the application of Problem-Based learning methods said that learning can make students face real-world problems that must be solved and proven systemically and real.

c) Text Context

All parts of the reading literacy test questions are referring on Problem-Based biology learning that is developed to contain the context of scientific texts. The scientific context was chosen because the subject of biology is a subject that enters the realm of science. The scientific context specifically contains excretory system material which includes the relationship between the structure of the organ constituent tissues, bioprocesses, the influence of life patterns, and disturbances in the

excretory system and its relation to technology. Below is an example of a question on a reading literacy ability test that is arranged using a scientific context.

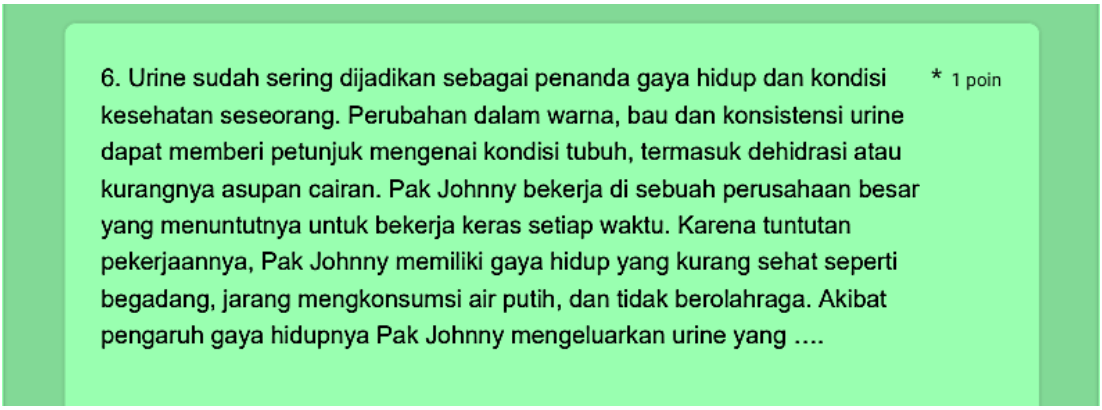

Figure 1. Example of a Scientific Text Context in a Reading Literacy Test Item

In figure 1, there is a narrative about Mr. Johnny's unhealthy lifestyle because of the demands of his job. The narrative is directed towards a scientific context rather than a personal or socio-cultural one. The scientific context in question is the relationship between Mr. Johnny's unhealthy lifestyle and the urine condition released by Mr. Johnny. It has been scientifically proven that urine can be used as a marker of a person's lifestyle and health. The color, smell, and concentration of urine released by Mr. Johnny can indicate Mr. Johnny's lifestyle and health.

Pusmenjar (2020) stated that the broad context has the aim that students are able to understand and reflect on various information to help students solve problems and develop their potential. This goal can be achieved if there is an understanding of relevant and tangential information in the daily life of students. The information covers various aspects that include local, national, international (global), socio-cultural, science, and technology.

The Content Validity of a Reading Literacy Ability Test Refers on Problem-Based Biology Learning

The results of the assessment content validity of the reading literacy ability test refers on Problem-Based biology learning were declared very valid (P value 93.14%). The test instrument is declared very valid because the P value obtained is in the range of $80 < P \leq 100$. Sugiyono (2016) stated that a valid instrument means that the instrument can be used to measure what will be measured. The reading literacy ability test refers on Problem-Based biology learning is stated to be able to measure what will be measured, in this research what will be measured is the level of literacy ability of students. Below are the results of the assessment of the level of validity of the content of the reading literacy test refers on Problem-Based biology learning by expert validators.

Table 1. The Content Validity Assessment Results by Expert Validators

No	Assessment Indicators	Validator 1		Validator 2	
		Score	Percentage (%)	Score	Percentage (%)
1	Material Aspects	24	96	25	100
2	Construction Aspects	32	91.43	32	91.43
3	Language Aspects	23	92	22	88
Average			93.14		93.14
Criterion			Very Valid		Very Valid

In the material aspect, it obtained a P score of 96% and 100%. The P value is in the interval of 80< P ≤ 100% so that the test instrument is considered very valid and is in accordance with the basic competency, the content of the material, indicators, references, and the concept of AKM questions in accordance with the school level. Percentage aspect of construction the score obtained is 91.43% for both validators, validators assess that the test instrument has the quality of clarity of graphs, drawings, tables, diagrams and the like. The accuracy of the reading text, homogeneity, logicality of answers, conformity with the Problem-Based biology learning model, clarity of work instructions and scoring are declared good, clarity of subject matter and choice of answers have also been rated very well by validators. In the language aspect, it obtained P scores of 92% and 88%, with this percentage it can be stated that the test instrument is in accordance with PUEBI, the sentences used are clear, straightforward, effective, communicative, and have been in accordance with the school level.

Characteristics Items of Reading Literacy Ability Test Refers on Problem-Based Biology Learning

The characteristics of the question items (difficulty level, differentiability, reliability, and distractor function) of the reading literacy ability test with Problem-Based biology learning are analyzed with the aim of determining the quality of the question items. Yuslita et al. (2016) stated that the analysis of question items can be used as an encouragement to improve the quality of the items by improving and refining the question items.

Based on the results of the analysis of the question items, it is known that Alpha shows the reliability of the test instrument as a whole. An Alpha value of 0.854 means that overall, the test instrument has a very high reliability value. Mean P indicates the difficulty level of test items. The Mean value of the analysis results shows a value of 0.671 meaning that the overall difficulty level of the test instrument is classified as "moderate". The mean Rpbis is used to find out the difference in power, in this test instrument the Mean Rpbis value is 0.380 so that it is not included in the "moderate" criteria (does not need to be revised).

Based on the results of this analysis, the reading literacy ability test with Problem-Based biology learning has criteria for an acceptable level of difficulty, differentiability, and reliability. In addition to the overall analysis, the results of Iteman's analysis also showed a per-item analysis of the reading literacy ability test refers on Problem-Based biology learning reference.

a) Difficulty Level of Each Items

The difficulty level of item (P) is divided into 5 levels, that is very easy, easy, medium, difficult, and very difficult. The level of difficulty that is not too high and not too low is an indication of a great items, this is due to the influence between the level of difficulty and the different power index. Question items that have too high difficulty will make the differential power index low and question items with too low difficulty levels will not have good differential power. The difficulty level should be adjusted to have a good differential power (Fatimah & Alfath, 2019).

This opinion is in line with Yuslita et al. (2016) who stated that a good question should not be too difficult and not too easy. Questions that are too difficult will be difficult for students to do because they are beyond their abilities and make students lose motivation to do things. Question items that are too easy to judge are not good because the question items are not able to make students increase their efforts to do it.

Based on the results of the study, it is known that the AKM question items developed have a difficulty level (P) which is dominated by question items with a "difficult" difficulty level. With a total of 14 questions. The question item developed by Hany a contains 4 levels of difficulty in the

absence of a question item with a "very easy" difficulty level. The following is the distribution of the difficulty level of question items in the AKM instrument as a result of development.

Table 2. Results of Analysis the Level of Difficulty of Question Items

Criterion	Item Number Question	Number of Question Items
Very difficult	9, 10, 12, 15, and 18	5 items
Difficult	7, 8, 11, 13, 14, 17, 20, 21, 24, 25, 26, 27, 28, and 30	14 items
Medium	3, 16, and 22	3 items
Easy	1, 2, 4, 5, 6, 19, 23, and 29.	8 items
Very Easy	None	-

Fatimah & Alfath (2019) stated that one of the important factors in determining the quality of the question is the balance of the difficulty level on the question item. A good question item has a difficulty level that is not too high (very difficult) or very low (very easy). Question items 1, 2, 3, 4, 5, 6, 7, 8, 11, 13, 14, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, and 30 are already classified as good question items because they have a difficulty level that is not too high and not too low.

Based on the table above, question items number 9, 10, 12, 15, and 18 are not included in the good question items because the level of difficulty is "too difficult". The five points of the question are difficult for students to do because they are beyond the limits of the student's ability and allow students to lose motivation.

b) Differentiating Power Index of Each Items

The differential index in the developed test is dominated by "excellent" differential power. The differentiation power index needs to be calculated to assess the intensity of a question item in distinguishing students who have understood the material from students who have not understood the material (Fatimah & Alfath, 2019). In this study, the 24 questions developed have been assessed to be able to distinguish students who have understood the material from students who have not understood the material. Meanwhile, the other 6 items, specifically question items number 4, 9, 12, 14, 15, and 18, are still unable to distinguish students who have understood the material from students who have not understood the material. The following is the distribution of the level of power of the different question items in the developed test instrument.

Table 3. Analysis Results Items Differentiation Power Index

Criterion	Item Number Question	Number of Question Items
Excellent	1, 5, 11, 16, 19, 20, 22, 23, 24, 25, 26, 27, 28, 29, and 30	15 items
Good	2, 6, 7, 8, 13, and 21	6 items
Enough	3, 10, and 17	3 items
Less	4, 9, 12, 14, 15, and 18	6 items
Very Less	None	-

c) Reliability of Each Items

The reliability of the question item (Alpha) in the reading literacy ability test refers on Problem-Based biology learning is dominated by a "very high" level of reliability, all question items have very high reliability because the entire A value of the Alpha is in the range of $0.80 < \text{Alpha} \leq 1.00$. The reliability of all question items on the test (30 questions) has very high reliability, the

Alpha value is in the range of 0.80 < Alpha ≤ 1.00. Sugiyono (2016) states that a reliable instrument is an instrument that when used to measure many times can produce the same and consistent data. In this study, question items that have high reliability mean that these question items can measure cognitive levels in literacy skills consistently. Based on the reliability results, it is stated that all test questions developed can consistently measure cognitive levels in literacy ability.

d) The Distractor Function for Each Item

All answer choices that serve as deceptions in the reading literacy test refers on Problem-Based biology learning totaled 108 answer choices. The function of distractor is assessed by looking at the student's answer differences in choosing various answer choices on the question items, this is in accordance with Fitriani (2021) who stated that the effectiveness of distractor is assessed using an answer distribution pattern, that is the distribution of testee in choosing answer choices. Most of the distractor functions (90) functioned well (value > 5%), the poor choices were revised before being used for large-scale trials of test instruments. The improvement of answer choices that have a deceptive function of less than 5% is in line with the opinion of Fatimah & Alfath (2019) stating that choices can be used or rewritten because they are not good. The answer choices should be replaced if none of the students vote.

Implementation of Problem-Based Biology Learning

The effectiveness of Problem-Based biology learning needs to be measured so that the objectives of learning can be carried out properly and the evaluation process to measure students' literacy ability can be measured more precisely. This is in line with Choirullita's opinion (2020) which states that learning objectives can be achieved if teachers can prepare the planning, implementation, and evaluation process well, these three processes can be assessed through the implementation of learning. The degree of implementation of Problem-Based biology learning is determined by descriptive analysis using the percentage of implementation. The percentage of Problem-Based biology learning in both schools is 100%. The criteria for the level of implementation of learning are very high because the percentage value is on a scale of 75 < P ≤ 100. The criteria are very high (100%) meaning that all stages of Problem-Based learning contained in the Learning Process Design well-known as RPP have been carried out as a whole.

Level of Reading Literacy Ability of Class XI Students of Godong 1 Public SHS and Semarang 12 Public SHS

Reading literacy skills have three cognitive levels that are tested, to be exact:

a) Finding Information (Access and Retrieve), at this cognitive level the competence that is expected to be achieved by students is to find, identify and describe ideas or information expressed (explicit) in the text.

b) Understanding (Interprate and Integrate), students are expected to be able to process the text that has been read by deciphering, integrating, comparing, grouping, making conclusions, and combining information in the text so that students can infer implied information in the reading text.

c) Evaluate and reflect, the expected competence at the cognitive level of evaluating and reflecting is that students are able to analyze, predict, and assess text both in terms of content, language, and elements in it. In addition, students are also expected to be able to relate experiences and the surrounding environment to create images or opinions about the content of the text (Pusmenjar, 2020).

Based on the mastery of reading literacy competencies, students' literacy abilities in this study were distinguished in four levels. In this study, the level of student literacy ability was divided

into four levels according to the mastery of the three cognitive levels previously mentioned. Below are the levels of literacy ability and mastery of cognitive levels:

1. The level of Need for Special Intervention, meaning that students have not been able to find and retrieve explicit information contained in the text or make simple interpretations.
2. Basic level, students are able to find and retrieve explicit information present in the text and make a simple interpretation
3. Proficient level, students are able to make interpretations of the implicit information present in the text; able to make inferences from the results of the integration of some information in a text
4. Advanced level, students are able to integrate information across texts; evaluate the content, quality, way of writing a text, and be reflective of the content of the text (Pusmenjar, 2020).

The results of measuring students' reading literacy ability measured using test instruments of development results show that the literacy ability of class XI students of Godong 1 Public SHS is dominated by the proficient level and class XI students of Semarang 12 Public SHS are dominated by advanced levels. This means that Class XI of Godong 1 Public SHS has generally been able to make interpretations of the implicit information present in the text; able to make inferences from the results of the integration of some information in a text. Class XI students of SMA 12 Semarang have been able to integrate some cross-text information; evaluate the content, quality, way of writing or text, and be reflective of the content of the text.

The next follow-up that can be done by the teacher is that the teacher can carry out learning as has previously been done to students with a level of advanced and proficient literacy ability. In addition, students with a level of proficient literacy ability can be given several reading texts to be evaluated and reflected by students. Teachers can assign students with advanced abilities to compare reading texts from various sources to make generalizations of conclusions with the results of the analysis of the reading text.

Based on the results of this analysis, the distribution of students' reading literacy levels in both schools can be mapped. The distribution of the level of literacy ability of students can be seen in the following table.

Table 4. Distribution of Reading Literacy Ability Levels of Students of Godong 1 Public SHS and Semarang 12 Public SHS

Reading Literacy Ability Level	**Godong 1 Public SHS**		**Semarang 12 Public SHS**	
	Sum	Percentage (%)	Sum	Percentage (%)
Need for Special Interference	2	3	2	2
Basic	9	13	14	13
Proficient	37	54	41	39
Advanced	20	29	48	46

Based on the table above, it is known that 3% of class XI students of Godong 1 Public SHS and 2% of students of class XI Semarang 12 Public SHS mean that students have not been able to find and retrieve explicit information in the text or make simple interpretations. As result of these, the teacher cannot rely on the reading material that has been given, the teacher is expected to provide students with other learning materials in audio, visual and special assistance.

A total of 13% of students with basic level literacy rates in both schools were declared to have been able to find and retrieve explicit information in the text and make simple interpretations. Teachers can be given companion learning resources in the form of short notes or conclusions for complete understanding.

The reading literacy ability level of students is influenced by several factors. Fuadi et al. (2020) stated that the ability to read and interpret a low reading is caused by students' low reading

habits and interests. Interest in reading is also an important factor determining the level of literacy of students. Interest in reading can arise from oneself (internal factors) or be influenced in the external environment (external factors). Saputri et al. (2017) stated that external factors that affect students' reading literacy are family and school. Families must be able to supervise and play a role in the student's learning process by creating an appropriate learning atmosphere and providing reading resources at home. Parents can give understanding to students to have awareness to learn and read.

Puspasari & Dafit (2019) which states that the school can be a major role in building students' interest in reading. Teachers can define learning models that support students' interest and habits in reading. In this study, *Problem Based Learning* was chosen as one of the learning models that is considered sufficient in increasing student literacy, this statement is supported by Puspasari and Dafit (2019) who argue that creative and interesting learning can increase students' interest in reading. In line with this, Saadati & Sadli (2019) also stated that learning strategies and models are important aspects that need to be considered

Based on the description above, it can be known that the level of student literacy ability is influenced by various factors that can be divided into 2 major parts, namely internal factors and external factors. Internal factors include students' reading habits and interests while external factors include the access availability, the family environment, and the school environment. Students can improve their reading literacy skills if all factors can be met and work together. This is in line with Puspasari and Dafit (2017) who stated that support and cooperation between facilities, students, families, and the school can create a good learning process so that students' reading literacy skills can also indirectly become better.

CONCLUSION

The development of a reading literacy ability test refers on Problem-Based biology learning has a very valid content validity. The characteristics of the question items in the developed test are good. "Moderate" difficulty level with a P value of 0.671. The differential power index of the items is included in the "medium" criteria with a value of Rpbis 0.380. The reliability of the question item is very high with an Alpha value of 0.854. The answer choices on the question items work well as distractors. Implementation percentage of the Problem-Based biology learning is very high 100%. The reading literacy ability level of class XI students of Godong 1 Public SHS is dominated by the proficient level and class XI students of Semarang 12 Public SHS are dominated by advanced levels.

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