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Program for international student assessment-based analysis for Javanese test

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ABSTRACT

This study aimed to analyze the test items of Javanese for junior high school in Special Region of Yogyakarta (DIY) using Program for International Student Assessment (PISA) literacy parameters. It was qualitative descriptive research employing content analysis methods. The instruments used were test items of PISA and Javanese reading literacy. The data collected was primary data in the forms of words, phrases, sentences, paragraphs, and discourses. The purposive sampling method was used to choose the research subjects. Data were analyzed using content analysis methods. The data collection was conducted through detailed documentation on test items of PISA reading literacy published by the Organization for Economic Co-operation and Development (OECD) and Curriculum 2013 Javanese reading test items for junior high school obtained from final examinations of four regions and one city in DIY. The semantic validity was used in this study. The results of the data analysis showed that out of 25 characteristics of PISA parameters of test items, there were only 13 (52%) characteristics a lied in test items of Javanese for junior high school in DIY, while the rest (48%) was not found in the Javanese test items. Based on these findings, it is expected that teachers can develop test items for Javanese reading literacy with higher thinking ability levels.

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1. INTRODUCTION

Program for International Student Assessment (PISA) is a survey conducted by Organization for Economic Co-operation and Development (OEDC). OECD is a multi-disciplinary world cooperation consortium. The organization conducts surveys and provides valid data to design important policies to improve education, economic, and social levels worldwide [1]–[3]. One of the OECD programs is to hold PISA every three years. PISA is an international study aimed at measuring the ability of 15-year-old students. Measured abilities are in the forms of reading, mathematics, and scientific literacies [4]. Through PISA, various information is obtained regarding the success level of Indonesian education. PISA also measures learning achievements and how to apply that knowledge in new and different situations [5], [6]. Therefore, tests PISA can measure the mastery of concepts, the success of processes, and the ability to address various situations and problems in daily life as adults [7].

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Indonesia has participated in PISA since 2001. However, the measurement results of Indonesian students' literacy ability in some international institutions always put Indonesia in a low position compared to other ASEAN countries [8]. For example, the 2018 PISA survey focusing on reading, mathematics, and scientific abilities as the minor assessment domains ranked Indonesia 74th out of 79 countries. Figure 1 presents the complete PISA test result of Indonesian students' reading literacy [9].

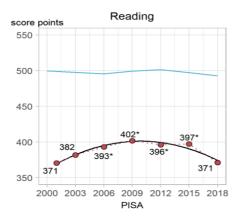


Figure 1. Literacy result of Indonesian students on PISA

The red dot is the result of Indonesian students' achievement in reading literacy from year to year. While the blue line is students' average achievement of reading literacy around the world taking PISA tests. Judging from the chart, Indonesia is left far behind. In fact, reading ability scores fell 26 points from 2015, from 397 to 371. This is certainly something of concern, considering reading literacy as one of the means to change for the better future. Reading ability is indeed related to the future. This statement is quite reasonable because reading habit pushes lifelong learning so that students can continuously develop themselves [10], [11]. In addition, motivation and reading ability influence a student's performance [12]. Reading ability is also a bridge to knowledge in the effort to strengthen self-potentials.

PISA tests determine that the reading literacy skills of Indonesian students are still low compared to the average level of the global community. Therefore, it can be inferred that Indonesian students' competencies are below the standards of global market needs. Of the six levels of reading literacy skills, Indonesian students are only at level 2. The description of level two is that students can find two pieces of information to make inferences about several conditions and determine main ideas, relationships, and meaning construction. Most Indonesian students cannot yet read critically and analytically and connect texts with understanding and knowledge outside the text [13]. The reasons for the low literacy achievement of Indonesian students, include: i) Lack of early literacy education; ii) Lack of training on typical PISA tests; iii) Disagreement with national curriculum with international standards; iv) Education budget issues; v) Teachers' quality; vi) Educational disparity; vii) The linkage between education and politics; viii) Decentralization of education; ix) The issues of teaching and learning processes [14], [15].

Based on the description, one of the reasons for the low reading literacy is the students' unfamiliarity with typical PISA test items. PISA reading tests include questions with high order thinking skills (henceforth: HOTS) and multi-text formats, while students in Indonesia are not familiar with those parameters. HOTS questions should be developed for every subject, including Javanese. Javanese is the mandatory learning subject as the local content is organized from elementary to high school levels. As a language lesson, Javanese includes four language skills. Javanese are taught for 2 hours per week at each level. If this subject has to use the test items in accordance with PISA characteristics, the reading test items will be continuity with all other learning subjects. If students are also accustomed to working on typical PISA test items in Javanese, they will be better trained to read complex texts and criticize the texts they read.

Training and particular competence are required to develop typical PISA test items in the respective fields. The questions made must be HOTS, so students can find and solve some problems [16], [17], addition a student develop critical thinking [16]. HOTS questions are not only to measure the ability of concept memory and knowledge but also how to analyze, evaluate, and create. By drilling students with this type of question, students are expected to improve their deep knowledge and qualified implementation ability, then applied in real life [18], [19]. To make a reading literacy test, the test maker must clearly know the characteristics of PISA test items.

In regards to the problem, it is necessary to examine the test items of Javanese reading literacy and then measure them with the parameters of PISA reading literacy. The goal is to determine which characteristics of high-level thinking skills are not yet present in the Javanese reading literacy test items. The results of the initial study show that the Javanese teachers' ability to develop test items with high levels of thinking skills still needs to be improved [20]. Therefore, this study is expected to identify the criteria of the test items following PISA standards. Through this identification, teachers are expected to develop more test items for reading literacy with higher thinking ability levels.

Relevant research has previously been conducted in order to discuss the characteristics of PISA reading literacy test items. The results show that higher order thinking skills such as interpreting, reflecting, and assessing dominate PISA reading literacy test items [13]. However, the present research discusses the characteristics of PISA test items only. In fact, there is a need to compare test items of PISA reading literacy with the Javanese reading literacy developed by teachers to identify test item characteristics that are not yet present in the developed test items. Therefore, this research was conducted to increase Javanese teachers' characteristics in developing reading literacy test items.

PISA is a test taken by junior high school students who have been able to apply critical thinking orders such as understanding and solving problems [21]. Unfortunately, this critical thinking order has not been optimally explored in schools. Critical thinking is assessing, evaluating, and questioning ideas based on reliable evidence [22]. This ability is very common in PISA test items. Thus, it is expected that the quality of students' thinking skills can be improved by familiarizing them with PISA test items. On top of that, this study will discuss the extent of Javanese reading literacy test items developed by teachers compared to standards of PISA.

PISA reading literacy is an individual's capacity to understand, use, evaluate, reflect on and engage with texts in order to achieve one's goals, develop one's knowledge and potential, and participate in society [7]. The description regarding the composition of these values is described as: i) Processes (aspects): Students are not assessed on the most basic reading skills, as it is assumed that most 15-year-old students will have acquired these. Rather, students are expected to demonstrate their proficiency in locating information, including both accessing and retrieving information within a piece of text, searching and selecting relevant text; understanding text, including both acquiring a representation of the literal meaning of text and constructing an integrated representation of text; evaluating and reflecting on text, including both assessing its quality and credibility, and reflecting on content and form; ii) Text formats: PISA uses both single-source and multiple-source texts; static and dynamic texts; continue texts (organized in sentences and paragraphs); non-continuous texts (e.g. lists, forms, graphs or diagrams); and mixed texts; and iii) Situations: These are defined by the use for which the text was constructed. For example, a novel, personal letter, or biography is written for people's personal use; official documents or announcements are for public use; a manual or report is for occupational use, and a textbook or worksheet is for educational use. Since some students may perform better in one type of reading situation than another, a range of reading situations is included in the test [7].

2. RESEARCH METHOD

It is descriptive qualitative research using content analysis methods. Test items of PISA and Javanese reading literacy are used as research instruments. Data were the forms of words, phrases, sentences, paragraphs, and discourses [23], [24]. In accordance with the determination of samples in content analysis, research samples were chosen using purposive sampling [23], [25]. The data were analyzed using the content analysis method. There were four stages of data analysis with this method, namely: decontextualization, recontextualization, categorization, and compilation. Semantic validity was used by analyzing Javanese reading literacy test items to find conformity with PISA reading literacy test items. Qualitative techniques in the form of comparison, perseverance of observation, and triangulation were used to determine data validity.

The data collected were primary data. The data were collected by documenting the test items on PISA reading literacy published by the OECD and Curriculum 2013 Javanese reading tests for junior high school in Special Region of Yogyakarta (DIY). The data were then classified based on the characteristics of the assessment adjustment process, the characteristics of the text format, and the characteristics of the answer format according to the model of PISA reading literacy questions. The results of data analysis are presented in the form of a description in which the researchers describe the characteristics of PISA reading literacy test items compared to the test items of curriculum 2013 Javanese reading tests for junior high school in DIY.

Researchers obtained the reading tests from four regions and one city in DIY comprising mid-term, final, end-year, and school exams. After that, the researchers examined the representation of samples by regions and then sorted out Javanese reading texts based on some categories. Finally, the researchers obtained 18 sets of exam questions based on purposive sampling, with the total number of literacy test items for Javanese reading being 72. The data is presented in Table 1.

Table 1. Data sampling of Javanese language literacy test

No	Year	Assessment categories	Grade	Number of questions
1	2018/2019	End of semester or midterm assessments	VII-IX	15
		Year-end assessments		10
		School exams		5
2	2019/2020	End of semester or midterm assessments	VII-IX	15
		Year-end assessments		10
		School exams		2
3	2020/2021	End of semester or midterm assessments	VII-IX	15
		Year-end assessments		-
		School exams		-
	Amount		18 sets of questions	72 question items

3. RESULTS AND DISCUSSION

This study aims to compare the characteristics of test items of Javanese reading literacy to those of PISA reading literacy. This section is devoted to describing the results of the test item analysis of the Javanese reading literacy for junior high school in DIY compared to PISA literacy parameters. Furthermore, there will also be explanations on the importance of these characteristics in relation to the students' higher thinking abilities. The results are presented in Table 2.

Table 2. The test item analysis on Javanese reading literacy compared to PISA literacy parameters

		Test items of Javanese reading literacy	Test items of Javanese reading literacy	Percentage
Cognitive	Locate	Access and retrieve information within a text	V	56
processes	information	Search for and select relevant text	X	0
•	Understand	Represent literal information	\checkmark	5
		Integrate and generate inferences	\checkmark	32
		Integrate and generate inferences across multiple sources	X	0
	Evaluate and	Assess quality and credibility	X	0
	reflect	Reflect on content and form	X	0
		Detect and handle conflict	\checkmark	7
Texts	Source	Single	\checkmark	100
		Multiple	X	0
	Organization	Static	\checkmark	100
	and navigation	Dynamic	X	0
	Format	Continuous	\checkmark	100
		Non continuous	X	0
		Mixed	X	0
	Type texts	Description	\checkmark	13
	• •	Narration	\checkmark	72
		Exposition	\checkmark	15
		Argument	X	0
		Instruction	X	0
		Transaction	X	0
Response	Response	Simple multiple choice	\checkmark	92
formats	formats	Complex multiple choice	X	0
		Close response	$\sqrt{}$	4
		Open response	\checkmark	4

From the description, it could be concluded that there are 25 characteristics of standardized PISA test items. Of the 25 characteristics, the Javanese test items in DIY comprise only 13 characteristics (52%) corresponding to the characteristics of the PISA test items, of which 3 were 100% similar to PISA. Furthermore, there were 9 of them with a percentage of between 4-92%, similar to PISA parameters. At the same time, the other 13 characteristics were not contained in Javanese reading test items. Therefore, it can be interpreted that the reading Javanese test item was not met the standard of PISA reading literacy test items.

The characteristics of the PISA test items that do not yet exist in the Javanese test item is the "search and selecting relevant texts." An example of a PISA test item with that characteristic can be observed in Figure 2 [26]. Test items with the characteristics "Integrate and generate inferences across multiple sources" and "Assess quality and credibility" were not found on the Javanese reading literacy test items. Figure 3 shows the example of a test item with those characteristics. In addition, the sample of test items also reflects PISA test items with the characteristic "dynamic organization and navigation," which is also not found in Javanese reading test items.



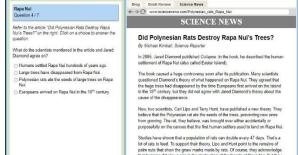


Figure 2. Examples of PISA reading literacy test items

Figure 3. Examples of PISA reading literacy test items

No test item of Javanese reading literacy fulfilled the characteristics of "Reflect on content and form" if compared to PISA test items. Examples of test items with the characteristics is can be seen in Figure 4. In addition, the test item in Figure 4 also shows the PISA item questions with the characteristic complex multiple choice answer format" that was not found in test items of Javanese reading literacy.

Test items with the characteristic "obtained from multiple sources" were not found in test items of Javanese reading literacy. However, in PISA, that type of test item is commonly used, as depicted in Figure 4. Another characteristic not found in Javanese reading literacy test items is "continuous and mixed text formats." Figure 5 shows a test item with the characteristic.

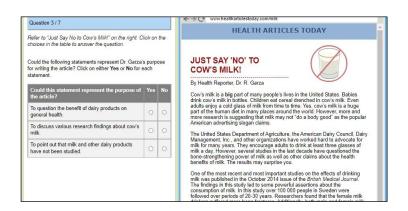


Figure 4. Examples of PISA reading literacy test items

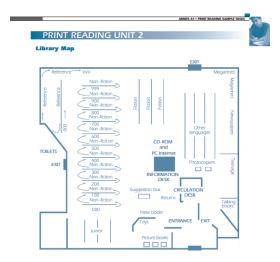


Figure 5. Examples of PISA reading literacy test items

Afterward, test items with the text types of argument, instruction, and transaction were not found in the Javanese reading literacy test items. Figures 6 and 7 show examples of PISA reading literacy with the text types of transaction, argument, and instruction, respectively [27]. Discussion on the test item analysis of Javanese compared with the parameter of PISA reading literacy will be explained in the following section. The explanation will be divided into three main parts: i) The analysis of characteristics of the assessment development process; ii) The analysis of the characteristics of the text format; and iii) The analysis of the answer format.

There are so many people out there dying from hunger and disease, yet we are more concerned about future advancements. We are leaving these people behind as we attempt to forget and move on. Billions of dollars are poured into space research by large companies each year. If the money spent on space exploration was used to benefit the needy and not the greedy, the suffering of millions of people could be alleviated.

Ana

The challenge of exploring space is a source of inspiration for many people. For thousands of years we have been dreaming of the heavens, longing to reach out and touch the stars, longing to communicate with something we only imagine could exist, longing to know... Are we alone?

Space exploration is a metaphor for learning, and learning is what drives our world. While realists continue to remind us of our current problems, dreamers stretch our minds. It is the dreamers' visions, hopes and desires that will lead us into the future.

Beatrice

Figure 6. Examples of PISA reading literacy test items



Figure 7. Examples of PISA reading literacy test items

3.1. Analysis of characteristics of the assessment development process

3.1.1. Locate information

Based on the data, there were 56% of learning to read Javanese aimed at "accessing and retrieving information within the text," requiring students to find particular information from the text. Qualitatively, the test item finding information from the text does not have significant differences from the test item of PISA reading literacy. Therefore, test items with these characteristics are very suitable for reading, namely capturing and understanding messages or information in the form of writing [28].

On the other hand, no test items of Javanese reading literacy were found fulfilling the second characteristic of "searching and selecting relevant texts." In contrast, the test item with this characteristic is essential to train students in relating new information with the student's prior knowledge. In solving problems, students will apply all the knowledge and information needed [16], [29].

3.1.2. The category of understanding

The cognitive process comprised of the characteristic of "represent literal information" was found in 5% of test items of Javanese. However, the test items for finding information in Javanese reading tests differed from those for PISA reading literacy. In Javanese reading tests, the process of interpreting is literally done by recollecting the meaning in the dictionary or looking for meaning based on context. In contrast, in PISA item tests, students should seek a literal understanding of the problem so that they can find a solution. Examples of PISA test items for this category can be seen in Figure 2 on "poultry health." In these test items, students are required to understand the literal meaning of the writings of Irma_88, NenieB79, Monka, and Bambang. If the students understand the literal meaning of each character's dialogue and the dialogue between the characters, they could answer the question.

Furthermore, the test item of the characteristic "Integrate and generate inferences," which requires the student to create a main idea or produce a summary or a title for a passage, is easily found in Javanese reading test items. There were 32% of Javanese reading test items fall into this category. One example is a question that originates from an online newspaper. The question maker quotes a section from the online newspaper tirto.id. The news describes about the Ministry of Agriculture's appeal for people to promote the consumption of fruits and spices to prevent the corona virus. Students are then asked to summarize the news. This category is mostly found in Javanese language questions. These types of questions are still included in the level 2 category, and Indonesia is still in level 2 for literacy skills. This shows a relationship that students who are familiar with level 2 questions, their literacy skills are also equivalent to level 2. Figure 8 shows the complete example of a level 2 category question made by a Javanese language teacher [30].

Which part of the below text is included as the news content?

The Fate of Farmers and Livestock during the COVID-19 Pandemic.

Since the announcement of the first positive patient by President Joko Widodo on March 2nd, 2020, the Ministry of Agriculture has diligently created a campaign on its Twitter account. Starting from the campaign of fruit and spices benefits to ward off coronavirus, physical distancing, to the certainty of safe food staple stock until August 2020. Unfortunately, from all the campaigns, there is no information on the impact of the COVID-19 outbreak on farmers. Of the 68 posts related to COVID-19, there was one related to food prices in Mitra Tani Market/TTIC ordered via go food.

Figure 8. Example of a level 2 category question (Translated from Tirto-id) [31]

Although the category is found in the Javanese reading literacy, it differs from PISA reading literacy in that sub-category. In the PISA literacy test items, students are asked to look for relevance between one text and another and engage more deeply with the information in the text. After that, students should be able to integrate information from those texts in order to get the correct answer. Figure 9 is an example of PISA reading literacy integrating and producing conclusions [26].

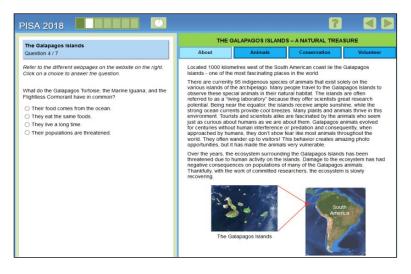


Figure 9. Examples of PISA reading literacy test items

3.1.3. The category of evaluate and reflect

For the sub-categories of "reflect on content and form" and "assess quality and credibility," no data was found on the Javanese reading literacy test items. In Figure 3 (PISA test items), students are required to be able to integrate and select information from several reading sources, namely blogs, book reviews, and science news. After that, students must identify the effects of the loss of large trees in Rapa Nui and understand what every scientist believes to be the cause of death.

In this test characteristic, students are required to be able to evaluate whether the information in the text is valid, up-to-date, accurate, unbiased, and trustworthy. Students should also identify and consider the source of information, the content, and the form of the text, or in other words, how the author presents the information [32]. In terms of higher order thinking skills (HOTS), the cognitive process of evaluating is one of the abilities that students must possess. In addition, there were differences in terms of quality and credibility in which Javanese test items used the simple single text format. Meanwhile, PISA test items have already used complex-solid multi-text test items. PISA test items also use a variety of texts in one question, such as blogs, book reviews, science news, and others aiming at measuring students' digital literacy.

Students must master digital literacy skills in order to be able to consider the quality and credibility of a text nowadays. Moreover, much hoax news is scattered in the community nowadays. Therefore, research has been related to the characteristics of the text format; indeed, multi-text understanding is needed by students in the digital era. Furthermore, the habituation of item tests with multi-text readings educates students to face conflicts from various contradictory sources of information so that they are able to accept and choose the good source [33]. In summary, multi-text can improve students' critical reading [34].

In the PISA sub-category of "reflecting the content of the form" through evaluating and determining how the author expresses his purpose and/or points of view, an item test presented requires students to reflect on their experience and knowledge. Students are then asked to compare, differentiate, or hypothesize different perspectives or points of view [26]. Based on the data obtained, no item tests of Javanese literacy reading fulfilled this parameter. In fact, this ability is a high level of thinking skills enabling students to analyze every problem and express their own perspectives. Students are invited to be more critical by comparing a problem with their experience and knowledge. Students' experience, so-called prior knowledge, does need to be evaluated through reading literacy test items. This is in line with the theory stating that reading is a complex activity involving various aspects, including motivation, prior knowledge, confidence, strategy, and skills [35]–[38].

The next characteristic is "detect and handle conflict". One example of Javanese language questions about detecting and handling conflicts made by a Javanese language teacher is about a new student's inner conflict in making a decision. This student's name is Dimas and he has to decide his stance in facing a new situation when he becomes a new student at a school. This type of question only accounts for 7% of Javanese language questions. This percentage is small and also not fully in line with the characteristics of detecting and handling conflict questions. This type of question should be a multi texts question, not just within one text so that the decision made by the student is based on data from various texts. Figure 10 presents the complete question created by Javanese language teachers [39].

Dimas and his friends then greeted the teacher, the teacher who was standing inside the gate. Dimas immediately looked for his class. After finding his class, he immediately looked for an empty seat. Dimas asked permission to sit beside his friend, who was still alone while introducing his name. What to do if you don't know friends?"

- a. Hanging out together
- b. Sitting next to a new friend
- c. Getting acquainted
- d. Making friends and brotherhood

Figure 10. Example of question created by Javanese language teachers (translated) [40]

Although there were already test items fulfilling this characteristic in Javanese reading literacy, there were differences in the depth of the test item compared to PISA's. In Javanese, there is only one question with one answer without any conflict. There are no scientific considerations on various literacy, unlike PISA test items that use multi-text reading. To answer PISA test items, students must determine whether some of the texts support or contradict each other. When conflicts occur, students must decide how to resolve the conflict, yet the test items of Javanese only use a single text. In fact, cognitive processes in resolving these conflicts must be possessed by students to have higher order thinking skills.

Problem solving capability is necessary for today's globalization era. Various conflicts occur, and with literacy, students are expected to be able to find and explore a variety of information that can be used as solutions to overcome conflicts. Various studies have been conducted with results showing that literacy is able to overcome problems, conflicts, and crises that arise in society such as religious and economic conflicts [41], [42]. Problem solving skills are needed to allow students to think creatively in the scientific context.

3.2. Characteristic analysis of text

The variety of texts in the PISA reading literacy test can be classified into four, namely source, organization and navigation, format, and type [32]. The text in the field of reading exams in Javanese subjects in DIY is quite diverse. The following is the classification of the variety of text compared to PISA reading literacy.

3.2.1. Source

There are two types of PISA reading literacy test items regarding the sources. They are a single source with one source or an author and multiple sources or authors. In the test items of Javanese, only one type was used, the one-source text. The source text used was taken from magazines, articles, textbooks, and some articles on the website. The example is a quote from a short story published in the newspaper Harian Jogja. The question quotes one of the story's narratives about the character named Sarpan. This character undergoes a change in personality due to environmental influences. Javanese language questions use questions with a single source type. Such question, which only uses one source and students are not asked to compare with other sources [43]. The following is an example of a single source test item.

"Deg! Oh, how rude Sarpan is. The person I knew who respected others and was full of courtesy towards others turned out to be a wild animal ready to prey on him. Big cities have changed your character and your heart so that you become pitch black..." (Quoted and translated from Harian Jogja Page 21, Thursday, 14 April 2011) [44]

The single-source text format in the Javanese reading exam was not different from the PISA reading literacy test. It was just that the packaging of sources on PISA reading literacy tests was more varied, such as conversation forums containing some opinions from netizens, television news, email conversations, online transactions, blogs, online news, and others. There is a need for varied resources on the test items in the field of Javanese reading, not only articles in magazines or textbooks only. Teachers can also provide a section for comments on YouTube or Instagram that discusses current issues, news on television, or conversation forums so that students are familiar with digital literacy. As stated in the previous discussion, no test item of Javanese used several sources even though this model could be used to develop students' reading literacy skills and cognitive skills. This is in accordance with the assessment context that measures students' abilities, namely correlating different information [45].

3.2.2. Organization and navigation

There are three categories of test items of PISA reading literacy in terms of organization and navigating: static, dynamic, and mixed. Static density texts are ones with low density containing only one or two pages, and the problem consists of one linear theme. On the other hand, dynamic texts are ones with high density, in which one page of the text can discuss non-linear themes [32]. Related to the form of text, there test items of Javanese were categorized as static in which the texts were low in density. The static type texts on the test items of Javanese reading and PISA reading literacy questions were not much different. The following is an example of a static question created by a Javanese language teacher. This question quotes from a news article posted on the district government's website. Javanese language questions are 100% static questions. They consist of quotes from news, dialogues, short stories, and others. The following is an example of a static question about the making of *adrem*, a traditional food from the Bantul, Indonesia [46].

"Adrem is a typical food from Bantul Regency. This bread is made from rice flour and brown sugar, which is fried ..." (Quoted and translated from http://www.bantulkabgo.id/pawartos/269html) [47]

The data show that there were no test items of Javanese reading using texts at the dynamic and mixed navigation level. Dynamic and mixed navigation is done by providing texts containing images, graphics, tables, and more. Non-linear texts can also contain several sources such as websites, blogs, newspapers, magazines, package books, encyclopedias, and others. Then students must look for answers among these sources. The test item can be selecting the relevant text, finding certain information that matches the test items, and demonstrating the depth range of engagement of one text with another.

3.2.3. Text forms

The texts in test items of PISA reading literacy are in three forms: continuous, non-continuous, and mixed-form. In terms of the mixed-text format, it consists of a combination of continuous and non-continuous texts. However, no non-continuous and mixed-format texts were found in the test items of Javanese. In fact, non-continuous texts used in test items are needed to improve skills in utilizing and accessing information in the forms of maps, forms, charts, tables, and graphs in various contexts of daily life. In addition, with the visualization in the test items, students can observe the problem as a whole so that it is easier to find solutions. Problem visualization could also facilitate understanding, strengthen memory, simplify and see problem associations, and meet individual learning styles [48].

Based on the statement, it is understandable that visualization of problems in the form of maps, forms, tables, charts, and graphics is important for students. An example of a non-continuous text form question can be seen in Figure 5. In this question, a complex library room layout is presented. Based on this layout, students are asked to indicate the most appropriate place to read French novels [27].

3.2.4. Text types

The text types used in PISA reading literacy include descriptive, narrative, argument, exposition, instruction, and transaction [32]. Meanwhile, the test items of Javanese use narrative, descriptive, and exposition. In grade VII, the text types learned are descriptive and stories of experience (narrative). In grade VIII, the text types learned are exposition and short stories (narrative), and grade IX students study the text of Master of Ceremony, which is included as narrative texts. Hence, it can be understood if the text types of argument, instruction, and transaction were not used as the test items in Javanese reading.

The most noticeable difference between the descriptive texts used in Javanese reading test items and PISA reading literacy is the absence of visualizations in the forms of images, graphs, or charts. A description text is one that explains or illustrates a thing using clear and detailed words. Further, the descriptive text should have the appropriate visualization so that students are able to get a clear, complete picture to improve the detailed vision, sound, smell, taste, feeling, and texture to create a clear image in their mind. In addition, the author must also pay attention to spatial settings in order to create a clear visual picture of persons, places, objects, or scenery [49].

The test items of narrative texts focus on an event's time [32]. The Javanese test items generally included the themes of experience stories, folklore, puppet stories, and others. There is no significant difference between the narrative texts used in test items in Javanese and PISA reading literacy. In PISA reading literacy text, there are also narrative texts in the forms of stories of experience, pieces of novels, short stories, and others.

The next text type used is exposition containing an explanation of how the different elements relate to each other and providing answers to the question 'how' [32]. The most noticeable difference is the presence of various text formats, such as comics, blogs, and websites. Varied text forms can be a reference for teachers in developing test items using exposition texts. The text types of argument, instruction, and transaction were not found in the test items of Javanese because the text types were not included in the basic competency of Javanese as the local content. However, argument, instruction, and transaction texts can be considered when preparing the curriculum of Javanese subjects. It is because of the importance of these text types in training students to think at higher levels.

The text of instructions is used in PISA in the forms of authentic recipes, charts showing how to provide first aid, or guidelines for operating software that is commonly found in everyday life. Instruction is a text type that students must master because, along with the development of technology, so many products are invented. In addition, students will definitely meet various procedural things in daily activities, e.g., a 17-year-old student must understand the procedure of applying for an identity card, driving license, and others. Understanding the procedural texts will help students be independent and understand the appropriate procedures in taking care of things without shortcuts, such as applying for a driving license.

The text type of transaction is not yet found in the test items of Javanese reading. The text of transactions taught in high school in Javanese is still limited to traditional letters. Materials should also be taken from various digital sources, considering that Javanese is also used in nowadays' online transactions. Understanding the transaction text can prevent students from becoming victims of scams through social media. Exercises to understand digital literacy must continue to be carried out, bearing in mind that digital competence must be mastered gradually. In the digital era of independent study, digital literation is needed for teaching and learning [50]–[52]. It is vital in determining students' characters and needs and parent and teacher assistance. Some of the applications are useful such as reinforcement, facility aid, training, and assistance in finding specific software, improving the variety of qualified learning sources, increasing digital literation reading material in the library, the use of learning applications as a source, double school bulletin, and computer and internet in the class [50], [52]–[54].

3.3. The characteristics of answer formats

The answer formats available in the test items of PISA reading literacy 2018 are simple and complex multiple choice, short answer, closed essay, and open description [13]. In addition, however, there are contextual and fluted test items in PISA. Therefore, students are exposed to one topic, explored from the beginning of the process of textual understanding to the opinions and knowledge of students around the topics discussed. Examples of PISA fluted test items can be found in the official document released by PISA. In this document, examples of PISA questions can be found in the form of scientific literacy and collaborative problem-solving [55].

The answer formats used in test items in Javanese are multiple-choice, closed response, and open response. The differences are in the context, plot, density, and complexity. In test items of Javanese, the essence of the questions tends to be simple, not dense, flat, and less authentic. Therefore, no complex multiple choice answer formats are used in test items of Javanese. The format of multiple complex choices allows students to think analytically, synthetically, and evaluatively as the higher-level thinking order. Hence, the format of multiple complex choices can be used in measuring students' thinking capabilities at the level of evaluation as well as guiding students to master the learning materials in complex and comprehensive manners [56]. Unfortunately, teachers rarely use the format because of time constraints in developing test items and difficulty making test items with multiple complex choices [56]. The next answer format is the closed essay. There is no difference in the format of closed essays between Javanese test items from PISA reading literacy test items.

Another format of the test items in PISA is the open essay requiring students to be able to develop creativeness, as well as developing their capabilities in mathematical thinking [57]. Students are asked to solve problems in varied ways and solutions. Test items using the format of open essay in the Javanese reading test were similar to PISA reading literacy. The difference was that PISA gave illustrations of images related to the text presented. Test items in the format of open essays in PISA require students to scan and infer answers from the provided text and ask them to express their opinions and arguments about global issues. Figure 11 shows an example of a question related to global issues.

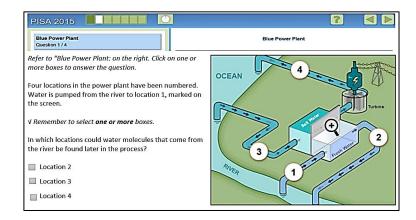


Figure 11. Examples of PISA reading literacy test item

4. CONCLUSION

The conclusion that can be drawn from this study is that the developed test items of Javanese reading literacy for junior high school in the Special Region of Yogyakarta only fulfilled 52% or 13 of 25 characteristics of reading literacy parameters made by PISA. The characteristics that were not yet found in the Javanese test items are: i) Search for and select the relevant text; ii) Integrate and generate inferences across multiple sources; iii) Assess quality and credibility; iv) Reflect on content and form; v) Text formatting from multiple sources; vi) Dynamic organization and navigation; vii) Non-continuous forms of texts; viii) Mixed forms of texts; ix) Argument texts; x) Instructional texts; xi) Transactional texts; and xii) The characteristics of complex multiple choice answer formats.

There are three important things to discuss in the difference between PISA literacy and Javanese test items: contextualization, thinking order, and authenticity of PISA questions. Contextualization and thinking order also come with the authenticity of the test items. Test items of PISA are to be as authentic as possible. For example, in PISA 2018, the priority is digital literacy skills. Therefore, the test items use formats of blogs, science news, websites, email communication, and others. The format is also authentic. For blogs, the

comments column is provided like a real blog, similarly to the formats of news and websites. The main character's name exists, researches, and writes existing books. Likewise, the issues discussed in the PISA test items are also real events happening in the world.

Compared to PISA reading literacy, Javanese reading literacy has contextualization and authentic thinking order. Yet, the problems and the format of test items are less diverse. Most of them are just news, stories of experience, or puppet stories. In addition, the source of the texts is also less up to date. For example, there were test items issued in 2019 using the news in 2017. In sum, with the results of the present research, it is expected that there will be revision of the Javanese language curriculum to reorganize the level of literacy at each level of education to adjust to global literacy mastery standards; training on writing test items with PISA standard parameters, especially for Javanese, so that teachers are able to write multi texts that are able to develop students' higher order thinking competence; teaching reading literacy especially in the form of digital literacy in schools so that students are not easily trapped by hoaxes, conflicts, pornography, excessive star syndrome, addiction to games and mobile phones, and others.

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