

Why Indonesian Students Struggle in Reading Test?:

An Insight from PISA 2018 Results

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Abstract—As PISA 2018 results announced in the end of 2019, most countries found out having a decrease in Reading Score. Some argue that changing in reading test delivery to computer based test while advancing it through adaptive test is the most likely contributed factor in lowering the score. Previously, Indonesia had positive progress in reading score but in PISA 2018 the score declined to its 2000 score. While more research reveals the struggle in students doing reading test, Indonesian students have limited expose in this field of research interest. Therefore, this paper aims to provide data in relation with Indonesian students in reading test and find out why they have difficulties in the test. From the test instrument, students may have difficulties in doing the test due to some unfamiliarity in test format and context. Further, the challenging topics in reading test are developed by PISA through adaptive test. Looking at background questionnaire, some contribution factors in reading test will also be examined to find out what other countries has successfully applied in improving their students' reading score and what Indonesia can learn from these findings. This paper will deliver using Qualitative approach in examining reading test, especially in deeply looking at difficult items for Indonesian students. Meanwhile, library research from PISA results and related studies will enrich the paper to find out more about the relation of students' background with reading score. Findings from this paper should be valuable information for related stakeholders to improve student competency in reading. Both in developing good test in reading for Indonesian students and providing innovative and contextual learning in reading subject at school level are recommended for helping students in mastering reading competency and preparing them to be a successful 21st century students.

Keywords—2018, reading test, reading score, reading policy

I. INTRODUCTION

A. Background

In today digital era, reading competency is absolutely essential in developing critical thinking skill. While the tsunami of information unexpectedly comes, it needs to be filtered to get the accurate and precise data. Another concern is to have strong statements to support good decision making that could be improved by reading skill. Following the trend, people

are connected by texting messages that require reading skill as well as technology-based communication skill.

Researchers have pointed out the urgency of developing reading skills for students to get their maximum potential in other subject areas such as Math, Science, Humanity and Arts [1,2]. Students who have good reading skills are likely get better academic performances in other subjects. It also shows by Programme for International Students Assessment (PISA) results that highlighted the importance of reading skill to better understand other subjects as students who get better score in reading are likely to have better score in Math and Science [2,3]. But it may not work for other subjects. Students who perform better in Math may not have good score in Reading.

Some scholars state that there are several contribution factors why reading skills have great influence in other subject areas [4,5]. The more exposure of reading text or books both in scientific or fictional genre is the common factor that contributes to higher reading score. It is commonly known as the more you read the more you know. Students will have better knowledge in other areas as well due to its intensive reading book.

The other interesting factor is the reading process itself that should engage students with text. During this process, students will have more sense to critic the text and ask whether the information is accurate and appropriate for them. But it should be noted that only good reading text that could challenge students in this ideal process.

As one of recognized international study, PISA has also put the importance of reading skill in improving school graduate skills. It is one of cognitive domains assessed in PISA. Until 2015, although having low performance, Indonesia has positive progress in reading score. But, in 2018 the score is declined. In 2018, Indonesia firstly participated in PISA through computer based assessment. In PISA 2018, reading is also the major assessed domain and has its first computer-based test format for reading test.

This paper aims to elaborate reading difficulties for Indonesia students in doing PISA Reading test. Some questions will be examined by its item parameter to deeply find out the

test or item format that may challenge students' reading ability. Further, other external contribution factors such as students' background and perception in reading subject and their learning process at school will also be explored to find out whether it has positive contribution to reading score.

B. Methods

This paper will adopt PISA 2018 results that can be publicly accessed from PISA website. To deeply examine the items and its parameter will be gained from internal database. Furthermore, students' background questionnaire will also be explored to find out important information about external contribution factors that may challenge reading score.

C. Objectives

The objectives of this paper are as follows:

- Providing information about hard questions in PISA reading test for Indonesian student.
- Finding out the common pattern in those questions in relation to reading competency.
- Providing supported information about students' background about reading that may have relation with reading score.

II. RESULTS

A. Indonesia in PISA 2018

Indonesia has positive progress in Reading score from 2000 to 2015 [3]. But, in 2018, as the population coverage increased, there is a declined in its score. The PISA reading score for Indonesia in all cycles is captured in the Figure 1.

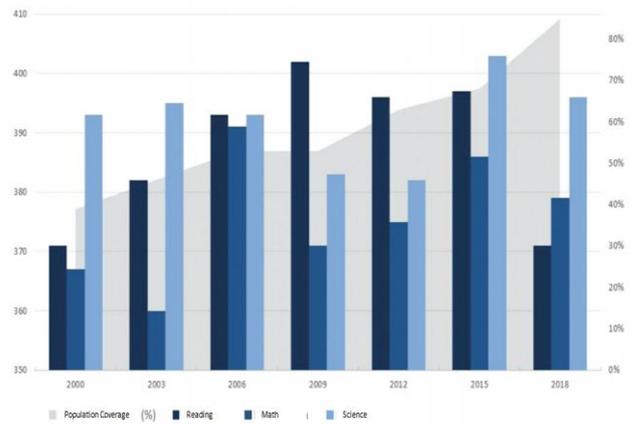


Fig. 1. Reading score in PISA [6].

PISA results not only show the score comparison between participated countries. It further points out whether student achieve certain level of reading proficiency that provide specific information for countries about the proportion of its student that must have more attention to achieve the standard level of reading.

Figure 2 highlights Indonesia position with other countries in regard of its students' proficiency level in reading [3]. It shows that only 30 % of students achieve the minimum level of reading proficiency or higher levels. It further shows that Indonesia has to be more concern in developing the capacity of national education to improve around 70 % of its lower-minimum level of reading students.

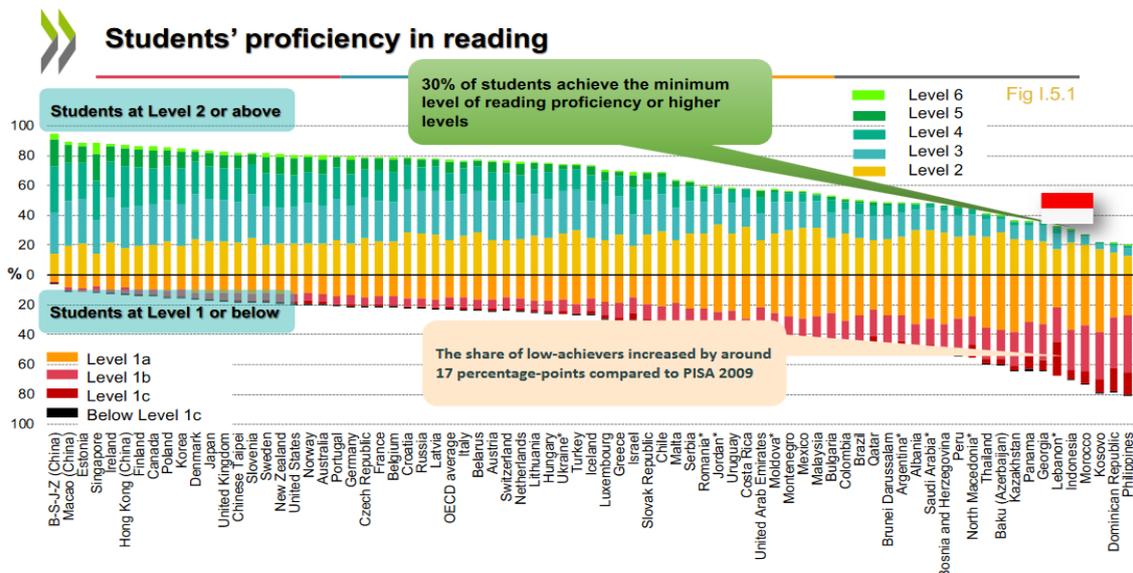


Fig. 2. Students' proficiency in reading [3].

Another concerns are not only about how the educational system works better to improve the competency of under-minimum level students but also to find out what makes students struggle in having reading test as well as some other background factors may also contribute to students' lower score.

B. Difficult Items for Indonesian Students

Following are some of difficult questions for Indonesian students (data taken from internal database). The data is captured from internal database of PISA data for Indonesia. Therefore, due to the confidentiality in showing PISA test questions, some similar released questions will be showed as examples for this paper purpose.

Table 1 is the list of difficult questions for Indonesian students. Following the list is the example of released items that similar to the questions on the list for showing purpose only due to the confidentiality to expose the real PISA items.

TABLE I. DIFFICULT ITEMS FOR INDOONESIAN STUDENTS (INTERNAL DATABASE)

Item and Item Difficulty	Unit Name	Item Format	Cognitive Process
CR560Q08S 2.75253	Great Pacific Garbage Patch	Simple Multiple Choice - Computer Scored	Represent literal meaning
CR556Q04S 2.44493	Microlending	Simple Multiple Choice - Computer Scored	Represent literal meaning
DR541Q04C 2.41456	Plastic	Open Response - Human Coded	Assess quality and credibility
CR432Q06S 2.10404	About a book	Complex Multiple Choice - Computer Scored	Corroborate and handle conflict
DR102Q04C 1.77919	Shirts	Open Response - Human Coded	Integrate and generate inferences
CR466Q03S 1.62086	Work Right	Complex Multiple Choice - Computer Scored	Represent literal meaning
CR566Q04S 1.60911	The Skellig Rocks	Simple Multiple Choice - Computer Scored	Reflect on content and form
DR544Q13C 1.47532	Nikola Tesla	Open Response - Human Coded	Corroborate and handle conflict
DR552Q11C 1.45492	FestiRock	Open Response - Human Coded	Corroborate and handle conflict
DR550Q09C 1.32218	Cliff Palace	Open Response - Human Coded	Search and select relevant text
DR543Q15C 1.31029	Alfred Nobel	Open Response - Human Coded	Corroborate and handle conflict
CR455Q05S 1.1398	Chocolate and Health	Complex Multiple Choice - Computer Scored	Represent literal meaning
CR220Q01S 1.2371	South Pole	Open Response - Computer Scored	Integrate and generate inferences

1) Example item in relation with answering question in map/graph for representing question CR220Q01 (taken from PISA Released Items - Reading [7]): In the question in Figure 3, a drama text is provided as stimulus with the question asks about the player position in the stage setting. The question style and format is new and uncommon for students as shows in Figure 4, especially when they are asked to complete the graph or map or picture using information from the text.

**Unit: Amanda and the Duchess
The Text**

AMANDA AND THE DUCHESS

Summary: Since Léocadia's death, the Prince, who was in love with her, has been inconsolable. At a shop called *Réséda Soeurs*, the Duchess, who is the Prince's aunt, has met a young shop assistant, Amanda, who looks amazingly like Léocadia. The Duchess wants Amanda to help her set the Prince free from the memories which haunt him.

A crossroads in the castle grounds, a circular bench around a small obelisk...evening is falling...

AMANDA
I still don't understand. What can I do for him, ma'am? I can't believe you could possibly have thought...And why me? I'm not particularly pretty. And even if someone were very pretty—who could suddenly come between him and his memories like that?

THE DUCHESS
No-one but you.

AMANDA, *sincerely surprised*
Me?

THE DUCHESS
The world is so foolish, my child. It sees only parades, gestures, badges of office...that must be why you have never been told. But my heart hasn't deceived me—I almost cried out at *Réséda Soeurs* the first time I saw you. To someone who knew more of her than just her public image, you are the living likeness of Léocadia.

A silence. The evening birds have now taken over from the afternoon birds. The grounds are filled with shadows and twittering.

AMANDA, *very gently*
I really don't think I can, ma'am. I have nothing, I am nothing, and those lovers...that was my fancy, don't you see?

She has got up. As if about to leave, she has picked up her small suitcase. She passes very close to the pale blur of Amanda by the obelisk. She murmurs.

AMANDA
Excuse me, Sir...

He stops, dismounts from the bicycle, takes off his hat and looks at her.

THE PRINCE
Yes?

AMANDA
Can you tell me the way to the sea?

THE PRINCE
Take the second turning on your left.

He bows, sadly and courteously, gets back on the bicycle and rides away. The bell is heard again in the distance. The Duchess comes out of the shadows, very much an old woman.

AMANDA, *gently, after a while*
He didn't recognise me...

THE DUCHESS
It was dark...And then, who knows what face

THE DUCHESS, *gently also, and very wearily*
Of course, my dear. I apologise.

She in turn gets up, with difficulty, like an old woman. A bicycle bell is heard in the evening air; she gives a start.

Listen...it's him! Just show yourself to him, leaning against this little obelisk where he first met her. Let him see you, even if it's just this once, let him call out, take a sudden interest in this likeness, in this stratagem which I shall confess to him tomorrow and for which he will hate me—in anything but this dead girl who'll take him away from me one of these days, I'm sure...(She has taken her by the arm.) You will do that, won't you? I beg you most humbly, young lady. (She looks at her, beseechingly, and quickly adds:) And then, that way, you'll see him too. And...I can feel that I'm blushing again from saying this to you—life is just too mad! That's the third time I've blushed in sixty years, and the second time in ten minutes—you'll see him; and if he could ever (why not him, since he's handsome and charming and he wouldn't be the first?) if he could ever have the good fortune, for himself and for me, to take your fancy for one moment...The bell again in the shadows, but very close now.

AMANDA, *in a whisper*
What should I say to him?

THE DUCHESS, *gripping her arm*
Simply say: "Excuse me, Sir, can you tell me the way to the sea?"

She has hurried into the deeper shadows of the trees. Just in time. There is a pale blur. It is the Prince on his bicycle. He he gives her now, in his dreams? (She asks timidly:) The last train has gone, young lady. In any case, wouldn't you like to stay at the castle tonight?

AMANDA, *in a strange voice*
Yes, ma'am.

It is completely dark. The two of them can no longer be seen in the shadows, and only the wind can be heard in the huge trees of the grounds.

THE CURTAIN FALLS

Fig. 3. Unit Amanda and The Duchess – Text.

Question 4: AMANDA AND THE DUCHESS

R216Q04- 0 1 9

The director positions the actors on the stage. On a diagram, the director represents Amanda with the letter A and the Duchess with the letter D.

Put an A and a D on the following diagram of the set to show approximately where Amanda and the Duchess are when the Prince arrives.

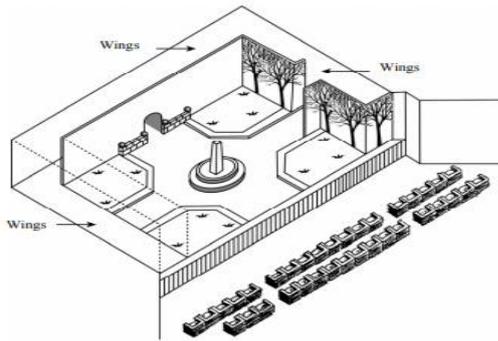


Fig. 4. Unit Amanda and The Duchess – Example item.

Unit: Gift

The Text

R119: Gift

THE GIFT

How many days, she wondered, had she sat like this, watching the cold brown water inch up the dissolving bluff. She could just faintly remember the beginning of the rain, driving in across the swamp from the south and beating against the shell of her house. Then the river itself started rising, slowly at first until at last it paused to turn back. From hour to hour it slithered up creeks and ditches and poured over low places. In the night, while she slept, it claimed the road and surrounded her so that she sat alone, her boat gone, the house like a piece of drift lodged on its bluff. Now even against the tarred planks of the supports the waters touched. And still they rose.

As far as she could see, to the treetops where the opposite banks had been, the swamp was an empty sea, awash with sheets of rain, the river lost somewhere in its vastness. Her house with its boat bottom had been built to ride just such a flood, if one ever came, but now it was old. Maybe the boards underneath were partly rotted away. Maybe the cable mooring the house to the great live oak would snap loose and let her go turning downstream, the way her boat had gone.

No one could come now. She could cry out but it would be no use, no one would hear. Down the length and breadth of the swamp others were fighting to save what little they could, maybe even their lives. She had seen a whole house go floating by, so quiet she was reminded of sitting at a funeral. She thought when she saw it she knew whose house it was. It had been bad seeing it drift by, but the owners must have escaped to higher ground. Later, with the rain and darkness pressing in, she had heard a panther scream upriver.

Now the house seemed to shudder around her like something alive. She reached out to catch a lamp as it tilted off the table by her bed and put it between her feet to hold it steady. Then creaking and groaning with effort the house struggled up from the clay, floated free, bobbing like a cork and swung out slowly with the pull of the river. She gripped the edge of the bed. Swaying from side to side, the house moved to the length of its mooring. There was a jolt and a complaining of old timbers and then a pause. Slowly the current released it and let it swing back, rasping across its resting place. She caught her breath and sat for a long time feeling the slow pendulous sweeps. The dark sifted down through the incessant rain, and, head on arm, she slept holding on to the bed.

Sometime in the night the cry awoke her, a sound so anguished she was on her feet before she was awake. In the dark she stumbled against the bed. It came from out there, from the river. She could hear something moving, something large that made a dredging, sweeping sound. It could be another house. Then it hit, not head on but glancing and sliding down the length of her house. It was a tree. She listened as the branches and leaves cleared themselves and went on downstream, leaving only the rain and the lappings of the flood, sounds so constant now that they seemed a part of the silence. Huddled on the bed, she was almost asleep again when another cry sounded, this time so close it could have been in the room. Staring into the dark, she eased back on the bed until her hand caught the cold shape of the rifle. Then crouched on the pillow, she cradled the gun across her knees. 'Who's there?' she called.

The answer was a repeated cry, but less shrill, tired sounding, then the empty silence closing in. She drew back against the bed. Whatever was there she could hear it moving about on the porch. Planks creaked and she could distinguish the

sounds of objects being knocked over. There was a scratching on the wall as if it would tear its way in. She knew now what it was, a big cat, deposited by the uprooted tree that had passed her. It had come with the flood, a gift.

Unconsciously she pressed her hand against her face and along her tightened throat. The rifle rocked across her knees. She had never seen a panther in her life. She had heard about them from others and heard their cries, like suffering, in the distance. The cat was scratching on the wall again, rattling the window by the door. As long as she guarded the window and kept the cat hemmed in by the wall and water, caged, she would be all right. Outside, the animal paused to rake his claws across the rusted outer screen. Now and then, it whined and growled.

When the light filtered down through the rain at last, coming like another kind of dark, she was still sitting on the bed, stiff and cold. Her arms, used to rowing on the river, ached from the stiffness of holding the rifle. She had hardly allowed herself to move for fear any sound might give strength to the cat. Rigid, she swayed with the movement of the house. The rain still fell as if it would never stop. Through the grey light, finally, she could see the rain-pitted flood and far away the cloudy shape of drowned treetops. The cat was not moving now. Maybe he had gone away. Laying the gun aside she slipped off the bed and moved without a sound to the window. It was still there, crouched at the edge of the porch, staring up at the live oak, the mooring of her house, as if gauging its chances of leaping to an overhanging branch. It did not seem so frightening now that she could see it, its coarse fur napped into twigs, its sides pinched and ribs showing. It would be easy to shoot it where it sat, its long tail whipping back and forth. She was moving back to get the gun when it turned around. With no warning, no crouch or tensing of muscles, it sprang at the window, shattering a pane of glass. She fell back, stifling a scream, and taking up the rifle, she fired through the window. She could not see the panther now, but she had missed. It began to pace again. She could glimpse its head and the arch of its back as it passed the window.

Shivering, she pulled back on the bed and lay down. The lulling constant sound of the river and the rain, the penetrating chill, drained away her purpose. She watched the window and kept the gun ready. After waiting a long while she moved again to look. The panther had fallen asleep, its head on its paws, like a housecat. For the first time since the rains began she wanted to cry, for herself, for all the people, for everything in the flood. Sliding down on the bed, she pulled the quilt around her shoulders. She should have got out when she could, while the roads were still open or before her boat was washed away. As she rocked back and forth with the sway of the house a deep ache in her stomach reminded her she hadn't eaten. She couldn't remember for how long. Like the cat, she was starving. Easing into the kitchen, she made a fire with the few remaining sticks of wood. If the flood lasted she would have to burn the chair, maybe even the table itself. Taking down the remains of a smoked ham from the ceiling, she cut thick slices of the brownish red meat and placed them in a skillet. The smell of the frying meat made her dizzy. There were stale biscuits from the last time she had cooked and she could make some coffee. There was plenty of water.

While she was cooking her food, she almost forgot about the cat until it whined. It was hungry too. "Let me eat," she called to it, "and then I'll see to you." And she laughed under her breath. As she hung the rest of the ham back on its nail the cat growled a deep throaty rumble that made her hand shake.

After she had eaten, she went to the bed again and took up the rifle. The house had risen so high now it no longer scraped across the bluff when it swung back from the river. The food had warmed her. She could get rid of the cat while light still hung

in the rain. She crept slowly to the window. It was still there, mewling, beginning to move about the porch. She stared at it a long time, unafraid. Then without thinking what she was doing, she laid the gun aside and started around the edge of the bed to the kitchen. Behind her the cat was moving, fretting. She took down what was left of the ham and making her way back across the swaying floor to the window she shoved it through the broken pane. On the other side there was a hungry snarl and something like a shock passed from the animal to her. Stunned by what she had done, she drew back to the bed. She could hear the sounds of the panther tearing at the meat. The house rocked around her.

The next time she awoke she knew at once that everything had changed. The rain had stopped. She felt for the movement of the house but it no longer swayed on the flood. Drawing her door open, she saw through the torn screen a different world. The house was resting on the bluff where it always had. A few feet down, the river still raced on in a torrent, but it no longer covered the few feet between the house and the live oak. And the cat was gone. Leading from the porch to the live oak and doubtless on into the swamp were tracks, indistinct and already disappearing into the soft mud. And there on the porch, gnawed to whiteness, was what was left of the ham.

Fig. 5. Unit The Gift – text.

Question 4: GIFT

RT19Q04

When the woman says, "and then I'll see to you" (line 92) she means that she is

- A sure that the cat won't hurt her.
- B trying to frighten the cat.
- C intending to shoot the cat.
- D planning to feed the cat.

GIFT SCORING 4

QUESTION INTENT: Developing an Interpretation: identifying a character's motive or intention

Full credit

Code 1: intending to shoot the cat.

No credit

Code 0: Other responses.

Code 9: Missing.

Fig. 6. Unit The Gift – Example item.

3) Example items in relation with question in new digital formats both in text or question style for representing question DR552Q11C and DR550Q09C (taken from PISA Released Items - Reading [3]): Following questions in Figure 7 dan Figure 8 show the newest digital reading unit in the style and format for PISA 2018. Here, the first text properly illustrate digital reading concept that includes text in multiple tabs (as you are doing an onlne internet browsing). Further, the question can only be assessed by computer-based system using drag and drop tools. Second example item also shows different format in delivering the text using online conversation style while the question is adjusted to select and search relevant information from the text.

Rapa Nui
Question 6 / 7

Refer to all three sources on the right by clicking on each of the tabs.

Drag and drop the causes, and the effect they have in common, into the correct places in the table about the theories.

Cause	Effect	Supporters of the Theory
		Jared Diamond
		Carl Lipo and Terry Hunt
The moai were carved in the same quarry.	Polynesian rats ate tree seeds and as a result no new trees could grow.	Settlers used canoes to bring Polynesian rats to Rapa Nui.
The large trees disappeared from Rapa Nui.	Rapa Nui residents needed natural resources to move the moai.	Humans cut down trees to clear land for agriculture and other reasons.

SCIENCE NEWS

Did Polynesian Rats Destroy Rapa Nui's Trees?

By Michael Kimball, Science Reporter

In 2005, Jared Diamond published *Collapse*. In the book, he described the human settlement of Rapa Nui (also called Easter Island).

The book caused a huge controversy soon after its publication. Many scientists questioned Diamond's theory of what happened on Rapa Nui. They agreed that the huge trees had disappeared by the time Europeans first arrived on the island in the 18th century, but they did not agree with Jared Diamond's theory about the cause of the disappearance.

Now, two scientists, Carl Lipo and Terry Hunt, have published a new theory. They believe that the Polynesian rat ate the seeds of the trees, preventing new ones from growing. The rat, they believe, was brought over either accidentally or purposefully on the canoes that the first human settlers used to land on Rapa Nui.

Studies have shown that a population of rats can double every 47 days. That's a lot of rats to feed. To support their theory, Lipo and Hunt point to the remains of palm nuts that show the gnaw marks made by rats. Of course, they acknowledge that humans did play a role in the destruction of the forests of Rapa Nui. But they believe that the Polynesian rat was an even greater culprit among a series of factors.

Fig. 7. Unit Rapa Nui.

Chicken Health
Question 3 / 7

Refer to the Chicken Health Forum on the right. Click on the choices in the table to answer the question.

Some posts on a forum can be relevant to the topic while some posts are not. Click on either **Yes** or **No** to indicate whether the posts in the table below are relevant to Ivana_88's problem.

Is the post relevant to Ivana_88's problem?	Yes	No
NellieB79's post	<input type="radio"/>	<input type="radio"/>
Monie's post	<input type="radio"/>	<input type="radio"/>
Avian_Deals' post	<input type="radio"/>	<input type="radio"/>
Bob's post	<input type="radio"/>	<input type="radio"/>
Frank's post	<input type="radio"/>	<input type="radio"/>

Chicken Health
Your online resource for healthy chickens

Forum

Giving Aspirin to Chickens

Ivana_88 THREAD STARTER Posted 28 October 18:12

Hello everyone!
Is it okay to give aspirin to my hen? She is 2 years old and I think she hurt her leg. I can't get to the veterinarian until Monday, and the vet isn't answering the phone. My hen seems to be in a lot of pain. I'd like to give her something to make her feel better until I can go to the vet. Thank you for your help.

NellieB79 Posted 28 October 18:38

I don't know if aspirin is safe for hens or not. I always check with my vet before giving my birds medicine. I know that some drugs that are safe for humans can be very dangerous for birds.

Monie Posted 28 October 18:52

I gave an aspirin to one of my hens when she was hurt. There was no problem. The next day I went to the vet but she was already better. I think it might be dangerous if you give too much, so don't exceed the dose limits! I hope she feels better!

Avian_Deals Posted 28 October 19:07

Hil! Don't forget to check out my super low deals on all bird supplies. I'm having a great sale right now!

Bob Posted 28 October 19:15

Can someone please tell me how to know if a chicken is sick? Thanks.

Frank Posted 28 October 19:21

Hello Ivana,
I am a veterinarian, specializing in birds. It is okay to give injured chickens aspirin if they are showing signs that they are in pain. When prescribing aspirin to birds, I follow the guidelines published in *Clinical Avian Medicine*. Chickens should receive 5mg of aspirin

Fig. 8. Unit Chicken Forum.

4) Example item in relation with asking for conditional decision making and giving valid and strong argument for representing question CR566Q04S, DR544Q13C, and DR543Q15C (taken from PISA Released Items - Reading [3]): Next example item in Figure 9 has the highest level cognitive in reading which is: evaluate and reflect on the text. First, the unit has two contradictive texts about cow's milk. It further asks students' to stand on someone's opinion with providing relevant information from the text. Here, students should evaluate the text and reflect on the information to find their position and provide strong and valid argument for answering question.

Cow's Milk
Question 7 / 7

Refer to both sources on the right by clicking on each of the tabs. Click on a choice and then type an explanation to answer the question.

Anna, Christopher and Sam are talking about the two texts.

Christopher: No matter what the coffee shop owner does, I'm going to keep drinking milk every day. It's really good for you.

Anna: Not me! I'm going to drink a lot less milk from now on if it's not good for you.

Sam: I don't know. I think we need to know more before we make a conclusion.

With whom do you agree?

Christopher

Anna

Sam

Explain your answer. Refer to information from at least one of the texts.

Farm to Market Just Say No

JUST SAY 'NO' TO COW'S MILK!

By Health Reporter, Dr. R. Garza

Cow's milk is a big part of many people's lives in the United States. Babies drink cow's milk in bottles. Children eat cereal drowned in cow's milk. Even adults enjoy a cold glass of milk from time to time. Yes, cow's milk is a huge part of the human diet in many places around the world. However, more and more research is suggesting that milk may not "do a body good" as the popular American advertising slogan claims.

The United States Department of Agriculture, the American Dairy Council, Dairy Management, Inc., and other organizations have worked hard to advocate for milk for many years. They encourage adults to drink at least three glasses of milk a day. However, several studies in the last decade have questioned the bone-strengthening power of milk as well as other claims about the health benefits of milk. The results may surprise you.

One of the most recent and most important studies on the effects of drinking milk was published in the October 2014 issue of the *British Medical Journal*. The findings in this study led to some powerful assertions about the consumption of milk. In this study over 100 000 people in Sweden were followed over periods of 20-30 years. Researchers found that the female milk drinkers suffered more bone fractures. Additionally, both male and female milk drinkers were more likely to suffer from heart disease and cancer. These staggering results are similar to findings from other studies.

The Physicians Committee for Responsible Medicine (PCRM) commented on some of the health problems related to the consumption of milk. It claims that milk and dairy products "have little or no benefit for bones." The PCRM goes further to describe some specific problems associated with milk:

"Milk proteins, milk sugar, fat, and saturated fat in dairy products pose health risks for children and encourage the development of obesity, diabetes, and heart disease."

These are serious claims and more studies are needed in order to confirm the findings. However, there is mounting proof that drinking cow's milk could be less beneficial to our health than originally thought. If these claims become indisputable facts, it may be time to just say 'no' to cow's milk.

Fig. 9. Unit Cow's Milk.

C. Contributed Factors of Reading Score (Results from Student Questionnaire)

1) Number of books at home: The graph in Figure 10 shows that students who have more books at home (exclude school textbooks) will likely get better score in reading test. The trend is declined when the number of books is more than 500 books. Students may mistakenly answer the question. The assumption is they may mistakenly count magazines or comics as books in this question.

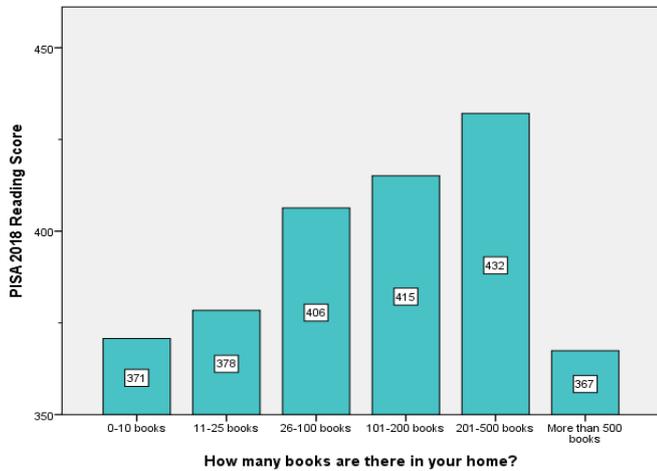


Fig. 10. How many books are there in your home? - PISA 2018 Reading Score (Data from OECD [3]).

Look at the student number in percentage in Figure 11, half of students have no more than 25 books at their homes. It consistently shows as most research prove that students access to more books at home will lead to more frequent reading which further improve reading score [8].

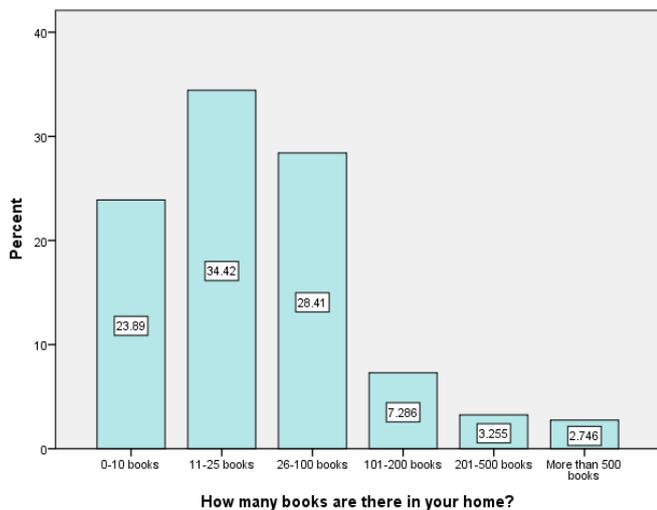


Fig. 11. How many books are there in your home? - Percentage (Data from OECD [3]).

2) How many pages was the longest piece of text (SBQ ST154): Similar trend also shows by next question asking how many pages was the longest piece of text students ever have for Bahasa Indonesia lesson in Figure 12. The longer the piece of text that student read, the more likely they get higher reading score.

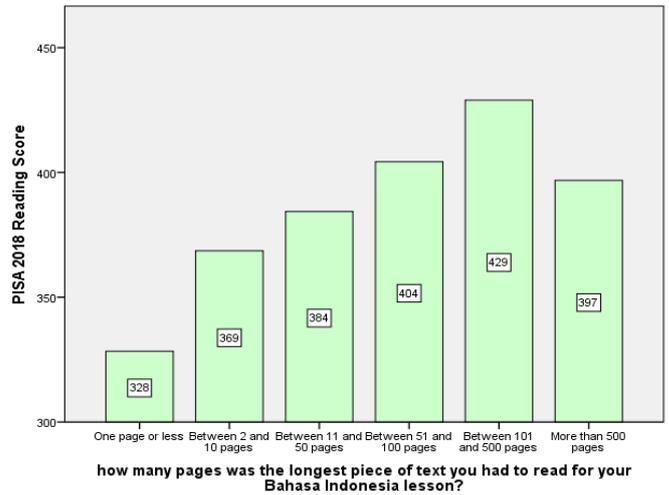


Fig. 12. How many pages was the longest piece of text you had to read for your Bahasa Indonesia lesson? - PISA 2018 Reading Score (Data from OECD [3]).

But, if we look at the percentage of students who read the text in Figure 13 is vary in number. The highest percentage is students who read the longest piece of text within range of 2 – 10 pages, followed by the text that has between 51 – 100 pages.

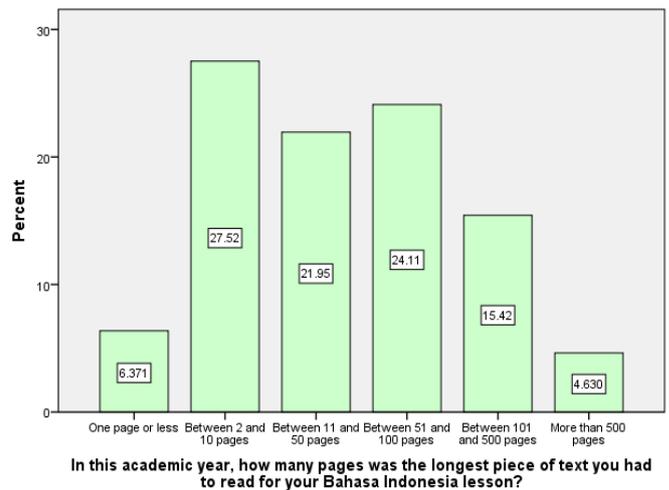


Fig. 13. How many pages was the longest piece of text you had to read for your Bahasa Indonesia lesson? - Percentage (Data from OECD [3]).

3) Digital reading (SBQ ST176): In relation with digital reading, following graphs show similar pattern. All of them ask whether students often involved in digital reading activities such as reading online news in Figure 14, searching

information online in Figure 15 and chatting online in Figure 16. The results are students who have more frequent time involved in digital reading will likely have better score in reading. But, there is no significant different in reading score from the graph of students who frequently reading emails as shown in Figure 17.

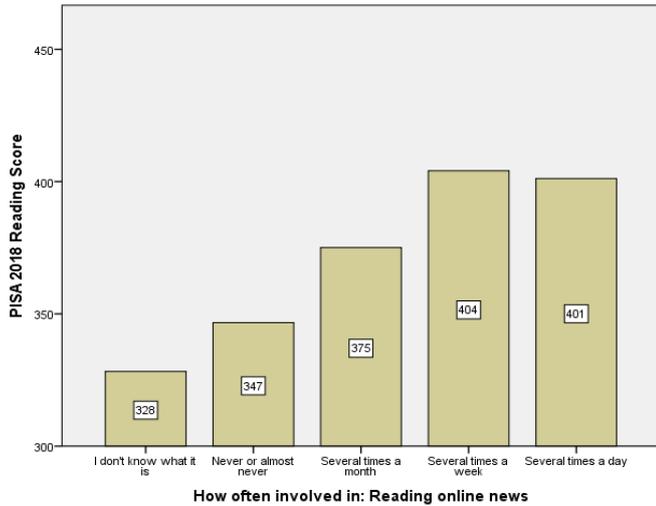


Fig. 14. Reading - Reading online news - PISA 2018 reading score (Data from OECD [3]).

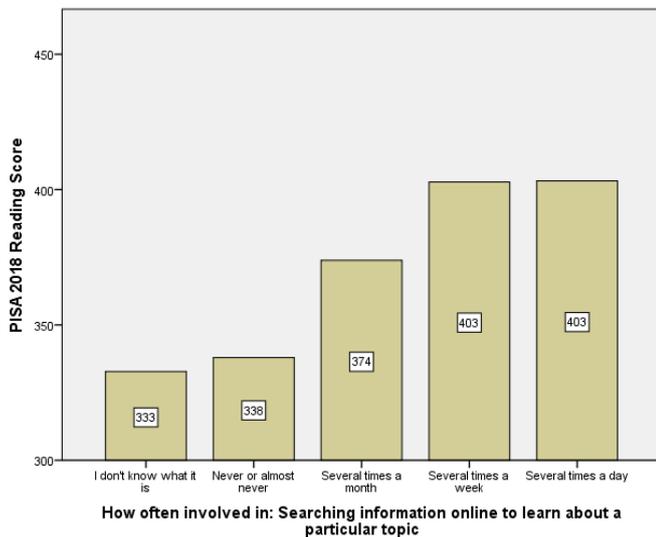


Fig. 15. Digital reading - Searching information online - PISA 2018 reading score (Data from OECD [3])

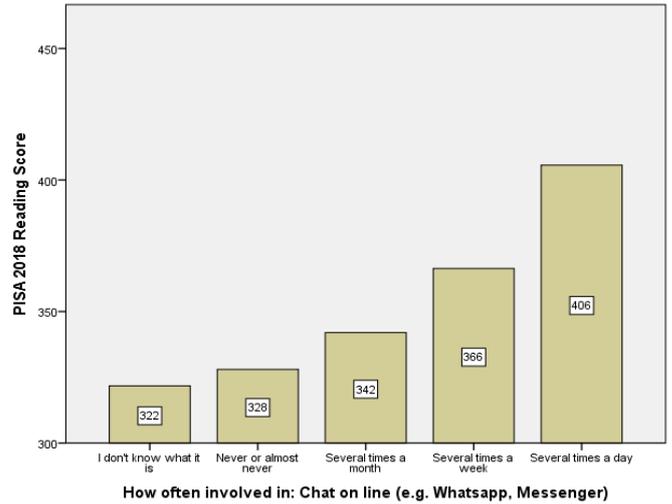


Fig. 16. Digital reading - Chat online - PISA 2018 reading score (Data from OECD [3]).

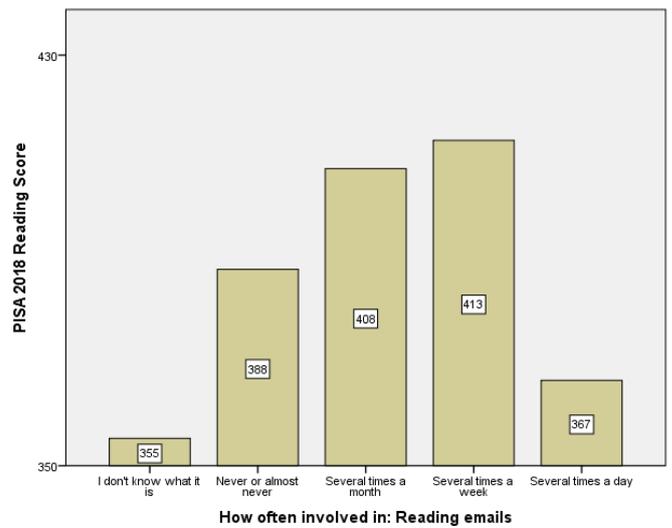


Fig. 17. Digital reading - Reading emails - PISA 2018 reading score (Data from OECD [3]).

However, looking at percentage of students who answer these questions, most of them intensively engage with reading online news as shown in Figure 18, searching information online as shown in Figure 19 and chatting online as shown in Figure 20 but they rarely access and use email for any purposes as shown in Figure 21. The following graphs illustrate about this issue.

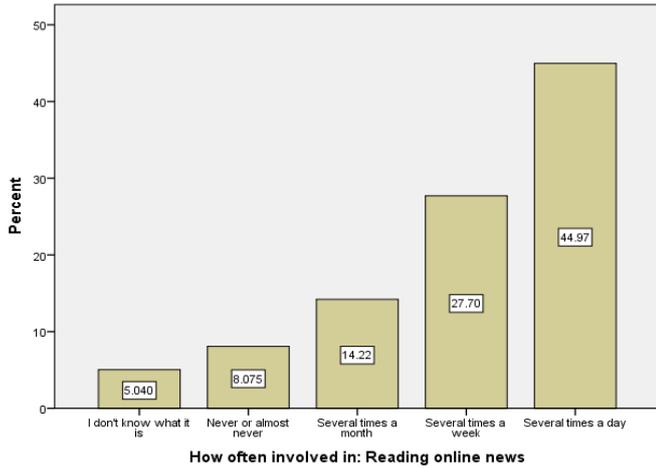


Fig. 18. Digital reading - Reading online news - Percentage (Data from OECD [3]).

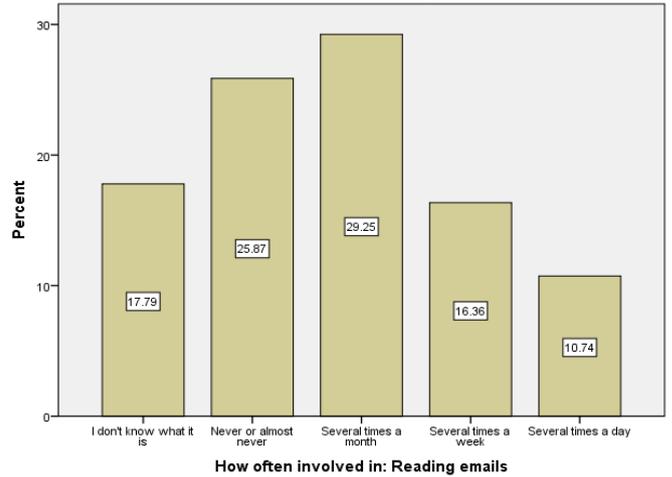


Fig. 21. Digital reading - Reading emails - Percentage (Data from OECD [3]).

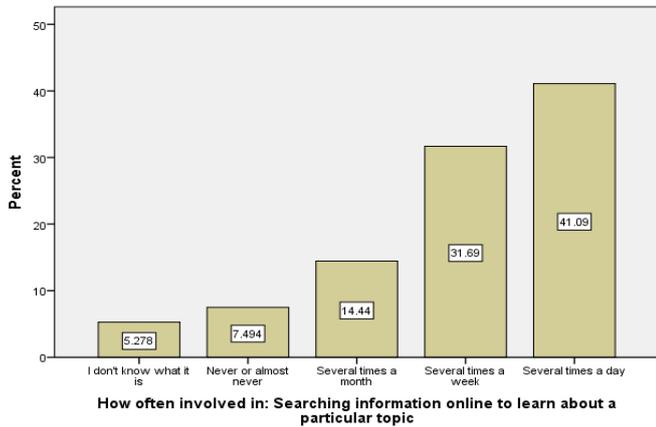


Fig. 19. Digital reading - Searching information online - Percentage (Data from OECD [3]).

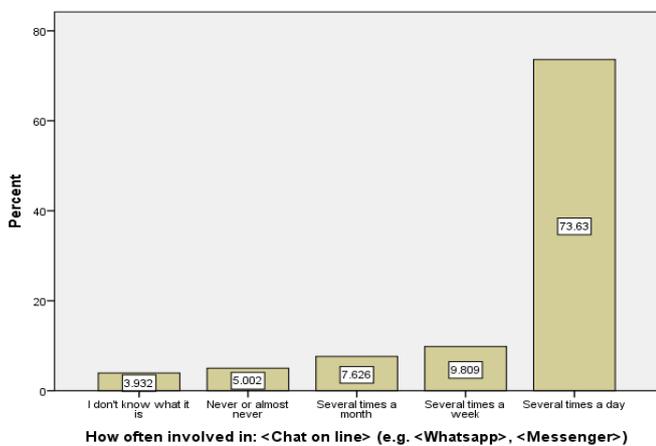


Fig. 20. Digital reading - Chatting online - Percentage (Data from OECD [3]).

4) *Spend reading for enjoyment (SBQ ST175)*: The next question in Figure 22 is shown whether students spare their time in reading for enjoyment. Students who spare more time in reading for enjoyment will likely have higher reading score.

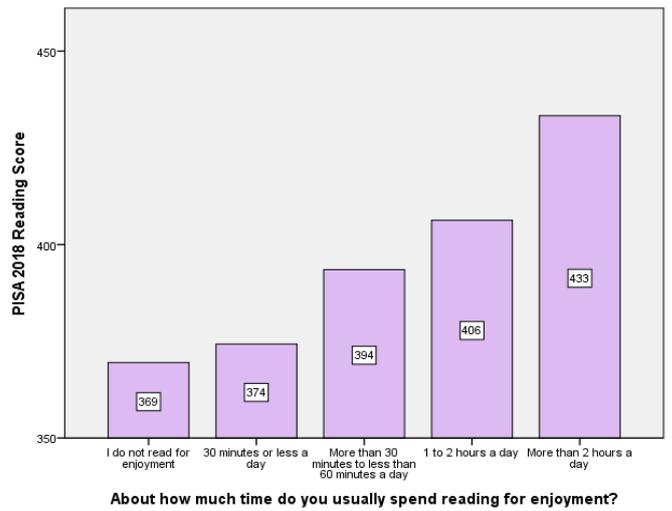


Fig. 22. Time spent in reading for enjoyment - PISA 2018 reading score (Data from OECD [3]).

In line with the score results, Indonesian students have insignificant time for reading in their spare time moreover reading for enjoyment as shown in Figure 23. Therefore, it may contribute to its lower reading score in PISA study.

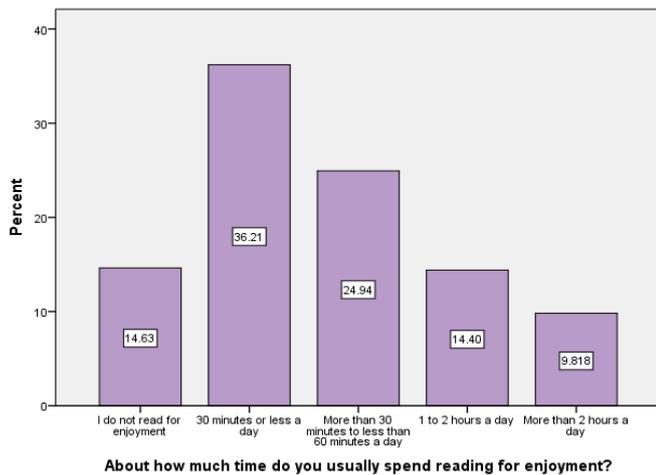


Fig. 23. Time spent in reading for enjoyment - Percentage (Data from OECD [3]).

III. DISCUSSIONS

A. Common Pattern of Difficult Items for Indonesian Students

From the results, it can be seen that most of difficult questions for Indonesian students have similar patterns. The patterns can be inferred as follows:

1) *Problems related to text topic or format:* In relation with the text, in PISA test, most texts contains of unfamiliar and non-routine topics that not only offers personal or family content but also societal, occupational and scientific topics [9,10]. From the list, most difficult questions come from scientific topic that during the test, students may not know the topic. For example, the difficult units include scientific topics such as Great Pacific Garbage Patch, Microlending, Space Debris, and Microwave. The other topic that may be challenging for Indonesian students is in biography format of popular scientists such as Nikola Tesla, Alfred Nobel, and Nalini Nadkarni.

It can be tracked to the classroom process while most of language lesson in the classroom put less emphasize in delivering text with advanced and updated topics such as text related to scientific issues or scientist biography [11]. Most of language lesson includes delivering informational text whether in poster, mail or short paragraph or fictional stories that may come from old times ago such as Cerita si Kancil or some similar stories. Therefore, further research shows that Indonesian students struggle with unfamiliar scientific text and also text in literature format such as fiction stories [11].

In contrast, PISA test in the context of assessing 21st century skills already put more focus on delivering unfamiliar and non-routine reading texts as students in this digital world should have the capacity to filter unlimited information and select relevant and valid information from new and unknown

millions sources [12]. It's a part of 21st century skills which is critical thinking and creativity. Students also should have other skills to validate their sources of information using their skill of communication and collaboration. So, the PISA test purposively (in good term) put unfamiliar and non-routine text (related to topics) to facilitate students in developing their 21st century skills.

Another concern in relation with text is the new format as what PISA stated to assess digital reading which less or more have significant impact on PISA score [2,13,14]. In PISA 2018, as it moved to new computer-based format for reading test, most new units are in multiple and hyperlinks text with each units contain minimum 2 hyperlink texts that show in multiple tabs. The other format includes in conversation style such as in texting short message, posting comment, replying email, and filling online form or questionnaire.

From here, Indonesian students have limited exposure to this kind of formats in their language lessons. It is not in the main core of language curriculum to assess students in digital conversational style for example. Teachers often give students text in the conversational format but in traditional style such as conversation between two persons or in the format of drama conversation.

Therefore, students may have limited exposure to text in conversational digital format, such as messenger text, in their everyday life. It may be the issue whether that may get it from the school. Furthermore, not all regions in Indonesia have access to electricity access moreover internet access. It may be one of reasons Indonesian student struggle in doing PISA reading test as they are unfamiliar with reading topics and also have limited exposure to current format of digital reading. As stated by Jerrim [14,15] that students may have difficulty in reading test when they have no idea with the topic and are unfamiliar with the format (both in the text or question).

Another highlight point is the text size. In PISA test, one text includes around 500 – 700 words. It should be noted that in the newest reading text, it is in multitext format that one unit may include 2 – 3 hyperlink texts or more in different formats (text, graph, map, or infographic). So, students have to read at least 700 words with the addition some words in different formats for one unit that contains 3 – 7 questions. If they have 3 narration texts, they may have around 2000 words to read to get the answers.

Further, in one hour reading test, they may have 5 – 7 units. In total they may have at least 6000 word in the text to read to answer the questions. For 15 years Indonesian students who mostly in grade 9 (junior high school level), it is very challenging as they are rarely have reading (or language) test that include thousands words text. In national examination, the maximum word for a longest text is 200 words.

Therefore, besides Indonesian students are unfamiliar with the reading topic and format/style, they also struggle with reading longer text. It can be also inferred from the research of Subrahmanyam et al [16] that students' lower reading score in

computer-based test may be caused by not having time to read long text and being unmotivated in finishing reading the text.

2) *Problems related to question style or format:* Looking at example items of PISA in previous section, most of them is categorized as higher order thinking skills questions which put advanced cognitive demand on students and ask for beyond literal questions. Most difficult items for Indonesian students are in the higher part of taxonomy blooms that demand students to evaluate and reflect on the text after integrate and interpret it to answer questions [17].

Some difficult questions include asking for implicit information beyond literal meaning of the text and question. Indonesian students are not used to have this kind of questions as their routine exam only assess minimum standard for reading (or language) that means most questions asking only for explicit information. So, when they get this PISA questions they struggle to find how to answer the questions as well as to find the keyword to ease the task.

It is stated by Voogt and Roblin [18] that higher order thinking skill assessment should include more questions asking for implicit information which further asking students to integrate and synthesize information in finding the answer. On the top of taxonomy bloom, students should be asked to evaluate and reflect on text so they will have better understanding of the text and the information about students reading comprehension can be properly gained.

The uncommon question type for Indonesian students is when the questions asking for valid explanation or strong argument. In higher cognitive items, students are asking to choose the options while they should provide explanation/argument for their choice. The assessment rubric for some of this question offers right answer for all choices. The highlight point is in the explanation/argument provided by students.

Here, Indonesian students are unfamiliar with showing or expressing their opinions or arguments from different view (or choice). In the classroom, they used to questions that only have right or wrong answer. There is no such type of all-options-is-right answers. While in PISA reading test, some questions demand your ability to provide valid and strong argument not only have right choice. Therefore, this type of question always be difficult for Indonesian students as they have to provide argument in (may be) different point of view from their peers.

Furthermore, as stated in previous section about problems with topic of the text, in some questions, students may be asked about their prior knowledge from other subject (Math, Geography, Biology, Physics, etc.) due to its scientific contains. In PISA reading test, some questions may ask general knowledge that may be appropriate for 15 years students in other developed countries such as the use of Microwave. But, it is absolutely not a general knowledge for Indonesian students. Here, students have difficulty in knowing the context or imagining the prior knowledge that should be known to answer the questions.

Lastly, question formats in PISA reading test follows digital reading style. It can be in any other uncommon digital format such as filling email subject and content, submitting online form, completing text messaging, and in most difficult ways, completing the graph or map or picture. In the example item, it can be seen that students have difficulty in transferring information from drama text to the question that asking to put players on a stage setting. This type of question is very uncommon for Indonesian students especially in the classroom learning setting. Teachers commonly ask students where the drama setting not to draw where the players on a stage setting.

Therefore, Indonesian students struggle in doing this type of questions. Another example is when students in PISA reading test are asked to complete the map of a traveler based on narration text provided. In some newest digital format questions such as completing emails and texting short message is also difficult for most students because in Indonesia not all students have privilege to digital devices moreover to internet access so they have no idea how to use the email or short messaging is in the real life.

B. Supported Reading Materials for Students

Interestingly, students' questionnaire results show similar conclusion in explaining why students struggle in having long text with unfamiliar and unknown vocabulary. The graph shows that students with more expose to longer text will likely have higher reading score.

Further, compare to other countries, Indonesia is ranked at the bottom of World Most Literate Nations because it has least translated books that make it more difficult for students to have good reading materials [19]. At school, library is not supported by updated books moreover digital books/e-books [20,21]. Teacher's main textbook may be their own collection and cannot be accessed by students for everyday or light reading.

Here, the homework is to provide suitable, affordable, and accessible reading materials for all students in Indonesia. During Covid-19 pandemic, long distance learning provides opportunity for teachers and students to effectively use digital devices for learning. But, in some areas that have limited internet access, TV program and radio program become main sources for learning. Therefore, it is the good time for learning to use ICT in the most effective way due to certain situation and condition of teachers and students.

C. Digital Reading

As most of information in the world today is in digital format, PISA is moving to assess reading skills in the term of digital reading. It is also showed by its computer-based format that most texts are in multiple and interrelated texts while it also applies adaptive testing in reading. So, students who have more exposure to digital reading whether for communication using messenger applications or reading online news or finding information from online platform are likely to have higher reading score.

They may have familiarity with internet tools as well as other digital devices functions to quickly find required information for their needs. It is supported by questionnaire results that students with more time spending in digital reading will likely have higher score in Reading.

Indonesian students are struggling in having access to digital devices moreover internet access [4,22]. It may be one of external constraint that hidden students' ability in understanding digital reading.

D. Reading as Hobby

Further, students who like to read and spend more time in reading for enjoyment also likely have higher reading score. They have the benefits in reading fluency as they used to read in their spare time and have insignificant difficulty in understanding unfamiliar or unknown vocabulary than other students.

As they have more exposure to any reading materials, they automatically develop their vocabulary [23,24]. They also have familiarity in knowing any text formats. Their reading speed is improved moreover if they like or enjoy the text (may be the topics are their interest or to fulfill their curiosity) [5].

Indonesian students have good perceptions about reading as the slogan for those who have reading as hobby is stereotyped as smart students. But, in reality, as Indonesian is the verbal community, society in general are more likely to gain and share information through mouth by mouth words or meeting people in community gatherings rather than from printed newspaper or online news [25]. It may be a cultural issue. But, it may have some contributions on accessing good reading materials for students as the society demands for good information in printing or online formats are limited. It can be seen from the book sales in some popular bookstore that most of it are novel and fictional books rather than informational and reference books [26].

E. School Literacy Movement, Does it Work?

Comes from the issue of reader less country, The Ministry of Education and Culture with the support from concerned communities have initiative to initiate School Literacy Movement (*Gerakan Literasi Sekolah, GLS*) in 2015. It provides some practical steps for teacher and school to encourage students to read at least 15 minutes a day before the class starts. In some schools, it properly works while on the other, it is only treated as the morning routine that instructed by the ministry [27,28].

Best practices from this movement are many in number [29]. For example, a school in Surabaya region could make its students read about 100 books a year through this initiative. The other school has enthusiast teachers who prepare online reading and show it to the class for the 15 minutes reading together activities before the class starts.

Most schools struggle in finding good reading materials for this program. Therefore, the evaluation for this program is to

provide more and more good, suitable, affordable and accessible reading materials for schools, teachers and students in all areas. It is challenging as Indonesia is very diverse both geographically and culturally.

The text formats should also be a concern. As today's world is moving to digital platform so do the supported reading materials for schools.

Another good point to highlight is also the society contribution for reading movement. Some great examples show persons or communities that have concerns in improving reading activities by providing some free books to read and distribute it to remote areas. This initiative should be appreciated and supported by both central and local governments.

IV. CONCLUSION

From PISA 2018 reading test results, Indonesian students have difficulty in the unfamiliar and uncommon text topic and format. While the question style, especially in asking digital skills also become one of main constraints for Indonesian students in doing reading test.

Another concern is supported by the questionnaire results that show students' limited exposure to both printed and digital reading materials while they have less motivated in having reading as a hobby and to spend more time to read in their free time. These factors contribute to the lower reading score for Indonesian students.

Therefore, teachers should have more various formats of supported reading materials for learning both in printed and digital format. Furthermore, the literacy movement initiated by the government should be more encouraged and involved more stakeholders in order to improve students' capacity in reading updated information in any digital formats to make them more familiar with the digital reading test such as PISA reading test.

Further research should be also developed in order to find the best practices and strategies for School Literacy Movement which has good intention in improving Indonesian Students' reading literacy.

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