An Analysis of the Problem Students use the PISA Assessment Guidelines for Junior Schools

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Abstract. Analysis of student problems in solving PISA questions is important in increasing the PISA level. This article describes the students problems for junior high school students in solving PISA questions. This research was conducted in junior high schools in the city of Ternate by taking a random sample of 50 junior high school students. then analyzed 20 students at different schools by taking students who like mathematics. We analyzed the student problems in terms of students' learning habits in class based on the PISA assessment guidelines for each level. and offers a recommendation for learning that can increase junior high school students' PISA levels..

Key words: pisa assessment; problem solving; student problems.

INTRODUCTION

PISA is an international scale assessment program by the OECD (Organization for Economic Co-operation and Development) and the Unesco Institute for Statistics , (Stacey, K. 2011). In 2009 indonesian srudents had not yet reached level 4. At the PISA results in 2012 showed that in mathematics (OECD, 2013), less than 5% of Indonesian students are able to answer level 4 questions, with the average score of Indonesian students being 375, it is means included in level 1. This is because PISA questions are mathematical questions that represent or applied mathematical material to real of life.

A teacher must be at the forefront of every learning institution (Etcuban, J. O. 2013). They are teaching and nurture students' of minds. Proserpio and Gioia added that teachers are responsible for understanding the needs, interests, and abilities of students so that teachers can provide learning tools according to student needs (Proserpio, L., & Gioia, D. A. 2007). Furthermore, Sung et al. said that teachers must choose suitable teaching tools for students to improve student achievement (Sung, Y. T., Chang, K. E., & Liu, T. C. 2016).

LITERATURE REVIEW

PISA is held every three years, namely in 2000, 2003, 2006, 2009, 2012 and so on. Indonesia has started to fully participate since 2001. PISA is one of the benchmarks for student achievement that has a high level of validity and reliability, because it includes several unique features, namely: 1) policy orientation, which links data on student learning outcomes with data about background and students' attitudes towards learning, and about the main factors shaping their learning inside and outside of school; it exposes differences in performance and identifies characteristics of well-performing students, schools and education systems. 2) innovative concept (literacy), which refers to the capacity of students to apply knowledge and skills, and to analyze, reason and communicate effectively as they identify, interpret and solve problems in various situations. 3) relevance to lifelong learning, because PISA asks students to report their motivation to learn, their beliefs about themselves and their learning strategies. 4) regularity, which enables countries to monitor their progress towards meeting key learning objectives. 5) broad coverage, in PISA 2018, covering 37 OECD countries and 42 partner countries and economies.

PISA has 3 assessment targets, namely: 1) Reading comprehension consists of narrative text, descriptive text, exposition text, explanatory text, report text, procedural text, enrichment text-mixed genre. 2) Mathematics consists of: number patterns, equations and formulas, algebraic forms, whole numbers and whole numbers, probability, data interpretation, data arrangement and representation, measurement, geometric shapes, location, movement, and spatial, ratio, proportion

and percentage, fraction and decimal. 3) IPA consists of force and motion, changes in the environment, development and life cycle of organs, diversity, adaptation and selection, ecosystems, structures, functions and processes in organisms, characteristics and classification of living things, types, sources, and energy conversion, heat and temperature, human health, light and optics, electricity and magnetism, and physical changes. Based on the PISA infographics (OECD. 2019)., it can be seen that students' mathematical abilities are still below the score of 400 and lower than reading and scientific skills

METHODS

The research for this article was conducted using a descriptive qualitative method. In qualitative research, deepening the root cause of the low problem solving is to get recommendations. This is done by crosschecking by triangulation (observation, in-depth interviews, and observation). The data were processed descriptive (Sukestiyarno,YL. 2020).

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RESULTS AND DISCUSSION

According to the PISA assessment guedelines, the PISA score for each level is obtained as follows:

1. Level1 (340 - 440 score points)

At Level 1, students can complete tasks with low problem complexity and limited collaboration complexity. They can provide requested information and take actions to enact plans when prompted. Level 1 students can confirm actions or proposals made by others. They tend to focus on their individual role within the group. With support from team members, and when working on a simple problem, these students can help find a solution to the given problem.

2. Level 2 (440-540)

At Level 2, students can contribute to a collaborative effort to solve a problem of medium difficulty. They can help solve a problem by communicating with team members about the actions to be performed. They can volunteer information not specifically requested by another team member. Level 2 students understand that not all team members have the same information

and can consider differing perspectives in their interactions. They can help the team establish a shared understanding of the steps required to solve a problem. These students can request additional information required to solve a problem and solicit agreement or confirmation from team members about the approach to be taken. Students near the top of Level 2 can take the initiative to suggest a logical next step, or propose a new approach, to solve a problem.

3. Level 3 (540-640)

At Level 3, students can complete tasks with either complex problem-solving requirements or complex collaboration demands. These students can perform multi-step tasks that require integrating multiple pieces of information, often in complex and dynamic problems. They orchestrate roles within the team and identify information needed by particular team members to solve the problem. Level 3 students can recognize the information needed to solve a problem, request it from the appropriate team member, and identify when the provided information is incorrect. When conflicts arise, they can help team members negotiate a solution.

4. Level4 (>640)

At Level 4, students can successfully carry out complicated problem-solving tasks with high collaboration complexity. They can solve complex problems with multiple constraints, keeping relevant background information in mind. These students maintain an awareness of group dynamics and take actions to ensure that team members act in accordance with their agreed-upon roles. At the same time, they can monitor progress towards a solution and identify obstacles to overcome or gaps to be bridged. Level 4 students take initiative and perform actions or make requests to overcome obstacles and to resolve disagreements and conflicts. They can balance the collaboration and problem-solving aspects of a presented task, identify efficient pathways to a solution, and take actions to solve the given problem.

Based on the results of PISA, Indonesian students are still at level 1, which means Indonesian students can complete tasks with low problem complexity and limited collaboration complexity. They can provide requested information and take actions to enact plans when prompted. At level 1 students can confirm actions or proposals made by others. They tend to focus on their individual role within the group. With support from team members, and when working on a simple problem, these students can help find

a solution to the given problem.

Furthermore, at Levels 2, 3 and 4 it is explained that to pass at that level it requires good teamwork collaboration between students. This is certainly a problem for Indonesian students.

In solving PISA questions, good mathematical literacy is needed, namely the ability to seek information and apply mathematical concepts in everyday life (De Lange, Jan. 2015). Meanwhile, in expressing that learning styles are the easiest way for each individual to absorb, seek and understand information that has been obtained (Bire, L., U. Geradus., & J. Bire. 2014Bire, L., U. Geradus., & J. Bire. 2014) Different learning styles for each individual have a big influence on the learning process. students can easily formulate hypotheses and make decisions in solving math problems together, so that TEAM work is needed in solving PISA questions (Mousa, N. 2014).

Based on research results from 20 selected students. Researchers analyzed student problems to find out the causes of student difficulty in collaborating in solving PISA questions. The results obtained were that 44.4% of students who had difficulty solving math application questions and 55.6% were able to solve math application problems. Furthermore, 87.5% of students can find information by themselves and apply the information obtained related to the math problems they are working on. Furthermore, 87.5% were able to make hypotheses related to the questions given and 77.8% of students were able to use tables, graphs and other mathematical symbols to represent aspects of the problem situation in solving the problems. This is in line with the results obtained that the teacher learning material less to give application content.

In teamwork all students or 100% of students answered very happy and were able to work together in solving questions in groups. This is in contrast to the teacher's habit, namely 100% of students answered that teachers gave more individual assignments to students than group assignments.

From the results, the researcher considers the need for a learning model that can help students connect their understanding of mathematics in everyday life by providing application content to each mathematics learning material and building teamwork for students.

CONCLUSION

From the research results, it was found that the problem of students in solving problems on PISA

in Ternate was that students were still difficult to apply mathematics in real life, this was because the learning process of the mathematics material they got was lacking application content. Furthermore, students are less able to work in teams because they solve problems individually.

From these results, the researcher was interested in teachers in the city of Ternate to apply a learning model that could address these problems.

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