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Analyzing critical thinking skills using the learn package context at madrasah tsanawiyah negeri 2 jambi

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Abstrak

Indonesia merupakan negara yang juga menjadi partisipan dalam PISA, faktanya walaupun sudah mengenal PISA sejak lama tetap saja mengalami keterpurukan khususnya PISA level atas disebabkan oleh banyak faktor. Diantaranya dapat dilihat pada temuan PISA tahun 2018 dimana Indonesia berada pada kuadran Low Perfomence dengan High Equity, selanjutnya juga Gender Gap Performance dan juga kondisi pembelajaran di sekolah yang masih berada di zona soal-soal matematika yang sangat sederhana. Ini menyimpulkan peserta didik di sekolah belum sepenuhnya mengeksplor kemampuan kognitif dalam menyelesaikan soal permasalahan matematikan yang bersifat analitis khusunya. Masalah rendahnya kemampuan matematis peserta didik dalam menyelesaikan suatu problem yang kontekstual dalam pembelajaran matematika menjadi masalah terbesar dalam pendidikan matematika di Indonesia. Penelitian ini bertujuan untuk menganalisis kemampuan berpikir kritis Peserta didik dengan menggunakan konteks paket belajar. Penelitian ini tipe deskriptif kulitatif dengan Populasi penelitian ini adalah Siswa kelas VIII Madrasah Tsanawiyah Negeri 2 Kota Jambi. Data yang dikumpulkan adalah Hasil tes siswa.

Kata kunci: *PISA, Kemampuan Berpikir Kritis, Pembelajaran Kontekstual, Paket Belajar*

Abstract

Indonesia is a country that is also a participant in PISA. The fact is that even though it has known PISA for a long time, it still experiences a slump, especially the upper-level PISA, caused by many factors. Among them can be seen in the findings of PISA in 2018, where Indonesia is in the Low-Performance quadrant with High Equity, Gender Gap Performance, and also learning conditions in schools that are still in the zone of very simple math problems. This concludes that students in schools have not fully explored cognitive abilities in solving mathematical and analytical problems, especially. The problem of low mathematical ability of students to solve a contextual problem in mathematics learning is the biggest in mathematics education in Indonesia. This study aims to analyze the critical thinking ability of students using the context of learning packages. This research is a qualitative descriptive type, with this study's population being students of class VIII Madrasah Tsanawiyah Negeri 2 Jambi City. The data collected is Student test results.

Keywords: *PISA, Critical Thinking Ability, Contextual Learning, Study Package*

A. Introduction

Critical thinking skills are essential to education (Megawati, Wardani, & Hartatiana, 2022). The challenges to the rapid development of education and technology in the current era require Indonesian students to be able to compete with students from other countries. Indonesia's involvement in *Programme for International Student Assessment* (PISA) is one of the efforts to see the quality of Indonesian education develop globally. PISA is an international standard study organized by *Organization for Economic Cooperation and Development* and followed by seventy countries, including Indonesia (Tanujaya et al., 2017: Megawati, Wardani, & Hartatiana, 2022). Program for International Student Assessment is also an international test conducted every three years, which aims to test the performance of children in the world under the age of 15 (Meryansumayeka, Zulkardi, Putri, & Cecil, 2021).

Indonesian learners have had a poor record at PISA since 2000, gaining much attention from practitioners and the government to reform and analyze the 2013 curriculum (Zulkardi & Putri, 2020). It can be seen in the PISA results of Indonesian students in 2018, where the average mathematics score only reached 379 with an OECD average score of 487, and at that time, Indonesia was ranked 72nd out of 78 participating countries. This shows that the ability of Indonesian students is still very lacking in applying mathematical critical thinking skills (Sari & Valentino, 2017).

Critical thinking skills become one of the indicators needed in the learning process, especially now that learning is held in a Post-Pandemic Blending manner. Critical thinking skills become skills that learners should possess, especially in the 21st century (Hidayat et al., 2022). Critical thinking is a mental activity carried out by a person to make decisions in solving problems faced in various ways through information obtained from various sources. One way to discover the ability to think critically is by looking at the things done by a person in facing and solving a problem (Ratnaningtyas, 2016: Hidayat et al. l, 2022). To see the ability to think critically is done by examining, connecting, and evaluating all aspects of a problem. Characteristics of critical thinking ability are analytical and reflexive (Destini et al., 2022).

Good analytical skills become an essential indicator of critical thinking skills. This skill allows a person to draw the exact conclusions of a problem and evaluate it to ensure its correctness. Good analytical skills

also enable learners to build concepts used in doing questions. Therefore, critical thinking skills are very important in determining learning outcomes (Syamsinar et al. l, 2023). Students equipped with critical thinking skills can observe the opinions of others based on data, truth, and knowledge so that students do not hesitate when deciding or judging the opinions of others, right or wrong. One of the efforts made by the Indonesian government to empower critical thinking skills is to make changes to the 2013 revised 2017 curriculum (Affandy, Aminah, & Supriyanto, 2019). The following indicators of critical thinking ability must be present in every mathematical problem-solving (Rusnah & Mulya, 2018): Interpretation, Analysis, Evaluation, and Inference.

Contextual Learning departs from a Realistic Mathematical Approach. The history of realistic mathematics has been widely discussed by experts, especially in the Netherlands (Heuvel & Panhuizen, 2016). The principles of realistic mathematics and their effects have also been explained at length in several other studies, for example, by De Lange, in 2015 (Arcavi, 2016). Realistic Mathematics is a learning approach adapted or developed from Freudenthal thought known as Realistic Mathematics Education (RME) and has been developed in Indonesia since 2001 (Ryandi, Somakim, Susanti, 2018). Learning mathematics using contextual or "real" learning means that what learners experience themselves in everyday life is a bridge to connect students from the actual stage to the formal stage of mathematics. (Nuraida, & Putri, 2018).

B. Methods

This research uses a research method with a qualitative type of development study by looking at students' test results (Bakker, 2018; Zulkardi, 2002). Formative assessment is carried out by emphasizing the prototype process, including self-evaluation, expert review, one-to-one, small group, and field tests. The formative assessment discussed on this issue emphasizes the small group process—subjects of study students Class VIII MtsN 2 Jambi City.

C. Results and Discussion

1. Results

a. Planning Stage

This stage aims to get approval where the research party discusses with the school represented by the teacher in the field of mathematics in the

seventh-grade field to convey the intentions and objectives and to determine the students who will participate in small group activities. Furthermore, the teacher sees the student's cognitive level by looking at the grade book and selecting six students heterogeneously with two high skills, two medium skills, and two low abilities. After determining the learners, the researcher sets a schedule for small group activities.

b. Implementation process

This stage aims to implement the learning plan that has been planned. Furthermore, researchers provide math problems that test students' critical thinking skills using the context of the learning package.

Figure 1. Researchers give students a briefing before doing the problem.

2. Discussion

This is one of the test questions in this study.

Perhatikan informasi pada gambar A dan B berikut !

Gambar A Gambar B

If Sarah chooses the two-pack in Figure A and Ruby chooses the package

both in Figure B, who pays more for each eye lesson?

The following is given the answers of students T1

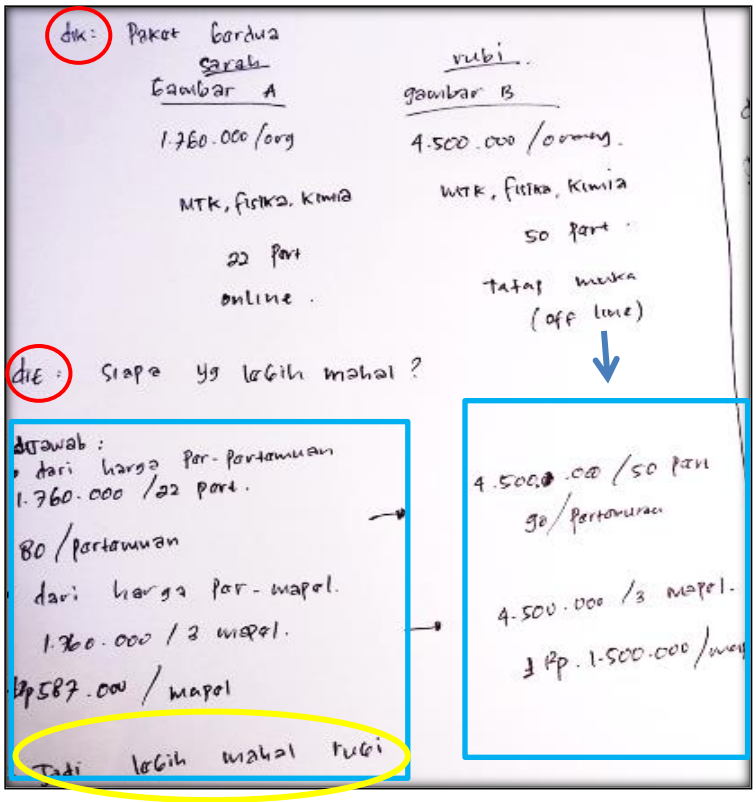

Figure 2. T1 student answers.

In Figure 2, it can be seen that IT answers the above questions systematically, starting with writing down what is known and what is asked. Next, writing the answer meets the first indicator in critical thinking skills, namely interpretation, where students can understand, explain and give meaning to the data or information obtained. Then it can be seen in the answers that IT students have identified the relationship between the information used to express their thoughts or opinions. This is quite fulfilling the second indicator, namely analysis. Furthermore, T1 makes price comparisons on each piece of information in Figure 1 and Figure 2 to obtain a comparison that can be further concluded. This meets the third indicator, namely, the last evaluation of IT students making conclusions from their thought processes. This meets the fourth indicator, inference, where students can identify and obtain the elements needed to make a conclusion that makes sense.

The following are given answers from S1 students

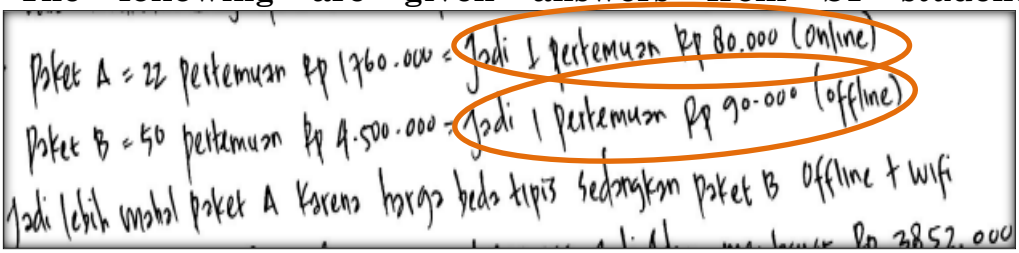

Figure 3. S1 student answers.

In Figure 3, it can be seen that SI answers has not been systematic. The answer has not been achieved to meet the first indicator in critical thinking skills, namely, interpretation, where students can understand, explain and give meaning to the data or information obtained. Then it can be seen in the answers that SI student has identified the relationship between the information used to express their thoughts or opinions. This is enough to meet the second indicator, namely analysis. Furthermore, S1 makes a price comparison but not yet in full and in detail to be further concluded. This has not met the third indicator, namely the last evaluation of SI students making conclusions from their thought processes. This is enough to meet the fourth indicator, inference, where students can identify and obtain the elements necessary to make a reasonable conclusion.

The following are given R1 student answers

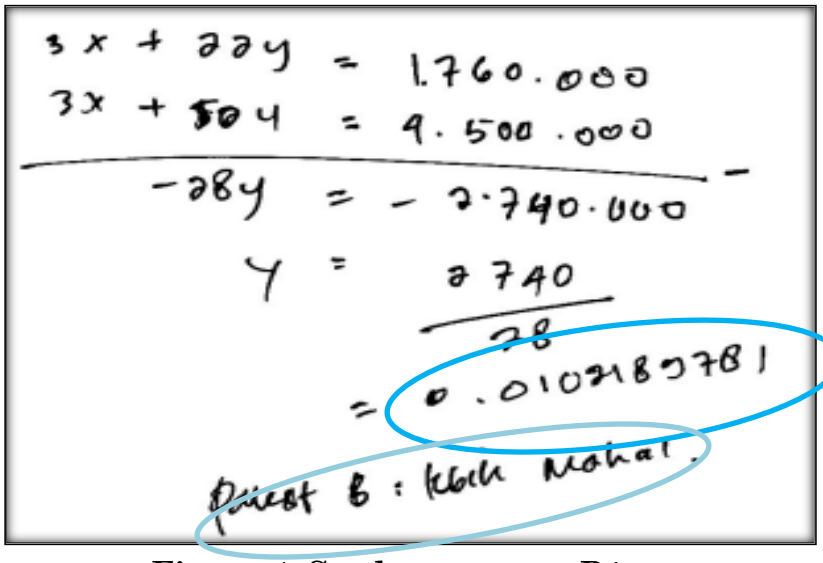

Figure 4. Student answer R1.

In Figure 4, it can be seen that the RI answer has not been systematic. The answer has not been achieved to meet the first indicator in critical thinking skills, namely interpretation, where students can understand, explain and give meaning to the data or information obtained. Then it can be seen in the answers that RI students have also been unable to identify the relationship between the information used to express their thoughts or opinions. This does not meet the second indicator, namely analysis. Furthermore, the answers of R1 do not make price comparisons, and incomplete and detailed answers are to be further used as conclusions. This does not meet the third indicator, namely, the last evaluation of RI students does not make conclusions resulting from their thought process, and this does not meet the fourth indicator, namely inference, where students can identify and acquire the elements necessary to make a reasonable conclusion.

D. Conclusion

Based on the analysis by paying attention to the achievement of critical thinking ability indicators, it is concluded that almost every indicator is achieved by T1 students. Only a few indicators have not been met by S1

students, and R1 students also achieved several indicators. Meanwhile, using the context of the learning package can help students understand and solve the problems given.

E. References

Affandy.H, Aminah N. S, & Supriyanto. A.(2019). Analisis Keterampilan Berpikir Kritis Siswa Pada Materi Fluida Dinamis Di SMA Batik 2 Surakarta. Jurnal Materi dan Pembelajaran Fisika (JMPF). 9(1).

Arcavi. A. 2016. *Learning to Look at the World Through Mathematical Spectacles—A Personal Tribute to Realistic Mathematics Education International Reflections on the Netherlands Didactics of Mathematics*, ICME-13 Monographs. https://doi.org/10.100 /978-3-030-20223-1_6

Destini, F., Yulianti, D., Sabdaningtyas, S., Ambarita, A., & Rochmiyati. (2022). Implementasi Pendekatan Science, Environtment, Technology and Society (SETS) Terhadap Kemampuan Berpikir Kritis Peserta Didik Sekolah Dasar. *Jurnal BASICEDU*, Volume 6 Nomor 1. 253-261.https://doi.org/10.31004/basicedu.v6i1.1615.

Hidayat. K, Sapriya, Hasan. S.H, & Wiyanarti. E. (2022). Keterampilan Berpikir Kritis Peserta Didik dalam Pembelajaran *Hybrid*. Jurnal Basicedu. 6(2).

Heuvel. den. M. V. & Panhuizen. 2016. *Seen Through Other Eyes—Opening Up New Vistas in Realistic Mathematics Education Through Visions and Experiences from Other Countries*. *International Reflections on the Netherlands Didactics of Mathematics*, ICME-13 Monographs, https://doi.org/10.1007/978-3-030-20223-1_1

Megawati, Wardani. A.K. & Hartatiana. (2022). Kemampuan Berpikir Tingkat Tinggi Siswa SMP Dalam Menyelesaikan Soal Matematika Model PISA. Jurnal Pendidikan Matematika 14(1).

Meryansumayeka, Zulkardi, Putri. R.I.I, & Hiltrimartin.C. (2021). Students' Strategies in Solving PISA Mathematical Problems Reviewed from Problem-Solving Strategies. Jurnal Pendidikan Matematika. 15(1)

Nuraida. E.M & Putri. R.I.I. (2018). Implementasi Lesson Study Dalam Pembelajaran Matematika Materi Perkalian Dan Pembagian Bilangan Bulat Peserta Didik Kelas VII. Prosidding: Seminar Nasional Pendidikan Matematika Ahmad Dahlan 2018 ISSN: 2407-749

OECD. (2018). *PISA 2015 : PISA results in focus*. Paris: OECD.

Ratnaningtyas, Y. (2016). Kemampuan Berpikir Kritis Siswa SMP Kelas VIII dalam Menyelesaikan Soal Higher Order Thinking Ditinjau dari Kemampuan Matematika. *Jurnal Ilmiah Pendidikan Matematika*,Volume 1 Nomor 5. 86-94. https://doi.org/10.26740/mathedunesa.v5n1.p%25p.

Rusnah, & Mulya. O.T (2018). Meningkatkan Keterampilan Berpikir Kritis Siswa Melalui Pendekatan Saintifik Di Sekolah Dasar. Jurnal Gentala

Pendidikan Dasar. (3)2

Ryandi. R.B. Somakim & Susanti, E. (2018). Pembelajaran Kombinasi Menggunakan Konteks Tim Sepak Takraw. *UNION: Jurnal Pendidikan Matematika Volume 6 No 2.*

Sari, Y. M., & Valentino, E. (2017). An analysis of students error in solving PISA 2012 and its scaffolding. *JRAMathEdu (Journal of Research and Advances in Mathematics Education),*

Syamsinar, Ali. S, & Arsyad. M. (2023). The Effect of Critical Thinking Skills and Achievement Motivation on Student Physics Learning Outcomes. Jurnal Penelitian Pendidikan IPA. 9(1).

Tanujaya, B., Mumu, J., & Margono, G. (2017). The Relationship Between Higher Order Thinking Skills And Academic Performance Of Student In Mathematics Instruction. *International Education Studies, 10*(11), 78-85. https://doi.org/10.5539/ies.v10n11p78.

Zulkardi, Putri. R. I.I. (2020). Supporting Mathematics Teachers to Develop Jumping Task Using PISA Framework (JUMPISA). Jurnal Pendidikan Matematika 14(2).