

Analysis of the Implementation of Higher Order Thinking Skills and Literacy for SMP Kota Pekanbaru Students

Sartika Tin Kartini¹, Ramadhan Sumarmin^{1*}

¹Biology Education Postgraduate Program, Faculty of Mathematic and Natural Sciences, Padang State University, Jl.

Prof. Dr. HAMKA, Air Tawar Padang, Postal Code: 25131

ramadhan_sum@fmipa.unp.ac.id



Abstract – Critical thinking skills in the world of work are a major need, this has meaning in our world of education so that it can be a map of the needs of students in the future, namely the importance of developing critical, creative thinking skills and mastering *Higher Order Thinking Skills*. Higher order thinking skills can improve the reading culture of students, with this it is hoped that all teachers are able to integrate literacy culture activities in their learning activities so that they can improve students' critical thinking skills which in turn affect the effectiveness of learning outcomes. Therefore, this study aims to analyze the implementation of *Higher Order Thinking Skills* (HOTS) and the literacy of junior high school students. This research was conducted by direct observation and interviews with several junior high school teachers in Pekanbaru City. The results showed that the use of high-order thinking-based questions in Junior High School in Pekanbaru City was classified as "minimal", namely 15% of the total questions for high-grade schools, 10% for middle-grade schools, and <5% for low-grade schools. The percentage of students' reading comprehension skills is very low, especially in questions in the form of essays, tables, analysis and *problem solving*, namely around 50% of high grade students, 40% of middle grade students, and <30% of low grade students. The results of this study are expected to be input in order to improve the quality of science learning in junior high schools.

Keywords – *Higher Order Thinking Skills* (HOTS), literacy, students.

I. INTRODUCTION

The abilities of Indonesian students aged 15 years in literacy, mathematics, and science are still below average. This can be seen from the report *Program for International Student Assessment 2018* (PISA) released by the *Organization for Economic Co-Operation and Development* (OECD). With the accumulated scores on these three indicators, Indonesia is ranked 71 out of 78 countries. This low achievement is strongly suspected because Indonesian students are not used to facing PISA questions. In terms of its characteristics and objectives, PISA questions in the field of science aim to determine students' scientific literacy skills including the ability to *formulate*, *employ*, and *interpret* in various

contexts, including mathematical reasoning skills and use concepts, procedures, facts, and tools to describe, estimate, and explain phenomena. Observing these characteristics and goals, in principle, PISA questions require students to not only remember facts and understand concepts, but students are required to do reasoning and use science in problem solving related to the skills to apply, analyze, evaluate, and even create. by using the right strategy.

Based on a survey conducted by Casner-Lotto & Barrington (2006) about the needs of the workforce in the United States, critical thinking skills (*critical thinking*) is in the first position. Other skills that stand out and are important according to the survey are mastery of information

technology, the ability to think collaboratively, and be innovative. The results of the survey have a meaning for our world of education, they represent a map of the needs of students in the future, namely the importance of developing critical and creative thinking skills. Students must be able to master *higher order thinking skill* *higher order thinking skills*. In line with the survey results, children must be challenged to think, find problems, find alternative solutions, and be able to solve them. In Indonesia, HOTS-oriented learning began to be implemented as the 2013 curriculum was implemented.

The current 2013 curriculum (Permendikbud No. 23/2016) on standards assessment, requires teachers to conduct learning and assessments that can encourage students to think critically and have higher order thinking skills or HOTS. Students are expected to not only be able to understand information or lessons at school, but also be able to use the knowledge they have acquired into their daily life, both from their attitudes and ways of thinking.

Meanwhile, the 2016 Ministry of Education and Culture's Directorate General of Primary and Secondary Education has rolled out the School Literacy Movement (GLS) which is aimed at strengthening the 2013 Curriculum for all subjects by implementing literacy strategies in learning by referring to HOTS. The definition of School Literacy in the context of GLS is the ability to access, understand, and use something intelligently through various activities, including reading, viewing, listening, writing, and / or speaking. The School Literacy Movement is an effort that is carried out comprehensively and continuously to make schools a learning organization whose citizens are literate throughout life through public involvement (Kemendikbud, 2016). The school literacy movement that was launched by the Indonesian Ministry of Education and Culture in 2015 cannot be implemented in all schools. Each school has different circumstances, maybe also at different stages of literacy (Indah, 2017).

Literacy activities in the learning phase aim to develop the ability to understand texts and relate them to personal experience, critical thinking, and cultivate communication skills creatively through activities to respond to text enrichment books and textbooks (Anderson & Krathwol, 2001). According to Huriyah et al., (2017), there are several factors that affect student literacy achievement, including: (1) students have never worked on literacy-based questions before, so they feel awkward because they get things that are different than what is obtained in school; (2) students are accustomed to memorizing material, so they are less able to

understand and apply it in their daily life; (3) the evaluation questions given by the teacher have not yet reached the analysis stage, so that students' reasoning and critical thinking abilities are not trained; (4) lack of interest in reading and students are not accustomed to answering questions in the form of discourse, graphics and pictures; and (5) students were more dominant in answering multiple choice questions than in essay questions, because they only needed to choose without having to think about answers.

The implementation of literacy-based learning supports the implementation of the 2013 Curriculum, which requires students to read non-textbooks which can be in the form of books on general knowledge, hobbies, special interests, or multimodal texts, and can also be linked to certain subjects. Asrizal et al, (2017) who have conducted preliminary research on Integrated Science subjects said that the average literacy score of junior high school students in Padang City is low, this is thought to be caused by several factors, including: students are not used to performing in literacy, learning and teaching materials do not integrate literacy, and the lack of application of performance appraisals in literacy. This is also confirmed by students, difficulties in literacy are felt because of low reasoning abilities. The low ability in reasoning makes students unable to think critically in problem solving (Zasda et al, 2018). Literacy is very important for students in learning, because skills in literacy will affect learning success and life. Literacy assessment is an assessment of higher-order thinking skills, literacy assessment is not only limited to context alone, but also in everyday life (Arbi et al, 2018).

Based on the results of interviews with several junior high schools in Pekanbaru City, the implementation of HOTS has already begun although it can be said to be very minimal. Science teacher at Al-Azhar Shifa Budi Middle School, Az-Zuhra Islamic School Middle School and Science Teacher at SMP IT Azzizziyah said that only a small portion of MID-TEST and FINAL-TEST questions were categorized as HOTS, HOTS questions were used only up to C4 (analyzing), reading skills Students' understanding is lacking and needs assistance, because there are many essay questions that are not responded to. Another problem is the students' unfamiliarity with answering questions in the form of tables, diagrams, testing analytical skills, and *problem solving*. Based on the results of the Mid-Semester Deuteronomy, it is known that there are still many students who do not meet the minimum completeness criteria (KKM). The school literacy movement that was launched since March 2016 which is aimed at improving students' reading skills until now has not had much effect on learning outcomes because it is only at the socialization and coordination stage.

Based on the explanation above, the researcher is interested in conducting a research entitled "Analysis of the Implementation of *Higher Order Thinking Skills* and Student Literacy at SMPN Pekanbaru City", so that it can be used as material for evaluation and improvement in the implementation of better learning.

II. RESEARCH METHOD

This research is a descriptive study, this study aims to describe the facts found during the observation regarding the implementation of HOTS and student literacy by science teachers of SMP Kota Pekanbaru.

a. Analysis of the Implementation of *Higher Order Thinking Skills* (HOTS)

This analysis was conducted with the aim of reviewing and knowing the implementation of HOTS by science teachers. The method used was filling out questionnaires, observing learning activities and interviewing teachers. This HOTS implementation analysis was carried out with the aim of requiring teachers to carry out learning and assessments that could encourage students to think critically and have high-level skills (*Higher Order Thinking Skills*).

b. Literacy Implementation

Analysis This analysis was carried out with the aim of reviewing and knowing the implementation of literacy by teachers and by schools. The method used was filling out questionnaires, observing and interviewing teachers. This literacy implementation analysis is carried out with the aim of developing the character of students through the culture of the school literacy ecosystem which is manifested in the school literacy movement to become lifelong learners.

III. RESULTS AND DISCUSSION

Based on the results of observations, interviews and questionnaires in several junior high schools in Pekanbaru City, the implementation of HOTS has started to be implemented even though it can be said to be very minimal. Science teacher at Al-Azhar Middle School Shifa Budi revealed that from the MID-TEST and FINAL-TEST questions which consisted of 40 questions, only about 15% were included in the HOTS category. Meanwhile, Az-Zuhra Islamic School Junior High School Teachers and IT Azzizziyah Middle School Science Teachers said that the HOTS questions used in the MID-TEST and FINAL-TEST were only around 10%, even some other teachers said that only 1 or 2 exam questions used HOTS. According to the science teachers at the school, HOTS questions were used only to the extent of C4 (analyzing), where students were

required to use the skills they had learned on information they knew in grouping information, determining the relationship between one group / information or describing a material becomes clearer components.

Students' reading comprehension skills are lacking and need help, because there are many essay questions that are not responded to. Even if they are responded to, the responses show that the reasoning is still low level, linear, and fragmented (not comprehensive). Another problem is the students' unfamiliarity with answering questions in the form of tables, diagrams, testing analytical skills, and *problem solving*. Science teacher at Al-Azhar Middle School Shifa Budi explained that of the 4 classes consisting of 80 students, 50% were able to answer questions categorized as HOTS, while the Junior Az-Zuhra Islamic School Teacher said that of 4 classes consisting of 110 students, only about 40% are able to answer it. The science teacher at SMP IT Azzizziyah even said that more than 70% of their students did not understand these questions.

Based on the results of the Middle Semester Deuteronomy one of the classes at SMP IT Az-Zuhra Islamic School, out of twenty-seven students only eleven students meet the KKM. When analyzing students' answers by only paying attention to filling in the answers without looking at the right and wrong, only fifty percent of students answered the questions in full, forty percent answered only half and ten percent of students only wrote back the questions on the answer sheet.

From the analysis of student answers in terms of understanding the concept, only fifty percent of students have mastered the concept correctly, this is shown in the answers of students who are able to write down information from questions and answer completely and correctly. Judging from the use of language in solving Semester Middle Test questions, students have not been able to write using correct scientific language. Most students just rewrite the statements that are listed on the questions. More than thirty percent of students were not able to understand what the question meant. Based on the results of the Mid-Semester Deuteronomy students have not been able to use their reasoning properly to solve the problems. Through the Semester Middle Deuteronomy questions in the form of essays, many students did not complete the questions. Even if the questions are done, they are answered imperfectly (not done until they are finished) and it is not uncommon for them to just do it. Students are less able to relate information to the knowledge they have learned to solve problems with new conditions. Based on this analysis, students do not yet have good higher-order thinking skills.

The school literacy movement that was launched since March 2016 which is aimed at improving students' reading skills until now has not had much effect on learning outcomes because it is only at the socialization and coordination stage. Science teacher at Al-Azhar Middle School Shifa Budi explained that literacy activities were only carried out once a week, while the Az-Zuhra Islamic School Junior High School Teachers and IT Azzizziyah Junior High School Science Teachers revealed that literacy activities in their schools were not optimal because they focused more on reading Al-Qur 'activities. The teachers also said that *assessments* periodic had not yet been carried out to see the impact of these literacy activities.

IV. CONCLUSION

From the results of the data analysis it can be concluded that critical thinking is one of the *output Mid-test* expected from the activities of building a literacy culture, with a culture of literacy it is expected to improve the critical thinking skills of students so as to form the character of students who are skilled in solving problems and analyzing all forms of information. what they have read or learned. The habit of reading culture fosters the curiosity of students so that it raises problems that must be solved, so that it requires students to have high-level thinking skills as well, and in the end HOTS's important role is needed.

Good learning must be imbued with HOTS-based learning, thus forming the character of students who are skilled in critical thinking and in the end have a positive impact on literacy or reading culture activities. HOTS-based learning requires students to be active in learning, so that the teacher is only a facilitator, the teacher is a facilitator, that is, the teacher bridges students when students find difficulties in solving the problems they find.

Thus it can be drawn a common thread that building a literacy culture can improve students' critical thinking and ultimately refers to HOTS-based learning. Likewise, HOTS-based critical thinking skills can improve reading culture in students. And it is hoped that in the implementation of the 2013 curriculum, all teachers are able to integrate literacy culture activities in their learning activities so that in the end it can improve students' critical thinking skills which ultimately affect the effectiveness of the results. learning, especially HOTS-based learning outcomes.

REFERENCES

[1] Anderson, LW, and Krathwohl, DR 2001. A Taxonomy for Learning, Teaching, and Assessing: A Revision of

Bloom's Taxonomy of Education Objectives. Addison Wesley Longman, In. New York.

- [2] Arbi YR, Sumarmin R., Putri DH 2018. Development Module Oriented Science Technology Society Indue Science Literacy Assessment for 7th-Grade Junior High School Students in 2nd-Semester. IOP Publishing. 335: 1-5. doi:10.1088/1757-899X/335/1/012089
- [3] Asrizal, Festiyed, and Sumarmin R. 2017. Analysis of the Wholeness of the Development of Integrated Science Teaching Materials with Digital Era Literacy for Class VIII Junior High School Student Learning. Journal of Exact Education (JEP), 1 (1): 1-8.
- [4] Casner-Lotto, J., & Barrington, L. 2006. Are They Really Ready To Work? Employers' Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21th Century US Workforce. Available at: http://www.p21.org/storage/documents/key_findings_joint.pdf. Accessed December 30, 2019.
- [5] Directorate of Junior High School Development, Directorate General of Primary and Secondary Education, Ministry of Education and Culture. 2016. Guidelines for Middle School Literacy Movement. Jakarta
- [6] Huriyah F., Sumarmin R., and Effendi J. 2017. Analysis of Science Literacy Achievement of Biology Class X High School Students in Padang City. Journal of Exact Education (JEP), 1 (2): 72-79.
- [7] Indah WA 2017. Implementation of the Familiarization Stage School Literacy Movement at MI Muhammadiyah Gandatapa Sumbang Banyumas. LIBRIA. 9 (1): 127-146. IAIN Purwokerto
- [8] Zasda J., Sumarmin R., and Zulyusri. 2018. Analysis of Biological Science Literacy a Program for International Student Assessment (PISA) Class IX Junior High School Students at Solok Town. International Journal of Progressive Science and Technologies (IJPSAT). 6 (2): 402-410.
- [9] Ministry of Education and Culture. 2016. Permendikbud Number 23 Year 2016 concerning Assessment Standards. Ministry of Education and Culture. Jakarta