DESCRIPTION OF MATHEMATICAL LITERATION ELEMENTARY SCHOOL STUDENTS IN COLLABORATIVE LEARNING SETTINGS

Muhammad Irfan Anshori[1]

[1]Mahasiswa Pendidikan Matematika Program Pascasarjana Universitas Negeri Medan,
Jln Williem Iskandar Pasar V Medan Estate 20221, Medan, Indonesia.
mhdirfananshori@gmail.com

Abstract : The purpose of this research is (1) to see the extent to which the mastery of mathematics elementary school students literacy country 015877 (2) look at the impact of collaborative learning against the ability of mathematical literacy elementary school students of the country 015877. This type of research using qualitative approach with data analysis using phenomenological descriptive. The sample of this research is the whole grade VI SDN 015877 Fifty which amounted to 28 students. Research findings demonstrating that the ability of mathematical literacy students rise seen from the average literacy test answers results' students who obtain a score above average as many as 21 students. and also the ability of other students showed improvement as the ability and proficiency in verbal argues rise after applied to collaborative learning. This is certainly be added value and also as an alternative solution for educators to address challenges of 21st century learning.

Keywords : Mathematics Literacy, Collaborative Learning

1. Introduction

Education at the present moment is in the period of knowledge (knowledge age) where all the pengetahnuan are at a very incredible acceleration. Accelerating the increase of knowledge is supported by the application of media and digital technology called information *Super Highway with Gates* (Wijaya, 2016). In this case all parties either industry to play an active role as well as the required educational Adaptive addressing development. Specialized in the field of education the need for innovation in learning either from the learning objectives that must be concerned with the readiness of the students face the next challenge.

In the learning activities of the substance of the materials need to be planned in the context of appropriate mature student really going natural. Learning materials should provide a more authentic design. Learning in the 21st century requires learners to have the skills, knowledge and ability in the field of technology, media and information, learning and innovation skills and life skills and career.

Literacy is certainly not new to the world of education. The learning demands of the 21st century requires that every student or teacher has a good literacy ability. Understanding of learning that leads to the establishment of literacy in Indonesia currently already programmed many schools include elementary school. The Ministry of education and culture (Kemdikbud) developed the Movement Literacy School (GLS) to develop human resources through education. The school also literacy movement in an effort to cultivate the habit of reading and character outlined in the Ministerial Regulation (sweets) number 23 years 2015 about growing of manners. The literacy movement in elementary school (SD) is done through three stages, namely conditioning phase, the development phase, and the phase of learning (Faizah, et al., 2016:6).

The importance of this mathematical literacy, it is not yet in line with student achievement in the eyes of international Indonesia. The fact still bad in somw skills of children aged 15 years in implementing problems late in life is real, as shown by the results of the PISA study, naturally became a serious issue that must be addressed to national education. The results obtained in the Programme for International Student Assessment (PISA) 2012 which shows that Indonesia is still categorized students is low. The PISA test was carried out by the Organization for Economic Cooperation and Development (OECD) that tests the ability of literacy students after following primary education. In 2009 Indonesia was only able to students ranked 61 of 65 participants (Balitbang in Maryanti, 2012:4).

See the thing is certainly making education in indonesia should do the evaluation. Looking at the results of the PISA assessment in the course of these tests showed that it only refers to a narrow literacy as part of the language lessons as in understand before. Literacy that became the test assessment includes in bahasa/reading literacy, covering mathematics, science literacy and financial literacy. Mathematical literacy in learning mathematics is the standard that must be mastered by learners in order to cultivate and improve the competence of math skills learners (Zainiyah,2018:6).

Based on the observation beginning at SDN 015877, the researchers to see the fundamental problems that in the settlement problems that do students in kontektual. Just there are some students of class on are able to resolve the issue contextual is right. Related to this, most of them are ignorant of informations that matters in settlement problems.

Look at these problems in addition to mastery of the still low literacy also learning settings which are normally still do not optimize the capabilities of the students. The mathematical model of learning is emphasized by (BNSP, 2010) based on cooperation between individuals to increase the competence of interpersonal and social life, as taught in the concept: *cooperative learning, collaborative learning, meaningful learning*, and so on.

Therefore as an alternative to develop math literacy abilities of students, collaborative learning settings considered could be an option to implement. Collaborative learning put forward cooperation than competition. It is certainly becoming a benchmark for students accustomed to work in teams. The importance of having skills of cooperation in human life, in line with a statement Johnson, Johnson Holubec in Apriono (2013:297), which States that just as an educator have to teach academic skills, skills cooperation should also be given to the learners, as this action will be beneficial for them to improve the work of the group, and determining for the success of social relationships in the community. Bordessa in Apriono (2013:298) also stressed the importance of student has participants

the skills of cooperation, saying that learners really should learn to collaborate towards a single goal, namely the existence of an understanding that it is not There is a single person who has all the right answers, except by cooperating. Certainly this learning process which becomes the means to achieve the learning objectives of the 21st century. The purpose of this research was to see and describe the mathematical literacy abilities of elementary school students in collaborative learning classrooms.

2. Literature Review

Literasi comes from the word language latin "littera" who interpreted as mastery conventional systems writing and the accompanying, next term literasi more interpreted as the ability to read and write, then developed covering the process of reading, writing, speaking, hearing, imagine, and see. Mathematical literacy according to the Puspitasari interpreted as the ability to someone to formulate, use and interpret in various context. The ability to literasi math help someone to understand the role of or usability math in everyday life (Masyur,2018). To have the ability to good literacy will facilitate the students in solving math problems. Thus activates literacy math very important to solve problems facing in everyday life (Setiawan, 2014).

Mathematical literacy is the ability of individual in the knowledge of the mathematics in order to solve the problems of everyday life. In mathematical literacy there are some important components namely, understand the concept of, solve a problem, communication, and apply the procedure. It is contained skills 21st century the critical and problem solving, communication and collaboration, as well as the creativity and innovation (Anwar, 2018:369). In line with it, Stacey and Turner (Sari,2015:714) interprets literacy in the context of mathematics is to have the power to use thingking of problem solving math in a day in order to is ready to face the challenges of life.

According to the Sasongko train mathematical literacy students then needed questions based argumentation. The ability to mathematical literacy of students need optimalize by way of getting used provision about PISA (Mansur,2018:142).

This is in line with the opinion (Lange J., 2003: 77) mentions achievement competences in mathematical literacy namely (1) mathematical thinking and reasoning (think and the reasoning matematis), (2) mathematical argumentation (argumention of math), (3) mathematical communication (communication matematis), (4) modeling (modeling), (5) problem solving (solve a problem), (6) representation (to translate or represent), (7) symbols (using a symbol of), (8) gardening and technology (use the tools and technology).

From some competency in math literacy target, outline some of the things that mark the student already has a good literacy ability that is as follows: (1) students can analyze mathematical situations by making patterns and relationships to draw analogies and generalizations, (2) students can give a reason on the patterns and relationships that they make. (3) Students can indicate the conclusion of a statement and explain logically (4) students can make a logical and mathematical argument can be accountable reason, (5) students are able to express mathematical ideas in the form of writings and to visualism into simple figures, (6) Students can connect the real objects, pictures and diagrams into the idea of mathematics, (7) students are able to present a mathematical phenomenon in the form of a mathematical model, and shows mathematical models of reality that exists, (8) students are able to ask formula (formula) and prescribe a settlement of an issue, (9) students can identify the problem, and make a plan of settlement, (10) students can make a plan the settlement appropriately, (11) Students can solve problems and conclusion (12) students can demonstrate reciprocal relationships and uses representations in accordance with the situation and objectives.

As for the indicators of achievement of mathematical literacy competence in terms of the ability of the students completing math problems, namely:

Tabel 1. Indicator of Mathematical Literacy (Zainiyah,2018:10)

MATHEMATICAL LITERACY	ABILITY TO SOLVE PROBLEM
Interpretation the Mathematics to solve the problem	- Identify the element of the unknown in question and the adequacy of the elements required
To formulate the problem Mathematically	- Formulate a Mathematical problem of draw up a Mathematical model
Using the concept, fact, procedure, and reasoning in Mathematics	- Applying the strategies solving various problem (either similar or new problem) in the inside or outside of Mathematics

In the process, the ability of mathematical literacy lesson that must be supported by an interactive process of learning and collaborative. In the process they will be shaping the direction where the learning will culminate or ability what was created in the end.

Given the current status of 21st century skills, there is an increased motivation to develop modes of assessment that allow students to demonstrate their abilities in the se domains.

note:

> We need to re-think assessment,identify new skills and standards relevant forthetwenty-firstcentury,and then determine how to best assess students' acquisition of the new competencies. More over,the envisioned new competencies should include not only cognitive variables (e.g.,critical thinking,reasoning skills) but also non-cognitive variables (e.g., teamwork, tolerance, tenacity) as the basis for new assessments to support learning (Child & Shaw,2016: 17).

Besides the learning process expected in the 21st century is team work-oriented (teamwork). With regard to that collaborative learning and cooperative learning is a priority on teamwork. Knowledge in interaction with the environment over bagun social good as well as the surrounding environment.

Johnson Johnson suggests that collaborative learning (CL) can be defined as a set of teaching and learning strategies that promote student collaboration in small groups (two to five students) to optimize their own learning and each other (Le Wubels,2017 Jansen: 103).

According to Dillenbourg (1999) in Apriono, Collaborative learning PDC learning methods that put more emphasis on specific tasks and sharing tasks in group work, compares the conclusions and the work procedures of the group, and provide greater leeway on learners in group work (Apriono, 2013:299). Collaborative learning supported by Vygotsky's theory of learning. According to Vygotsky, learning happens when children work or learn to handle tasks that have not yet learned the task assignment is still within range of his abilities (Santrock: 2013). The learning process will happen efficiently when children learn in co-operative play with other children in a supportive environment in the companion guidance or someone who is more capable or more adults such as teachers.

Panitz in Apriono (2013:301) there are a number of factors to note in the pattern of collaborative learning, namely the role of learners and the role of learner Roles that learners should be developed was (1) directing, namely drafting a plan that will implemented and propose an alternative solution of problems encountered, (2) explain, that provide explanations or conclusions conclusions on the other group members, (3) ask, asking questions to gather information that wants to be known, (4) criticized, namely the filing of the disclaimer and questioned the rationale of the proposal submitted, pendapatpernyataan (5) summarizes, namely making inferences from the results of discussion or explanation given, (6) notes, making notes about everything that happens and retrieved group, and (7) links, increasing the interactions that occur between members of the group.

Research has shown that students experienced some problems during collaboration (Janssen., 2007). In this section, we exemplify the lack of collaborative skills of students as one of the common problems reported in the literature collaborative learning at various levels of education. Barron in

Jansen (2007), investigating collaborative interaction of elementary school kids, finding low-quality coordination among members of the group when they participate in problem-solving tasks.

3. Methodology

The kind of this research using qualitative approach to data analysis using the descriptive fenomenology. A sample of this research is all students of class VI SDN 015877 Lima Puluh who number 28 students. Methods used in this study is the interview, observations, and the documentation in the form of a description. The test as much as 5 of about to see the extent of literacy math of students after done learning in collaborative setting.

Tabel 2. The Hints of Interview

ASPECTS MEASURED	QUESTION CONCEPT
Interpret the Mathematics to solve the problem	- Understanding of the issue in question - The ability of students to explain the problems in accordance with his own sentences
To formulate the problem Mathematically	- Planning solutions determine terms enough in the matter too determine the physics problem
Using the concept, fact, procedure, and reasoning in Mathematics	- Carry out the settlement procedures which have been formulated - Reflect and choose the best solution

In addition to the test data collection done by the open interview or observation also do semi-structure, during the process of collaborative learning to take place. Observations made during the learning process of maths to see mathematical literacy students. Observations carried out focused observation due to narrowed down on certain aspects. The test results are then analyzed and supported with observation for learning, as well as interviews to some students.

Tabel 3. The Hints of Observation

ASPECTS MEASURED	THE THINGS OBSERVED
Interpret the Mathematics to solve the problem	- The Activities of the collaboration in understanding the issues contained in the questions with your group
Organization in the team	- Working in teams - The existence of peer tutors
Discussion and asking answer sections	- Ask a question - Provide an explanation of friends

4. Results and Discussion

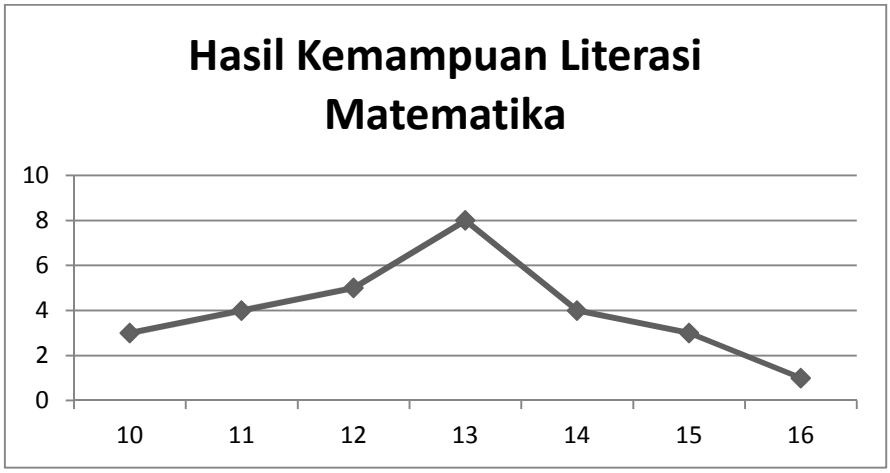
c. Result

Results of the data in the form of a qualitative data derived from test results matter a matter of mathematical literacy of students and qualitative data related to the findings of the interviews and observations at the time of learning activities taking place. In the examination of mathematical literacy test results of students not in the focus on the value that is retrieved. But it's more to how far the students are able to carry out the process of literacy in finshing process reserved. The results of the analysis of data obtained from the results of the interview combined with observations of the researchers while the implementation of collaborative learning.

Results of tests the ability of mathematical literacy grade IV SDN 015877 after a collaborative learning.

Score	Frequency
10	3
11	4
12	5
13	8
14	4
15	3
16	1
Sum =	28
Average=	11,96429

The results obtained from the rubric assessment of literacy ability test with scale range 1-4. Average grade VI in the tests was 11.96 indicates most students already are capable and have the ability of mathematical literacy but still in the category is enough. If seen further that most students bnyak gain score 13 of the maximum total score 20 and the most of students who are above average is 21 students. This showed that most students already have the ability of mathematical literacy in categories and multiple categories. As for the student mathematics literacy test results can be seen in.



Apart from the test results the ability of mathematical literacy. Other findings in the form of interviews with some of the students related to discuss about reserved literacy obtained diverse answers to students. As for the results of the interviews from some of the students are:

Student 1:

R : How do you solve the problem in question No. 1?

S : the last A says the reply to question No. 1 this should be sorted out first from the low Pack.

R : after that what do you do next?

S : I'm still trying to wear the number line pack.

Seen that students 1 are able to interpret the meaning of the question. If seen from observations. Student group 1 is already working in teams where they have mutually discuss and teach his friend who still understand the meaning of each problem.

Student 2:

R : what parts haven't you understood yet?

S : reserved to the 3 Pack of these at the start from where it used to be?

R : try note! There it is said that each sack contained mango 15 kg. For example each of you bring 2 sacks, then you guys are selling into the market selling Just 30 kg. Try to pay attention to the unit of the end of it.

S : kg Pack?

R : yeah you guys are trying to calculate how many kg of mango you guys carry.

S : oh, yeah Yes Sir we understand.

For students 2 and his group, they still feel confused especially in choosing the resolution procedure. Therefore the grant guidance can be directly given by teachers to help them to see enough in terms of completing a math problem.

d. Discussion

From the findings, both mathematical literacy tests, interviews or observations while learning process, in general students have answered varies depending on the group. Some students were able to correctly answer the question in the form of context, identifying information, resolve problems with a clear instruction as well as being able to give the right answer to the reason. Students had started to get used to working on procedures that require decisions sequentially, solved the problem with a simple strategy, interprets and uses a representation based on different information sources and suggested their interpretation of the results. Most other students were able to solve a problem already given, but not all the answers are correct. Students are able to answer the question in the context of known as well as all relevant information is available with a clear question, capable of identifying information, and perform common ways based on clear instructions and shows a action in accordance with the given simulation. Students also are able to interpret to be able to recognize the context which requires a direct conclusion.

Students are able to sort the information to present the data and give the exact reason of the results of the solution. Other studies relevant with this study is the research conducted by Mulyati (2016), he said that the characteristics of elementary students who are still at the stage of operational concrete, i.e. learning that integrates knowledge, skills, and creative thinking as well as more emphasis on the experience and involvement of students actively in solving the problem. This means the characteristics of elementary students who are still in the stage of operational concrete is very influential on the settlement of the problem of literacy by involving students actively and interact with their social environment. The role of the social environment make students more active in the learning process. This is supported by the results of research from Pakpahan (2016:346), namely, the dominant factors that affect student achievement Indonesia participants PISA2012 yaitufaktor identity and socio-cultural factors. Factor the identity consists of the level of education, kindergarten education, and discipline in school.

As has been expressed by the Centre For Education Statistics And Evaluation (Zainiyah,2018:12) in the year 2016 that effective teachers have a basic knowledge of literacy that powerful that it is able to create teaching strategies that area appropriate to the context, purpose and, student needs, and be able to utilize the environment that supports the improvement of literacy. until the role of teachers in improving the literacy skills of mathematics students is considered very important because it is considered to help students in building a positive perception towards mathematics.

5. Conclusion

Based on the research results obtained average grade VI in the tests was 11.96 indicates most students already are capable and have the ability of mathematical literacy but still in the category is enough. If seen further that most students obtain score 13 of the total maximum score of 20. Generally students are already quite capable of resolving the question of mathematical literacy problem. Observations while learning process shows that the collaborative learning able to be alternative election model learning to improve student literacy. In this study the settings of each students interact and work together in teams to solve the problem so builded a good literacy every student equally.

References

Anwar, N. T. Peran Kemampuan literasi Matematis pada Abad 21. *Prosiding Seminar Nasional Matematika, PRISMA*.364 – 370.(2018)

Apriono, D. PEMBELAJARAN KOLABORATIF: Suatu Landasan untuk Membangun Kebersamaan dan Keterampilan Kerjasama Diklus, Edisi XVII, Nomor 01 September 2013. h 292-304.(2013)

Child, S., & Shaw,S. Collaboration in the 21st century: Implications for assessment. *Research Matress UCLESS p: 17-22*. Summer 2016

Faizah, D.U., dkk. Panduan gerakan literasi sekolah di SD. Jakarta: Kemdikbud.2016

Janssen, J., Erkens, G., Kanselaar, G., & Jaspers, J. Visualization of participation: Does it contribute to successful computer-supported collaborative learning? *Computers & Education*, 49,2007,h: 1037–1065

Lange, J. "Mathematics For Literacy". Quantitative Literacy: Why Numeracy Matters for Schools and Collage. The National Council on Education and the Disciplines. Princeton.2003

Le, H., Janseen, J., Wubbels, T,. Collaborative learning practices: teacher and student perceived obstacles to effective student collaboration, *Cambridge Journal of Education*, ,Vol. 48, no. 1, 2018, h. 103–122

Maryanti, E.. "*Peningkatan Literasi Matematis Siswa melalui Pendekan Metacognitive Guidance"*. Tesis pada Jurusan Pendidikan Matematika UPI Bandung.2012

Masyur, N. Melatih Literasi Matematika Siswa dengan Soal PISA. *Prosiding Seminar Nasional Matematika, PRISMA*. h : 140-144(2018).

Mulyati, T,. Kemampuan Pemecahan Masalah Matematis Siswa Sekolah Dasar. *EDUHUMANIORA*, vol 3 no 2,h. 1-15.2016

Rogers Pakpahan, Faktor-Faktor Yang Memengaruhi Capaian Literasi Matematika Siswa Indonesia dalam PISA 2012. *Jurnal Pendidikan dan Kebudayaan*, Vol. 1, Nomor 3, Desember 2016. h 337-341. 2016

Sari, R. H.. Literasi Matematika: Apa, Mengapa, Dan Bagaimana?, Prosiding Seminar Nasional Matematika Dan Pendidikan Matematika UNY 2015. Yogyakarta.(2015)

Setiawan, H., Dafik, D., & Lestari, N. D. S. Soal matematika dalam pisa kaitannya dengan literasi matematika dan kemampuan berpikir tingkat tinggi.2014

Wijaya, E. Y., Sudjimat, D. A., & Nyoto, A. Transformasi Pendidikan Abad 21 Sebagai Tuntutan Pengembangan Sumber Daya Manusia di Era Global. *Prosiding Seminar Nasional Pendidikan Matematika 2016* ~ Universitas Kanjuruhan Malang. Malang.(2016)

Zainiyah, U., Marsigit, Literasi Matematika: Bagaimana jika Ditinjau dari Kemampuan Pemecahan Masalah Matematika Siswa SD Kelas Tinggi?. jurnal riset pendidikan matematika vol 4 no 1, 2018. h.5-14.