

WHAT ARE THE SOCIAL SCIENCE LITERACY ABILITIES OF JUNIOR HIGH SCHOOL STUDENTS AFTER THE PANDEMIC?

Esti Setiawati ¹

Sunarti ²

Victor Novianto ³

Siti Zumrotul Islamiyah ⁴

Danarstuti Utami ⁵

ABSTRACT

Objective: The objective of this study is to examine the impact of teacher learning on the social science literacy skills of post-pandemic junior high school students.

Theoretical Framework: This research is crucial to elucidate the observed decline in students' science literacy proficiency over recent years.

Method: The study used a Kirkpatrick design with four parts. It involved four junior high schools, 14 teachers, and 423 students. Data were collected through interviews, questionnaires, observations and tests. The data were analysed using a variety of techniques, including graphs.

Results and discussion: Aiken's formula showed that the research questionnaire and literacy questions are highly suitable. The research questionnaire had a Cronbach Alpha value of 0.950, which is excellent, while the literacy questions had a value of 0.727, which is good. 95% of students achieved the reaction dimension, 91% achieved the learning dimension, 88% achieved the behaviour dimension, and 69% achieved the outcome dimension. The results show that 30.97% of students did not achieve proficiency in social science literacy after learning. This is important for Sustainable Development Goal 4, which is about making sure everyone has access to quality education and learning opportunities. More research is needed to gain a better understanding of this outcome.

Research implications: This study contributes to the field by providing a comprehensive evaluation of social science literacy skills among post-pandemic junior high school students.

Keywords: evaluation, teacher learning, social studies scientific literacy, junior high school students, Sustainable Development Goals (SDG).

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¹ Universitas PGRI Yogyakarta, Yogyakarta, Indonesia. E-mail: esti@upy.ac.id

² Universitas PGRI Yogyakarta, Yogyakarta, Indonesia. E-mail: Sunarti@upy.ac.id

³ Universitas PGRI Yogyakarta, Yogyakarta, Indonesia. E-mail: victor@upy.ac.id

⁴ Universitas PGRI Yogyakarta, Yogyakarta, Indonesia. E-mail: zumrotul015@gmail.com

⁵ Universitas PGRI Yogyakarta, Yogyakarta, Indonesia. E-mail: danarstutiutami@upy.ac.id



1 INTRODUCTION

Real indications of the low quality of education, weak students, and the lack of quality of the systems run by schools have been seen in several world-class academic competitions and in reality in society, namely the decline in PISA scores. The decline in Indonesia's Program for International Student Assessment (PISA) score in 2022 reflects the increasing learning crisis in Indonesia and must be addressed seriously and sustainably. The results of the PISA survey announced on December 5 2023, globally, the mathematics, reading and science ability scores of 15 year old students in 81 countries fell, including in Indonesia [1], [2]. The results show that Indonesia is ranked 68th with scores in mathematics (379), science (398) and reading (371).

One of the reasons for the decline in scientific literacy skills was the impact of studying at home when the Covid-19 pandemic hit Indonesia. This is because the learning process is carried out online, there is no direct interaction between teachers and students, limited space and time to hone oneself, and learning loss occurs. This impact can only be felt after students return to school face-to-face, one of which is that their literacy competency is not yet optimal.

Schools play a big role in honing human abilities, namely cognitive, affective and psychomotor abilities [3]. This cannot be separated from the role of teachers as developers of human resources which is the most important part of the learning process, both formal and non-formal education [4]-[7]. By Minister of Education and Culture Regulation Number 21 of 2016, it is stated that the substance of national education goals is the domain of spiritual attitudes and social attitudes, knowledge and skills. Likewise, the standard of educational success in the modern era seems to be under the influence of literacy. Literacy is a complex process that involves building on previous knowledge, culture and experience to develop new knowledge and deeper understanding through reading, viewing, listening, writing and/or speaking activities. For this, teachers need to have access to the development of literacy skills needed to integrate language support into the learning process [8] and students must be active because learning is a process of someone gaining new experiences which then results in new behavior and their own experiences while



interacting with their environment [9],[10], [11],[12]. Teachers are obliged to develop literacy skills in the learning process and must provide them feedback and assessment so that the results are truly effective [13].

The 2013 Curriculum mandates that learning must integrate four important things, namely Strengthening Character Education (PPK), literacy skills, 21st century learning competencies, namely 4C (Communication, Collaboration, Critical Thinking and Problem Solving, and Creativity and Innovation) and HOTS (Higher Order Thinking Skill) [14]-[17]. This will be achieved if quality education is provided with good quality teachers, so that the learning process leads to educational goals. This requires a comprehensive evaluation of teacher performance by school leaders, supervisors and related stakeholders [18], [19]. Besides that, the curriculum must be dynamic and continue to develop following local and global developments, and be responsive to the needs of changing times [20]. Likewise, the education system experiences changes due to the demands of time and changes in society along with advances in science and technology [21], [22]. In line with the development of increasingly modern times, society, especially students, is required to be able to compete and adapt to become higher quality human resources, through high quality education with a focus on scientific literacy through social studies learning.

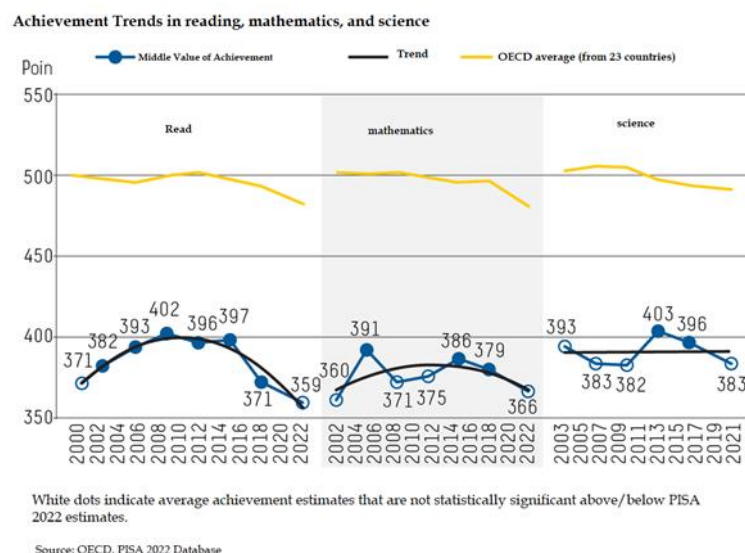
For the reason that the literacy skills of students in Indonesia are currently declining and are ranked 68th in the Indonesian International Student Assessment Program (Program for International Student Assessment/PISA). The important thing that is really needed is a teacher who knows the content of his teaching, the methodology and learning strategies that need to be applied in the classroom [23]. Accompanied by information and communication competencies including mastery of the basics of digital literacy, the ability to use information technology in education [24], [25].

The results of PISA 2022 show that Indonesia's literacy learning outcome ranking has increased by 5 to 6 positions compared to PISA 2018. This increase is the highest achievement in terms of ranking (percentile) in the history of Indonesia following PISA, however the international reading literacy score in PISA 2022 has dropped by 18 points on average. Meanwhile, Indonesia's score

decreased by 12 points, which is a decrease in the low category compared to other countries [26]. The 2022 PISA results can be seen in the following image.

Figure 1

PISA score graph for 2022



This graph shows that the trend in achieving scores for both reading, mathematics and scientific literacy tends to decrease. This is a big question in the world of education. What teacher learning strategies have been implemented so far so that the results of international assessments have had their ups and downs? Of course, future education stakeholders need to think deeply about this. How to train teachers to become great teachers and able to develop students' optimal literacy potential, using various relevant platforms. Because, it is teachers who continuously determine the best things to improve the quality of learning [27]. To support increased teacher performance, competency and achievement, adaptive capacity and a willingness to face future challenges are needed [28]. Therefore, scientific literacy competencies need to be evaluated periodically so that students can optimally understand all social science material which is useful in their future lives after graduating from junior high school.



2 THEORITICAL REVIEW

In the era of the 21st century, one of the basic abilities that everyone needs to have is literacy skills. The main requirement for facing revolution 4.0 is the quality of public literacy, so it needs to be developed from the start through education (Sumanik *et al.*, 2021). Scientific literacy is defined as the ability to use scientific knowledge, identify questions, and draw conclusions based on evidence, in order to understand and make decisions regarding nature and changes made to nature through activities carried out by humans. A person who has scientific and technological literacy skills is a person who has the ability to solve problems using scientific concepts obtained in education according to his level, is familiar with technological products around him and their impacts, is able to use technological products and maintain them, is creative in producing results. simplified technology so that students are able to make decisions based on the values and culture of the local community (Komalasari *et al.*, 2019). The development of scientific literacy is very important because it can contribute to social and economic life, as well as to improve decision making at the community and personal levels. Scientific literacy includes two main competencies. First, lifelong learning competencies (longlife education), including equipping students for further study at school. Second, competence in using the knowledge they have to fulfill their life needs which is influenced by developments in science and society (Erdani *et al.*, 2020).

Scientific literacy focuses on the implications of problems that occur in local, regional and national community life. The concept of scientific literacy consists of two dimensions: 1) Vocabulary dimension; This dimension shows science terms as the basic foundation in reading and understanding science reading material; and 2) Dimensions of the inquiry process; This dimension shows understanding and competence to understand and follow arguments about science and matters related to media technology policy (Ajie *et al.*, 2013).

Permanasari revealed that science, mathematics and reading literacy skills are interconnected. The general weakness obtained from the analysis results is that Indonesian children have difficulty interpreting reading and



providing critical evaluations of reading material (Yanti *et al.*, 2020). In terms of mathematical literacy, Indonesian children are not able to complete tasks at a high level, such as the ability to solve problems that involve visual and spatial reasoning in contexts they are not familiar with. Average results for the three subjects; mathematics, reading and science in 2022 show a decline (learning loss) reaching 12-13 points compared to 2018. Overall, the PISA 2022 results can be categorized as among the lowest, equivalent to the results obtained in 2003 in reading and mathematics, and in 2006 in science. Although the results of some previous assessments were higher than the results observed in earlier years, this increase reversed with a decline seen in 2015 and beyond. This means that since our participation in PISA from 2000 to 2022, there has not been a significant increase in quality as represented by the scores obtained during 2000-2022. The serious problem is that only 18% of our students can obtain mathematics proficiency of at least level 2. Meanwhile for the other 82%, information is not available (Yanti *et al.*, 2020) .

The low scientific literacy abilities of Indonesian students are influenced by many things, including the curriculum and education system, the choice of teaching methods and models by teachers, learning tools and facilities, learning resources, teaching materials, and so on. One of the factors that directly relates to students' learning activities and influences the low literacy skills of Indonesian students is the teacher's choice of teaching methods and models (Rahayuni, 2016) . The success of learning is a must that can be achieved through the establishment of effective communication between learning components. One way to create effective communication is to use good learning methods or models so that students can easily understand the material presented by the teacher (Widiawati *et al.*, 2019) . This is proven by the results of research from (Widiawati *et al.*, 2019) which stated that there was an increase in scientific literacy of 72.61% in the high category due to the implementation of the double loop problem solving learning model assisted by teaching aids in junior high school students. Likewise, research by (Hajrah *et al.*, 2021) stated that the discovery learning model can increase the scientific literacy of class XI high school students with a completion percentage of 88% (Hajrah *et al.*, 2021).



This is also confirmed by the results of research by (Mardianti *et al.*, 2020) who also stated that through the guided inquiry learning model, it had a positive impact on increasing scientific literacy skills (Mardianti *et al.*, 2020).

3 RESEARCH METHOD

This research is evaluation research with a descriptive approach. The aim of this research is more focused on describing the impact of the teacher's learning process on strengthening social studies scientific literacy. Evaluation refers to the aspects and stages of the Kirkpatrick Four Levels Evaluation Model evaluation model [29].

The subjects in this research were 13 middle school social studies teachers with bachelor's degrees, 9 people, 4 people from master's degrees, and 423 students from four selected schools, namely three state junior high schools in the Special Region of Yogyakarta, namely SMP Negeri 1 Bantul, SMP Negeri 1 Pleret, Bantul, SMP Negeri 1 Pakem, Sleman, and one school in Central Java Province, namely SMP Negeri 2 Mertoyudan, Magelang, which was determined using purposive sampling.

Data collection uses interview, observation, questionnaire and test methods [30]. The instrument readability test was carried out by 2 evaluation experts, 2 language experts, and 2 social studies teachers. The content validity of the research instrument was carried out using the Aiken formula with the assessment of 3 evaluation experts, 2 education practitioners, and 2 social studies experts. Meanwhile, the content validity of the social studies science literacy test questions was carried out by 4 senior middle school social studies teachers. Test the reliability of research instruments and scientific literacy questions using Cronbach Alpha.

Evaluation aspects and indicators include four dimensions, namely reaction, learning, behavior, and results. The reaction dimension refers to students' satisfaction with teacher learning, students' opinions on teacher learning, and students' responses to teacher services in learning. The learning dimension refers to mastery of knowledge, improvement of skills, and changes in attitudes. The behavioral dimension refers to aspects of changes in student

behavior after participating in teacher learning. Meanwhile, the result dimension is scientific literacy abilities after participating in teacher learning. The evaluation model is presented in the following figure.

Figure 2

Kirkpatrick Evaluation Mode



4 RESULTS AND ANALYSIS

Validity and reliability test results of questionnaire instruments and literacy questions content validity was carried out on the instrument grid, questionnaire and interview guide. Content validity was carried out by 7 people, namely experts in the field of evaluation (3 people), education practitioners (2 people), and social studies experts (2 people). The results of the experts' assessment of the instrument grid, questionnaire and interview guide with an Aiken value of 0.82. These results indicate that the research instruments used have good content validity because all Aiken values are above 0.7.

Meanwhile, the readability test of the instrument was carried out by 6 people, namely one Indonesian language expert, 2 evaluation experts, and 3 social studies teachers. The average readability test result for the questionnaire instrument used was 4.70 with the range of scores used to assess the readability of the questionnaire instrument being 1 (very poor) to 5 (very good). The average score for the questionnaire readability test was 4.70, indicating that the questionnaire instrument used to capture information on the impact of teacher learning was in the "Very Good" category in terms of readability, so it could be used.

Meanwhile, the results of the reliability test of the research instrument are a questionnaire with Cronbach Alpha, the reliability coefficient is 0.950 which is in the very high category. The results of the research instrument reliability test are displayed in the following table.

**Table 1***Reliability Test Results of Research Instruments*

Cronbach's Alpa	N of Items
.950	43

To test the content validity of the social studies literacy questions, it was carried out by social studies experts and education practitioners, stating that out of 25 items in the social science literacy questions, 20 items were declared valid, of which 5 items were invalid. After that, a reliability test was carried out on scientific literacy questions via Cronbach Alpha, the result of which was 0.727 and was declared reliable in the high category. The results of the reliability test can be displayed in the following table.

Table 2*Reliability Test Results for Scientific Literacy Questions*

Cronbach's Alpa	N of Items
.727	20

4.1 REACTION DIMENSION

The teacher's learning process greatly influences several aspects of students, such as active learning, attention, interest and motivation to learn. If the learning process goes well, the teacher is interactive with students, the teacher uses the right media, of course student learning outcomes will also increase. However, if the teacher's learning process is less interesting, boring, or the media is not appropriate, of course it will also affect the condition of student learning outcomes. Apart from that, teacher learning also creates learning experiences for students as a reaction to the learning process.

Students' reactions to teacher learning have several important elements in it. These elements support each other in shaping students' learning experiences in social studies learning. The reaction dimension to teacher learning boils down to aspects of satisfaction, learning experience, and student responses to teacher learning. The results of the analysis of student responses in the reaction dimension were in the categories very good 33.83%, good 61.46%, enough 4.29%, not enough 0.28%, and very less 0.14%.

The results of this analysis can be interpreted to mean that the teacher learning process still needs to be improved, even though the results are only 4.71% lacking. What needs to be improved in this research is in-depth observation regarding the teacher's learning process, while the data analyzed is still limited to student responses via questionnaires. The results of the dimensional analysis of students' reactions to teacher learning are shown in Table 3 and Figure 3 below.

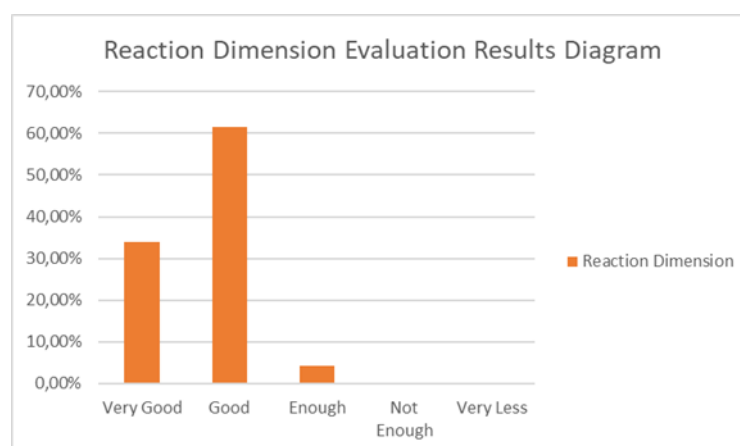
Table 3

Reaction Dimension Evaluation Results

No	Value Scale	Reaction Dimension	Category
1	5	33,83%	Very Good
2	4	61,46%	Good
3	3	4,29%	Enough
4	2	0,28%	Not Enough
5	1	0,14%	Very Less

Figure 3

Reaction Dimension Evaluation Results Diagram



4.2 LEARNING DIMENSIONS

The learning dimension in the learning process includes aspects of mastering knowledge, improving skills and changing students' attitudes. These three aspects are of course prioritized in the learning process because the transfer of knowledge and positive values from the teacher is expected to have an impact on changes in these three aspects. The results of the analysis of student responses via the questionnaire showed that 31.43% were in the very



good category, 59.66% were in the good category, 8.14% were enough, 0.55% were not enough, and 0.22% were very less. Although the results of this analysis are 91.09% good and very good, there are still 8.91% which are still not good.

Of course, there are obstacles in the learning process which of course need to be sought for effective solutions so that the impact of teacher learning on strengthening social science science literacy competencies can be maximized. Teachers need to train themselves a lot with various learning media platforms, such as workshops, seminars, even the Merdeka Belajar platform. The results of the learning dimension analysis can be displayed in Table 4 and Figure 4 below.

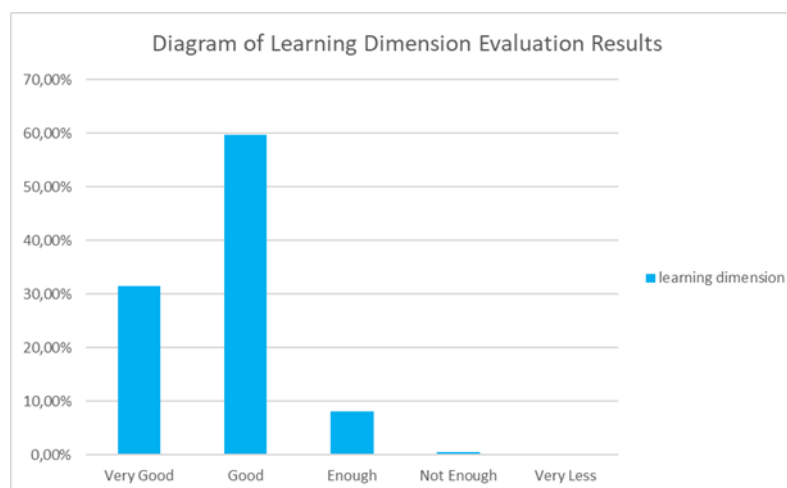
Table 4

Learning Dimension Evaluation Results

No	Value Scale	Learning Dimension	Category
1	5	31,43%	Very Good
2	4	59,66%	Good
3	3	8,14%	Enough
4	2	0,55%	Not Enough
5	1	0,22%	Very Less

Figure 4

Diagram of Learning Dimension Evaluation Results



Even though the learning dimension evaluation results show the very good category at 31.43% and good at 59.66%, there are still those in the enough category at 8.14%, not enough at 0.55% and very less at 0.22%. This requires serious follow-up from the teacher in the learning process so that students'



mastery of competencies can be maximized without students feeling unable to do the work. Evaluation of this dimension needs to continue to be carried out so that student understanding can increase over time as teachers improve the learning process carried out. Student obstacles must be overcome as optimally as possible, accompanied by periodic supervision from the principal of the teacher's learning process so that learning objectives can be achieved optimally and students truly understand the material provided by the teacher.

4.3 BEHAVIORAL DIMENSIONS

Evaluation of the behavioral dimension leads to elements of behavioral change carried out by students after the learning process. The behavior changeover can be measured by how far students have applied their behavior in following the teacher's learning in terms of participation, activeness, collaboration, cooperation and problem solving. In the evaluation of the behavior dimension, the results of the analysis show that there are 26.98% of students in the very good category, 61.13% in the good category, 10.34% in the enough category, 1.25% in the not enough category, and 0.31% in the very less category. Good. Even though 87% of students are in the good and very good categories, there are still students below the assessment standards. This means that there are still things that need to be improved in the teacher learning process. The obstacles that arise and exist within students need to be further researched as to the causes, and teachers also really need to carry out self-evaluation and reflection on the learning carried out so far.

The results of the behavioral dimension evaluation analysis can be displayed in Table 5 and Figure 5 below.

Table 5

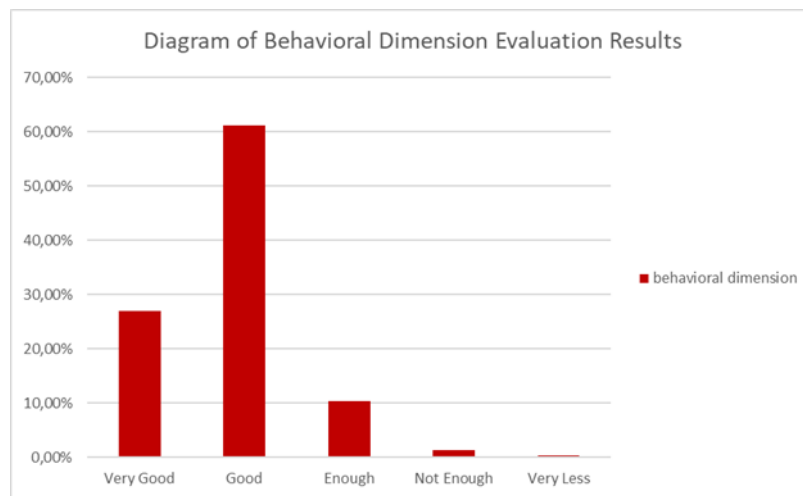
Evaluation Results of Behavioral Dimensions

No	Value Scale	Behaviour Dimension	Category
1	5	26,98%	Very Good
2	4	61,13%	Good
3	3	10,34%	Enough
4	2	1,25%	Not Enough
5	1	0,31%	Very Less



Figure 5

Diagram of Behavioral Dimension Evaluation Results



From the explanation above, what has not been done is measuring student behavior after the teacher's learning process, regarding what behavior and skills students have carried out in developing and mastering social science scientific literacy. This is very important because measuring new behavioral dimensions is limited to students' opinions through questionnaires and in-depth research has not been carried out regarding changes in behavior and skills that students have made after the learning process is complete. This is to see how successful the teacher's learning is in terms of the success of students in taking concrete actions related to developing the learning outcomes they have mastered.

4.4 DIMENSIONS OF RESULTS/SOCIAL SCIENCE LITERACY ABILITY

One of the dimensions measured in this evaluation is social science scientific literacy abilities as an impact of the teacher's learning process. Literacy is a complex process that involves building on previous knowledge, culture and experience to develop new knowledge and deeper understanding. The social studies subject is one of the subjects at junior high school level and is a combination of various social science disciplines ranging from history, geography, sociology and economics. Social sciences can simply be defined as a combination of various concepts or material from the social sciences which

are combined for the benefit of education and learning programs in schools/madrasahs.

Seeing how important the role of social studies is in human life, it is very important to know how far students' competence is in mastering social science scientific literacy. This competency will enable students to be able to solve life problems that they will face in the future. This preparation of course also requires the participation of both parties, namely teachers and students, in the learning process. Teachers really need to use a problem-based learning model, while students must actively read, listen, explore and a series of positive activities during the learning process.

The results of the evaluation of social science science literacy skills in four state junior high schools showed that 19.15% of the results were very good, 49.88% were good, 21.28% were enough, 8.04% were not enough, and 1.65% were very less. The evaluation results show that there are still 30.97% of students in the enough, not enough, and very less categories, and can be seen in table 6, figure 6, and figure 7 below.

Table 6

Results of IPS Science Literacy Evaluation

No	Value Range	Percentage	Category
1	81-100	19,15%	Very Good
2	61-80	49,88%	Good
3	41-60	21,28%	Enough
4	21-40	8,04%	Not Enough
5	0-20	1,65%	Very Less

Figure 6

Diagram of IPS Science Literacy Evaluation Results

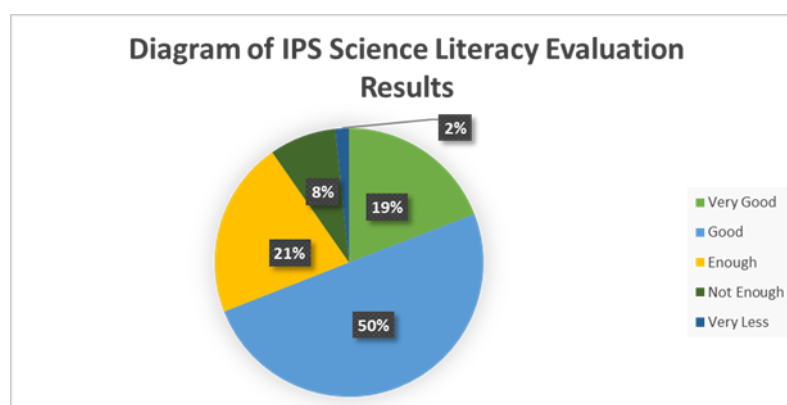
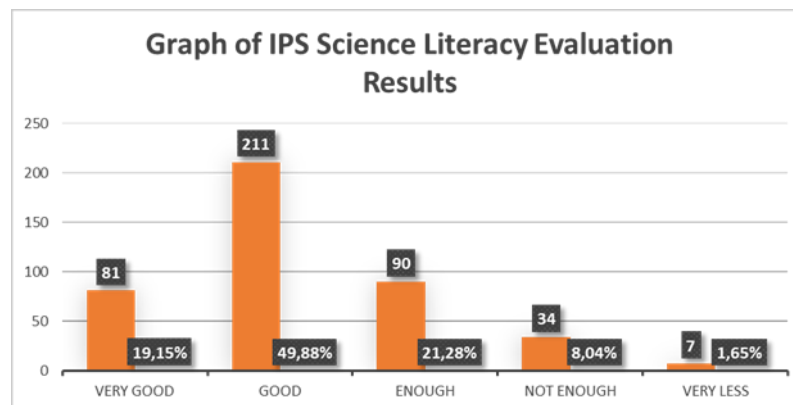


Figure 7

Graph of IPS Science Literacy Evaluation Results



Based on the evaluation results above, it can be explained that in the learning process, there are still students whose social science science literacy skills need to be improved. Because, of the 423 students who were respondents, there were still 30.97% or around 131 students who had not mastered social science scientific literacy. Meanwhile, the questions used are only limited to 20 questions which refer to the Social Science Olympiad questions at junior high school level.

Improving the quality of teachers in the learning process needs to be improved, along with increasing the quality and quantity of social science science literacy questions, so that the evaluations carried out are more comprehensive, thorough, complete and simultaneous. One thing that must not be forgotten is that this evaluation activity must be carried out periodically at a certain level and time so that students' social science literacy skills are truly mastered to move on to the next school level and adapt to increasingly complex developments in science, technology and culture. In line with the evaluation findings through questionnaires and tests, qualitative results were also obtained from the statements of a number of junior high school social studies teachers in four schools as a comparison to the quantitative results.

"Mrs. SK explained that the teacher had tried to use appropriate and interesting learning strategies so that students' social science literacy skills could be optimal. This is because the material studied is very complex with inadequate time allocation. Many students still rely on textbooks, while the development of science is accelerating rapidly."



"Similarly, Mrs. SZ said that the teacher has maximally implemented learning strategies with problem solving so that students practice several skills needed in the 21st century. Students are always given new topics to discuss in small groups in class. This is to stimulate students to be active and fully involved in the learning process."

"Social studies learning must be packaged as attractively as possible, because up to now social studies has been considered less important than other subjects. Apart from a lot of memorization, social studies material is very complex, because it includes history, economics and geography. "Teachers must be smart in packaging lesson material so that it is easy for students to understand, especially regarding the mastery of social science scientific literacy that is currently needed." Said Mrs. S. "Teachers' learning strategies need to be improved and their models developed, so that they attract students to be active, creative, participative, and social studies becomes a subject that students like," said Mrs. MW."

The strategies used by teachers at the beginning, middle and end of learning must of course be carried out in accordance with the signs in the curriculum and those outlined in the Learning Implementation Plan (RPP). This process needs to be monitored optimally through academic supervision carried out by the school principal and his staff, so that the spirit of the teacher as someone to be digugu (their words are listened to by people because their words must be accounted for) and ditiru (their behaviour as are role models be imitated)[31] is truly realized in the school environment, and scientific literacy skills can definitely be mastered by students. Teachers must use a variety of learning strategies, appropriate teaching aids and materials, with various assessment methods, and the use of reflection to improve the quality of learning [32]. Teachers have a very strategic role in self-development, organizational skills, leadership and student initiative as the basis for increasing literacy [33], [34], [35].



5 CONCLUSION

The urgent thing achieved in this evaluation research is the description of the dimensions of reaction, learning, and behavior as well as the achievement of social science literacy mastery of junior high school students, as an impact of the teacher's learning process. The results of research data analysis are divided into four important dimensions as a unified Kirkpatrick evaluation model. The reaction dimension shows that the category is very good 33.83%, good 61.46%, enough 4.29%, not enough 0.28%, and very less 0.14%. The learning dimension shows that 31.43% are in the very good category, 59.66% are in the good category, 8.14%, 8.14% are enough, 0.55% are not enough, and 0.22% are very less. The behavior dimension shows that 26.98% of students are in the very good category, 61.13% are in the good category, 10.34% are in the enough category, 1.25% are in the not enough category, and 0.31% are in the very less category. Meanwhile, the outcome dimension showed that 19.15% of the results were very good, 49.88% were good, 21.28% were enough, 8.04% were not enough, and 1.65% were very less. Even though the results were more than 75% good, this research was still limited to questionnaires, tests and interviews. Therefore, further research is needed, with a larger number of respondents and an adequate number of social science science literacy questions.

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