**ANALISIS RENDAHNYA HASIL BELAJAR MATEMATIKA DAN IPA DI SEKOLAH DASAR (STUDI KASUS DI SDN TALABIU)**

**ANALYSIS OF LOW MATHEMATICS AND SCIENCE LEARNING RESULTS IN ELEMENTARY SCHOOL (Case Study In Talabiu State Elementary School)**

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**Abstrak**: Mata pelajaran Matematika dan IPA merupakan dua mata pelajaran yang sangat penting untuk dikuasai siswa agar nantinya dapat dipergunakan dalam menyelesaikan masalah dalam kehidupan sehari-hari. Realita menunjukan bahwa hasil belajar Matematika dan IPA masih tergolong kurang. Penelitian ini bertujuan untuk menganalisis rendahnya hasil belajar Matematika dan IPA disekolah dasar. Negeri Talabiu. Penelitian ini merupakan penelitian deskriptif kualitatif dengan subjek penelitian adalah siswa kelas atas. Penentuan subjek penelitian secara purposive sampling (berdasarkan tujuan penelitian). Instrument yang digunakan untuk mengumpulkan data berupa pedoamn wawancara dan dokumentasi. Data dianalisis dengan menggunakan rumus ketuntasan klasikal untuk mengetahui berapa persen siswa yang tuntas dan yang tidak tuntas. Hasil penelitian menunjukan bahwa hasil belajar Matematika dan IPA siswa di sekolah dasar Talabiu tergolong rendah. Rendahnya hasil belajar Matematika dan IPA disebabkan oleh dua faktor yaitu faktor internal siswa dan faktor ekternal. Faktor internal berkaitan dengan psikologi dan fisiologi. Sedangkan faktor ekternal dipengaruhi oleh kedaan keluarga, sekolah dan masyarakat. Kaitan dengan sekolah sangat dipengaruhi oleh faktor guru dan sarana prasaran. Solusi yang diambil dari rendahnya prestasi belajar yang diakibatkan oleh faktor ekternal (sekolah) dengan Peningkatan Fasilitas sarana Prasarana memadai dan peningkatan Konpetensi Guru yang meliputi Konpetensi Pedagogik, Profesional dan konpetensi Sosial dan Pribadi

**Kata kunci:** Hasil Belajar, Matematika, IPA, Sekolah Dasar

**Abstract:** Mathematics and science are two very important subjects for students to master so that later they can be used in solving problems in everyday life. The reality shows that the learning outcomes of Mathematics and Science are still quite lacking. This study aims to analyze the low learning outcomes of Mathematics and Science in elementary schools. Talabiu country. This research is a qualitative descriptive study with the research subjects are upper class students. Determination of research subjects by purposive sampling (based on research objectives). The instrument used to collect data is in the form of interview and documentation guidelines. The data were analyzed using the classical completeness formula to find out how many percent of students who completed and who did not complete. The results showed that the mathematics and science learning outcomes of students at the Talabiu elementary school were low. The low learning outcomes of Mathematics and Science are caused by two factors, namely students' internal factors and external factors. Internal factors related to psychology and physiology. Meanwhile, external factors are influenced by family, school and community conditions. Relationships with schools are strongly influenced by the factors of teachers and infrastructure. Solutions taken from low learning achievement caused by external factors (schools) by improving adequate infrastructure facilities and increasing teacher competencies which include pedagogic, professional and social and personal competencies

**Keywords**: Learning Outcomes, Mathematics, Science, Elementary School

**Introduction**

Mathematics and science are two subjects that have been taught starting at the elementary school level which are packaged in theme-based learners. Mathematics and science are often considered as subjects that are closely related to everyday life and are indispensable for learning. Science learning in elementary schools has the aim of developing knowledge and understanding concepts that are useful for solving problems in everyday life. Science learning in elementary schools is also expected to provide direct learning experiences to students so that students can form scientific attitudes, science process skills, grow rational attitudes and think critically. Likewise, learning Mathematics in elementary schools has a goal such that students are able to solve problems in everyday life.

The purpose of the 2013 curriculum of science learning based on content standards for elementary school students is to provide meaningful learning experiences by developing various attitudes, knowledge, and skills. In the Regulation of the Minister of Education and Culture Number 64 of 2013 learning science is expected so that students have the following competencies: (1) demonstrate the behavior of faith in God Almighty as a result of observing science objects, (2) demonstrate a scientific attitude: curiosity , honest, logical, critical, disciplined, and responsible through science, (3) asking questions: what, why, and how about the natural surroundings, (4) observing science objects using the five senses and simple tools, (5) presenting data from observations of the natural surroundings in the form of tables or graphs, (6) draw conclusions and report the results of observations of the natural surroundings in simple oral and written forms, (7) explain science concepts and principles. [1]. From the objectives and competencies to be achieved, based on empirical data in the field, it shows that the students' abilities from the results of learning Mathematics and Science in elementary school (cognitive, affective and psychomotor aspects) have not met expectations. From the existing problems related to the low learning outcomes of mathematics and science, many studies have been carried out. The studies that have been carried out are mostly research by applying various models, methods and media in order to overcome the existing problems. There are not many studies that lead to the analysis of why learning outcomes in mathematics and science are low. So that this research is deemed necessary to do to find out 1) how the mathematics and science learning outcomes at SDN Talabiu, 2) what factors cause the low mathematics and science learning outcomes of students, 3) what is the right solution to overcome the existing problems

**Method**

This research is a qualitative descriptive study with the subject of the research is the upper class students, totaling 37 people. The instrument used to collect data is in the form of interview guidelines and documentation. The data were analyzed using the classical completeness formula to find out how many percent of students who completed and who did not complete. While the analysis of the data from interviews using qualitative analysis. The following is the classical completeness formula:

KK = $\frac{Students Who Completeds}{Students Whole}$ x 100%

After the student scores are analyzed using the classical completeness formula, then they will be consulted again according to the following intervals to find out the categories of students' mathematics and science learning outcomes

Table 1. Categories of student learning outcomes

|  |  |
| --- | --- |
| **Interval** | Category |
| 81- 100 | Very high |
| 61- 80 | tall |
| 41 - 60 | Enough |
| 21 - 40 | Not enough |
| 1 - 20 | Very low |

**Research Results and Discussion**

The results showed that the mathematics and science learning outcomes of upper class students were still in the poor category. The following data has been analyzed:

Table 2. Percentage of classical completeness

|  |  |
| --- | --- |
| Class | Classical Completeness |
| Mathematics | Science |
| IV,V,VI | 13,51 % | 39% |

From the data in table two above, if consulted with table one, it can be seen that the learning outcomes of mathematics are in the very low category (interval 1-20), namely with a mastery percentage of 13.51%, while for the science learning outcomes of upper class students are at less category (interval 21-40) with a percentage of 39%. This data is in line with data released by TIMSS (Trends in International Mathematics and Science Study) and PISA (Program for International Student Assessment). Based on data released by the Ministry of Education and Culture in 2016 in relation to science ranking data, Indonesian students stated that TIMSS had measured the achievement of Indonesian students in 1999, based on the international standard score of 500, stating that the average score of achievement scores obtained by Indonesian students was at the level or ranked 32 out of 38 countries with a score of 435. In 2003 it got a score of 420 which was ranked 37 out of 46 countries. In 2007 it got a score of 427 with a ranking of 35 out of 49 countries. In 2011 it got a score of 406 with a rank of 40 out of 59 countries and in 2015 it was ranked 45 out of 48 countries with a score of 397. From the data presented by TIMSS, it shows that the achievement of Indonesian students in the field of Science is still in the low category.

Furthermore, the data presented by PISA (Programme for International Student Assessment) starting in 2000 got a score of 393 with a rank of 38 out of 41 countries, in 2003 it got a score of 395 with a rank of 38 out of 40 countries, in 2006 it got a score of 393 with a rank of 50 out of 57 countries, and in 2009 it scored a score of 383 with a ranking of 60 out of 65 countries. All scores are below the international average score of 500

The OECD in 2012 conveyed about the scientific achievements of Indonesian students by getting 383 scores and ranking 64 out of 65 countries, while the latest results in 2015 Indonesia was ranked 62 out of 70 countries with 403 scores (OECD, 2016: 5). Various survey data from TIMSS, PISA and OECD show that the achievement of Indonesian students in the field of science is in the very low category or low international benchmark.

The low mathematics and science learning outcomes of students in elementary schools can be seen through various research results that have been carried out by researchers. The following is an illustration of some research results that represent the relationship with real data on student learning outcomes in elementary school.[2] In the results of his research, it is stated that learning science in elementary schools still finds various kinds of problems, one of which is the low learning outcomes of students in elementary school science.[3] conveyed the problems he faced that students' scientific thinking skills were still weak. Research result [4] and there are many other research results that illustrate that students' science learning outcomes in elementary schools are still having problems. [5] in the results of his research stated that science learning outcomes in elementary schools were still relatively lacking. In addition to the lack of science learning outcomes, Mathematics also experienced the same thing, namely the low learning outcomes of students and there were still many students who did not like mathematics. According to research results [6] stated that there are still many students who are afraid of mathematics and consider mathematics as a difficult subject. Various previous research results are related to mathematics learning outcomes such as research conducted by [7], [8], [9], [10], [11] and [12] found the same problem that students' mathematics learning outcomes were still less than optimal.

From the data on the low learning outcomes of mathematics and science in these elementary schools, it is known that there are various factors that cause this to happen. According to Baharudin and Wahyuni, the factors that influence learning outcomes are divided into internal factors and external factors [13].

Internal factors are driving factors that come from within students such as physiological factors which include physical factors, health factors, physical disability factors and psychological factors including motivation, interests, talents, learning habits and concentration. This physiological factor can indeed affect science learning outcomes. According to research results [14] that motivation affects the learning outcomes of elementary school students.

External factors are aspects that come from outside the individual that affect student learning outcomes such as: 1) family factors which include factors from the educational background of parents, the way parents educate, relationships between family members, and the atmosphere of the house. 2) school factors that influence learning include teaching methods, learning methods and facilities and infrastructure. the last 3) community factors. [15]

Relation to school factors such as teaching methods, this is strongly influenced by human resources, namely teachers as perpetrators of learning practices in schools. The success of students in learning is strongly influenced by the ability of teachers to teach. Various studies have stated that [16] states that one of the causes of students' science learning outcomes is caused by the learning carried out by the teacher which is memorizing and shallow without applying various interesting learning techniques. In line with the results of research conducted by [17], [3]

**Solutions to the Problem of Low Science Learning Outcomes in Elementary School**

According to [18] stated that one of the strategic steps in overcoming problems in science learning is to improve the quality of learning which is carried out through various activities as follows:

a. Improving science teacher professionalism

The teacher has a very large role in achieving the success of the learning carried out. according to [19] teachers are led to be able to make students active, manage the learning environment well, be able to guide students in learning. Professional teachers are certainly teachers who have 4 competencies, namely pedagogic, personality, professional and social competencies. These competencies need to be improved and continue to be developed so that science teachers become professional teachers. Increased competence can be through activities such as: 1) continuing education to a higher level, 2) training, 3) upgrading, 4) seminars, 5) discussions, or 6) fostering relationships between teacher-producing institutions and schools. Teachers in teaching are very required to be able to master various learning models, so that learning is carried out effectively and is fun for students. This is evidenced by the results of various studies that have conducted experiments. according to [20] states that in learning science in schools, teachers are required to use the media. according to [21] that science learning cannot be separated from the use of media that can help students understand the material being taught, the results of other studies recommend that teachers in science learning can use various media that match the material being taught [22]**,** [23]**.**

In addition to the use of various media, teachers are also required to master teaching methods. according to [24] said that there are various learning models that are recommended to be applied in science learning in elementary schools such as CTL, inquiry, problem-based learning, cooperative learning, project-based learning, improving process skills of students who get problem-based learning (PBM) better than students who get non-formal learning. PBM.[25]. In addition, teachers must also be creative in creating a pleasant learning atmosphere. Learning is not only carried out in the classroom but can also be carried out outside the classroom. Outdoor learning can provide students with hands-on learning experiences, but it also provides them with many opportunities to interact with their peers and their environment [26]

a. Fulfillment of adequate facilities and infrastructure

Learning facilities and infrastructure greatly affect the success of students in learning. If the learning facilities are adequate, it will be very helpful for teachers and students in learning. On the other hand, if the facilities and infrastructure are not adequate, it will be able to hinder the learning that is carried out. Analysis of the low science learning outcomes described above can be summarized in the following figure:

TIMSS data

PISA data

Real Data in the Field

Low math and science learning outcomes

External Factors

Internal factors

Causative factor

Family

School

psychology

Physiology

Public

Teacher

Facilities and infrastructure

Teacher Competency Improvement:

- K. Pedagogy. Professional

- K. Social and Personal

Adequate facilities and infrastructure

Solution

**Figure 1. Analysis Framework**

**Conclusion**

From the description above, it can be concluded that the low mathematics and science learning outcomes of students in elementary schools are caused by two factors, namely students' internal factors and external factors. Internal factors related to psychology and physiology. Meanwhile, external factors are influenced by family, school and community conditions. Relationships with schools are strongly influenced by the factors of teachers and infrastructure. Solutions taken from low learning achievement caused by external factors (schools) by improving adequate infrastructure facilities and increasing teacher competencies which include pedagogic, professional and social and personal competencies

**Bibliography**

[1] A. J. Nugraha, H. Suyitno, and E. Susilaningsih, “Analisis Kemampuan Berpikir Kritis Ditinjau dari Keterampilan Proses Sains dan Motivasi Belajar melalui Model PBL,” vol. 6, no. 1, pp. 35–43, 2017.

[2] N. L. U. F. J. B. Kelana, “Natural Science Problem Solving in Elementary School Students Using the Project Based Learning (PjBL) Model,” *J. Ilm. Sekol. Dasar*, vol. 4, no. 4, pp. 596–603, 2020, [Online]. Available: https://ejournal.undiksha.ac.id/index.php/JISD/article/view/28377.

[3] Zuryanty, A. K. Kenedi, R. Chandra, Hamimah, and Y. Fitria, “Problem based learning: A way to improve critical thinking ability of elementary school students on science learning,” *J. Phys. Conf. Ser.*, vol. 1424, no. 1, 2019, doi: 10.1088/1742-6596/1424/1/012037.

[4] S. Khairani, R. D. Suyanti, and D. Saragi, “The Influence of Problem Based Learning (PBL) Model Collaborative and Learning Motivation Based on Students’ Critical Thinking Ability Science Subjects in Class V State Elementary School 105390 Island Image,” *Budapest Int. Res. Critics Linguist. Educ. J.*, vol. 3, no. 3, pp. 1581–1590, 2020, doi: 10.33258/birle.v3i3.1247.

[5] F. Faridah, Salahudin, Mariamah, and M. Ajwar, “Students’ Learning Creativity By The Implementation Of Contextual-Based Learning In The Subject Of Natural Science,” vol. 16, no. 5, pp. 659–663, 2021, doi: 10.29303/jpm.v16i5.2828.

[6] M. Mariamah, R. Ratnah, H. Katimah, A. Rahman, and A. Haris, “Analysis of Students’ Perceptions of Mathematics Subjects: Case studies in Elementary Schools,” *J. Phys. Conf. Ser.*, vol. 1933, no. 1, p. 012074, 2021, doi: 10.1088/1742-6596/1933/1/012074.

[7] D. S. Saputra, Y. Yuliati, and R. Rachmadtullah, “Use of ladder snake media in improving student learning outcomes in mathematics learning in elementary school,” *J. Phys. Conf. Ser.*, vol. 1363, no. 1, 2019, doi: 10.1088/1742-6596/1363/1/012058.

[8] H. Mulyanto, G. Gunarhadi, and M. Indriayu, “The Effect of Problem Based Learning Model on Student Mathematics Learning Outcomes Viewed from Critical Thinking Skills,” *Int. J. Educ. Res. Rev.*, vol. 3, no. 2, pp. 37–45, 2018, doi: 10.24331/ijere.408454.

[9] M. Salam, N. Ibrahim, and M. Sukardjo, “Effects of instructional models and spatial intelligence on the mathematics learning outcomes after controlling for students’ initial competency,” *Int. J. Instr.*, vol. 12, no. 3, pp. 699–716, 2019, doi: 10.29333/iji.2019.12342a.

[10] M. S. Sumantri and R. Satriani, “The effect of formative testing and self-directed learning on mathematics learning outcomes,” *Int. Electron. J. Elem. Educ.*, vol. 8, no. 3, pp. 507–524, 2016.

[11] A. Ardila and S. Hartanto, “Faktor Yang Mempengaruhi Rendahnya Hasil Belajar Matematika Siswa Mts Iskandar Muda Batam,” *PYTHAGORAS J. Progr. Stud. Pendidik. Mat.*, vol. 6, no. 2, pp. 175–186, 2017, doi: 10.33373/pythagoras.v6i2.966.

[12] M. Mariamah, M. Muslim, G. Gunawan, A. Hidayat, and Suratman, “The Effectiveness of Think Pair Share (TPS) Integrated Problem-Solving Learning of Students’ Mathematic Ability,” *J. Phys. Conf. Ser.*, vol. 1933, no. 1, p. 012073, 2021, doi: 10.1088/1742-6596/1933/1/012073.

[13] F. Kristin, “Analisis model pembelajaran discovery learning dalam meningkatkan hasil belajar siswa SD,” *J. Pendidik. Dasar PerKhasa*, vol. 2, no. April, 2016.

[14] G. Nugroho and G. Nugroho, “Analisis Motivasi Belajar Siswa Pada Pembelajaran IPA di SDN16 / II Sepunggur,” vol. 1, no. 2, pp. 1–5, 2020, doi: 10.37251/isej.v1i2.67.

[15] F. R. Basuki, M. D. Pangestu, N. Asmara, and D. Prasetya, “Analisis Faktor Yang Mempengaruhi Hasil Belajar IPA Dan Literasi Sains,” *ght © 2019 Edufisika J*, vol. 4, 2019.

[16] N. F. Yullii, “a n a l iis iis k e m a m p u a n g u r u d a l a m m e n g e m b a n g k a n k e t e r a m p iil a n b e r p iik iir k r e a t iif s iis w a s e k o l a h d a s a r k e l a s v p a d a p e m b e l a j a r a n iil m u p e n g e t a h u a n a l a m,” *J. IPA Ed. Khusus No. 2, Agustus 2011*, vol. 1, no. 2, pp. 98–106, 2011.

[17] E. Satria and W. Sopandi, “Applying RADEC model in science learning to promoting students’ critical thinking in elementary school,” *J. Phys. Conf. Ser.*, vol. 1321, no. 3, 2019, doi: 10.1088/1742-6596/1321/3/032102.

[18] M. Sari, “Problematika Pembelajaran Sains Ditinjau Dari Aspek Guru,” *Al-Ta lim J.*, vol. 20, no. 1, pp. 346–356, 2013, doi: 10.15548/jt.v20i1.30.

[19] A. Gecer and R. Ozel, “Elementary Science and Technology Teachers’ Views on Problems Encountered in the Instructional Process,” *Educ. Sci. Theory Pract.*, vol. 12, no. 3, pp. 2256–2261, 2012.

[20] Lia Portanata, Y. Lisa, and I. S. Awang, “Analisis Pemanfaatan Media Pembelajaran IPA SD,” *J. Pendidik. Dasar PerKhasa*, vol. 3, no. April, 2017.

[21] Azimi, Rusilowati, and Ani Sulhadi, “Pengembangan Media Pembelajaran IPA Berbasis Literasi Sains untuk Siswa Sekolah Dasar,” *Pancasakti Sci. Educ. J.*, vol. 2, pp. 145–157, 2017.

[22] A. Syawaludin, Gunarhadi, and P. Rintayati, “Enhancing elementary school students’ abstract reasoning in science learning through augmented reality-based interactive multimedia,” *J. Pendidik. IPA Indones.*, vol. 8, no. 2, pp. 288–297, 2019, doi: 10.15294/jpii.v8i2.19249.

[23] K. tem Sun, Y. cheng Lin, and C. jui Yu, “A study on learning effect among different learning styles in a Web-based lab of science for elementary school students,” *Comput. Educ.*, vol. 50, no. 4, pp. 1411–1422, 2008, doi: 10.1016/j.compedu.2007.01.003.

[24] S. M. Glynn and L. K. Winter, “Contextual Teaching and Learning of science in elementary schools,” *J. Elem. Sci. Educ.*, vol. 16, no. 2, pp. 51–63, 2004, doi: 10.1007/bf03173645.

[25] Y. Yuliati, “Peningkatan keterampilan proses sains siswa sekolah dasar Melalui model pembelajaran berbasis masalah,” *J. Cakrawala Pendas*, vol. 2, no. 2, 2016.

[26] Y. M. Huang, Y. T. Lin, and S. C. Cheng, “Effectiveness of a Mobile Plant Learning System in a science curriculum in Taiwanese elementary education,” *Comput. Educ.*, vol. 54, no. 1, pp. 47–58, 2010, doi: 10.1016/j.compedu.2009.07.006.