



Analysis of Scientific Understanding of The Scientific Behavior of Disciplines in Waste Disposal

Vidiyanti¹, Aliet Noorhayati Sutisno^{2*}, Fanny Septiany Rahayu³

^{1,2,3} Universitas Muhammadiyah Cirebon, INDONESIA

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ABSTRACT

Education is a bridge for humans to develop their potential through the learning process obtained. With education, students are able to protect the surrounding environment, especially in the school environment. A clean, comfortable school environment can make learning more enjoyable, increase learning motivation, and support students' mental and physical health. Science literacy is the ability to understand scientific concepts and processes and utilize science to solve problems in daily life. Based on environmental problems that are increasing day by day, and this is closely related to human behavior. This study aims to describe the scientific understanding of the scientific behavior of discipline in disposing of waste at SDN 1 Plumbon. The type of research used is qualitative research with a descriptive method with instruments using observation, interviews, and documentation as data collection techniques. The results of the study show that students' scientific understanding of the concept of waste shows that the learning process touches three important domains in education, namely cognitive, affective, and psychomotor. The understanding of science is not just a theory, but also how it is applied in real life, especially in waste management and the formation of scientific behavior. This is shown through students being able to recognize and explain types of waste such as organic, inorganic, and B3 waste. Students are also able to apply understanding through real actions, such as throwing garbage according to its type, sweeping yards, and carrying out pickets. In addition, the scientific behavior of students is reflected in the discipline in maintaining cleanliness, as well as the ability to sort, categorize, and classify waste based on its characteristics and level of danger.

Keywords: Analysis of scientific understanding, Scientific behavior, Discipline in disposing of garbage

INTRODUCTION

Education is a bridge for humans to be able to develop their potential through the learning process that they get. Education has become something mandatory [1] In the 1945 Constitution, article 31 Paragraph states that: "Every citizen has the right to get education", so education is the right of every individual to get it. With the existence of Education, it is hoped that it can give birth to the next generation of the nation with intelligent and qualified individuals, which means a generation that is able to take advantage of existing progress as best as possible. With education, students are able to protect the surrounding environment, especially in the school environment.

The school environment is the second environment where children learn after the family environment [2]. The school environment has an important role in the development of children's potential, as a place where students spend most of their time at school, the school environment is not only a means to acquire knowledge, but also a social place that affects students' attitudes, character, and behavior. A clean, comfortable school environment can make learning more enjoyable, increase learning motivation, and support students' mental and physical health. There are aspects of the school

environment, which involve interaction with family, school rules, learning facilities, relationships between students, and teacher-student interaction [3]. If the school environment can be properly organized and managed, it will be effective in instilling a correct understanding of natural resources.

The science environment is a realm of abilities that are not only memorized, but related to the application of science values in daily life [4] . [5] Science literacy is the ability to understand scientific concepts and processes and utilize science to solve problems in daily life. Science literacy is important for students to understand science as a concept and how to apply science in daily life.[6] Science literacy has great potential to be instilled and developed at an early age. Students will see, find, and learn from objects in the surrounding environment. Science literacy at an early age can help students become more sensitive or aware of the environment, so that students can observe and solve problems that arise in their environment. In accordance with the goals of science education, students have the ability to be productive and live well. Producing a science-literate generation aims to increase people's understanding of science and technology so that learners can make decisions that affect their current and future survival. For this reason, it is necessary to instill the spirit to save the environment from an early age.

In school, teachers have a very important role in teaching students in environmental care [7]. Thus, students can comply with the rules that have been expected at school in disposing of garbage in its place. The cleanliness of the school environment is not only for students, but it is the responsibility of the school to dispose of garbage in its place. The cleanliness of the school environment is not only for students, but also the responsibility of teachers and everyone in the school [8] . Teachers must set an example and invite to maintain the cleanliness of the school environment. That way students will follow the example set by their teachers. Quality character needs to be developed early in school because it can make students aware of the importance of caring for the environment for life. The cleanliness of the school environment not only creates comfortable and safe conditions for learning, but it can also help raise awareness of the importance of maintaining environmental cleanliness [9] .

Schools also have an important role in building students' affective and cognitive abilities, [10] Schools today focus more on developing the cognitive aspects of students during the learning process. However, there is a lot to learn in school, especially in terms of morals, because when in school it greatly affects attitudes, a clean school environment will result in a good attitude. An attractive, clean, healthy, safe and comfortable school is very closely linked to excellent learning. A clean school will make students feel comfortable, and things that can increase students' motivation will also allow teachers to perform at their best in improving the learning process [11] .

There is not much research that comprehensively links the understanding of science to the scientific behavior of the discipline in disposing of waste, especially the discipline of waste in elementary schools. Previous studies have placed more emphasis on students' theoretical knowledge of waste types or environmental management programs in schools. However, there is not much research that studies how understanding science can affect students' affective and psychomotor abilities so

as to reflect real efforts to keep the environment clean. As a result, this study is important because it provides a thorough analysis of the relationship between understanding science and littering practices in schools.

Based on the results of a preliminary study conducted on February 3, 2025 at SDN 1 Plumbon, through interviews with grade III teachers and supported by direct observation, it was found that there are still students who do not have full awareness in disposing of garbage correctly. Garbage is still often thrown carelessly without paying attention to the trash cans that have been provided. In addition, elections. In addition, waste selection has also not been done properly, so that there is a mixing between organic waste and inorganic waste. This shows that students' scientific understanding of the importance of waste correctly still needs to be reminded.

The habit of littering, if left unchecked, will cause dangerous health and environmental problems. There needs to be a solution to address this problem [12]. The purpose of this study is to determine how well the science understanding of SDN 1 Plumbon students is about the discipline of throwing garbage and how the understanding of science is reflected in the disciplinary action of throwing garbage. The focus of this research is the relationship between the cognitive component and the real actions of students in maintaining a clean school environment, including the behavior of throwing garbage according to the rules and types.

This condition has the potential to have a negative impact, both on the cleanliness of the school environment and the health of students. Waste that is not selected according to its characteristics can cause pollution, bad odors, and become a breeding ground for various types of diseases. Therefore, it is necessary for students to understand the importance of disposing of waste in its place and sorting according to the characteristics of its type.

The main problem that the researcher wants to solve is how students understand the discipline of disposing of garbage at SDN 1 Plumbon scientifically; and how students apply the scientific behavior of the discipline of disposing of garbage based on their scientific knowledge. This problem is very important to measure the extent to which students understand the concept of environmental cleanliness and are able to apply it in daily life at school.

Based on the formulation of the problem that has been presented, the purpose of this study is to find out how well students' scientific understanding of waste disposal discipline at SDN 1 Plumbon is. In addition, this study will also look at how students show scientific behavior in applying the discipline based on their science knowledge. Thus, this study can provide an in-depth picture of the relationship between cognitive, affective, and psychomotor aspects.

In this regard, the researcher feels it is important to conduct research related to the title "Analysis of Science Understanding of Scientific Behavior of Disciplines in Throwing Waste".

MATERIAL AND METHODS

Methods

This research method uses a descriptive qualitative method, with a case study approach. Case studies are a type of in-depth qualitative research about individuals, groups, institutions, and so on in a given time. The purpose of a case study is to try to

determine the meaning, investigate the process, and gain a deep and complete understanding and understanding of a particular individual, group or situation. Case study data was obtained by interviews, observations and studying various documents related to the topic under study [13]. This is done to obtain a general and complete picture of the research problem[14]. This approach was chosen because the main goal is to dig deep into the scientific understanding of the scientific behavior of discipline in disposing of waste at SDN 1 Plumbon. Because this study is aimed at describing the results of the research findings. Descriptive qualitative research is examining natural social action events with a focus on how people interpret their experiences, to understand social realities so that people can solve their own problems [15]. Data collection is carried out using several techniques, namely observation, interviews, and documentation. In the observation technique, the researcher observed the extent of the students' scientific understanding reflected in their daily lives, especially in disposing of garbage. The researcher directly saw how students used science concepts such as grouping organic, inorganic, B3 waste, and students' knowledge about the impact of littering. Furthermore, the researcher conducted interview techniques with grade III students and grade III teachers to be more accurate. Data analysis in qualitative research is carried out at the same time as the data collection process, data analysis can be carried out both when the researcher is in the field and after returning from the field. The flow of analysis follows the interactive analysis model as expressed by Miles and Huberman [16]. Here are the steps used in data analysis techniques such as:

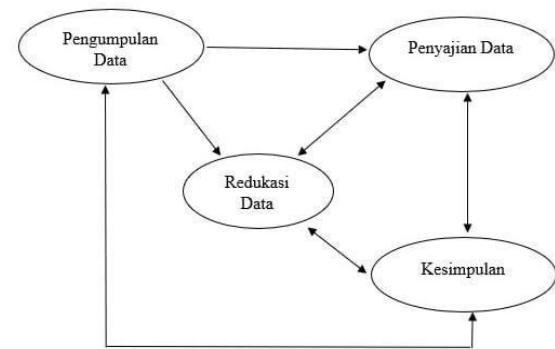


Figure 1. Data Analysis Techniques

Namely by data collection, data presentation, after that data reduction and finally conclusion. In this study, the researcher used the data validity technique with *Triangulation*, the triangulation technique is used to test the reliability of a data which is done by finding out and seeking the truth of the data against the same source through different techniques. This means that researchers use different data collection techniques to obtain data from the same source. In this case, researchers can cross observation, interview and documentation techniques which are then combined into one to reach a conclusion (Sugiyono). Triangulation techniques mean using different data collection to obtain data from the same data source. Researchers use passive observation, in-depth interviews, and documentation for the same data sources simultaneously, i.e. researchers use a variety of data, using several techniques such as observation, interviews and documentation.

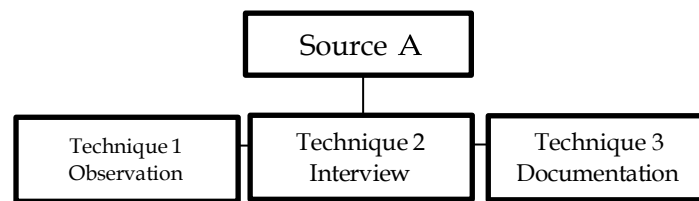


Figure 2. Technical Triangulation

Instrument

The research instrument is a tool in the form of a grid used by researchers in collecting data to make it easier and planned. The data in this study was collected using observation sheet guidelines, interview guidelines, and documentation. The collection of interview data is taken directly so that all data is in accordance with the formulation of the problem and the purpose of the research, so that no data or things are missed from this research. The indicators that are the reference for interviews and observations need to be compiled based on the theoretical studies that have been described.

The data of this research was obtained through several research instruments, namely interviews, observations, and documentation.

1. Interview Guidelines

The interview guidelines in this study are carried out to find out and find information based on questions and answers with direct sources of information. By listening directly to the information obtained. Exploring affirmation data with the type of interview questions using Ellizar er al theory [17] and Kahfi's theory [18], carried out in a planned manner guided by a list of questions that have been prepared beforehand, and the interviewees in this study are grade III teachers and grade III students at SDN 1 Plumbon.

Table 1. Teacher Interview Guidelines Grid Related to Science Understanding

Aspects	Indicators	No Item
Understanding of basic science concepts	Cognitive Aspects (Science Knowledge and Understanding)	1, and 2
	Affective Aspects (Environmental Attitudes and Awareness)	3, and 4
	Psychomotor Aspects (Scientific Practices or Behaviors in the Discipline of Waste Disposal)	5, and 6
Disciplined behavior in disposing of garbage	Sorting waste based on basic properties such as organic and inorganic.	7,8,9,10 and 11
	Categorizing (Waste is grouped with the same characteristics)	12
	Classifying (Waste is classified according to its level of hazard)	13, and 14
	Waste according to its type, (organic, inorganic, and B3 waste)	15

Table 2. Guidelines for Student Interviews Related to Science Understanding

Aspects	Indicators	No Item
Understanding of basic science concepts	Cognitive Aspects (Science Knowledge and Understanding)	1, 2, and 3
	Affective Aspects (Environmental Attitudes and Awareness)	4, 5 and 6
	Psychomotor Aspects (Scientific Practices or Behaviors in the Discipline of Waste Disposal)	7,8 and 9
Disciplined behavior in disposing of garbage	Sorting waste based on basic properties such as organic and inorganic.	10, and 11
	Categorizing (Waste is grouped with the same characteristics)	12, and 13
	Classifying (Waste is classified according to its level of hazard)	14,15, and 16
	Waste according to its type, (organic, inorganic, and B3 waste)	17, 18, and 19

Thus, what happens that the indicators of the analysis of scientific understanding of the scientific behavior of the discipline in disposing of waste are cognitive aspects, affective aspects, psychomotor aspects, sorting waste, categorization, classifying, and waste according to its type.

2. Observation Sheet Guidelines

In general, observation is defined as the process of gathering information by making systematic observations and records of observed phenomena. Confirming the affirmation data taken from the aspect of interviews with Ellizar er al theory [19]and Kahfi's theory [20].

Table 3. Student Observation Guidelines Grid Related to Science Understanding

Aspects	Indicators	Number of Statements
Understanding of basic science concepts	Cognitive Aspects (Science Knowledge and Understanding)	2
	Affective Aspects (Environmental Attitudes and Awareness)	2
	Psychomotor Aspects (Scientific Practices or Behaviors in the Discipline of Waste Disposal)	2
Disciplined behavior in disposing of garbage	Sorting waste based on basic properties such as organic and inorganic.	1
	Categorizing (Waste is grouped with the same characteristics)	2
	Classifying (Waste is classified according to its level of hazard)	2
	Waste according to its type, (organic, inorganic, and B3 waste)	1

Thus, the indicators of the analysis of scientific understanding of the scientific behavior of disciplines in disposing of waste are cognitive aspects, cognitive aspects, psychomotor aspects, sorting waste, categorization, classifying, and waste according to its type.

3. Documentation

Documentation is the activity of taking, processing, processing, or collecting documents in the form of sound, photographs, or videos to obtain information about knowledge, information, and evidence. As well as to disseminate it to stakeholders. Documentation is very important because it can be stored as valuable information and serve as accurate evidence to support the information.

Procedures

This research procedure begins with the preparation stage, which is to prepare a research design that includes the formulation of the problem, research objectives, benefits, research subjects, and data collection and analysis techniques. The researcher also compiled the necessary instruments, such as interview guidelines, observation sheets, and documentation formats. After all the instruments are ready, the researcher takes care of the research permit by submitting a permit application letter to the university, then forwarding it to the local Education Office if needed, and then to the school, namely SDN 1 Plumbon. After obtaining permission from the principal, the researcher conducted initial communication with the 3rd grade teacher to explain the purpose, method, and time of conducting research in the field.

The next stage is the implementation of data collection. The researcher conducted direct observations of grade 3 students in their daily activities in the school environment, especially related to their behavior in throwing garbage. This observation was carried out to see the extent to which students applied scientific understanding in disciplinary actions to maintain environmental cleanliness. Researchers recorded findings in the field using previously prepared observation sheets. Observations are carried out repeatedly over several days to ensure that the data obtained is consistent and accurate.

In addition to observation, the researcher also conducted in-depth interviews with grade 3 teachers to obtain information about how science understanding is taught to students, as well as how teachers instill disciplinary values in disposing of waste. Researchers also interviewed several students individually in easy-to-understand language, to find out the extent to which they understood the concepts of cleanliness, organic and inorganic waste, and the impact of waste on the environment. All interview results were recorded and documented systematically.

As a complement, the researcher also collected documentation in the form of photos of students' activities when disposing of garbage. After all the data is collected, the researcher conducts a qualitative descriptive data analysis, namely by reducing, presenting, and drawing conclusions from observation, interview, and documentation data. The final stage is the preparation of a research report based on findings in the field. After the report was completed, the researcher thanked the principal, teachers, and students for their participation, and officially ended the research activities at SDN 1 Plumbon.

Data Analysis

Data analysis in qualitative research is carried out at the same time as the data collection process, data analysis can be carried out both when the researcher is in the field and after returning from the field. The flow of analysis follows the interactive analysis model as expressed by Miles and Huberman [21]. Here are the steps used in data analysis techniques such as:

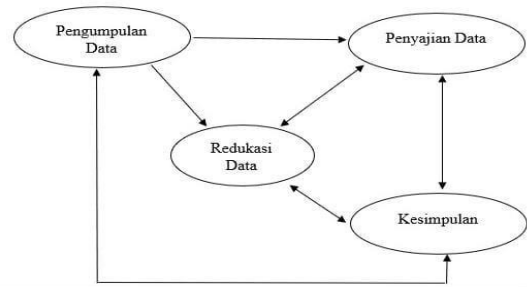


Figure 3. Data Analysis Techniques

1. Data Collection

The data obtained from the results of interviews, observations, and documentation are recorded in field records which consist of two parts, namely descriptive and reflective. Descriptive records are natural records (records of what the researcher sees, hears, witnesses, and experiences himself without the opinion and interpretation of the researcher on the phenomena experienced). Descriptive notes are records that contain impressions, comments, opinions, and interpretations of the findings found, and are material for the data collection plan for the next stage.

2. Data Reduction

After the data is collected, then a data reduction is made, in order to sort out relevant, meaningful data, and focus the data that leads to solving the discovery problem. Or to answer research questions. Then simplify, compile systematically, describe important things about the findings and their meaning. In the data reduction process, only data findings or findings related to research problems are reduced. Meanwhile, data that is not related to research problems is discarded. In other words, data reduction is used for analysis that classifies, directs, and discards non-essentials, as well as organizes data, making it easier for researchers to conduct further data.

3. Data Presentation

After the data is reduced, the next step is the presentation of the data. The presentation of data can be in the form of writing or words, pictures, graphs, and tables. The purpose of data presentation is to combine information so that it can describe the circumstances that occurred. In this case, so that the researcher does not have difficulty in mastering information either as a whole or certain parts of the research results, the researcher must create a *narrative*, matrix or graph to facilitate the acquisition of certain information or data. For *data display*, it must be partially realized in data analysis.

4. Conclusion

The final step, which is drawing conclusions. Conclusions are drawn during the research process as well as the data reduction process, after the data is collected

sufficiently adequately, then a provisional conclusion is taken, and after the data is completely complete, a final conclusion is taken

RESULTS AND DISCUSSION

Science Understanding of Grade III Students at SDN 1 Plumbon on the Concept of Waste

Understanding science is the development of children's cognitive (thinking), affective (heart), and psychomotor (physical) abilities, so that students gain scientific knowledge and information about science, and become more interested in science in the surrounding environment. Students scientifically understand the types of waste (organic, inorganic, and B3) as well as their impact on the environment and health.

Based on the results of observations and interviews in grade III of SDN 1 Plumbon, Plumbon district, Cirebon regency, on 05 - 17, May 2025, as follows:

1. Cognitive Ability of Class III Students in Understanding the Type of Waste and Its Impact on Environment and Health

Cognitive abilities are abilities related to the processes of thinking, understanding, remembering, analyzing, and solving problems. Cognitive ability in understanding the type of waste and its impact is the ability of students to distinguish and group various types of waste such as waste, organic, inorganic, and toxic hazardous materials (B3) and understand the impact of improper waste management. Garbage can cause environmental pollution problems (both soil, water, and air pollution) and disturb species in ecosystems [22]. separating organic and inorganic waste, putting waste in the bin, putting waste at the right time and place [23], [24] reveal the following types of waste: 1) Organic waste, decomposable waste. Consists of leaves, wood, bones, livestock food scraps, vegetables, fruits, other waste that is easily deflated by *microbe*. It is made up of organic compounds consisting of carbon, hydrogen, and oxygen. 2) Inorganic waste, waste that cannot be decomposed or cannot be decomposed by *microbe*. Consists of cans, plastics, iron, metals, and materials that are not made from organic compounds. 3) B3 Waste (Hazardous and Toxic Materials) is waste that contains hazardous and toxic materials. This includes bottles of mosquito repellent products, toxic chemicals, batteries, syringes, and syringes that have been damaged. In terms of organic materials, they are all elements that are easily decomposed through the process of decay with the help of microorganisms, because the origin of organic components is living things. Inorganic materials are all elements produced from non-biological materials, either in the form of synthetic products or the results of the process of processing mining materials or natural resources that cannot be decomposed by nature, for example: plastic bottles, plastic bags, cans [25].

In the cognitive aspect, students show a fairly good understanding of the types of waste, such as organic, inorganic, and B3 (hazardous and toxic materials). Organic waste is waste that can be easily broken down by bacteria. Organic waste can be used as fertilizer or biogas, it is also a non-hazardous waste. However, if organic waste is allowed to accumulate, it can cause problems such as bad odors and make the environment shabby [26]. Inorganic waste grows longer time to decompose, recycling is one way to deal with inorganic waste. Hazardous and toxic material waste (B3) is household waste consisting of hazardous and toxic materials that result from activities in the residential environment and have the potential to harm the

environment and health, examples of B3 waste such as, lamps, batteries, sanitary napkins, cosmetic containers, plastic detergents, and other items [27]. Students are able to understand waste correctly and understand the bad effects of littering. Waste can cause various problems if it is mismanaged. The negative impact of accumulated waste is flooding, global warming, causing pollution, causing various diseases, and environmental pollution [28].

Table 4. Students' understanding and the impact of waste

Observed data	Key Findings
Understanding Types of Waste (Organic, Inorganic, B3)	Most students understand well the different types of waste such as organic and inorganic waste, but students are still a little confused in B3 waste of hazardous and toxic materials.
Understanding the Impact of Waste on the Environment and Health	Students understand the impact of waste on the environment and health, such as floods, bad odors, and diseases.

Grade III students already understand organic, inorganic, and B3 waste which is hazardous and toxic waste. But there are still 8 children who need further guidance to strengthen the types of waste, especially B3 waste, hazardous and toxic material waste. Students also understand the impact of waste on the environment and health. As well as impacts such as floods, bad odors, diseases caused by improper waste management, and students have also shown how important it is to keep the environment clean.

2. Affective Ability on Students' Attitudes and Awareness of the Environment

Students' affective abilities, especially attitudes and environmental awareness, greatly influence behavior in maintaining environmental sustainability. The affective ability of attitude and environmental awareness is the ability to show concern, responsibility for the environment through attitudes and feelings, to maintain, protect, and improve the environment as well as increase awareness of how natural preservation is very important for the sustainability of life Law Number 32 of 2009 concerning Environmental Protection and Management states that with the principle of responsibility, sustainability and benefits, therefore, environmental management is aimed at realizing sustainable development that is environmentally friendly (Law No. 32 of 2009 concerning Environmental Protection and Management (*JDIH BPK RI*), n.d.) While awareness is preparedness *Awareness* Individuals are aware of events in their environment as well as cognitive events including memory, thoughts, feelings, and physical sensations. Another explanation defines consciousness as a state of consciousness or awareness of its behavior, which is a conscious mind that regulates the mind and can make its choices about what it wants [29].

Table 6 Students' Attitudes and Awareness of the Environment

Observed data	Key Findings
Attitude towards Environmental Cleanliness	Actively dispose of garbage and join pickets.
Social Care (Reprimanding Friends)	Few dare to reprimand friends who throw garbage carelessly.

The results of observations and interviews show that students are very concerned about the cleanliness of the school environment. This is shown by the habits of students to maintain the classroom environment, such as maintaining cleanliness, disposing of garbage in its place, cleaning the floor and classroom board, and reminding their friends not to litter. Students show awareness and a sense of responsibility for the surrounding environment when reminding their friends who throw garbage carelessly.

3. Students' Psychomotor Skills Through Discipline in Throwing Waste

In vocational education, especially the emphasis on the aspect of psychomotor ability is the most important part for students in learning [30]. Behavior is an action or activity of a human being that has a very broad meaning. Human behavior includes things like activities. All human activities or activities, whether directly observed or not observed by others, are included in human behavior [31]. Behavior is also a person's mental reaction to his environment. Scientific behavior is a human action that is based on scientific thinking and an evidence-based approach to understanding and responding to the environment. Scientific behavior towards natural resources is an attitude and action based on scientific methods in the utilization, conservation, and management of natural resources.

Table 7 discipline in disposing of garbage

Observed data	Key Findings
Dispose of Garbage by Type	Demonstrate discipline and understanding in disposing of waste
Hygiene Activities at School	Actively involved in cleaning activities such as sweeping and cleaning the classroom.

The results of observations and interviews show that students have shown good behavior in disposing of garbage in its place and maintaining the cleanliness of the environment. Students dispose of garbage in their place regularly, students have this habit not only in the classroom but also in the environment around the school. This shows that students understand the importance of maintaining cleanliness and have the awareness not to litter. Students show a sense of responsibility and involvement in keeping the school environment comfortable and clean.

Scientific Behavior and Discipline in Throwing Garbage of Grade III Students at SDN 1 Plumbon

1. Students' ability to sort waste based on its type characteristics

Sorting is the process or action of grouping or separating objects according to certain criteria. There are only 3 types of organic waste produced, namely food waste, leftover pieces of vegetables, fruit or kitchen waste and waste from yard sweeps. Meanwhile, the types of inorganic waste are very diverse, namely plastic, and fabric. For B3 waste, what is often produced in households are light bulbs or neon, iron, glass, and battery stones. [32]

Table 8. Sorting waste by type characteristics

Observed data	Key Findings
Waste sorting ability	Able to sort waste, including those that can be recycled and those that cannot

From the results of observations and interviews, students have shown that students understand and realize how to manage waste properly. The habit of students sorting waste before throwing it away is one of the positive behaviors. Most students are able to distinguish between organic, inorganic, and B3 waste, which stands for hazardous and toxic materials. Students consciously sort waste according to its type and dispose of it in a trash can that matches its category. When food scraps or leaves are disposed of in organic waste, plastic waste is disposed of in inorganic waste, and styrofoam is disposed of in B3 waste.

2. Students' Ability to Categorize Waste Based on Similar Characteristic

Categorization is the process of grouping objects into specific groups based on the same characteristics, making it easier to manage, sort, and recycle

Table 9. Categorizing by Same Characteristics

Observed data	Key Findings
grouping organic, inorganic, and B3 waste into appropriate places	Able to group waste based on the same characteristics

Most students already understand and care about waste management, students can distinguish waste based on its type, organic, inorganic, and B3 waste. Students show good habits by throwing garbage in its place. Plastic, paper, and plastic waste is put into inorganic bins, while organic waste such as food scraps and dry leaves is disposed of in organic bins. Students are careful with B3 waste such as used batteries or sharp objects and dispose of them as directed. Students also understand that materials such as plastic bottles, paper, and cans can be reused or processed into new items, while waste such as used wipes, certain single-use plastics, and B3 waste cannot be recycled and must be specially treated.

3. Students' Ability to Classify Waste Based on Its Hazard Level

Classifying is the process of grouping or classifying something based on certain similarities or characteristics. The purpose of classifying is to make data, objects or concepts easier to understand, analyze, and manage. Household hazardous and toxic material (B3) waste is waste generated from daily activities or activities at home or at home that contain hazardous or toxic materials or packaging that are very harmful to the environment. [33].

Table 10. Classifying waste by Hazard Level

Observed data	Key Findings
Classifying waste based on its hazard level	Able to classify waste based on the level of its ingredients

Students have understood various types of waste, especially hazardous waste or B3 (Hazardous and Toxic Materials). Students can recognize various types of B3 waste, such as used batteries, expired drugs, fluorescent lights, and sharp objects that can harm the environment and health. In addition to the ability to identify, students behave well in managing B3 waste. They don't throw garbage in random places instead, they place it in the place that has been provided. This shows that students

not only have knowledge, but they also know how to maintain their own safety and the environment. As part of environmental education, schools regularly implement the habit of disposing of B3 waste in the right place. If students understand and take real action, it is hoped that awareness of the importance of managing hazardous waste from an early age will continue to increase.

The Role of Teachers in Shaping Students' Scientific Behavior Through Scientific Understanding of the Discipline of Waste Disposal at SDN 1 Plumbon

Teachers play a significant role in shaping students' scientific behavior through science learning approaches that are relevant to daily life, especially in terms of waste disposal discipline. Experiential and habituation-based learning has a positive impact on the cognitive, affective, and psychomotor development of students in maintaining a clean environment.

In the cognitive aspect, students show the development of understanding of the type of waste, its effect on the environment and health. Grade III teachers show that students are quite capable of distinguishing organic and inorganic waste. But children of that age still find it difficult to understand hazardous and toxic waste (B3) because of its abstract nature and not yet fully understood, so through classroom activities, teachers help explain these concepts concretely, practice disposing of waste properly, and talk about the adverse effects of waste on the environment such as odors, floods and diseases, among other practical methods that have proven effective in improving students' cognitive abilities.

In the affective aspect, students' attitudes and awareness of the environment have developed quite well. Most of the learners have shown a great sense of responsibility and care. The students have completed picket duties according to schedule, swept the classroom, cleaned the blackboard, and dared to reprimand their friends who littered them carelessly. This shows that scientific concern for the environment has become the norm. Even so, some students remain passive and do not care about cleanliness, such as leaving garbage scattered or not daring to reprimand friends. To overcome this, teachers take persuasive actions by giving suggestions, creating educational classroom rules, and conducting hands-on practice with students. This shows that constructive and attitude building approaches should be applied consistently rather than punishing.

In addition, the psychomotor aspect shows interesting development. The teacher said that students are starting to get used to carrying out cleaning tasks with more discipline and disposing of garbage in their place. Every day, teachers continue to teach actions such as sweeping the classroom and collecting garbage and throwing it in the proper bin. But some students have not been consistent, especially during breaks or outside of class. By implementing the picketing system and continuing to set a direct example, teachers overcome this problem. This learning is very important to build students' motor skills and good garbage disposal habits.

In addition, there is a gradual development in the ability of students to sort, categorize, and classify waste based on its type characteristics (organic, inorganic, and B3). Students begin to understand the concept of sorting waste based on its physical properties. For example, they can distinguish food scraps from plastic. They also started to be able to group waste by category, but there were still mistakes that occurred, especially when in a hurry or outside of class. There is no segregated trash can facility,

which makes students confused about how to dispose of garbage. To address these issues, teachers use methods such as classroom discussions, trash can labeling, and clean Friday activities and hands-on practices after meals together. In addition to improving theoretical understanding, this strategy also improves practical skills. On the other hand, the classification of waste according to its level of danger is still a problem in itself. The teacher admitted that students did not understand B3 waste such as glass or batteries. There may be some students who mention examples, but they still don't understand the reason why the item is considered dangerous. Teachers use picture media, grouping practices, and light discussions as approaches to slowly instill understanding to address these issues. As a result, this classification process has become an important component of efforts to form broad environmental awareness.

The role of teachers is very important in shaping students' scientific behavior through understanding science related to the habit of disposing of garbage in a disciplined manner. Teachers not only deliver material, but also guide, set an example, and create a learning environment that supports the affective, cognitive, and psychomotor development of students. Teachers succeed in increasing students' awareness and skills in maintaining environmental cleanliness through habituation scientific behavior in students' daily lives, although there are still some obstacles, especially in terms of behavioral consistency and understanding of hazardous waste. The role of teachers as supervisors leads to the role of teachers in guiding students to have an attitude of concern for the environment. That the role of teachers as supervisors is to provide encouragement and encouragement to students to always maintain the beauty of the environment, how to cultivate an attitude of love for the environment is carried out by teachers by telling students to take care of plants in the classroom yard, teachers also warn students to always dispose of garbage in its place, carry out class pickets, and many other teacher guidance [34]. The application of the role of teachers as demonstrators in fostering the character of caring for the environment of students can be done by providing direct examples to students of ways to protect the environment. In the research conducted [35] Instilling the value of caring for the environment to students, in addition to giving advice, teachers also provide examples of environmental care attitudes, for example, when garbage is found, teachers will directly pick it up and throw it in the trash, this is done to provide an example to students to care about environmental cleanliness

CONCLUSION

Based on the results of research conducted on grade III students at SDN 1 Plumbon, it can be concluded that students' scientific understanding of the concept of waste shows that the learning process touches three important domains in education, namely cognitive, affective, and psychomotor. The understanding of science is not just a theory, but also how it is applied in real life, especially in waste management and the formation of scientific behavior.

1. Scientific understanding of grade III students of SDN 1 Plumbon on the concept of waste

Students have shown a fairly good understanding in cognitive aspects, especially in recognizing and explaining different types of waste, including organic,

inorganic, and B3 waste which is a hazardous and toxic substance. Students are also able to understand the impact of waste from improper waste management, such as disease, floods, and environmental pollution. This shows that the understanding of science has instilled an awareness of the importance of protecting the environment from an early age.

Students have also shown an attitude of concern for the cleanliness of the school environment in the affective aspect, shown through the act of cleaning the classroom voluntarily, throwing garbage in its place without being remembered, and daring to reprimand their friends who violate the rules.

Meanwhile, in the psychomotor aspect, students are able to apply an understanding of waste in real actions, such as sorting, disposing of waste according to its type, sweeping yards, and carrying out class picket duties. However, there are still some students who need guidance to improve consistency in maintaining cleanliness.

2. Scientific behavior discipline in disposing of garbage

The scientific behavior of students is reflected in discipline in disposing of garbage and taking responsibility for cleanliness. Most of the students have shown discipline

through the habit of disposing of garbage according to their place and being active in picket activities. In addition, students also understand the importance of sorting, categorizing, and classifying waste based on its type and hazard characteristics. Students are able to sort between organic and inorganic waste and are able to group waste into the category of toxic hazardous materials (B3). But there are still some students who need additional guidance, especially in classifying B3 waste, continuous habituation guided by the school environment and the active participation of classroom teachers is necessary for sustainable environmental awareness.

3. The role of teachers in shaping students' scientific behavior in understanding science on the discipline of waste disposal

Teachers have an important role in shaping the scientific behavior of students. Teachers not only play the role of conveying information, but also as guides, role models, and facilitators in habituating environmentally caring behavior. Through experiential learning strategies, such as waste disposal practices, discussions, trash can labeling, posters about waste, teachers have succeeded in fostering students' understanding and skills in sorting, categorizing, and classifying waste. Teachers also help students who have difficulties, especially in understanding the concept of B3 waste, although there are some students who are not fully consistent in maintaining cleanliness, teachers' continuous efforts can affect habits and environmental responsibilities.

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