

Science Learning for Slow Learner Students in Indonesia

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Abstract

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Inclusive schools are schools that facilitate children with disabilities to learn together with their peers according to their abilities, including science learning. Thus, this study looks at teachers' learning process and science assessment of slow learners. This study uses a qualitative research method with a case study approach. The research subjects were Slow Learner students, class teachers, class assistant teachers, and the Principal of INTIS School Yogyakarta. Data collection techniques using interviews, observation, and documentation. The data validity technique uses data source triangulation and technical triangulation. Data analysis techniques include data reduction, data presentation, and conclusion. Based on the results of the analysis of science learning, the slow learners showed: 1) There was no difference in the Science Learning Implementation Plan, methods, and media for learning Science, both regular and slow learners; 2) Modification of content or material is carried out directly during learning according to the needs of slow learners; 3) The science assessment for slow learners undergoes a modified assessment process different from regular students; 4) In the process of learning and assessing slow learners, receive assistance from accompanying teachers.

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Introduction

Science consists of three domains: knowledge, scientific processes or methods, and ways of knowing (Lederman & Lederman, 2019; Mulyeni et al., 2019). Science as a body of knowledge implies products of Science such as concepts, facts, and theories. Acquiring a body of knowledge requires a series of methods or processes. In addition, Science is also a way of knowing (Bell, 2008). Science learning aims to learn about nature and prepare students to think like scientists, asking scientific questions, making hypotheses, and conducting investigations (Kelley & Knowles, 2016). For this reason, learning to do Science is more valuable than studying facts, concepts, and theories (Lederman & Lederman, 2019; Martin, 2008).

Besides the learning process, assessment is essential in measuring student achievement in the learning process (Edwards, 2013; Oyinloye & Imenda, 2019). In general, the assessment aims to assess learning in the classroom and improve students' learning and quality so they can achieve the goals and standards set in the learning process. So, assessment is more than just a tool to investigate the success or failure of the learning process. However, the assessment indicates achievement and success in learning (Shepard, 2000). The assessment process must adapt to the learning objectives by considering the student's character so that the teacher can provide the best form of assessment and time to carry out the assessment (Gardner, 2006).

Based on its function, there are two types of assessment: formative and summative. Formative assessment directs students to learn further, while summative assessment competes with each other (Rustaman, 2017). Not only science learning must teach the three domains of Science. However, the science assessment requires teachers to collect information on science learning outcomes by assessing these three domains. To obtain science learning outcomes accurately (Azizah et al., 2018).

The curriculum used in Indonesia is the 2013 curriculum which consists of four core competencies, namely spiritual, social, knowledge, and skills core competencies (Ministry of Education and Culture, 2016). Thus the assessment of student learning outcomes in elementary schools for all subjects, including Science, includes attitudes, knowledge, and skills (Azizah et al., 2018; Ministry of Education and Culture, 2016). All students must obtain science learning and its assessment without exception, including Slow Learner students. A slow Learner is a child with low intellectual potential below that of other children (Khabibah, 2017; Maftuhatin, 2014). Slow learners have obstacles or weaknesses in abstract thinking, responding to stimuli, and social adaptation. Slow learner students do not show unique characteristics; they are challenging to identify because their outward appearance is the same as normal children and functions commonly (Khabibah, 2017; Marheni, 2017; Utami, 2018). Slow Learner students have limitations in basic skills, namely reading and writing. In addition, slow learners also experience problems in almost all subjects related to memorization, comprehension, and abstract thinking (Hartini et al., 2017; Triani & Amir, 2016), low learning motivation, low vocabulary mastery, in understanding lessons requires more time than children of his age, and repetition of explanations of subject matter (Hartini et al., 2017). The characteristics of a slow learner indicate difficulty in following instructions with many steps (Marheni, 2017; Triani & Amir, 2016). In addition, slow learners experience difficulties in organizing or socializing, learning difficulties, and explaining information. Its social feature is being a passive player or spectator. Meanwhile, they understand the moral characteristics of the rules but need to understand what they are for (Triani & Amir, 2016).

Several research results show that slow learners experience learning and behavior problems because slow learners have limited intellectual abilities and psychological skills. In general, the problems found in slow learners include; have low academic achievement, have difficulty practicing reading, writing, arithmetic, and memorizing. Slow learner students also have difficulty concentrating and get bored quickly, so children tend to do many activities that are not focused. So that to complete academic and non-academic tasks takes a long time and repeatedly and requires special assistance in understanding the subject matter, both abstract and conceptual (Khaira & Herman, 2020; Triani & Amir, 2016).

Inclusive schools, as a newly developed education system, are currently regular education in which students have special needs (Triyanto & Permatasari, 2016). Like schools in general, schools providing inclusive education also have several obstacles in their implementation. Inclusive schools face problems: the management of inclusive schools still needs to be more optimal, as the lack of accompanying teachers and teaching skills (Tarnoto, 2016). The teacher's lack of ability in teaching and learning activities will significantly impact students, especially students' lack of conceptual understanding of the material taught by teachers, especially in Science learning at school (Pratiwi et al., 2020). So science learning

outcomes for students with disabilities, including slow learners, are lower than for regular students (Therrien et al., 2011).

INTIS School is one of the elementary schools that received a decree from the Yogyakarta City Education Office to become an inclusive school (Yogyakarta City Education Office, 2016). This school provides and facilitates children with special needs to get their right to education. The 2013 curriculum, known as K-13, is very challenging for teachers to teach if there are children with special needs in their class. Implementation of the K-13 learning process thematically, but the assessment is separate. In inclusive schools, children with special needs are slow learners (Hartini et al., 2017). Likewise, INTIS School also accepts students with special needs, including the slow learner type.

Suprihatiningrum (2021), in his research, found that in science learning in inclusive classes where there were slow learner students, the teacher found it difficult to identify the type of slow Learner. So, the teacher needs help lowering the material's limits. Alternatively, the teacher delivers science material on the daily life encountered by slow learner students (Suprihatiningrum, 2021). The results of research by Nugroho & Prasetya (2019) show that out of 249 prospective elementary school science teachers, 245 prospective teachers need a greater understanding of the characteristics and methods of teaching Science to Slow Learner students. In addition, of the 100 teachers who participated in teacher professional education in 2016, 97% did not understand the characteristics and methods of teaching Slow Learner students (Nugroho & Prasetyo, 2019). Thus, the study aimed to look at the science learning process, and science assessments carried out by teachers on Slow Learner students at INTIS School Yogyakarta.

Method

Science Learning and Assessment Research for slow learner students use qualitative research. Qualitative research is inductive, which allows problems to arise from data or is left open to interpretation (Ghony & Almanshur, 2016). This study examines learning data and science assessment in Class V slow learners at INTIS School Yogyakarta. This research uses a case study approach. In the case of studies, researchers try to find scientific truths by studying in-depth and for a long time (Prastowo, 2014). The case study is research directed at collecting data, making meaning, and understanding the case (Ghony & Almanshur, 2016). In the case study research approach, researchers explore cases to observe how research subjects overcome specific problems (Creamer, 2018).

The data obtained from this research is in the form of qualitative data. This qualitative data can be in student conditions, infrastructure, teaching and learning activities, and assessing science subjects. The Source of data is the subject of obtaining data. This study took primary data from school principals, teachers, and Slow Learner students through observation, interviews, and documentation. At the same time, secondary data is in the form of literature and scientific articles.

The research subject is a data source that can provide information related to the research problem under study (Sugiyono, 2015). The subjects of this study were three informants, namely the school principal, class V teacher, class assistant, and one Slow Learner, class V INTIS School Yogyakarta Umar Bin Khattab. The triangulation technique has to measure the validity of the data (Wirawan, 2011). This study uses source triangulation. Triangulation of sources, researchers validate research results with several directly related informants. So, in this

study, data were obtained from several informants, and then interpretation was carried out on the data obtained. The analysis consists of three stages: data reduction, data presentation, and conclusion.

Results and Discussion

Science Learning Process in Inclusion Class with Slow Learner Students

INTIS School Yogyakarta is an elementary school that organizes inclusive education in the City of Yogyakarta (Yogyakarta City Education Office, 2016). Inclusive schools in Yogyakarta aim to increase and equalize access to education for children with special needs and increase professionalism in managing inclusive education in the city of Yogyakarta (Yogyakarta City Education Office, 2014). Schools designated as inclusive schools must have implementation requirements, including curriculum, supporting facilities, and infrastructure (Yogyakarta City Education Office, 2014).

The observation results show that INTIS School Yogyakarta provides the main facility needed by students with special needs, namely the Inclusion Room, which is called the Gray Room. The facilities in this room are air-conditioned rooms, various toys, tools, and materials for drawing, painting, coloring, computers, and many more. This room also functions to calm down and eliminate boredom, boredom, and anger for children with special needs (Principal, personal communication, January 7, 2020). Children with special needs, including slow learners, need space for therapy. Therapy for Slow-Learning Children can be in the form of play therapy that connects social, language, and motor skills (Marheni, 2017; Triani & Amir, 2016). Children can paint, color in the Gray Room, and so on (Principal, personal communication, January 7, 2020). One of the therapies for children with special needs is to use art therapy. A hallmark of art therapy is the use of media to help the child, parent, or teacher communicate. Slow learner children can express and describe their feelings and thoughts through the media (Marheni, 2017).

This study discusses science learning for slow learners in class V Umar Bin Khattab. In class V, there are 14 students, seven boys and seven girls. In this class, there is one slow Learner with an IQ score of a slow learner at the age of 7 years is 78. Slow learner students are students with special needs who have abilities below the average normal child with an IQ score between 70-90 (Amdany et al., 2018; Khabibah, 2017). The school also provides a special accompanying teacher for students with special needs who need assistance. The special companion teacher at INTIS School is known as the Shadow Teacher. Besides having shadow teachers, each class at INTIS School Yogyakarta has two teachers. The first teacher is responsible for teaching Thematics (including science lessons) and Mathematics. In contrast, the second teacher is responsible for English subjects and helping students who ask questions or do not understand. In this position, The teacher replaces the Shadow Teacher to assist Slow Learner students in learning, including science learning.

As a place of research, the Umar Bin Khattab Class has two teachers; one focuses on teaching, and the other on mentoring. Slow learner students in this class need the Shadow Teacher facility. However, only get a companion from the class accompanying teacher. So that slow learners can learn independently. Slow Learning Children need accompanying teachers who aim to motivate them when doing positive things or to reward the learning process (Amdany et al., 2018). In addition, the task of the Special Assistance Teacher is to design and

implement special programs, identify students' learning needs, conduct assessments (Hartini et al., 2017; Khiyarusoleh, 2019), develop Individual Learning Programs, modify teaching materials, and carry out individual assessments (Khiyarusoleh, 2019). Through guidance, teachers can help provide service programs and tutoring according to the characteristics of students with special needs, not only from teachers. So that learning can be carried out appropriately according to the needs of slow learners (Aziz et al., 2015).

INTIS School Yogyakarta implements the 2013 curriculum known as K-13. The curriculum for students with special needs is also the same as for regular students (Principal, personal communication, January 7, 2020). Based on researchers' observations, learning at INTIS School, Yogyakarta, uses the 2013 curriculum textbook. The lesson plan used by the teacher is also by the provisions of the 2013 curriculum. The teacher makes learning modifications according to the child's ability. In Science, the teacher does thematic learning. In one theme, several sub-themes combine other subjects. At the first meeting with the theme "Heat and Transfer," there was a sub-theme, "Temperature and Heat," where the sub-theme combined two subjects, Science and Indonesian. The second and third lessons on temperature and the sub-theme of heat combined several lessons, namely Science, Indonesian, Cultural Arts, Citizenship Education, and Social Studies. Subsequent learning also has the theme of Science by combining several subjects. Learning for elementary school children should be themed because, at that age, the way children think is holistic. Besides implementing the 2013 curriculum, the learning system uses an integrative thematic approach. Integrative thematic learning is a learning approach that integrates various competencies from various subjects into various themes (Ministry of Education and Culture, 2013). In science lessons, the lesson plan is the same as for regular students. However, in practice for slow learners, there are modifications by reducing the level of Basic Competence or even eliminating it to suit students' abilities. These results prove that the application of the curriculum at INTIS School Yogyakarta for Slow Learner students is the same as for regular students. Slow Learner students can follow the general curriculum with modifications as needed. There is a modification of content or material in learning; teachers can modify the time, content, or learning materials and processes (Apriyanto, 2012).

The learning process in class and the preliminary activities of Science subject teachers always habituate students physically and psychologically. Then the teacher motivates students to study according to the benefits and application of teaching materials in everyday life. The teacher asks questions that relate previous knowledge to the next subject matter. In addition, the teacher explains the learning objectives or essential competencies to be achieved. In the core activities of learning Science, the learning method used for slow learners is the same as for regular students without any special modifications. Teachers try to choose learning methods that can accommodate slow and regular students. The learning method used is a group discussion, presentation of the results of the discussion, and clarification of the results of the discussion conducted by the teacher. Sometimes students also do group experiments (homeroom teacher, personal communication, December 16, 2019; Andriyani & Fatmasari, 2020). The group discussion method can build interaction in learning to foster enthusiasm for student learning, especially for children who are slow learners (Aziz et al., 2015). The group discussion method also introduces students to diversity. However, science learning using the 2013 curriculum should ideally use a scientific approach consisting of observing, asking, trying,

associating, and communicating. Using the scientific method in science learning can involve students actively understanding each learning concept to achieve science learning goals optimally.

Using the same learning method is considered more practical and more accessible so that slow learners are not actively involved in the process of understanding every concept or knowledge given. In its implementation in class, the assistant teacher modifies it according to the character of the slow Learner. Suitable learning activities, especially in inclusive schools, are through well-organized planning processes such as making Learning Implementation Plans for regular students and Individual Learning Programs for students with special needs according to their characteristics. The provision of educational services must adapt to their needs, especially in the learning process (Pratiwi et al., 2020). The exciting thing about learning Science at INTIS School is that ice-breaking is carried out before the presentation or after the group discussion. Ice breaking aims to keep students from getting bored and refocus on learning. Generally, slow learner students have low concentration, around 20 minutes. After that, slow learner students tend to be nervous and can disturb their studying friends. Slow learners can also easily forget, get distracted, and react to stimuli without consideration (Aziz et al., 2015).

Teachers also equate learning media for slow learners with regular students. Here the assistant teacher plays a role in helping students to adjust to the existing learning system. A teacher must have creativity in providing learning to students, from teaching materials and methods to learning media, considering that each student has different characteristics or needs, especially in inclusive schools (Suryadinata & Farida, 2016). The selection of media use and learning resources must pay attention to the characteristics of slow learners (Aziz et al., 2015).

In the implementation of learning between subject teachers and accompanying teachers coordinate with each other, both in the learning process and outside the classroom. So that the teacher gets information about the development of slow learning students related to understanding the concepts of science lessons that have been taught. The science teacher and accompanying teacher discuss together student progress and student learning difficulties to find the right solution in implementing further learning. Here the accompanying teacher plays a role in helping the subject teacher, not replacing his teaching duties. This effort makes the slow learner achieve maximum learning success if the subject teacher provides remedial teaching, enrichment/acceleration programs for slow learner, but still works with accompanying teachers in compiling the program. In addition, if the accompanying teacher is a certain subject teacher who also acts as a companion teacher and has special abilities in the field of inclusion, then the accompanying teacher must truly collaborate with all elements involved in inclusive classroom learning. Because when the accompanying teacher who is a certain subject teacher will provide additional lessons for slow learners in subjects that are outside their scientific discipline, it is feared that the subject matter will not be conveyed to students to the fullest and instead it will get further away and make students fall behind from their friends. (Aziz et al., 2015).

In the science learning process, the problems of slow learners that often occur are in communicating and difficulties in expressive language, conveying ideas or understanding other people's speech. So, it is better to convey information in simple language. The science learning process for slow learners is simple but complex when there are scientific words (Slow learner students, personal communication, February 3, 2020). When there is scientific language, slow

learners need help explaining scientific words they do not understand (homeroom teacher, personal communication, December 16, 2019). For this reason, the accompanying teacher changes scientific words into simpler words or explains according to the language used daily (Assistant Teacher, personal communication, February 6, 2020). So, during the teaching and learning process in science subjects, the accompanying teacher is more helpful in simplifying scientific words or sentences that Slow Learners do not understand. Because the problems faced by slow learners include low intelligence, interpreting the language conveyed, forgetfulness, shyness, difficulties in understanding concepts, and abstract thinking (Triani & Amir, 2016)(Triani & Amir, 2016). Slow learner students will easily understand something in very concrete language, which will be an obstacle in communicating abstractly with others who have entered the cognitive development stage of thinking. Children's limitations in understanding abstract information result in minimal language skills (Marheni, 2017). Slow learner students have difficulty expressing ideas inability to combine words; embarrassment also causes them to have difficulty expressing ideas in the spoken language, so they often use body language (Hartini et al., 2017).

The Process of Assessment of Science Subjects for Slow Learner Students

When assessing, INTIS School also provides accompanying teachers to students with needs, so there are special notes when carrying out midterm or end-of-semester assessments. This special note is used so that Slow Learner students are always accompanied, reminded, and cared for when working on any subject matter, including science lessons (Teacher Class, personal communication, December 16, 2019; Principal, personal communication, January 7, 2020; Assisting Teacher, personal communication, February 6, 2020). During the assessment process, the accompanying teacher explains words, sentences, or terms in questions that are not understood by slow learners, especially in science lessons (Assistance Teacher, personal communication, February 6, 2020). Daily assessments in science lessons are not strictly scheduled, such as midterm and end-semester assessments, but adjust to the existing lesson schedule. The questions given to slow learners are the same as regular students. The accompanying teacher further explained that at the beginning of working on science questions, students who were slow learners were enthusiastic about working on the questions. However, slow learner students feel rushed at work and want to be collected immediately. One of the characteristics of slow learners is having a low level of concentration (Novitasari et al., 2018). In addition, when working on questions, slow learners often ask the accompanying teacher. Because slow learners still need clarification with the sentences in the questions. Slow learner students have difficulty combining words (Hartini et al., 2017). So that teachers can assist slow learners who experience difficulties (Utami, 2018).

The teacher makes a Learning Implementation Plan so that the determination of the minimum completeness criteria for learning outcomes is also the same between Slow Learning students and regular students. The results of observations and interviews regarding midterm assessment questions showed no difference in the minimum completeness criteria given (homeroom teacher, personal communication, December 16, 2019). The minimum completion criteria for science subjects are 70 and equal for all students (homeroom teacher, personal communication, December 16, 2019; Principal, personal communication, January 7, 2020). In the observation data, the average daily assessment value of slow learner students was 70; then,

there was an increase in the midterm assessment to 72. This increase in value became the enthusiasm of slow learner students to improve further their science learning (Slow Learner Students, Personal Communication, January 7, 2020). A minimum completeness score of 70 for slow learners will have different qualities from ordinary children (Utami, 2018). The teacher sets the minimum completeness criteria for slow learners and regular students the same because the teacher views slow learners as still able to participate in learning like other students. However, the teacher must provide continuous repetition so that Slow Learner's students understand (Utami, 2018).

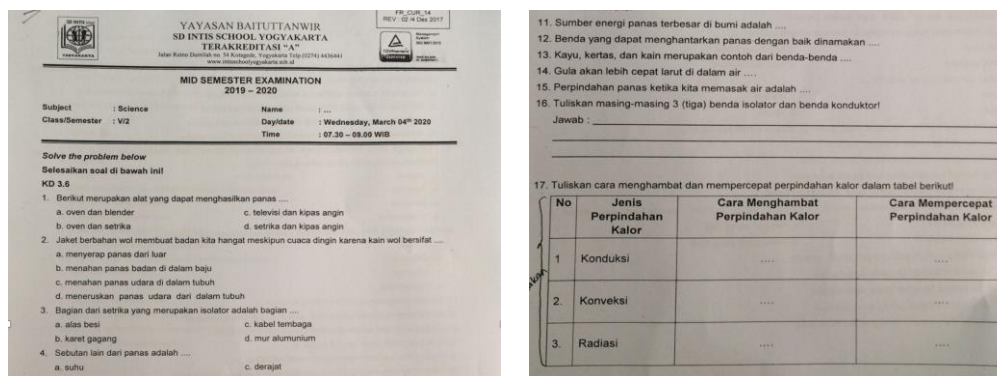


Figure 1. Example of Multiple Choice & Subjective Questions Questions

Even though the problem (Figure 1) is the same between regular and slow learner students, in the scoring system, there are differences in subjective questions for slow learners and ordinary students. The difference in the scoring system aims to appreciate Slow Learner student answers. What was conveyed by the Class Teacher, namely: (Class Teacher, personal communication, December 16, 2019):

"What distinguishes the correction is in the matter of content or description. Later, if the answer is wrong, we will give an additional value of 1 to appreciate the hard work and value of the writing."

The difference in scores due to the assessment of learning progress in Slow Learner students is not used to compare with other students. However, there is an individual mastery, namely the completeness of individual learning according to its potential (Triani & Amir, 2016). So that the difference is only in the scoring system, not the type of problem, so slow learner students feel they need to be more distinguished from their peers. That way, it minimizes the potential for feeling privileged, minimizing differences. Both the science learning system and the assessment of exams at INTIS School seek a system that is friendly to slow learner students with accompanying teacher facilities without differentiating the learning process and questions for assessment. However, class teachers and accompanying teachers must also understand that science learning outcome. Science learning outcomes are test scores and a more meaningful science learning process, namely through assessment of class assignments, learning attitudes, and motivation of slow learners in learning Science.

In this study, the accompanying teacher has a significant role in ongoing science learning. In teaching Science, the classroom teacher needs the role of a companion teacher. Without an accompanying teacher, the class teacher has difficulty and becomes challenged in teaching Science for slow learner students. Collaboration between science teachers and accompanying teachers is beneficial in realizing inclusive science learning (Suprihatiningrum, 2021).

Conclusion

Based on the analysis of the results of science learning research on slow learners at Inclusive Schools INTIS Schools. Researchers concluded that: 1. There is no difference in the Science Learning Implementation Plan between regular students and slow learners, but pay attention to the characteristics of slow learners; 2. The use of learning methods and media for slow learners is the same as for regular students. However, there is assistance in the learning process; 3. Modification of content or material is carried out directly during learning according to the needs of slow learners; 4. In the scientific assessment of slow learners, there is a modification of the assessment process that is different from regular students. In addition, the learning process and the assessment of slow learners at INTIS School receive assistance from the accompanying class teacher. In science learning, the teacher should provide various variations of science learning that have proven effective in supporting the needs of slow children in science learning in inclusive classes. Science teachers and accompanying teachers need to have joint discussions to clearly describe science learning achievement indicators to help determine the level of achievement or development of science learning for slow learner students.

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