

PREPARATION OF FINE MOTOR ASSESSMENT INSTRUMENTS FOR CHILDREN *OF THE* AUTISM SPECTRUM IN CLASS V IN SKh PUTRA PUTRI MANDIRI

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ABSTRACT

Children who are experienced difficulties in learning to the appearance of subtle people, but they have the ability to develop according to the order to live independently. One of the aspects that performing on optimizing ability is fine motor skills. The study aims to compile fine motor assessment instruments for autistic children to find out the extent of children's abilities and disabilities so that individualized learning programs can be made so that the child's potential can be explored. The research method used in this study is a descriptive method with a qualitative approach, the data collection techniques used in this study are observation, interviews, documentation, FGD/Workshop and validation. The results showed that the fine motor skills of autistic children were very lacking so that teachers and researchers compiled fine motor assessment instruments for children which were then validated to teachers from two different schools by adding several aspects/components in the assessment so that the assessment instruments became suitable for use and perfecting the assessments that had been made by teachers and researchers. Recommendations are made to teachers, schools and people to play a role in improving children's fine oral abilities.

Keywords: *Preparation, assessment, fine motor skills, autism children*

A. BACKGROUND

Education is an inseparable part of human life. The nature of education is complex (comprehensive), dynamic (moving) and contextual (continuous). The provision of education as a process of human formation that lasts throughout life.

In line with this, improving the quality of education is an integral part of national development directed towards improving the quality of Indonesian people as a whole. The Government of Indonesia fully supports education for every citizen as stated in the 1945 Constitution Article 31 paragraph 1 that "Every citizen has the right to receive teaching". This proves that education must reach all citizens without exception, including children with special

needs. The right to education for children with special needs has been regulated in Law No. 20 of 2003 concerning the National Education System article 5 paragraph (2), namely "Citizens who have physical, emotional, mental, intellectual and/or social disorders are entitled to special education". Children with special needs consist of various kinds of specialties, one of which is children with autism spectrum. Children with autism spectrum are entitled to education that aims to develop and optimize their potential.

According to Yuwono (2009: 2) autism is "A very complex / severe neurobiological development disorder in a long life which includes disturbances in aspects of social interaction, communication and language, behavior and emotional disorders and sensory perception even in motor aspects".

Meanwhile, according to Danuatmaja (2017: 3) explained that: "Autism is a collection of syndromes due to nerve damage. The disease interferes with the development of the child. The diagnosis is known from the visible symptoms, indicated by developmental deviations".

From this opinion, it can be concluded that autism is a child who experiences neurobiological development disorders that cause disruption of social interaction, communication and behavior that appears before the child is 3 years old.

Autism has a complex developmental disorder problem that appears before the age of 3 years as a result of neurobiological disorders that impact brain function. Disorders of the brain cause autistic children to have obstacles in communication, social interaction, and behavior. Various barriers that autistic children have cause them to need special education and special services.

In some cases found in schools, children on the autistic spectrum often have difficulties in developing fine motor skills that involve coordination of small muscles in using stationery such as coloring, writing, crocheting and so on.

In the module written by Amini, et al (2021: 114) stated that:

Fine motor is body movements that involve small muscles, such as finger muscles, facial muscles, and others. Fine motor movements, especially those involving hand and finger muscles usually require high precision, perseverance and coordination between the eyes and small muscles. Some movements that can be included in fine motor movements, such as scissoring, tearing, drawing, writing, folding, crocheting, sewing, squeezing, grasping, arranging blocks, grimacing, glaring, laughing, and so on.

In line with Dini and Sari in Afandi (2019: 57) states that "fine motor is a motor activity that involves the activity of small or fine muscles, this movement requires eye and hand coordination and good motion control that allows it to carry out precision and accuracy in motion."

Another opinion expressed by Astaty in Jumadilah (2010: 11) that "fine motor is a movement that only uses certain muscles and is carried out by small muscles that require good coordination of motion and concentration."

Based on the above quotes, it can be concluded that fine motor is the organization of body movements that involve the use of small muscles such as fingers and hands that require careful coordination of the eyes and hands.

The importance of fine motor skills that must be possessed by autistic children in preparing their ability to use stationery as a prerequisite for being able to write. Therefore, it is important for a teacher or other practitioner to conduct an assessment for autistic children to find out the extent of fine motor skills possessed by autistic children.

Assessment according to Suwandari (2010: 4) is "an activity carried out to obtain data or information about a person to find out the condition and needs of children."

Furthermore, in the opinion of Rosenberg (1982) quoted by Suwandari and Mulyati (2010: 4) that "Assessment is a process of collecting information that will be used to make considerations and decisions related to children's learning". So that the assessment process is important to get a picture of children's learning abilities and needs.

According to Astaty (2010: 34) by taking into account the purpose of assessment, the scope of assessment can be grouped as follows:

- a) Sensory-motor and perceptual abilities, such as gross and fine motor skills, perception of sight, touch, taste, etc.;
- b) Self-preservation skills, such as eating and drinking alone, dressing themselves, using the bathroom and others;
- c) Language skills such as: speaking, writing, use of communication tools, etc.;
- d) Social emotional skills, such as reacting, playing together, carrying out orders, procedures, getting along, etc.;
- e) Cognitive abilities, such as: understanding shapes, color sizes, numbers, and the use of money; and
- f) The ability to use skill tools, such as: cutting, cutting, gouging, sculpting, using sewing tools, maintaining clothes and others.

From the opinion above, it can be concluded that assessment is an activity carried out to determine the level of children's abilities in the needs of the learning process. Assessment activities are carried out without intervention from teachers or other people in order to obtain valid data.

In conducting assessments, instruments are needed that must be arranged as a tool to conduct tests and collect data on the fine motor skills of children with *autism spectrum* to be studied so that it is hoped that later data on fine motor skills will be obtained so that areas that require more intensive attention and intervention can be identified.

The instrument used in this study is an assessment sheet. Assessment sheet used to determine the level of fine motor skills of autistic children carried out in the learning process. This assessment sheet uses a *checklist* with a descriptive of the skills that the child is expected to achieve.

Several studies have been conducted by Herviani (2017) in a Journal entitled Three-Dimensional Collage Activities on Fine Motor Abilities of Autistic Children in Kindergarten showing that fine motor exercises with 3-dimensional collages can improve fine motor skills

for autistic children, autistic children are more creative in functioning fine motor organs by emphasizing hand movement activities.

In line with research conducted by Nuraini (2019) in a journal entitled Implementation of the Fine Motor Development Program for autistic children, it shows that autistic children have fine motor skills that are quite good after learning fine motor development.

The research that has been done, it can be concluded that to determine the fine motor skills of children with *autism spectrum* need to be assessed in several different ways that focus on the coordination of small muscles such as finger muscles and eye coordination ability with hands.

Based on the above background, researchers are interested in conducting research that focuses on fine motor skills in terms of writing preparation skills formulated in the title Preparation of Fine Motor Assessment Instruments for Class V Autism Spectrum Children at SKh Putra Putri Mandiri.

B. RESEARCH METHODOLOGY

In this study, the methods that used as follows:

1. Research Approach

The research approach used by researchers is a qualitative approach. According to Moleong (2005: 6), qualitative research is "research that intends to understand phenomena about what is experienced by the research subject, such as behavior, perception, motivation, action, etc. holistically, and by way of description in the form of words and language, in a special natural context and by utilizing various natural methods".

While Saryono in Noor (2012: 104) states that "qualitative research is research used to investigate, find, describe, and explain the quality or privilege of social influences that cannot be explained, measured or described through quantitative approaches".

From these expert opinions, it can be concluded that qualitative research is research conducted to understand and describe phenomena that occur naturally through sentences based on things that occur in the field.

2. Research Method

This research used descriptive research method with qualitative approach. According to Ramdhan (2021: 07) that "The descriptive method is a method that describes a research result and has the aim of providing explanation, description, and validation of the problem being studied".

Meanwhile, according to Sukmadinata in (2007: 54) explained that the descriptive research method is "a method used to describe and describe existing phenomena, both natural and human engineering, which pays more attention to characteristics, quality, relationships, between activities".

From some of these expert opinions, it can be concluded that qualitative descriptive research methods are research methods that aim to explain or describe the results of research on a problem in accordance with the phenomena that occur in the field.

3. Data Collection Technique

Data collection technique used in this study were as follows:

a. Interview

Data collection techniques used in this study, one of which is interviews. According to Roosinda, et al (2021: 65) "interviews are one of the data collection techniques by asking questions to sources or informants related to research topics directly". Interviews are used when researchers want to know the informant's experience or opinion about something in depth.

Meanwhile, according to Nazir in Hardani, et al (2020: 137) an interview is "the process of obtaining information for research purposes by means of questions and answers while meeting face to face between the questioner or interviewer and the answerer or respondent using a tool called *an interview guide*".

From the above understanding, it can be concluded that the interview is a question and answer process conducted by interviewers with respondents who aim to obtain more in-depth information.

In conducting research, researchers need interview guidelines that contain questions about what activities teachers do to obtain information / data about the abilities and fine motor learning needs of children with class V *autism spectrum* at SKh Putra Putri Mandiri.

b. Observation

In this study, to obtain concrete data both primary data and secondary data, the researchers made observations. According to Hardani, et al (2020: 125) observation is "a technique or way of collecting systematic data on the object of research either directly or indirectly". Meanwhile, according to Gainau (2021: 115) "observation is observe using the sense of sight which means not asking questions".

The data obtained from these observations can support the writing of research. From some of the opinions above, researchers can conclude that observation is a data collection technique carried out by observing events using the sense of sight without intervening.

The type of observation used was participant observation. According to Riyanto (2007: 44) "Participant observation is an observation in which the person making the observation participates in taking part in the life of the person being observed". Observations made in this study, researchers are directly involved with people who are being observed in research activities. So that the data obtained is sharper and more to find out the fine motor skills possessed by autistic children.

c. Documentation

Documentation in this study is an effort to complete the research data. Documentation according to Sugiono (2013: 240) "Documents are records of events that have passed. Documents can take the form of writing, drawings, or monumental works of a person". Meanwhile, according to Sukmadinata (2011: 221) "Documentation study is a data collection technique by collecting and analyzing documentation in the form of writing, images, and electronics".

Meanwhile, according to Asdar (2018: 119) "documents are data sources used to complement research, both in the form of written sources, films, images (photos), and monumental works, which can provide information for the research process".

Based on the expert quote above, it can be concluded that documentation is a technique where researchers collect data by analyzing documents that are considered relevant to the research being observed.

d. FGD (*Focus Group Discussion*)

The fourth data collection technique is FGD or seminar and workshop, according to Agustin (2014: 556) "Seminar is a meeting attended by several participants to discuss a problem". This is in line with the opinion of Usman (2015: 94) "Seminar and workshop is an orderly process involving a group of people in informal face-to-face interactions with various experiences, inference, and problem solving".

From the above understanding, it can be concluded that FGD or workshop is a meeting held by several people to solve a problem in a study.

e. Validation

Validation can be interpreted as an act of proof in an appropriate way. According to Arikunto (2014: 144) "Validation is a measure that shows the levels of validity and validity of an instrument". Meanwhile, according to Sugiono (2015: 363) "Validation is the degree of accuracy between the data that occurs in the object of research and the power that can be reported by the researcher".

Based on the two quotes above, it can be concluded that the validation in this study is to see the implementation and readability of fine motor skills assessment instruments for grade V autistic spectrum children at SKh Putra Putri Mandiri which are validated to teachers in two different schools, namely at SLB Negeri Karawang Regency and SKh Mustika Tigaraksa.

Validation is an activity carried out in accounting for research results accurately.

4. Research Instrument

In conducting research, researchers need instruments or those used to obtain data. According to Arikunto (2010: 203), "Instruments are tools or facilities used in collecting data so that the work is easier and the results are better, in the sense that it is more careful, complete and systematic so that it is easier to process". Based on the data collection techniques used, researchers in this qualitative study are in the form of observations, interview guidelines, and fine motor assessment instruments.

C. RESULTS AND DISCUSSIONS

Result of this study are described as given:

1. Results

To find out the abilities and needs of children in terms of fine motor, it is necessary to conduct an assessment on children. In conducting assessments at SKh Putra Putri Mandiri, researchers and teachers compile fine motor assessment instruments that will be given to children with autism.

Fine motor assessment instruments are arranged in the form of performances and written tests that have been prepared in advance by the class in accordance with the PPI prepared at the beginning of the new school year. The description of the assessment report is in the form of a descriptive narrative so that it is easy to understand and convey to parents.

In conducting assessments, there are several indicators that can be done to children through writing, cutting, folding, squeezing and pasting. This can be done with tools and materials available at school, the implementation of assessment is carried out before learning according to the needs of children.

Motor skills for a child have a very important role in learning activities at school. To determine fine motor skills in children, it is necessary to conduct assessments related to fine motor starting from recognizing, identifying and using stationery.

From the results of the assessment that has been prepared by teachers and researchers, it was found that in general, grade V autistic children at SKh Putra Putri Mandiri can already recognize and identify several objects used for writing such as pencils, books, erasers, scissors and so on. Children can already hold pencils in the right way, the writing skills possessed by autistic children are also quite good, this can be seen when given the task to thicken lines, copy letters and sentences children can do it well.

In other activities, it is known that children can squeeze sponges and paper to find out the strength of their finger muscles, which this ability will affect their ability to press the pencil when writing. However, the ability in terms of painting and sewing children still look unfamiliar with it so that children are still lacking in the ability to paint and sew because in the school at the elementary level children fine motor skills still focus on the stage of writing or using stationery, not on complex abilities such as squeezing.

The results of the preparation of assessment instruments carried out by teachers and researchers were then validated in two different schools called validator 1 from SLBN Kab. Karawang and validator 2 from SKh Mustika Kab. Tangerang.

Enter from validator 1 suggested sticking activities which include recognizing sticking materials and sticking practices, then validator 2 added several indicators in the assessment

including writing practice activities including hand position, practice cutting paper paper with circle patterns, , practice squeezing paperboard.

The following are the results of the preparation of assessment instruments resulting from the collaboration of teachers and researchers as follows:

FINE MOTOR ASSESSMENT INSTRUMENT FOR CLASS V AUTISM E SPECTRUM CHILDREN AT SKh PUTRA PUTRI MANDIRI

(The result of collaboration between teachers and researchers at SKh Putra Putri Mandiri)

NO	ASPECT	SUB ASPECT	INDICATOR	ABILITY	
				ABLE	UNABLE
1.	1.1. Writing	1.1.1. Recognizing stationery	1.1.1.1. Indicating stationery 1.1.1.2. Mentioning stationery 1.1.1.3. Distinguishing stationery		
		1.1.2. Writing practice	1.1.2.1. Sitting position 1.1.2.2. Create a line 1.1.2.3. Tickening the dotted line 1.1.2.4. Writing letters		
2.	2.1. Menggunting	2.1.1. Recognizing tool for scissoring	2.1.1.1. Indicating a tool for scissoring 2.1.1.2. Mentioning a tool for scissoring 2.1.1.3. Distinguishing a tool for scissoring 2.1.1.4. Indicating material for scissoring		
		2.1.2. Recognizing material for scissoring	2.1.2.1. Mentioning material for scissoring		

		2.1.3. Scissoring practice	2.1.3.1 Distinguishing material for scissoring 2.1.3.2 Hands position 2.1.3.3 Scissoring paper by certain pattern		
	2.2. Folding	2.2.1. Recognizing folding material 2.2.2. Folding practice	2.2.1.1. Indicating folding material 2.2.1.2. Mentioning folding material 2.2.1.3. Distinguishing folding material 2.2.2.1. Folding with 2 folds 2.2.2.2. Folding with many folds		
3.	3.1. Squeezing	3.1.1. Mengenal bahan meremas Recognizing squeezing material 3.1.2. Squeezing practice	3.1.1.1. Indicating squeezing material 3.1.1.2. Mentioning squeezing material 3.1.1.3. Distinguishing squeezing material 3.1.2.1. Squeezing sponge 3.1.2.2. Squeezing paper		

FINE MOTOR ASSESSMENT INSTRUMENT FOR CLASS V AUTISM SPECTRUM CHILDREN AT SKh PUTRA PUTRI MANDIRI

(Validation results at SLBN Kab. Karawang and SKh Mustika Kab. Tangerang)

NO	ASPECT	SUB ASPECT	INDICATOR	ABILITY	
				ABLE	UNABLE
1.	1.1. Writing	1.1.1. Recognizing stationery	1.1.1.1. Indicating stationery		

		1.1.2. Writing practice	1.1.1.2. Mentioning stationery 1.1.1.3. Distinguishing stationery 1.1.2.1. Sit position 1.1.2.2. Sit position (validator 2) 1.1.2.3. Create a line 1.1.2.4. Tickening the dotted line 1.1.2.5. Writing letters		
2.	2.1. Pasting (validator 1)	2.1.1. Recognizing pasting materials 2.1.2. Pasting practice	2.1.1.1. Indicating materials for pasting 2.1.1.2. Mentioning material for pasting 2.1.1.3. Distinguisihing materials for pasting 2.1.2.1. Pasting a paper woth circle pattern 2.1.2.2. Pasting a paper by a certain pattern		
3.	3.1. Scissoring	3.1.1. Recognizing a tool for scissoring 3.1.2. Recognizing materials for scissoring	3.1.1.1. Indicating a tool for scissoring 3.1.1.2. Mentioning a tool for scissoring 3.1.2.1. Distinguishing a tool for scissoring 3.1.2.2. Indicating materials for scissoring		

		3.1.3. Scissoring practice	3.1.2.3. Mentioning materials for scissoring 3.1.2.4. Distinguishing materials for scissoring 3.1.3.1. Hands position 3.1.3.2. Scissoring a paper with circle pattern (validator 2) 3.1.3.3. Scissoring a paper by a certain pattern		
	3.2. Folding	3.2.1. Recognizing folding materials 3.2.2. Folding practice	3.2.1.1. Indicating folding materials 3.2.1.2. Mentioning folding materials 3.2.1.3. Distinguishing folding materials 3.2.2.1. Folding with 2 folds 3.2.2.2. Folding with many folds		
4.	4.1. Squeezing	4.1.1. Recognizing materials for squeezing 4.1.2. Praktik meremas	4.1.1.1. Indicating materials for squeezing 4.1.1.2. Mentioning materials for squeezing 4.1.1.3. Distinguishing materials for squeezing 4.1.2.1. Squeezing a sponge 4.1.2.2. Squeezing a paper		

			4.1.2.3. <i>Squeezing a paperboard (validator 2)</i>		
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FINE MOTOR ASSESSMENT INSTRUMENT FOR CLASS V AUTISM SPECTRUM CHILDREN AT SKh PUTRA PUTRI MANDIRI

(Validation results at SLBN Kab. Karawang and SKh Mustika Kab. Tangerang)

NO	ASPECT	SUB ASPECT	INDICATOR	ABILITY	
				ABLE	UNABLE
1.	1.2. Writing	1.2.1. Recognizing stationery 1.2.2. Writing practice	1.2.1.1. Indicating stationery 1.2.1.2. Mentioning stationery 1.2.1.3. Distinguishing stationery 1.2.2.1. Sit position 1.2.2.2. <i>Hands position (validator 2)</i> 1.2.2.3. Create a line 1.2.2.4. Tickening the dotted line 1.2.2.5. Writing letters		
2.	2.1. <i>Pasting (validator 1)</i>	2.1.1. <i>Recognizing materials for pasting</i> 2.1.2. <i>Pasting practice</i>	2.1.1.1. <i>Indicating materials for pasting</i> 2.1.1.2. <i>Mentioning materials for pasting</i> 2.1.1.3. <i>Distinguishing materials for pasting</i> 2.1.2.1. <i>Pasting a paper by circle pattern</i> 2.1.2.2. <i>Pasting a paper by a certain pattern</i>		

3.	3.1. Scissoring	3.1.1. Recognizing a tool for scissoring	3.1.1.1. Indicating a tool for scissoring 3.1.1.2. Mentioning a tool for scissoring		
		3.1.2. Recognizing materials for scissoring	3.1.2.1. Distinguishing a tool for scissoring 3.1.2.2. Indicating materials for scissoring 3.1.2.3. Mentioning materials for scissoring 3.1.2.4. Distinguishing materials for scissoring 3.1.3.1. Hands position 3.1.3.2. Scissoring a paper by circle pattern (validator 2) 3.1.3.3. Scissoring a paper by a certain pattern		
	3.2. Folding	3.2.1. Recognizing folding materials	3.2.1.1. Indicating folding materials 3.2.1.2. Mentioning folding materials 3.2.1.3. Distinguishing folding materials		
		3.2.2. Folding practice	3.2.2.1. Folding with 2 folds 3.2.2.2. Folding with many folds		

4.	4.1. Squeezing	4.1.1. Recognizing a materials for squeezing	4.1.1.1. Indicating materials for squeezing 4.1.1.2. Mentioning materials for squeezing 4.1.1.3. Distinguishing materials for squeezing		
		4.1.2. Squeezing practice	4.1.2.1. Squeezing a sponge 4.1.2.2. Squeezing a paper 4.1.2.3. <i>Squeezing a paperboard</i> (validator 2)		

2. Discussions

This research is a demand for needs in education, especially for children with special needs as an effort to develop all children's potential. One of the efforts made to explore the ability or potential of children is carried out through assessment.

In the opinion of Rosenberg (1982) quoted by Suwandari and Mulyati (2010: 4) that "Assessment is a process of collecting information that will be used to make considerations and decisions related to children's learning". Assessment is an activity carried out before learning to determine the basic abilities of children in determining the next learning program, one of which is fine motor skills.

According to Dini and Sari in Afandi (2019: 57) stated that "fine motor is a motor activity that involves the activity of small or fine muscles, this movement requires eye and hand coordination and good motion control that allows it to carry out accuracy and accuracy in motion". Fine motor is an activity that involves small muscles that require eye coordination with hand movements such as writing, squeezing, scissoring, and pasting. Fine motor is one of the abilities that autistic children need to have.

According to Yuwono (2009: 2) autism is "A very complex / severe neurobiological development disorder in a long life which includes disturbances in aspects of social interaction, communication and language, behavior and emotional disorders and sensory perception even in motor aspects". Autism has neurobiologic disorders that have an impact, one of which is on their motor aspects. Therefore, it is necessary to compile a fine motor assessment instrument to determine the abilities and disabilities of children.

In the preparation of fine motor assessment instruments, teachers try to find out information about children's abilities and disabilities. By having good motor skills, children will be able to participate in various learning activities well. Factual conditions in the field of autistic children experience disturbances in fine motor.

In general, children are able to trace, squeeze, stick, and scissor, but children still need guidance. In compiling fine motor instruments, teachers and researchers formulate learning objectives from the applicable curriculum accompanied by input from 2 different schools to perfect the assessment instruments that have been made.

The preparation of fine motor assessment instruments carried out focuses on the ability of finger muscles and eye coordination with finger muscles, which is more on material in using stationery such as pencils, squeezing sponges and paper to find out the ability of finger muscles, scissors to find out their ability to use scissors correctly, thickening lines to determine the ability to coordinate hands with eyes. In arranging assessment instruments, researchers work together with teachers, parents and principals so that the results of the instruments that have been compiled can be used in schools.

D. CONCLUSIONS AND RECOMMENDATIONS

Based on the results of research conducted at SKh Putra Putri Mandiri, the following conclusions were raised:

1. Conclusions

a. General Conclusions

Based on the discussion about the preparation of fine motor assessments for grade V SDLB autistic children, it can be concluded that actually the preparation of assessments is very important to be carried out in schools to find out the assessment instruments are prepared and can be applied to see and find out the extent of the fine motor skills of autistic children and the results of the assessment are used to create appropriate fine motor learning programs for autistic children.

b. Specific conclusions

In general, autistic children are able to follow the stages in fine motor learning such as writing, scissoring, folding, pasting, and scissoring. In the implementation of fine motor learning, the initial stages of students can be given as basic skills. Then teachers and researchers compile fine motor assessment instruments in order to determine the abilities and disabilities of children so that the assessment results can be used as a tool to create learning programs. The results of assessment instruments conducted by teachers and researchers were validated on teachers from 2 different schools to perfect fine motor assessment instruments.

The preparation of fine motor assessments for autistic children should be prepared properly and correctly according to the stage of development and assessment results of autistic children.

2. Recommendation

In this study, the recommendations in this study were addressed:

a. For Teachers

With the preparation of this assessment instrument, it can be used as information and input material for implementing educational service programs for autistic children, especially in fine motor skills.

b. For Principals

With the preparation of fine motor skills assessment instruments for autistic children, it is very helpful for schools to compile and retrieve mapping data related to fine motor skills, especially autistic children so that policy making will be right on target in accordance with valid and in-depth data. For Parents With this assessment, parents can understand the advantages and disadvantages of their sons / daughters so that parents can collaborate with teachers in improving children's abilities at home. For Researchers Can gain knowledge and experience in the form of direct practice where research results can be used as a foundation in providing educational services and opening knowledge insights in making scientific papers.

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