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Early Intervention for Children with Visual Impairment

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Abstract

Children with visual impairment tend to fail in understanding body images accurately, as a result of limited exploration, limited movement, and overprotective which will affect the delay in motor development. BS is a child with visual impairment who has obstacles in the process of orientation and mobility. So that it requires an early intervention program that is expected to be able to help BS to get to know their environment. Early intervention programs that will be applied to BS are orientation and mobility. This research uses a descriptive method with a qualitative approach. The research data was obtained through observation, interviews, and documentation. The results showed that before the early intervention BS got a score of 65, because BS had not yet understood the concept of early intervention. After early intervention the BS value shows an increase of 90.

Keywords: early intervention, children with visual impairment

INTRODUCTION

The process of developing a child does not only increase in weight, size and age, but also increases in his movement activities. The development of milestone motors that are late can affect self-regulatory on the environment. This is related to children with special needs who have a wide range and variability in motor skills. One of them occurs in children with visual impairment. According to Nakata (2003), children with visual impairment are those who have a combination of visual acuity of less than 0.3 (60/200) or who have a higher level of visual function abnormality despite using a magnifying glass aid. Fallen and Umansky (1985) that children with visual impairment tend to fail to understand body image accurately, as an impact of limited exploration, limited movement, and overprotective which will all affect the delay in motor development.

Visual impairment cause them to have three limitations of cognitive function, according to Lowenfeld (in Scholl, 1986), namely, (1) experience, (2) orientation and mobility abilities in their environment, and (3) interaction with their environment. Children with visual impairment have difficulty controlling their own position and have no perception of the space outside that they occupy.

Every child who has visual impairments has different characteristics. So, in an effort to handle it is also different. To find out these characteristics, identification and assessment is carried out first. Assessment is a systematic and comprehensive process regarding the obstacles and needs of children, so that the results can be used for the main foundation in determining an early intervention program.

According to Sidiq (2015) the children with visual impairment have no nervous system disorders but did not get the opportunity to learn motion system skills. Therefore children with visual impairment have obstacles in their motion skills.

Based on the results of the assessment conducted, the researchers found that BS is a children with visual impairment who has obstacles in the process of orientation and mobility. So that it requires an early intervention program that is expected to be able to help BS to get to know their environment. According to Sunardi and Sunaryo (2007) early intervention is based on the objective conditions of children individually, so that what will

be done really touches on the underlying problems faced, so the results can be meaningful and functional for children.

Early intervention given to the subject of this study relates to its orientation and mobility. Because, basically children with visual impairment use the sensory ability of touch and hearing as the main means of learning. This is due to the fact that children with visual impairment have little light perception and perception of form or can not see at all.

Furthermore, Fallen and Umansky (1985, p. 189) suggest that early intervention refers to additional services or modifications, strategies, techniques, or materials needed to change stunted developments. Children with visual impairment experience obstacles in the perception sensing feedback system that is very important in the concept of learning, such as: introduction to shape, size, and space (spatial). (Sunardi and Sunaryo, 2007).

According to Doods (Sunanto, 2016) mobility orientation can be done in two ways, namely using sequence methods and cognitive map methods. The sequence method is sequential points in the environment, while the cognitive map method is a topographical description of the general relationship between various points with the environment.

Early intervention programs that will be applied to BS are **orientation and mobility**. Rahardja (2010) **orientation is the process of using the senses that are still functioning to determine the position of the self and its relationship with the objects that exist in its environment**. Whereas **Mobility is the ability, readiness, and easy to move and move in an environment**. Children with visual impairment must understand well about their concepts so that they can easily bring the environment towards themselves or bring themselves into the environment. Rahardja (2010) children with visual impairment must have a functional understanding of specific orientation components such as:

1. Landmarks (terrain features), tactual or sound instructions, smells, temperatures that are easily recognized and known in advance and have a permanent location in the environment.
2. Clue, any sound, smell, touch, kinesthetic, or visual stimulation that affects sensing that can immediately provide information to determine his position.
3. Indoor Numbering System, pattern and arrangement of room numbers in a room.
4. Measurement (measurement), action or process of measuring or determining a dimension for sure or approximately from a space by using a tool.
5. Compass Direction, the direction of the wind determined by the magnetic field of the earth.
6. Self familiarization, the process of combining the five orientation components. Children with visual impairment since early birth, need an orientation to the learning process longer than children with visual impairment who are not from birth.

METHOD

This research uses a descriptive method with a qualitative approach. The research was conducted on a child with visual impairment on a 9 years old. The first step is collecting data through observation, interviews and documentation studies. Observation aims to see child development based on milestone. Interviews addressed to parents and teachers who are interested in exploring deeper data about the condition of children from

birth to the present. While the documentation consists of sounds and images collected to help understand data records.

The second stage is data analysis, according to Milles and Huberman (Creswell, 2012) there are three steps, namely data reduction, data display, and data verification. Data reduction to focus the research objectives and draw conclusions for taking action. Display data to organize data that has been obtained from research. Verify data to analysis data and draw conclusions to get new findings.

FINDING AND DISCUSSION

Finding

The first stage carried out in descriptive qualitative research is by conducting early identification of children with visual impairments. Based on the results of identification carried out in March are:

Tabel 1. Instruments for early identification of children with visual impairments

No.	Indication	Yes	No	Explanation
1.	Watery eyes	√		Watery eyes every 5 minutes
2.	Eyes reddened		√	No obstacles
3.	Wink often	√		Every 4 seconds winks
4.	There are often eye disorders		√	-
5.	Cockeye		√	-
6.	Often tripping over objects or bumping into people	√		Blind Totality
7.	Tilt your face or close his eyes when you see	√		Blind Totality
8.	Difficulty counting fingers at a distance of one meter	√		Blind Totality
9.	Move his head to two sides when reading		√	Blind Totality
10.	Difficulty finding objects at a certain distance	√		Blind Totality
11.	Difficulty doing something that requires vision	√		Blind Totality
12.	Hold the book too close or too far from the eye	√		Blind Totality
13.	Frequently ask friends when writing from the board	√		Blind Totality
14.	Difficulty reading the writing on the board	√		Blind Totality
15.	Often hit objects	√		Need helping

The next step after the researcher conducts early identification is assessment or collection of children's information individually and in the environment, as a basis for making a decision. (Sunardi and Sunaryo, 2007, p. 84)

Tabel 2. Assessment for children with visual impairments through orientation and mobility

No.	Observed Aspect	Score			Information
		3	2	1	
1.	a. Landmark				
	1) Past the incline		√		Need helping
	2) Pass the stairs		√		Need helping
	3) Skip the obstacles	√			Without helping
	4) Past the derivative		√		Without helping
	5) Recognizing classrooms			√	has not been able to

2.	b. Clue				
	1) Understanding a place through the senses of touch			√	has not been able to
	2) Get to know space with sound or sound			√	has not been able to
	3) Determine the direction of self position in the environment			√	has not been able to
3.	c. Numbering System				
	1) Understanding how many steps the child must walk from the school gate to the class			√	has not been able to
	2) Understanding how many times he had to change the direction of the road from the school gate to the class			√	has not been able to
	3) Understanding how many steps a child must walk from first grade to another class.			√	has not been able to
	4) Understanding how many steps he has to walk to the toilet.			√	has not been able to
4.	d. The direction of the wind				
	1) Understand the concepts of right and left	√			Without helping
	2) Understand the concepts of front and back	√			Without helping
	3) Understand the concept of straight / straight walking		√		Need helping
	4) Can do 90 degrees and 180 degrees of rotation			√	has not been able to
5.	e. Measurement				
	1) Understanding large and narrow rooms		√		Need helping
	2) Understanding long and short	√			Without helping
	3) Understanding the ratio of high and low	√			Without helping
	4) Understanding the comparison of big and small	√			Without helping
6.	f. Self familirization				
	1) Understanding where he was at that time		√		Need helping
	2) What are you doing there	√			Without helping
	3) How to get to the destination			√	Has not been able to
7.	g. Practice eating alone				
	1) Eat using a spoon		√		Need helping
	2) Hand and mouth coordination		√		Need helping
	3) Neatness when eating	√			Without helping
	4) Niceness when drinking use a glass	√			Without helping
Total score				53	

$$: \text{Asessment} = \frac{\text{the number of score obtained}}{\text{maximal score}}$$

$$\text{Asessment} = \frac{53}{81} \times 100\% = 65$$

80%-100% = able to do a very good program

60%-79% = quite capable of doing the program

<59% = not able to do of the program

Based on the assessment results and reinforced by interviews with parents and teachers, BS needs to be given an intervention program that relates with principle of orientation and mobility. So that requires several techniques that can be used in implementing the program. Early intervention programs for BS can be seen in the table below:

Table 3. Results of the Early Intervention Implementation for children with visual impairments

N o.	Observed Aspect	Score			Information
		3	2	1	
1.	a. Landmark				
	1) Walk through the incline	√			Without helping
	2) Walk through the obstacles	√			Without helping
	3) Walk through the stairs	√			Without helping
	4) Walk through the derivative	√			Without helping
	5) Recognizing classrooms		√		Need helping
2.	b. Clue				
	1) Understanding a place through the senses of touch	√			Without helping
	2) Know space with sound		√		Need helping
	3) Determine the direction of self position in the environment		√		Need helping
3.	c. Numbering system				Need helping
	1) Understanding how many steps the child must walk from the school gate to the class		√		
	2) Understanding how many times he had to change the direction of the road from the school gate to the class	√			Without helping
	3) Understand how many steps a child must walk from first grade to another class.	√			Without helping
	4) Understanding how many steps he has to walk to the toilet.		√		Need helping
4.	d. The direction of wind				Without helping
	1) Understand the concept of right and left	√			
	2) Understand the concept of front and back	√			Without helping
	3) Understand the concept of straight / straight walking	√			Without helping
	4) Can do 90 degrees and 180 degrees of rotation	√			Without helping
5.	e. Measurement				Without helping
	1) Understanding large and narrow rooms	√			
	2) Understanding long and short	√			Without helping
	3) Understand the ratio of high and low	√			Without helping
	4) Understand the comparison of big and small	√			Without helping
6.	f. <i>self familiarization</i>				
	1) Understanding where he was at that time		√		Need helping
	2) What are you doing there	√			Without helping
	3) How to get to the destination		√		Need helping
7.	g. Practice eating alone				
	1) Eat using a spoon	√			Without helping
	2) Hand and mouth coordination	√			Need helping

	3) Neatness when eating		√		Without helping
	4) Niceness when drinking use a glass	√			Without helping
Total Score		73			

: Assessment = $\frac{\text{the number of score obtained}}{\text{maximal score}}$

$$\text{Assessment} = \frac{73}{81} \times 100\% = 90$$

80%-100% = able to do a very good program

60%-79% = quite capable of doing the program

<59% = not able to do of the program

Discussion

According to Sunardi and Sunaryo (2007) early detection or early identification can be through observation for some of child development by comparing developments with children who the same age. Mastery of skills that are in it is motoric, language, social, cognitive and child behavior

Based on table 1, early identification instrument of children with visual impairment, BS experiences total visual impairment that affects their orientation and mobility skills. Visual impairment in BS show several characteristics, namely, watery eyes every five minutes. BS often blinks his eyes involuntarily every four seconds. He is often tripping when walking.

In addition, he has difficulty in counting the fingers of his own hand, finding objects within a certain distance, and working on something related to vision. His movements still looked stiff, had difficulty reading the writing on the board, and often asked friends. Based on the characteristics seen in the BS, it is known that BS experiences obstacles in their orientation and mobility skills. So, in carrying out daily activities, BS still needs help and needs to be directed. This aims to develop BS orientation and mobility skills to minimize the impact that will occur next.

Based on the data obtained from the identification results, an assessment needs to be carried out as a follow-up to find out BS orientation and mobility skills. Assessment is given based on the principles found in orientation and mobility. Assessment is the activity of gathering information about the situation of children with special needs to make a decision or program that be adapted to the needs or characteristics of the child. (Yusuf, 2012).

According to Rahardja (2010) visual impairment must have a functional understanding of special orientation components such as landmarks, clues, numbering systems, wind direction, measurement, self-familiarization, and self-eating practices. In recognition of landmarks, BS still needs help. Whereas in the clue and numbering system, BS is still not able to carry out instructions properly. In recognizing directions, the BS has been able to distinguish right and left, front and back, up and down.

In addition, the BS's ability in measurement is good enough. He does not need help in understanding the concepts of a room that is large and small, wide and narrow, high and low, long and short. For self-understanding and self-eating practices, BS still needs help.

As a result of interviews with BS parents, BS experienced vision problems since birth because his mother had pain when pregnant. BS enters elementary school when he is 9 years old, so that BS can be said to experience delays in handling. The class teacher said

that the BS's mobility orientation ability is still below the ability of their peers. So that BS requires further handling.

Based on ecological theory according to Bronfenbrenner (in Azizah, 2009) said that the development and growth of children is determined by parents, family, environment and social welfare. The implementation of the intervention program is carried out at school and at home. So as to optimize early intervention programs in addition to involving teachers and parents. The researcher gave guidance to parents in implementing an early intervention program. So, parents can help implement the early intervention program. According to Foreman (Azizah, 2009) early intervention is part of an education program that takes place starting from a baby and lasts a lifetime.

Early intervention according to Fallen and Umansky (1985, p. 189) refers to additional services or modifications, strategies, techniques, or materials needed to change stunted developments. Early intervention aims to help children develop according to their abilities. Based on the table 3, the ability of BS in mobility orientation shows an increase. The principle of orientation and mobility of 90% can be finished by BS.

Orientation is the activity of the brain processing a stimulus, can be tactual stimulation, visual, auditory, olfactory or tasting. Orientation is mental readiness while mobility is physical readiness. Orientation and mobility go together, orientation will not work without mobility. (Andajani, 2016).

Best (in Martinez, 2001) argues that orientation and mobility learning skills in children with visual impairment cannot easily monitor their movements because visual impairment children can experience difficulties in understanding what happens when they move or stretch his body, bent or twisted his body.

Rahardja (2010) argues that visual impairment persons must have a functional understanding of special orientation components such as: First, landmarks components which include passing inclines, stairs, derivatives and obstacles. BS can be performed it. Landmarks component that still need help are in recognizing classrooms. Second, the clue, BS is able to master the instructions in finding classrooms marked with braille. The ability to recognize space with sound and determine the direction of self position still needs help. The third component is the numbering system, BS's ability to do the number of times he has to change the path from the gate to the school and how many steps the child has to walk from one class to another which is able to do it independently. While the ability of how many steps must be taken from the school gate to class and how many steps the child must walk from the classroom to the toilet still need help. Fourth, the child's ability to understand the direction of the wind where from the four components (the concept of left and right direction, front and back, straight motion, and doing 90-180 degrees rotation), BS is able to do it independently. The fifth component is a measurement where BS is also able to do everything independently. The components that are in it are understanding large and small rooms, understanding the ratio of length and short, understanding the ratio of high and low, understanding the ratio of big and small. Sixth, the ability of children in self familiarization, the ability of children to know himself more deeply. The ability to understand his position and how children can get to their destination still needs help. While the ability of children to recognize their goals is in a place that is capable of being done independently. Seventh is the ability of children to care for themselves (eating), children are able to eat independently. The ability of BS in early intervention programs through mobility orientation has increased significantly.

CONCLUSION

Based on the results of research and discussion of early intervention in children with visual impairments, data were obtained that BS experienced obstacles in mobility orientation. BS mobility orientation ability is below the average ability of its peers, because there is no early treatment by the environment. So the BS needs an early intervention program regarding mobility orientation. The results of the initial assessment of the ability of BS in mobility orientation got a score of 65 but after getting early intervention the ability of BS increased and got a score of 90. This proved that the early intervention program succeeded in increasing BS capability in orientation and mobility abilities.

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