

IMPROVING THE ABILITY EXECUTIVE FUNCTION THROUGH OUTDOOR PLAY

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Abstract. This study aims to improve the ability of executive function through outdoor play in Nurul Hidayah Kindergarten. The research method used is classroom action research developed by Kemmis and Taggart. The research subjects were children aged 5- 6 years with observation and documentation data collection techniques. This research was carried out in 2 cycles and each cycle was carried out for 3 meetings. The results of the increase in the study were 56.29% in the pre-action in the sufficient category, after the action in the first cycle increased to 68.84% in the good category, in the second cycle increased to 90.12% in the very good category.

Keywords: ability executive function, outdoor play.

INTRODUCTION

Early childhood is a child who is in the age range of 0 to 6 years. Early childhood education is a coaching effort in nurturing, guiding, and stimulating growth and development so that it is more optimal. There are 6 aspects of development that must be improved, namely aspects of cognitive development, language, social emotional, religious and moral values, art and motor skills (Sujiono, 2009). First, the development of religious and moral values where children are taught to have a polite attitude towards the people around them, knowing that there is a god and the religion they adhere to. Second, physical-motor development where the child will move a lot using small muscles and large muscles. Third, cognitive development, namely where the child will solve his own problems when playing or studying in groups with his friends. Fourth, language development where children are taught to mature language development in the context of playing such as role playing, storytelling, and telling stories with their own version. Fifth, social-emotional development, namely children will be taught how to have a sensitive attitude towards something and social skills and emotional maturity when playing. Sixth, art development is where children can explore, express and appreciate art while playing (Peraturan Menteri Pendidikan Dan Kebudayaan RI, 2014).

Early childhood cognitive development of 80% has been achieved at this time, so children must get stimulation so that they can develop according to the stages of child development. The basis of cognitive development is executive function (EF) (Hernández et al., 2022). EF is a child's ability to control, adapt, regulate, start processing information and behavior (Diamond, 2013). EF plays an important role in children's cognitive development which is an aspect of children's school readiness (Hernández et al., 2022). Unfortunately, in fact, EF has never been a factor to be considered in preschool (Hermahayu et al., 2020). Even

though EF is an important ability for physical mental health, success in life, cognitive and psychosocial development (Garon et al., 2008). Several studies have proven that EF is an important factor in a child's school readiness. There is a relationship between EF and children's academic achievement (Blair, 2002), good mental health (Brocki & Bohlin, 2004), and social adjustment (Razza, 2009). This shows that the ability of EF in preschool-age children is important so that it can provide stimulation for the further development of EF.

There are three core components of EF, namely working memory, cognitive flexibility, and inhibition (B et al., 2004). The first component of EF working memory is the ability to store information in the mind and then use it or in other words work with information that has recently been obtained [4]. Working memory is very important so that children can understand what happened from time to time, therefore it always requires the ability to deviate from what happened before and what came next (Hermahayu et al., 2020).

The second component of EF is cognitive flexibility, which is closely related to creative thinking, seeing things from different perspectives, and quickly and flexibly adapting to changing situations (Diamond, 2013), (Monette et al., 2011). Cognitive flexibility consists of several aspects, the first is being able to change perspectives spatially (for example seeing things from a different perspective), the second is the ability to change the way you think about something (thinking outside the box). This second aspect, for example, if one way of solving a problem doesn't work, then you can use another way by solving it again by forming or compiling plans or ideas in your mind that have never been considered before. The third aspect involves the ability to be flexible in adapting to changing or priority demands, to admit mistakes, and to take advantage of situations that suddenly arise or change, or take unexpected opportunities from these situations (Diamond, 2013).

The first last component of EF is inhibition which includes self-control (behavioral inhibition), self-control from distractions, surviving impulsive actions, selecting selective attention). Inhibitory control involves the ability to control one's attention, behavior, thoughts, and/or emotions to reject/override strong internal drives or external lures, but to do what is more appropriate or necessary (Diamond, 2013). Without the control of inhibition, the child will be under the control of impulses, doing habits (conditioned responses), and/or stimuli in the environment that attract him to react in a certain way. Thus, inhibitory control allows children to change and choose how individuals react and how they behave (Hermahayu et al., 2020). Based on the explanation above, it can be concluded that EF is an important ability for preschoolers. Good EF skills can help a child pass the transition from preschool to elementary school smoothly (Hermahayu et al., 2020).

In Indonesia, especially in the Kebumen Regency, the results of the ability of EF on preschoolers have never been done. Because of this, through this research, trying to find out the ability of EF in preschool children. Based on initial observations on children aged 5-6 years at Kindergarten Nurul Hidayah Kebumen, the ability of EF in children is still not optimal, some children cannot follow existing rules, there are 10 out of 15 children, they cannot tidy up toys neatly, there are 9 out of 15 children, and still there are those who can't give in to their friends 10 out of 15 children.

EF is very useful for children's readiness to enter higher education, EF can also train children to be responsible for all the problems they face, to be able to direct their own behavior, and self-monitoring skills (self-monitoring) and therefore to help increase EF one way for children is by doing activities outside the classroom or outdoor play, outdoor play is an activity outside the classroom which has many benefits for child development, the benefits of outdoor play are great for children's ability to control themselves because a motivating child's learning environment is one of the drivers growth and development of children, especially in

terms of ability or intelligence.

Outdoor play learning is very important for early childhood, outdoor play learning and teaching methods are very appropriate in educating children, helping children master various kinds of learning in outdoor play, as well as increasing children's achievements compared to other children whose learning system is in class. Children will understand lessons more easily than learning in class (Gunayanti et al., 2015). Outdoor play acts as a place for early childhood in expressing their desires, outdoor play is also a very interesting place where children can develop according to their age (Burriss & Burriss, 2011).

With outdoor play, various different characteristics possessed by children can be facilitated to become a force for achieving success together or individually for children, and for optimal development of children themselves (Francis, 2015). Children who are very easily bored and bored can be treated with various kinds of outdoor activities such as new activities, exciting games in an atmosphere and environment that is different from their daily lives. Outdoor play space in young children is important for child development and policy making, because outdoor play is a consistent predictor of physical activity, which is related to children's social, mental, and child health (Angraini, 2015). If using a structured playground correlates with different EF skills than using open spaces, it can be used by parents, teachers, and administrators to facilitate children's positive development. Based on the explanation above, the researcher will conduct research in the form of action research entitled "Improving Executive Function Capabilities through Outdoor Play in Children Aged 5-6 Years".

RESEARCH METHOD

The research method used by researchers is classroom action research developed by Kemmis and Taggart. The classroom action research model developed by Kemmis and Taggart is a spiral model which means that the learning cycle is carried out repeatedly and continuously and children's abilities are increasing over time where the implementation of classroom action research includes planning, action and observing (observation) and reflection (Wahyuni & Erdiyanti, 2020).

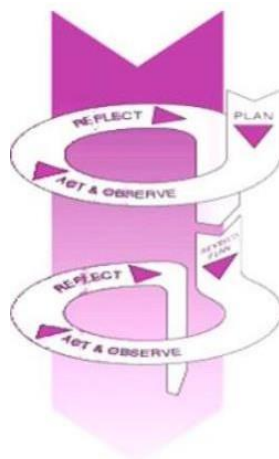


Fig. 1. Kemmis and Taggart's spiral model of classroom action research

Information:

Cycle I

1. Plan (Planning)
2. Action & Observe
3. Reflect

Cycle II

1. Revised Plan
2. Action & Observe
3. Reflect

The subjects studied were children aged 5-6 years with a total of 15 children consisting of 9 boys and 6 girls. These 5-6 year olds have problems with EF. The purpose of this observation is to obtain valid data by collecting data through observation and documentation when learning activities are taking place (Azlina & S., 2012). The data analysis technique used is descriptive qualitative technique with the following percentages (Azlina & S., 2012):

$$P = \frac{F}{N} \times 100\%$$

Information :

P = Prosentase

F = Total Score obtained

N = Maximum number of scores that must be obtained

The formula is implemented into categories:

1. Categories (%): 0-20 = Very Less
2. Categories (%): 21-40 = Less
3. Categories (%): 41-60 = Enough
4. Categories (%): 61-80 = Good
5. Categories (%): 81-100 = Very Good

RESULT AND DISCUSSION

1.1 Pre Action

Pre-action is carried out to determine the initial condition of the child before the action is carried out. Researchers observed the ability of EF in children. In the first results of the observation there were problems when the researchers observed the teacher's learning process

by asking questions to the children, but there were still some children who did not focus on the teacher's questions. The teacher also has to repeat the question by getting the child to focus on the teacher's question. It can be concluded that on the first day of observation the child still cannot focus.

In the second observation the researcher observed and found problems during marching activities in the field but children who wanted to play alone did not listen to instructions from the teacher. In the learning activities the teacher provides sports games and explains the rules of the game, but there are still children who do not follow the rules and play at will. It can be concluded that the child is still unable to focus and cannot follow the teacher's instructions that have been conveyed. The results of observing the ability of EF before taking action are:

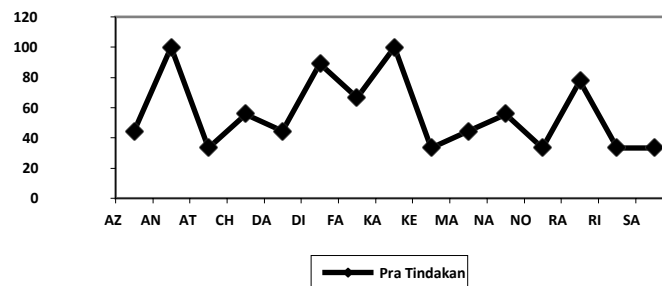


Fig. 2. Cumulative Data on Observation of EF Ability During Pre-Action

Based on the results of the analysis of games for EF, it can be seen that there are many deficiencies in learning that need improvement to improve the learning process for children. Therefore, the improvements made included designing learning programs to improve EF's abilities. In knowing the condition of a child's EF abilities, researchers made observations based on instruments that had been tested on other children. Observations were made by teachers and researchers during learning activities outside the classroom.

Cycle I

Cycle I was carried out in three meetings. In Cycle I all outdoor play activities used relay games. The assessment indicators seen are that the child is able to follow the teacher's orders, the child is able to walk a specified distance, is able to complete the game, the child is able to pass obstacles well in playing, the child is able to use playing tools in their function and the child is able to place himself according to his duties in each game. During activities outside the classroom, the researcher observed the ongoing activity to see that the action was in accordance with what was planned. The results of the researcher's observations showed that the implementation of the actions carried out was in accordance with the plan for the ability of the children's EF up to the 3rd meeting to show an increase even though the increase was not yet reach the maximum. The results of each action are seen qualitatively. The results of observing EF's ability after the action was taken in Cycle I are as follows.

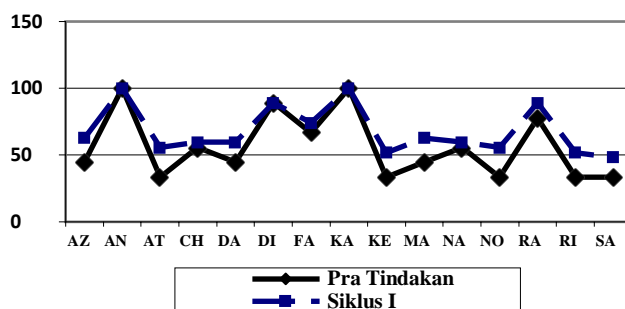


Fig.3. Cumulative Observation Data on Children's EF Ability During Cycle I.

In the implementation of the learning process cycle 1, there are still many deficiencies in each meeting, several situations that occur in the learning process in implementing outdoor play and the development of children's EF abilities are different. Some events that occur in the learning process include the learning environment during research, which is inadequate, thus making children less focused on games or assignments given by teachers to children. Second, when the research was taking place, there were still many children who were busy playing alone, not listening to what the teacher was saying. Third, when the researcher was documenting the activity, there were some children who couldn't focus on playing, sometimes looking at the camera with style.

The strengths in cycle 1 are that teachers at Nurul Hidayah Kindergarten support researchers to increase children's EF, the media in baton relay games, leaky pipes, and balloon train and fire in the hole are safe for children. The follow-up plan based on the results of the reflections carried out, the researchers and collaborators discussed the action plan for cycle 2, namely replacing outdoor play on the baton relay with a leaky pipe and balloon train and fire in the hole. Second, there is a leaky pipe game which is held for 3 days and the balloon train and fire in the hole game which is held for 2 days. Third, improving teacher skills in explaining leaky pipe games and balloon train and fire in the hole. Researchers hope that the ability of EF in children aged 5-6 years at Nurul Hidayah Kindergarten can increase according to the expected target.

Cycle II

Cycle II was held in three meetings. After cycle 2, the researcher observed children's development in outdoor play activities. Many children have seen a good increase in the development of executive function, and in cycle 2 the researchers showed that the implementation in cycle 2 went well. The children's EF abilities up to the 6th meeting seem to show a better improvement than the previous results in cycle 1. The results of observing the children's EF abilities after the action was taken in Cycle II are as follows:

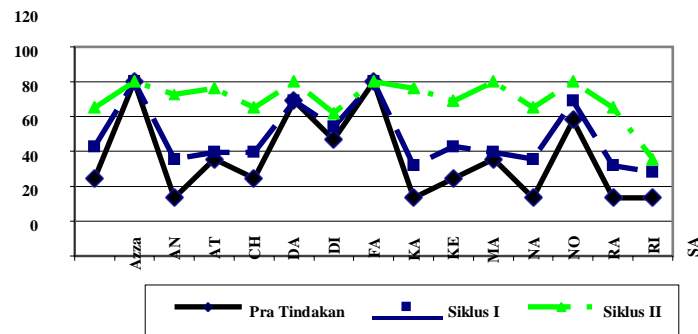


Fig.4. Cumulative Observation Data of Children's EF Ability During Cycle I

The implementation of actions in Cycle II is the result of improvements to the weaknesses that occurred in Cycle I. Based on the observational data in Cycle II, all of the children's EF abilities observed are already within the very good criteria. Children are very enthusiastic in following the learning using stick relaygames so that EF cognitive ability can increase significantly. Thus, based on the results of observations in Cycle II, the researcher can conclude that the purpose of this research has been achieved and the children's EF ability has been successfully improved, so this research is sufficient until Cycle II. The improvement of the child's EF ability before the action, Cycle I, to Cycle II can be seen in the graphic below:



Fig. 5. Cumulative Observation Data of EF Cycle II Ability.

The ability of children's EF has increased significantly. Before the action was taken 56.26% was in enough, after the action was carried out in Cycle I and Cycle II it increased to 68.64% in Cycle I was in the good category and 90.12% in Cycle II was in the very good category

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Based on the results of classroom action research carried out collaboratively by researchers and teachers during six meetings in two cycles that children's EF abilities through outdoor play experienced an increase and success in research. The EF abilities observed in this study included children being able to follow teacher orders, children being able to walk a specified distance, being able to finish games, children being able to pass obstacles well in playing, children being able to use playing tools in their function and children being able to place themselves according to with his duties in each game.

Outdoor play provides stimulation for various aspects of child development, one of which is cognitive and EF is part of that development (Manurung et al., 2021). Doing outdoor play activities can give children freedom, adventure, confidence and opportunities to solve problems (Beyer et al., 2015). Furthermore, through outdoor play activities will be able to reduce fear in children (Shi, 2017). In addition, through outdoor play, children become individuals who can control their emotions and make children think creatively to try new things in activities (Acar, 2014). Furthermore, another opinion is that outdoor play activities carried out by children can play an important role in the development of courage and self-confidence as well as the development of EF (Suryastuti et al., 2016).

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