

THE EFFECT OF MATHEMATIC GAMES TOWARDS CHILDREN COGNITIVE DEVELOPMENT AT B GROUP IN PAUD WIDYAMANDALA AND PAUD AL HIKMAH BONDOWOSO

Anggraeny Unedia Rachman

PAUD Lecturer at FKIP in the University of Muhammadiyah Jember
anzani80arifin@yahoo.com

Abstract

This research background that is in the BIPA learning process, Indonesian language errors cannot be avoided by a foreign learner. BIPA student competence with knowledge of the rules, Indonesian vocabulary, and culture is limited can be a error factors. Thailand learners often face difficulties when they have to write in Indonesian, especially in forming sentence structures that raw and acceptable. This study aimed to describe the linguistic taxonomy seen through the study of syntax to find syntax errors in Thailand learners writing, find errors that are most dominant, and describe the factors that caused the error. Data collected from essay writing narrative of Thailand students studying in Faculty of Teacher Training and Education Study Program Language and Literature Indonesia, University of Muhammadiyah Jember. The object of research is the use of the phrase that contains errors syntactic structure.

This study uses descriptive qualitative method, describe the state of naturals regarding the errors use of syntactic structure on a narrative essay Thailand students. Data were analyzed using agih metodhs with baca markah techniques and padan otografis methods with pilah unsur penentu technique, by classifying errors using linguistic categories. The research instrument is the human istrument, which is a key instrument by using the criteria of shape and distribution. In seeking the causes of syntactic errors by Thailand learners, The main theory used is based on the theory Corder (1981), Richard (1985) and Selinker (1994).

The assumption in the research error analysis is that the language teaching should be focused on the greatest frequency learner speak errors. Search their causal factors and the kinds of mistakes made by learners is more important because it can be used as a basis to correct learn errors and speak errors of the learner.

Keywords: *taxonomic linguistics, syntax, BIPA*

I. Introduction

Cognitive development is aimed for children in order to make them able to explore their surroundings through their five senses, so that by having knowledge, they can survive and become a human that is appropriate as God's creature that has to preserve what exists in this world for themselves and others (Susanto, 2011).

According to early childhood education paradigm that will develop all children's potential, integrated, and fun so that various potentials can be developed simultaneously. Therefore, mathematic games that have been introduced in early times would orientate to the children's cognitive development.

In the aspect of cognitive development, competence and learning outcomes that are hoped to children is to make children able and have logical, critical, reasonable, problem-solving, and find the cause-effect relation in solving the problem that they face.

Piaget (in Yamin, 2010) stated that human through four stages in cognitive development, and each of them related to age and consists of distinctive thinking capabilities. Those four stages in cognitive developments are sensory motor stage, pre-operational stage, concrete operational stage, and formal operational stage.

Cognitive is a process of thinking i.e. the ability of an individual to connect, assess, and consider an event or incident. Cognitive process is related to intelligence that indicates someone from various interests mainly on ideas and learning.

Cognitive development depicts how the children's thinking developed and functioned so that they can actually think. Susanto (2011: 52) consider that cognitive development is a development from mind. Mind is a part of thinking that comes from brain, the part that is used i.e. to comprehension, reasoning, knowledge, and understanding. Children's mind has been activated since they were born, from day to day in their entire growth. The mind development such as (1) learning about people; (2) learning about something; (3) learning about new skills; (4) acquiring many memories; (5) getting many experiences. As long as this development in line with their minds, so that they are going to be clever.

Mathematician (Sujiono, 2007) mentioned that math is something that is related to ideas or abstract concept which arranged hierarchically through deductive reasoning while mathematic games are learning activity about mathematic concept through games in natural daily life.

By playing mathematic games, children will understand the basic concept of learning counting in fun, safe, comfortable, and interesting environment.

Learning activity is supposed to be interesting and fun, so that it can fulfil the students' curiosity. Teacher role, care and interest from the teacher towards what the students say will encourage them to tell stories and experiences, including solving their own problems.

Problem-solving can be introduced since early ages by using concept that happens everywhere. The experience in problem-solving can give them chance to

split their thoughts and ideas with other children. The experience about successful problem-solving can make them confidence about the ability that they have. By playing mathematic games, the children will have an ability to think systematically because they are processing to solve their own problems by their own ways.

II. Research Method

This research uses quantitative research design. Quantitative research is a research that is focused on objective phenomena which then analysed quantitatively. The research data is quantified in the form of numbers and analysed by using statistics (Musfiqon, 2012). The design of the research is categorised as experimental research, conducted systematically, logically, and carefully by controlling every single condition. In experimental research, the researcher manipulates at least 1 variable, controls another relevant variable, and observes the effect towards dependent variable (Emzir, 2007).

An experiment usually involves two groups, one experimental group and one control group. Experimental group usually receives something new, a treatment under investigation. Meanwhile, control group usually gets something different or conventional treatment. Control group is needed to see the comparison whether new treatment is more effective than conventional treatment or not. The place of this research is PAUD Widyamandala Kembang and PAUD al Hikmah Bondowoso, in each B class that consists of 15 students. The technique of collecting data is through observation and documentation technique.

III. Research and Discussion

The effect of mathematic games towards children's cognitive development can be seen from T test analysis. In this research, cognitive development is measured when learning is on process that covers classifying things based on shape or color/size, classifying things by pair group, identify number concept, and identify letter concept.

Based on the research that is conducted, it can be known that cognitive development of students in experimental school i.e. PAUD Widyamandala Kembang Bondowoso is bigger than control school i.e. PAUD al Hikmah Tapen

Bondowoso, as displayed in picture 4.2. Mean score of the first meeting in experimental school is 85%, mean score of control school is 72.09%. In the second meeting, mean score of experimental school is 92.92%, and control school is 72.92%. In the third meeting, mean score of experimental school is 91.67%, and control school is 70.42%. In the fourth meeting, mean score of experimental school is 92.92% and control school is 73.75%.

Mean score of experimental school is 85% bigger than mean score of control school, 72.09%. Based on the activity criteria, it shows that children activity in learning at school is still in a good category ($80\% \leq Pa \leq 95\%$), while in control school, children activity in learning is in good-enough category ($65\% \leq Pa \leq 80\%$). This shows that the result of children's development achievement in school by having mathematic games has bigger significant improvement on cognitive development rather than control school.

Children build concepts through various daily activities that they do. Children often listen and say the words that are related to various things in their neighbourhood either from parents, teacher, or their friends. Natural environment is when children develop in social, emotional, cognitive, moral, even children language.

Experimental school i.e. PAUD Widyamandala Kembang Bondowoso is located in city area while control school i.e. PAUD Al Hikmah Bondowoso is located in remote area of a village. This makes children development different from each other.

By using mathematic games, children are able to improve their cognitive ability. In this case, cognitive development is shaped through direct experience that can be done by children through various trials or inventions. Children's cognitive can be developed through playing activity. This activity indirectly makes children learn about measurement, numbers, colours, shapes, and any other concepts.

In every addition and development of children, they have different characteristics. They need quite a long time to build cognition in their own because cognitive development needs the ability to think abstract. The ability of the children to think abstract is still imperfect and keeps developing in line with their age levels.

Meanwhile, the F score in the first meeting is 2,780 and in the second meeting is 2,860, in the third meeting is 4,421, and in the fourth meeting is 3,911. Where in F calculation, the first meeting until fourth meeting has reached significant level less than 5%. Therefore, in F Test analysis, it can be known that mathematic games have significant effect towards cognitive development of the children. Mathematic games are truly recommended to be implemented in Early Childhood Education because that thing can actually improve the children's cognitive ability.

IV. Conclusion

The activity of mathematic games in PAUD Widyamandala and PAUD al Hikmah Bondowoso uses learning-by-playing approach. By playing games, children unconsciously learn various things and develop all development aspects. Children cognitive development in playing mathematic games is better than children who play freely. This picture portrays improving children's cognitive ability can be done by implementing mathematic games which means children can classify things related to shape or colour / size, the ability of children in classifying this by pair group, the ability of the children to identify numbers concept, and the ability of children to know letter symbol. Children who has cognitive look more excited to interact with friends and teachers, and they always try to ask.

Teacher needs to know that various concept developments happens inside the children's body, so that they are able to plan and conduct learning activity precisely according to the characteristic of thinking and learning of early childhood education. Teacher has an important role in developing various kinds of learning experience that can fulfil the purpose of the program by its quality. Also, teacher has to be able to arrange learning activity that can make the students fulfil the standard competence. Teachers give more chance for the students to think, express their feelings, and find the solution for their own problems. This can motivate and make them creative in learning for the sake of positive development of the children themselves.

V. References

- Aqib, Zainal. (2009). *Belajar dan Pembelajaran di Taman Kanak-kanak*. Bandung: CV.Yrama Widya.
- Asmawati, dkk. (2008). *Pengelolaan Kegiatan Pengembangan Anak Usia Dini*. Universitas Terbuka, Jakarta.
- Arikunto, Suharsimi. (2007). *Prosedur Penelitian Pendekatan Praktik*. Jakarta: Rineka Cipta.
- Emzir. (2007). *Metodologi Penelitian Pendidikan*. Jakarta: PT. RajaGrafindo Persada.
- Fadlillah, Muhammad. (2012). *Desain Pembelajaran PAUD*. Jogyakarta: Ar-Ruzz Media.
- Hurlock, Elizabeth. (1991). *Perkembangan Anak Jilid I*. Jakarta: Erlangga.
- Musfiqon. (2012). *Metodologi Penelitian Pendidikan*. Jakarta: Prestasi Pustaka.
- Piaget, Jean. (2010). *Psikologi Anak (Terjemahan)*. Jogyakarta: Pustaka Pelajar.
- Sujiono, et. al. (2011). *Bermain Kreatif Berbasis Kecerdasan Jamak*. Jakarta: Indeks.
- Sujiono, Yuliani Nurani. (2011). *Konsep Dasar Pendidikan Anak Usia Dini*. Jakarta: Indeks.
- Sujiono, Yuliani Nurani. (2007). *Metode Pengembangan Kognitif*. Jakarta: Universitas Terbuka.
- Susanto,Ahmad. (2011). *Perkembangan Anak Usia Dini Pengantar Dalam BerbagaiAspeknya*. Jakarta: Kencana.
- Suyanto, Slamet. (2005). *Konsep Dasar Pendidikan Anak Usia Dini*. Jakarta: Direktorat Jenderal Pendidikan Tinggi.
- Suparno, Paul. (2001). *Teori Perkembangan Kognitif Jean Piaget*. Yogyakarta: Kanisius.
- Yamin, Martinis dan Jamilah Sabri Sanan. (2010). *Panduan Pendidikan Anak Usia Dini*. Jakarta: Gaung Persada (GP) Press.
- Yus, Anita. (2011). *Model Pendidikan Anak Usia Dini*. Jakarta: Kencana.