



Effect Of Experimental Methods On Early Children's Creativity

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ABSTRACT

Aim: The experimental method is one of the learning methods that can help encourage individual abilities by observing objects around them and creating a high sense of curiosity in individuals. With individual experimental methods will add knowledge, gain experience and be able to develop creative abilities. This article aims to review literature reviews, and articles from research related to experimental methods and early childhood creative abilities. Sample: The sample used in this study is a research journal with the topic of experimental methods or creativity according to the criteria of the selected journal, namely: 1) experimental methods, 2) children's creativity, 3) early childhood respondents. Method: The method used in this research is the search for scientific articles from several databases totaling 20 journals consisting of 15 national journals in the last 5 years and 5 international journals over the last 7 years and using certain keywords. The results of the discussion: literature review shows that the experimental method can provide a process for something happening and a solution, which can produce abilities in children, such as children's creativity abilities that can be stimulated by activities using experimental methods. Experimental methods can be provided through the introduction of science, science skills, or science learning. Science activities for early childhood include identifying colors, mixing colors, recognizing plants, recognizing animals, causes of natural events, and so on. This activity is related to the experimental method which also affects the creativity of early childhood. **Conclusion:** the experimental method is one of the experimental methods that is able to make children find and solve their own problems, this is able to foster creativity in early childhood.

KEY WORDS

creativity; experiments; early childhood learning

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INTRODUCTION

Early Childhood Education (PAUD) is education given to children from birth to 6 years of age which is implemented by providing educational motivation to increase physical and spiritual growth and development so that children have mature abilities for further education. (Susanto, 2017: 16).

PAUD is a form of management that can help in developing early childhood growth and development which includes developmental aspects such as aspects of Religious and Moral Values (NAM), language, cognitive, physical-motor, socio-emotional, and arts. PAUD is expected to facilitate what each child needs to support healthy and optimum growth and development of children in accordance with the values, norms and expectations of the community (Mulyasa, 2017). Meanwhile, there are other skills that need to be developed, among others, science, behavior, and abilities. Behavioral abilities are divided into two, namely spiritual behavior and social behavior. One of the abilities that exist in social behavior abilities is a creative attitude.

Creativity is very important for life. According to Maslow (in Munandar, 2014), the basic needs of individuals are the most important needs for humans. Therefore, the existence of creativity enables individuals to produce new works in the form of ideas, products, and methods that are useful for life.

Munandar (in Mulyani, 2019) explains that children who have creative abilities, usually have a high curiosity, enjoy fun and creative activities. Mulyani (2019) also said that children who have

good creative abilities are usually able to do an activity on their own, have high self-confidence, always have the courage to take risks from what they do, and don't care about the reproaches given by others.

Creativity is changing something that existed before into something new. Or it can also be said to combine two old ideas which are combined into a new idea. Meanwhile, Fakhriyani (2016) also defines creativity as the influence of the relationship between a person and the environment, the expertise to do new combinations, sourced from pre-existing news, data or parts, namely knowledge and experience received by individuals in families, schools, or from the surrounding community.

Fakhriyani (2016) suggests a creative definition with regard to the words process, product, person, and press or the environment that encourages a person to have a creative attitude. The word personal refers to intelligence, cognitive, and character or disposition. Creative attitude describes something that comes with the uniqueness of the character in relation to the environment. In the word process is the act of the scientific method by sensing complexity, problems, imbalances, and formulating provisional assumptions, correcting and re-observing until communicating the results. Creative products should be observable, new, useful for the environment. Meanwhile, the word press refers to the aspect of internal support that a person generates with his ability to support ordinary thoughts.

Each individual has creative abilities that must be developed from an



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early age. Individuals whose creativity is developed from an early age will certainly develop optimally. In contrast to individuals whose creativity is developed from an early age, individuals will tend to feel insecure, do not have broad interests, are not trained in solving problems, are not sensitive to the environment, and so on. So that individual creativity can develop optimally, educators need the right method at the time of learning.

Mursid (2015) argues that the learning method is a method used to obtain the desired results. And when connected with the learning process, the understanding of learning methods can be interpreted in a way that is used by teachers or parents to maximize the learning process which has the goal of obtaining the expected results. Through the learning method, it can convey opportunities and freedom to children to express their opinions, they express their own opinions and recognize their activities. In addition, it also makes it easier for teachers to get data and to carry out learning so that learning objectives can be achieved. In this way, the learning method can focus the teacher in teaching activities as well as the active learning of children.

There are various types of methods used in learning, namely the assignment method, lecture method, project method, demonstration method, discussion method, experimental method, field trip method, playing games, and so on. Methods that can involve children actively in carrying out activities are needed in learning activities, including the experimental method. Mulyasa (2017) suggests that

experimentation (experiment) is an activity that can support creativity skills, logical thinking skills, likes to observe, fosters a sense of curiosity, and a fascination for nature, knowledge and God.

The experimental method does not mean learning in a closed room such as a laboratory, but the experimental method in learning activities in early childhood means a learning method in which individuals can get new ideas or works that children have never found. The experimental method is able to improve children's skills such as creativity skills, logical thinking skills, likes to observe, and has a sense of admiration for nature and science.

The experimental method can share experiences with children through what it does. Examples of experimental activities in early childhood include blowing balloons using baking soda, mixing colors, observing watered and non-watered plants, and so on. Through experimental activities, children can understand the process of the occurrence of a thing, know the reasons for something can happen and how the solution or how the child deals with the problems that are in front of them. Based on this opinion, with the experimental method children are able to carry out experiments and show their own experimental results. The experimental method can encourage children's abilities, one of which is the ability of creativity.

Individuals in carrying out experimental activities will gain knowledge, gain experience, and develop their creative abilities. Through the experimental method, individuals

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are increasingly active when they think and act. Individuals are given the opportunity to carry out activities directly by conducting experiments, observing the experimental process, and concluding the experiment is supported by the facilities provided and mentoring by the teacher. Activities that involve children directly can produce new ideas or children's work, which can develop creativity in children.

With appropriate learning methods, it is hoped that children's creativity can develop optimally. This article aims to understand how effective the experimental method is to influence children's creativity.

RESEARCH METHOD

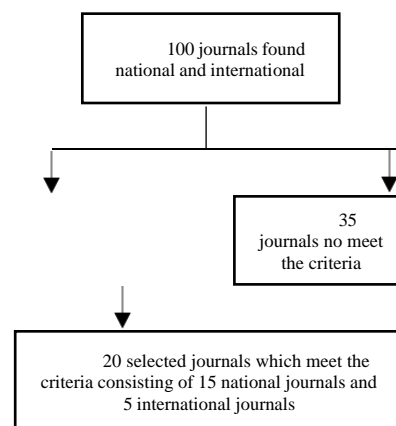
In this study is a secondary research in the form of *literature review* which means critical analysis (build or drop) of research that has been done with a certain core and questions for the field from scientific sources. Literature studies can be obtained from various sources including journals, books, documentation, internet, and libraries. The literature study method is a series of activities related to the method of collecting library data, reading and taking notes, and managing writing materials (Darmadi, 2011 in Yuliana et al, 2019).

This research was conducted using the literature review method carried out by looking for (compare), looking for inequalities (contrast), providing views (criticizing), comparing (synthesizing), and summarizing (summarize). The procedure for investigating articles in English is in accordance with the subject

of the article which is made using key words: "Creativity", "Learning childhood", "methods", "experiment", "childhood education", "experiment methods" to several databases such as GOOGLE SCHOLAR , RESEARCH GATE, WILEY ONLINE LIBRARY.

In this article, the researcher analyzes The independent variable, namely the experimental method, is also the dependent variable, namely creativity. The population in this article is all research articles related to experimental methods. The sample is a research journal with the topic of creativity. The criteria for the selected journal were: 1) the treatment given was related to experimental methods or the development of creativity; 2) respondents in research journals are early childhood; 3) References in the form of primary articles of approximately 20 articles 15 journals national journals with the last 5 years and international journals with the last 7 years quality, accredited and reputable.

The journal review flow in the literature review is carried out in accordance with Figure 1.





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Gambar 1. Review Structure

Literature review begins with the material written in a sequence from the most relevant, relevant, and quite relevant. Then read the abstract of each journal first to provide an assessment of whether the problem being studied matches what will be solved in a journal. Write important points and their relevance to research problems, to keep from getting entangled in plagiarism, the author should also write information sources and include a bibliography, if it is true that the information comes from someone's ideas or writing. Write notes, quotes, or information arranged systematically so that writing can easily be traced back if any time needed. (Darmadi, 2011 in Yuliana et al, 2019)



RESULTS

Table 1. Analysis Results

Critical analysis of the 20 research articles that become The samples in this review literature are presented in Table 1.

Researcher	Research Title	Year	Research Type and Design	Population	Sample	Variable	Data Collection Techniques and Instruments	Data analysis	Research result
1. Mundariyah	The influence of the BCCT learning model and independence on the creativity of playing blocks of children aged 4-6 years in Ciracas sub-district	2017	Experimental method with a 2x2 factorial design.	All children aged 4-6 years at TAAM Nurul Hidayah, Ciracas, East Jakarta.	Children aged 4-6 years at TAAM Nurul Hidayah with a total of 44 children.	Independent : BCCT learning model and independence, Dependent: creativity and playing blocks.	The technique of collecting data was using observations and questionnaires, while the data collection instruments used the item validity test and the reliability coefficient.	Two-way Anova.	Based on the results of the study, it shows that the BCCT and Independence learning models affect children's creativity.



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2.	Rachmi & Herdana	Optimization of Your Creativity Through Activities Montage At Kindergarten Age.	2018	The research design was Kemmis Taggart, which was conducted with three cycles and three actions / meetings in each cycle.	All children at TKRahman, Tangerang	Children aged 5-7 years in Ar-Rahman Kindergarten, Tangerang	Independent activity montage, Dependent: creativity	Checklist, interview, observation, documentation.	Validity and reliability	Based on the results of the study, montage activities had an effect on children's creativity as indicated by the increase in each cycle carried out.
3.	Afriani, et al	The effect of playing finger painting on the creativity of children aged 5-6 years	2016	The quantitative research used the causal associative method.	All children in group B1	The sample taken in this study was the total population of 23 children.	The independent variable is playing finger painting, while the dependent variable is creativity	Data collection techniques using observation guidelines	Regression analysis	Based on the results of the study, children's creativity scored 87%, while finger painting scored 83%. With these results it can be concluded that playing finger painting affects the creativity of children aged 4-5 years.



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4.	Asmawati	Increasing the creativity of early childhood through integrated learning based on multiple intelligence s.	2017	This research implemented with using the Kemmis and Mc Taggart model modified by Jamaris	All children aged 4-5 years in kindergarten Aisyiyah 10 Depok City	The samples taken were 22 children aged 4-5 years from the total population.	Independent : creativity, dependent: integrated learning based on multiple intelligences	Test form	Descriptive statistical analysis	By comparing the results of each cycle which always increases, it means that integrated learning based on multiple intelligences affects creativity.
5	Holis	Learning Through Play for Early Childhood Creative and Cognitive Development	2016	This study uses quasi-experimental research with a "nonequivalent control group design".	All students at Al-Kautsar Kindergarten	The samples taken were 21 children for the experimental group and 23 children for the control group.	The independent variable is creativity development, while the dependent variable is cognitive	Observation sheets, documentation, and interviews.	Pre-test and post-test	Based on the results of the study, children who took part in learning activities with the experimental group obtained higher results than the control group
6.	Windasari, et al	Early Childhood Creativity Development	2017	Quantitative research with associative	Early childhood in PAUD AL Fajr	The research sample taken in	The independent variable is creativity	Observation sheet	The data analysis used is simple	Based on the results of the study, it was concluded that



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	nt Through Project Methods		research type.	Labuhan Ratu East Lampung totaled 38 children.	this study was group B totaling 30 children.	development , while the dependent variable is the project method.		linear regression.	the project method was proven to have an influence on children's creativity.	
7.	Ubaidillah	Learning center BAC (Vahan Alam Cair) to develop children's creativity	2018	Qualitative descriptive method	All students at Kindergarten Ar-Rasyid Kartasura \	The samples taken were children aged 4-6 years in Kindergarten Ar-Rasyid Kartasura	Independent : BAC center, dependent: creativity	Observation, interview, and documentation	Data analysis using an interactive analysis model	Based on the results of the research, the steps in the BAC center can develop children's creativity
8	Sagala & Kamtini	The influence of printing activities on the creativity of group B children at Kindergarten Assisi Medan for the	2019	Quantitative research (experimental)	All students of class B Kindergarten Assisi Medan	The sample consisted of 113 children from group B who were taken randomly and then divided into two groups, namely the	The independent variable is printing activity, while the dependent variable is creativity.	Observation sheet	Descriptive statistics using the Mann Whitney test (U-Test)	Based on the results of the study, children who were the experimental group got higher results than children in the control group



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10.	Nofitasari, et al	The effectiveness of the experimental method on the ability to recognize colors in class A TK ABA Tobayan Sleman	2018	This study uses a quantitative approach with a quasi-experimental type	The population in this study were all children of group A in TK ABA Tobayan	The sample was 17 children from group A TK ABA Tobayan	The independent variable is the experimental method, while the dependent variable is the ability to recognize colors.	Oral test and documentation	T test (paired sample t-test)	In the research results there are differences in the value of the ability to recognize colors before and after being given the experimental method. Evidenced by the value of T count obtained as much as 38.276 and T table as much as 2.120, then it is obtained T count 38.276 > T table 2.120 which means there is an influence with the experimental method.
11.	Nellyana and Kamtini	The effect of the experimental method	2017	<i>True experiment al design</i> in the form of	All students aged 5-6 years are	The sample in this study were the children of	The independent variable is the	Observation	The analysis technique used in this	Based on the research results, there are differences in the



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	on the introduction of science for children aged 5-6 years in TK Perwanis Sei Batang Serangan Kec. Medan Baru Academic Year 2016-2017	post-test only control group	Perwanis Batang	group B classes B1 and B2 in Perwanis Sei Batang Kindergarten, totaling 20 children per class.	experimental method, while the dependent variable is the introduction of science.	research is descriptive statistics and imperial statistics.	value of introducing science before and after being given the experimental method. Evidenced by the value of T count is obtained as much as 6.17 and T table as much as 1.705, then it is obtained T count 6, 17> T table 1.705 which means that there is an effect with the provision of the experimental method.		
1 2.	Khaeriyah, et al Application of Experimental Methods in Learning Science to	2018	PTK	All children aged 5-6 years at Baiturrahman	Group B children who are in the second semester, consisting	The independent variables are the experimental method and	Observation and documentation	Qualitative and quantitative descriptive analysis	In the research results, the results of each cycle always increase. This means that the experimental



		Improve Early Childhood Cognitive Ability		Kindergarte n	of students at Baiturrahm an Kindergarte n	17 science learning. While the dependent variable is cognitive ability.			method affects science learning to improve cognitive.	
1 3.	Afriani	The effect of the simple science experiment method on children's learning interest in TK Aisyiyah Palu 1	2016	Qualitative descriptive research	All children at TK Aisyiyah 1 Palu	There were 20 children in group B5 at TK Aisyiyah 1 Palu	Independent : experimental method, dependent: interest in learning	Observation, interview, and documentation.	<i>Pretest</i> and Post-test	The results of the research carried out were the Very High (ST) category average with the pre-test value of 0% and the post- test score increased to 35.28%. The pretest score in the High category (T) was 3.33% and the post-test score increased to 17.61%. Then the pre-test score in the medium category (S) with a percentage of



13.33%, and the post-test value rose to 20.28%. And in the low category, the pre-test score was 83% and the post-test score fell to 26, 83%. This means that the experimental method affects children's learning interest.

1 4.	Rahman	The role of teachers in developing Early Childhood Creativity through Experimental Methods in Asahan Parent's PAUD	2019	Descriptive method with a qualitative approach	Principals, teachers, Principals, teachers, and all students at PAUD Asuhan Bunda	Principals, teachers, and students at PAUD Asuhan Bunda	The independent variable is the role of the teacher, developing creativity. While the dependent variable is the experimental method	Observation, interview, and documentation.	Data analysis was performed by reducing data, and drawing conclusions.	Based on the results of research in PAUD Asuhan Bunda, it can be concluded that an educator has a fundamental role in every early childhood development, including children's creativity, types
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										of experimental activities carried out in PAUD Asuhan Bunda including magic food, mixing colors, and new flavored drinks.
1 5.	Nurfuady, et al	Application of experimental methods to increase creativity in early childhood	2019	Design nonequivalent control group design	All children at Masruroh Kindergarten	9 children in group B1 and 8 children in group B2	Independent : experimental method, dependent: creativity	Observation, interview, and documentation	Pretest and posttest	Based on the results of this research, the researcher recommends to educators that the experimental method is one of the learning methods that can be used to foster children's creativity.
1 6.	Astawa, et al	<i>Effect of Use of Educational Appearance Ape (APE) Media Images to</i>	2019	This type of research uses an experiment with a Randomized Pretest-	All group A children aged 4-5 years in Mataram City, West	The 10 children in group A1 consisted of 4 boys and 6 girls.	The independent variable is the Educational Game Tool (APE), while	Observation, documentation, and child development instruments	Pretest and posttest	Based on the results of the study, the pretest and posttest scores of the agree group (A1) increased to



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		<i>Creativity Children Age 4-5 Years in National Country City Mataram Nusa West Tenggara</i>		Posttest Control Group Design <i>Design design</i>	Nusa Tenggara	And 8 children in group A2 consisting of 4 boys and 4 girls.	the dependent variable is Creativity		16.88% while the control group (A2) gained 2.03%. So it can be concluded that through the use of educational play tools which are media images in children's learning activities can affect the creativity of children aged 4-5 years at the age of children in the city of Mataram, Southeast Mataram.
17.	Gundogan	<i>SCAMPER: Improving Creative Imagination of Young Children</i>	2019	This type of research uses experiments	All children Kindergarten in Denizli, Turkey	The sample used is 5 years, there are 2 classes in Kindergarten in Denizli, Turkey	The independent variable is imagination, while the dependent variable is creativity	Child test form <i>Pretest</i> and posttest	Based on the research results, the SCAMPER technique is effective in enhancing creative learning. Therefore, techniques and



										activities that support creative development must be applied to early childhood.
18.	Li, et al	<i>The Relationships of Family Socioeconomic Status, Parent-Adolescent Family Functioning in Mainland China</i>	2012	Type of research used is experiment	All student in Mainland China	A total of 2,341 students (1,218 girls and 1,096 boys)	The independent variable is the Social Creativity, While the dependent variable is SES and parent-child relationship	The observation and documentation of creativity development of children	Multivariate Analysis of Variance (MANOVA)	The results of this study indicate that the storytelling method is an effective strategy through one important type of ability, namely creative ability in the field of environmental studies, namely originality creative ability.
19.	Ghorai	A Study on The Effect of Story-telling Method on Creative Developme	2018	This type of research uses experiments	All school children who are affiliated with WBB.PE	The sample in this study were 52 children who were class or part A	The independent variable is the story-telling method, while the	Observation, documentation, and instruments	Data analysis with Ancova	The result of the present study states that story-telling methods is an effective strategy through which one



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		nt of			children,	dependent				important types
		Primary			and 54	variable is				of abilities ie
		School			grade B	creativity				creative abilities
		Children			children	ability				in the area of
					from BJH					environmental
					schools					studies ie
					affiliated					originality
					with					creative abilities.
					WBBPE.					
20.	Zheng	<i>Study on the Experiment of Cultivating the Peer Interpersonal Skill of the Children in the Kindergarden.</i>	2016	The method or type of this research is experiment al and direct observatio n.	The population in this study were all children in kindergarte ns in Nanchong, China.	The sample in this study was randomly selected, namely 95 children in the experiment al group and 87 children in the control	The independent variable is experimental , while the dependent variable is interpersonal .	Questionnaire test	The analysis technique uses paired-pair	Based on the results of the study, it was concluded that after the experiment was conducted, there was the effectiveness of the teacher to intervene in children's peer interactions during the experiment.



DISCUSSION

This entire article is a sample for research. The research sample used various types of research, namely experimental research, descriptive research, quantitative research, and qualitative research.

The method usedThe sample selection also varies, namely using random sampling methods, total sampling, and purposive sampling. The population used in these 20 journals is children with an age range of 4-7 years. The number of respondents used in each of these articles ranged from 15 to 115 children.

Experimental Method

From all journals, there are 20 research journals that become research samples, 8 of which discuss experimental methods. There are several journals related to experimental methods, including: 1) (Nofitasari et al, 2018) discusses the ability to recognize colors; 2) (Afriani et al, 2016) discusses children's interest in learning; 3) (Nurfuady et al, 2019) discuss creativity. Meanwhile (Rahman, 2019) discusses the role of teachers and creativity development; 4) (Agustini et al, 2016; Nellyana & Kamtini, 2017) discusses the introduction and skills of science. Meanwhile (Khaeriyah et al., 2018) discusses early childhood science and cognitive learning.

From 8journals that analyze experimental methods, there are 2 journals that discuss skills or the introduction or learning of science and cognition written by Agustini (2016); Nellyana & Kamtini (2017); and Khaeriyah, et al (2018). In this article, it is explained that science provides a means to understand the situation around us. Learning science is not by calculating, formulas, or memorizing. It's not just about having concepts and knowledge either. But learning science is armed with great curiosity, learning by observing, investigating, asking questions, noting

what is found, and exploring the surroundings for answers. Science has objectives in learning, including (1) having skills in completing; and (2) have scientific attitudes. Learning science from an early age can hone children in using their thoughts, honesty, strengths, and methods with full confidence. Science learning activities can be in the form of identifying colors, mixing colors, recognizing plants, recognizing animals, the causes of natural events, and so on.

Agustini (2016) and Khaeriyah (2018) in their article explain that the procedure or research steps use cycles, namely cycle I, cycle II, and cycle III. In this paper, it can be concluded that the experimental method can affect the ability or learning of science and cognitive in early childhood. Meanwhile, Nellyana & Kamtini (2017) used the pretest-posttest form. In his writing, it means that learning with the experimental method affects the introduction of science.

Nofitasari also explained the next findings& Maryani (2018) stated that the skill of recognizing colors is a developmental aspect, namely cognitive skills that each individual needs to have which will be useful for present and future life. In color recognition, an experimental method is needed that can increase a child's full and strong imagination according to his development.

The next finding is Afriani (2016) said that the experimental method has an influence on children's interest in learning. Interest has a great influence on learning activities, because if the mind feels happy or wishes for the activity, it will arise in the child and will make the child learn as well as possible. Interesting activities must be supported by the use of appropriate methods, namely the experimental method. With the experimental method, it will create a sense of curiosity and interest in children, and make children interested in always learning.



The next finding of Nurfuady, et al. (2019) in their article explains that creativity can be influenced by the experimental method written by Nurfuady, et al (2019) and Rahman (2019). Creativity is the ability to provide new ideas and apply them to problem solving. In his writing, Nurfuady, et al (2020) also say that in general the characteristics of creativity in solving problems are related to 1) fluency in expressing opinions to solve a problem, 2) flexibility in the form of the ability to solve problems outside the extraordinary category, 3) authenticity in the form of skills to create original ideas from one's own thoughts, 4) elaboration in the form of expressing and realizing ideas in detail to others, 5) resilience of nature in dealing with uncertain situations. Meanwhile, Rahman (2019) said that to achieve optimal results, creativity needs to be applied in upbringing and learning patterns from an early age. Every individual has a talent for creativity as well as early childhood even though they have different creativity, this is where the responsibility and role of teachers and parents in developing early childhood creativity. It was also explained that the development of creativity can be developed by using experimental methods.

The next finding, namely Zeng (2016) in the article explained that interpersonal skills with peers are important for early childhood. The Chinese Ministry of Education also clarifies the regulation regarding it in the "framework of kindergarten education guidelines", which is an object for fostering early childhood interaction skills, such as liking interaction, learning to help each other, cooperation, sharing, sympathy. The teacher must guide children to learn about interpersonal skills, this can be done by using the experimental method. The ability to interact with peers needs to be given treatment in order to increase the ability of peer interaction for a better life in the future.

From the articles above, it can be concluded that the experimental method can affect abilities such as the ability to recognize colors, the ability for creativity, cognitive abilities, and interpersonal skills. In addition, the experimental method can also affect the recognition or skills or learning of science, and children's interest in learning. This is related to the theory put forward by Mulyasa (2017: 2002) explains that experimentation (experiment) is an activity that can support creativity skills, logical thinking skills, enjoy observing, foster a sense of curiosity, and a fascination for nature, knowledge, and God. Meanwhile, Djamarah (in Amalia, 2018: 4) in his writing says that the experimental method is a way of delivering learning when children carry out experiments by encountering and demonstrating themselves from what they are learning. Sumantri, et al (in Amalia, 2018: 4) also explain that the experimental method is defined as a way of learning and teaching that involves children by meeting and proving the procedure and results of the experiment by themselves.

Creativity

From all journals, there are 20 research journals that are the research samples, 14 of which discuss creativity. There are several journals related to experimental methods, including: 1) (Holis, 2016) discusses children's cognitive; 2) (Astawa et al., 2019) discuss the Educational Game Tool (APE); 3) (Gundogan, 2019) discusses scamper techniques and imagination creativity; 4) (Li et al., 2012) discusses socio-economic status and the relationship between parent-child; 5) (Mundariyah, 2017) discusses the BCCT learning model and independence. Meanwhile (Asmawati, 2017) discusses integrated learning based on multiple intelligences; and (Ubaidilah, 2018) discusses the learning center for Liquid Natural Materials (BAC); 6) (Windasari et al, 2017)



discusses project methods. Meanwhile (Ghorai et al., 2018) discusses the story-telling method; 7) (Nurfuady et al, 2019) discusses the experimental method. Meanwhile (Rahman, 2019) discusses the role of teachers and experimental methods; 8) (Rachmi et al, 2018) discusses montage activities; (Afriani, 2016) discusses finger painting activities; and (Sagala & Kamtini, 2019) discuss printing activities.

Learning for early childhood ones most effective is through activities that still involve elements of play that are creative and fun. In the journal, it is also stated that with creative activities individuals can develop all their skills, individuals will explore more objects that children see and also through experiences that children build alone with social relationships with adults when they understand through social interaction with adults. when they understand that with action can grow cognitively leads to verbal thinking. So that all aspects of development in early childhood are successful, eating will be better given at the beginning of life where children's development can develop optimally, by using the standard of playing while learning in the learning method (Holis, 2016).

There are various kinds of learning methods in PAUD in supporting the development of early childhood abilities. In this finding, there are 2 journals that explain methods that can influence creativity, namely project methods and story-telling methods. In the journal, it is explained that project methods can provide opportunities for individuals to convey ways of thinking, and maximize their expertise in solving problems, and can develop as optimal creativity as possible (Windaari et al., 2017). Creativity is developed by giving children the opportunity to express thought patterns, skills and abilities that can develop optimally. There are important aspects to improve creativity, namely fluency and flexibility that can be

developed through the learning-story-telling or story-telling method (Ghorai et al, 2018).

In addition to project methods and methods *story telling*, The experimental method can also affect children's creativity written by Nurfuady (2019) and Rahman (2019). Creativity can be increased by applying experimental methods to children's learning. With the experimental method can create creative and interesting activities that can encourage children's creative abilities. The experimental method can also make children do experiments and do problem solving. In the experimental method, the teacher needs to provide varied activities so that children get impressions and experiences that can motivate children (Nurfuady, 2019). Rahman (2019) in his writing also explains that in the experimental method, there are strategies that need to be prepared by teachers to develop early childhood creativity, including (1) taking simple problems,

Further findings are explained that there are 3 journals that discuss the learning model written by Mundariyah (2017); Asmawati (2017); and Ubaidilah (2017). The learning model in question is the BCCT learning model, BAC center learning, and integrated learning based on multiple intelligences. In the article, it is explained that the BCCT (Beyond Centers and Circle Time) learning model or also known as the center approach is structured to provide clear ideas with creative ways that can foster creativity in children (Mundariyah, 2017). One of the learning models or the center approach is the Liquid Natural Material Center (BAC). BAC can introduce children to their environment. With this learning method, it can provide individual opportunities to play *tandap* under coercion from the teacher. Learning activities have been arranged by the teacher to encourage aspects of individual development and individuals are free to explore and develop their imagination and creativity (Ubaidilah, 2018). In



addition, an integrated learning model based on multiple intelligences can certainly solve problems in order to increase individual creativity. On this matter, it is explained that integrated learning based on multiple intelligences has simple actions, is easy to follow, and is focused on the unified theme of the eight multiple intelligences (Asmawati, 2017). In addition, an integrated learning model based on multiple intelligences can certainly solve problems in order to increase individual creativity. On this matter, it is explained that integrated learning based on multiple intelligences has simple actions, is easy to follow, and is focused on the unified theme of the eight multiple intelligences (Asmawati, 2017). In addition, an integrated learning model based on multiple intelligences can certainly solve problems in order to increase individual creativity. On this matter, it is explained that integrated learning based on multiple intelligences has simple actions, is easy to follow, and is focused on the unified theme of the eight multiple intelligences (Asmawati, 2017).

The next finding states that there are 3 journals that discuss activities or activities that can affect creativity. The activities or activities in question are printing activities, finger painting activities, and montage activities written by Sagala & Kamtini (2019), Afriani, et al (2016), and Rachmi & Herdana (2018). Of the various activities or activities, each of them has different findings. In research with the provision of learning, printing activities are carried out simultaneously with coloring activities, through which the two are compared. The result is that children who are given printing activities using natural media get a higher percentage compared to children who are given coloring activities. Other than that,

The next activity or activity is an activity *finger painting*. The finger painting activity that is being carried out is mixing dough ingredients such

as paper glue mixed with dyes. Then the tools or media used are the fingers. The method is that the fingers are dipped in the dough and then scratched onto the paper so that they produce works of finger painting forming trees, animals, and so on according to the child's idea. In the article, it was explained that children's creativity reached a high percentage by providing fingerpainting activities (Afriani et al, 2016).

The next activity or activity is montage activity. Montage is a work of sticky art by combining pictures either from used magazines, old newspapers, or books containing pictures that are no longer used. This article uses 3 cycle stages, namely cycle I, cycle II and cycle III. In cycle I achieved very low results and still need to be assisted by the teacher, then the second cycle was carried out with montage activities increasing but there were still some individuals who did not match the standard indicators made. Then in the article, the research was conducted again with the first cycle of action but by providing a variety of common tools and media, namely in the form of images from used magazines and books. The result of cycle III is more increased than the previous cycle. In totality, individuals can communicate and tell the work they make in their own style through montage activities (Rachmi & Herdana, 2018).

The next finding is The Educational Game Tool (APE) has an influence on creativity written by Astawa & Astiti (2019). In the article, it is explained that there are two groups, namely the control group and the experimental group. In the control group, children were given learning by providing children's magazines and books, while in the experimental group they were given APE media and the two were compared. The result, after treatment with pretest and posttest, the creativity of children in the experimental group with APE media achieved more optimal results than children in the control group.



Further findings namely the socio-economic status of the family and the relationship between parent-child affects children's creativity, written by Li, et al (2012). In the article, it is explained that children with good parent-child relationships are thought to feel a lot of social support from their parents, as well as improve their adjustment skills by overcoming social problems and frustration and the accompanying negative moods that can affect children's creativity. A higher family SES (Economic-Social Status) and positive parent-child relationships will also positively influence high social creativity.

The next finding is that creativity can be improved with the Scamper technique written by Gundogan (2019). In his article, it is explained that Scamper (modifying, used for other purposes, adjusting, replacing, eliminating, rearranging) is one of the techniques used to increase creativity. The scamper technique was given to children in the experimental group. Data collected using creative imagination test. With the scamper technique, the level of creativity in the experimental group increases. Children who receive the scamper or do not accept the difference lies in the fluency of the sub-dimensions of creativity.

From the articles above, it can be concluded that creativity can be influenced by various methods, namely the BCCT learning method, the integrated learning method based on multiple intelligences, the center learning method, the project method, the story telling method, and the experimental method. In addition, creativity is also influenced by various activities including montage activities, fingerpainting activities, and printing activities. Other factors that can influence creativity include APE media, learning through play, the role of teachers, scamper techniques, and the relationship between socioeconomic status and the relationship between parents and children. This is related to the theory of creativity explained

by Mundariyah (2017) that creativity is a skill found in humans. Basically, each individual has the ability to be creative. This ability needs to be stimulated and given the right guidance, because the ability for individual creativity can be lost because it is not always given stimulation. Therefore creativity is one of the abilities of every individual which is very important to always be given stimulation.

Mundariyah (2017) also defines the definition of creativity operationally, namely skills that describe ease, flexibility, and authenticity in thinking as well as skills to describe an idea. This guide states that creativity is an original thinking skill, and can link, especially, multiplying an idea into something new. Creativity is also defined as a style of thinking in order to support individuals to always seek and create new ideas. Creativity is often seen as a product that is the result of individual opinions and behavior. In addition, teachers and parents are also important things to encourage creativity. Teachers and parents need to understand the creativity that exists in children by being flexible and creative. Parents are one who plays an important role in developing children's creativity. Parents' efforts to develop creativity can be done by approaching their children (Diana (in Mulyani), 2019: 94).

Susanto (2011) states that creativity is an innovation or creation carried out by individuals, either with the form of ideas or other forms that are new. Creativity is an important thing to motivate early childhood to prepare for future life, because in general the difficulty that is often encountered is in adapting skills when facing difficulties around them creatively and actively. (Rachmi & Herdana, 2018).

CONCLUSION

From the results of the review, there were 20 articles consisting of 8 articles on experimental methods and 12 articles on creativity.



The experimental method can affect abilities such as the ability to recognize colors, creativity abilities, cognitive abilities, and interpersonal abilities. In addition, the experimental method can also affect the recognition or skills or learning of science, and children's interest in learning. This is related to the theory put forward by Mulyasa (2017: 2002) explains that experimentation (experiment) is an activity that can support creativity skills, logical thinking skills, enjoy observing, foster a sense of curiosity, and a fascination for nature, knowledge, and God. Meanwhile, Djamarah (in Amalia, 2018: 4) in his writing says that the experimental method is a way of delivering learning when children carry out experiments by meeting and demonstrating themselves from what they have learned. Sumantri, et al (in Amalia, 2018: 4) also explain that the experimental method is defined as a way of learning and teaching that involves children by meeting and proving the procedures and results of the experiment themselves.

Meanwhile, creativity can be influenced by various methods, namely the BCCT learning method, the multi-intelligence based integrated learning method, the center learning method, the project method, the story telling method, and the experimental method. In addition, creativity is also influenced by various activities including montage activities, fingerpainting activities, and printing activities. Other factors that can influence creativity include APE media, learning through play, the role of teachers, scamper techniques, and the relationship between socioeconomic status and the relationship between parents and children. This is related to the theory of creativity explained by Mundariyah (2017) that creativity is a skill found in humans. Basically, each individual has the ability to be creative. This ability needs to be stimulated and given the right guidance, because the ability for individual creativity can be lost because it is not always given stimulation. Therefore creativity is

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