JECED
JOURNAL OF EARLY CHILDHOOD EDUCATION AND DEVELOPMENT
Website : http://jurnalftk.uinsby.ac.id/index.php/JCED

P-ISSN : 2715-8454 ; E-ISSN : 2715-8446
JECED, Vol. 6, No. 1, Juni 2024 (26-41)

Vegetable Stems As A Learning Media To Develop Children's Exploration

Siti Mahfudoh [1], Wahono[2], Gusmaniarti [3], Wardah Suweleh[4]
[1, 2, 3] Muhammadiyah University Surabaya

DOI : https://doi.org/10.15642/jeced.v6i1.3905

Abstract

The background of this research is that there is still a lack of children's exploratory abilities in the critical thinking process and a low level of curiosity, Ilal. This is because the leaming that is applied is less diverse. The problem focuses on how children's explorative development occurs through providing stimulation using the SAINS (vegetable stem) play method. The aim is to find out the extent of development that occurs in children, especially in exploratory activities when using SAINS play activities (vegetable stem media). The method used by researchers is quantitative research. This research design uses Pre-Experimental Design with One-Group Pretest-Posttest Control Group Design. The population of this study was 100 children with a research sample of 20 children as the experimental group and 20 children as the control group. This research was carried out using a series of testing processes, namely; normality testing and homogeneity testing, so that data analysis can be carried out using the T Test (T-Test). The results of the research conducted found that children's explorative development was well stimulated through the SAINS (vegetable stem) play method applied to children as proven by hypothesis testing via the T test (t-test) with a sig value = 0.001 less than 0.005 or (0.001 <0.005). So it can be concluded that SAINS activities (vegetable stems) have a positive effect on other children's development such as social, artistic, physical motor skills, creativity, imagination, stimulate children to think critically and have a high curiosity.

Article Info

Article history:
Received: May 15, 2024
Approved: July 20, 2024
Published online: July 26, 2024

Keywords:
Early childhood;
Exploratory abilities;
Science play activities.

INTRODUCTION

National Association for The Education of Young Children (NAEYC) in (Sari, 2020) states that early childhood is children in the age range 0-8 years, who are included in educational programs in child care parks; family child care, childcare home). Early childhood education is a level of education before the basic education level which aims to train and develop children's competencies (abilities) including all aspects of early childhood development through providing educational stimuli to help physical and spiritual growth so that children are ready to enter further education, which held on formal, non-formal and informal channels (Izaludin, 2019). Sudirman (2021) wrote in a book entitled Early Childhood Characteristics and Competency Module that the development of learning aspects in early childhood education must refer to early childhood competency standards, including the following. First, morals and religious values. The religious and moral values taught to early childhood are positive behavior, independence, discipline, honesty and other behavior. Habitual activities related to religious values must also be provided, such as mastery of daily prayers. Second, physical/motor. In this case, educators must be able to

stimulate children's physical and motor development according to their developmental age. This can be done with various educational improvements. Third, Social and Emotional. Children are educated to be able to develop social skills through the socialization process. Through this aspect, children are equipped with the ability to solve the social problems they face, of course through a continuous habituation process. Fourth, Janguage. In this aspect, children are encouraged to master communication skills according to their development period. Language abilities seen from the child's developmental age can be divided into 2 periods, namely the prelinguistic period (0-1 year) and the linguistic period (1-5 years). Fifth, Cognitive, Children's cognitive development usually refers to Piaget's opinion which divides children's cognitive development into four stages, namely the sensorimotor period (0-2 years of age), the pre-operational period (2-7 years), the concrete operational period (7-11 years) and the formal operational period. (ages 11 to adult). Sixth, Art. Arts Skills in the arts can be developed in music, dance, drawing and other skills that provide aesthetic and artistic abilities to young children.

Early childhood children have various characteristics, namely unique, egocentric, active and energetic, have a strong sense of curiosity, explorative, spontaneous, have a high imagination, enjoy new experiences, do not focus easily (Sudirman, 2021). The characteristics of children will influence their learning process. Muhammad Fadilah (2014) suggests that leaming is fun for children aged Early learning is effectively implemented using the central learning method. The central learning model is a learning model that looks at each child's abilities from a benchmark of classification abilities that is built through a series of activities that use concrete objects or toys. Learning science from an early age begins by introducing nature by involving the environment to enrich children's experiences. Children will learn to experiment, explore and investigat the surrounding environment so that children are able to build knowledge that can later be used in adulthood.

The world of early childhood (AUD) according to (Muhammadiah et al., 2023) is a world full of curiosity about what is around early childhood. AUD will generally be very enthusiastic in exploring knowledge about things related to the natural world around early childhood. However, most AUD educators are sometimes not ready to face complex questions related to science and technology around children. This is because the scientific background that AUD educators work in does not fully construct scientific understanding. Many AUD educators are not equipped with the ability to teach inquiry which leads to scientific construction patterns. If so, when children ask complex and unanswered questions and construct well-constructed answers guided by educators, in the future the child will be enthusiastic about exploring and investigating the natural surroundings. it could be fading away.

Science games are a learning activity or introduction to science adapted to the characteristics of early childhood, where the delivery process is carried out based on the principles of play (Setiawati et al., 2022). The principles of play include: appropriate to the child's developmental stages, oriented to the child's needs, playing while learning, being active, creative, innovative, effective, exploratory and fun. Learning science from an early age begins by introducing nature by involving the environment to enrich children's experiences. Children will learn to experiment, explore and investigate the surrounding environment so that children are able to build knowledge that can later be used in adulthood. Science process skills in early childhood include: The ability to observe, classify, draw conclusions, communicate and apply based on the science experience gained. Science can invite children to think critically, because with science children don't just accept and reject things. According to Wahono, et al (2022), one of the principles of

early childhood is that development always accelerates if children have the opportunity to do it directly with various abilities obtained through several attacks at a higher level than the things they have already mastered.

According to Kurniawati and Mulyati (2021), introducing science concepts through games is an appropriate way to convey material to children and through science games learning will be more fun and less boring, the material can be conveyed easily. By playing science, passive children become more active, children are happy and enthusiastic about participating in activities. Games are also selected according to learning materials for early childhood. Science games develop logical thinking skills, increase curiosity, and increase children's knowledge. Learning must be child- centered, not teacher-centered. Child-centered learning will increase activity and provide opportunities for children to explore knowledge directly through concrete objects and form meaningful knowledge for children. Game Science is the right means to introduce new things to children. Through science games, children are actively involved directly in observing, concluding and classifying. Based on the statement by Zahro, et al (2023), science learning in early childhood, if done well, will have a significant positive impact, it will gradually improve children's logical and critical thinking abilities.

Early childhood exploratory learning is a leaming approach that emphasizes children's active exploration, observation and discovery of the world around them in early childhood. In the context of early childhood, exploratory leaming is driven by children's natural curiosity and allows young children to leam through direct and hands-on experience (Agus Riyanto, 2020), Early childhood exploratory leaming has special characteristics that differentiate it from other learning methods. Some of the characteristics of early childhood exploratory leaming include (Palma, Lawalata and Mpuang, 2020):

1. Child Centered Activities

   Exploratory learning places emphasis on children's desires, interests and initiatives. Activities are designed to meet the exploration and curiosity needs of young children.
2. Live Exploration

   Children are given the opportunity to observe, touch, try, smell, and feel materials or objects directly. Early childhood leams through real and hands-on experience.
3. Leaming Through Play

   Exploratory activities are often delivered through games, experiments, and small projects designed to stimulate children's imagination and creativity.
4. Use of Simple Tools and Materials

   Children are given access to a variety of simple tools and materials, such as sand, water, paint, construction blocks, and natural materials, allowing young children for creative exploration. Addini (2021) in his research entitled "Effect of Experimental Methods on Fearly Children's Creativity" The use of "Spinach Stems" in science play activities can provide a deep and enjoyable learning experience for children
5. Project Based Activities

   Children often engage in small project activities that allow young children to create, design, and complete task-based tasks exploration.

Exploratory Games in SCIENCE Leaming in Early Childhood is the ability that children do with something and gives children the opportunity to see, understand, feel, and ultimately children make something that attracts their attention. With exploratory play, children will be able to imagine. Likewise, with exploratory play, children will also have

the opportunity to solve the problems they face, discover new things, be encouraged to learn skills, and develop their potential. How to develop explorative AUD can be through various activities, namely; recognizing colors, distinguishing sounds, introducing nature, playing with sand, playing with one's own fingers, playing with picture pieces, combining or arranging objects, introducing various objects, and playing with Lego/blocks (Faizah, 2019). Introduction to nature can be done through activities playing SCIENCE or experiments where children are required to increase the stimulation points on their nerves and thinking because young children will be required to carry out experiments directly. Exploratory development theory coined by Piaget, it explains schemas or how a person provides and explains perceptions of their environment in several stages of development. Yola Mila Sari in her research entitled "Exploratory Play in Early Childhood SCIENCE learning" concluded that SAINS play activities are able to develop the exploratory abilities of early childhood because children have the opportunity to play a direct role, observe, understand, and ultimately raise children's enthusiasm for learning while playing.

El-Hijaa Kindergarten is an Islamic-based kindergarten institution using the Independent Curriculum. and 4 Centers. (Preparation center, natural materials center, block center, and art center) which is located on Jl. New Cotton XI No. 06, Kapas Madya Baru Village, Tambaksari District, Surabaya City. The results of initial observations by researchers at the El-Hijaa Kindergarten educational institution in Surabaya show that teachers lack understanding regarding how to implement a fun learning activity process and explore children's abilities so that children can think critically, think creatively and have high curiosity. Teachers do not bring students into the real world of children. Just explaining and explaining the theory, this will really support children's development so they can experience important events and important things in their lives. So that children always learn from the environment around them. SCIENCE-based activities are also rarely carried out and only prioritize reading, writing and arithmetic activities according to the perception/ main side of the students' parents so that students lack critical thinking, lack creative thinking and high curiosity when learning while playing activities take place. This can be seen from several studies which state that there are many setbacks in children's development in the Madya Baru Cotton Village area, one of which is El-Hijaa Kindergarten Surabaya. The current reality in Kapas Madya Baru Village is that there are several kindergarten/PAUD teachers who do not emphasize the predetermined curriculum in their teaching. In fact, the curriculum was prepared and published by the Ministry of Education with the aim of developing children's potential, including language, artistic, cognitive, psychomotor and affective potential. There are several kindergarten/PAUD schools, where teachers tend to direct their students to take part in walks/parades, camivals and recreation, meaning that kindergarten/ PAUD teachers prioritize the quantity of their students rather than the quality of their students. With a large quantity of students in a school, it will give rise to the perception/mainside of society that the school is popular and rich in activities In this way, people will flock to send their children to the TK/PAUD school (Dina KNA. And Euis Kumiati (2023). Not to mention, there are several TK/ PAUD teachers who hold social gatherings with their parents. We can draw conclusions about the reality in Kapas Village Madya Baru today, that education is used as a business area or a place to exploit children to gain monetary profits According to (Gusmaniarti and M. Almadina, 2022) in (Veronica, 2022) Computers as a leaming medium to increase children's interest in reading in El-Kindergarten. Hijaa Jl. Kapas Madya Baru XI/06, Kel. Kapas Madya Banu, Tambaksari District, Surabaya City, East Java Province, while others were not so enthusiastic and played with their friends when the researcher provided stimulation read using computer

media and those who are interested in trying and responding when reading using computer media are almost 98% or around 18 children carrying out this learning process. From the statement above, it can be seen that El-Hijaa Kindergarten has limitations in carrying out school operations, namely teachers who are less competent in arranging learning activities so that learning does not occur according to the existing curriculum, namely the Merdeka curriculum and still uses less creative methods.

RESULTS AND DISCUSSION

Result

Based on the results of the research conducted, data was found that children experienced quite significant development and could be said to be drastically stimulated by using science activities. Previously, children only studied monotonously by reading, writing and calculating. Moreover, at home, the parenting style implemented by parents is authoritarian, which really requires children to study and study without being given time to determine their own pleasure and how the learning process will be fun and in accordance with the child's wishes. By implementing science activities (vegetable stems), it becomes easier for children to grasp the lessons being taught and become more active, creative, and able to think logically during learning while doing activities. This will support children's development, especially in their explorative abilities. From this activity, children can think about how to slice vegetable stems, for example thin slices, slanted, or even like flowers according to the child's creativity. Children can also be creative by mixing whatever colors they want to form new colors in the glass of water which will be used as a place for experimenting with dyeing spinach stems. Not only that, this play activity can train the emotional aspects of today's boarding house children, namely from the activity of patiently waiting in line. Rehan takes a glass and takes a toy knife which he uses to write vegetable stems. With science activities, children become more enthusiastic and enthusiastic about learning and can even trigger a high level of curiosity about what the child observes.

Science activities (vegetable stems) have a very positive influence and impact, especially on children's cognitive and emotional development. This is confirmed by research analysis which proves that learning media using vegetable stems does not make children explore, have high curiosity and be more creative. Because they feel that learning is fun and not scary like before, where children are always indoctrinated that learning is only filled with something monotonous and required to read, write and count and there is no innovation or interest. So, having learning media with vegetable stem experiments carried out both at school and at home will make children enthusiastic.

Figure 1. Science play activities with vegetable stems

Based on the picture, it can be seen that the measles child is enthusiastic and carries out activities with great joy, which of course will support the child's creativity. Physical motor skills can also be stimulated well, with the activity of cutting vegetable stems. On the other hand, it will also train children's focus in observing the results and what changes will occur in the vegetable stems they have.

Data Description

The research carried out by the author aims to identify the relationship between science activities and the exploitative development of group B early childhood children at the EL-HIJAA Kindergarten school in Surabaya. Data collection uses observation. Observation and documentation are used to understand explorative abilities in schools.

Data on group was divided into two, some were given training (experimental group) and some were not given training (control group). The research population was all students in group B2 at El-Hijaa Kindergarten Surabaya for the 2023/2024 academic year with a total of 100 students. Researchers studied 20 students as a control group and 20 students as an experimental group. This research produced a very significant difference between the two groups, in the experimental group it appeared that there was a critical thinking pattern that was developing in children, and there was a high level of creative power and curiosity when learning while playing activities took place. Meanwhile, in the control group, children still needed teacher assistance during activities and deeper uriderstanding from the teacher to stimulate students' creative abilities.

Research data was taken from the results of observation data, namely by carrying out Pretest and Posttest activities. The pretest is given before carrying out the experimental class treatment. Meanwhile, the experimental class and control class carried out a posttest after treatment (Treatment).

Stage of providing treatment (Treatment)

Treatment was given on February 15, 2024 to February 21, 2024 at El-Hijaa Kindergarten. This treatment was given to class B2 as the experimental group:

1) First Meeting

Date and time : Monday, February 12, 2024

Time : 10.30-10.45 WIB

Description of activities:

This first treatment was carried out on Monday 12 February 2024. Activities carried out in the first treatment. The researcher gave instructions to the children to sit at their respective desks in a circle-shaped class position. Then the children are asked to observe what vegetables the teacher has brought, the teacher invites the children to mention what the children know about the types of vegetables they know, then the teacher explains the parts of the vegetables that have been prepared (broccoli, spinach, kailan)., basil, cassava leaves, celery, papaya, mustard greens and kangkong), children are instructed to observe and feel directly the shape of some of these vegetables.

2) Second meeting

Date and time : Thursday, February 15, 2024

Time : 10:30-10:45 WIB

Activity description:

The second treatment was carried out on Thursday, February 15 2024. The second treatment was used to support the science activities that would be researched. Researcher using science collaboration in this treatment to attract children's interest. Apart from using the vegetable stem osmosis process, researchers also used the concept of color mixing. The

teacher also explained the concept of mixing colors which will produce new colors. This is done by continuing the treatment on the first day, where the children are instructed to take the glasses one by one in front of the class. Then, the child is asked to write his own name by queuing to get a marker of the color he likes. Next, children are instructed to sit at their respective tables and fill their glasses with water provided by the teacher.

3) Third meeting

Date and time : Monday, February 19, 2024

Time : 10:30-10:45 WIB

Activity description :

This third treatment was carried out on Monday, February 19 2024. This treatment was carried out to continue the activities on the second day, namely: after the teacher prepared research materials (glasses filled with water by each child) in front of the class, the children were asked to take turns pouring color which he likes. Not only that, children can also give colors not only using one of their favorite colors but can also mix it with other colors according to their wishes. After that, children will see the results of mixing colors in each of their glasses.

4) Fourth meeting

Date and time : Wednesday, February 21, 2024

Time : 10.30-10-45 WIB

Activity description

This fourth treatment was carried out on Wednesday, February 21 2024. The second treatment was carried out to continue the first, second and third treatments, Where researchers apply science activities (vegetable sticks) to children by explaining that vegetables are rich in benefits and good for health, but not only that, vegetables can also be used to play science Then, the teacher explains about experimental activities with Vegetable Stems. The teacher instructs the children to slice the vegetable stems they like into slices according to their creativity. This is done by queuing to slice with a toy knife that has been prepared by the teacher and dipping the sliced vegetable stems into each glass containing colored water.

5) Fifth meeting

Date and time: Monday, February 26, 2024

Time : 09.15-09.30 WIB

Activity description:

This fifth treatment was carried out on Monday, February 26 2024. The fifth treatment was carried out not much different from the Treatment first, second, third and fourth. Where researchers apply science activities (vegetable stems) to children. Children were asked to observe what happened to the sliced vegetable sterns on the fourth day. After that, the researchers asked about the changes that had occurred and asked whether there were any vegetable stems that had not experienced changes.

Description of Post Test Results

The results of the posttest scores were obtained after giving treatment using science activities (vegetable stems). This test uses an observation assessment format to see children's explorative abilities.

The results of the posttest scores show that children's explorative abilities have improved significantly. Students show an increase in explorative abilities and develop very well. Children's explorative abilities received a very good improvement from the scores at the pretest. This increase is supported by carrying out treatment, children carrying out science activities (vegetable stems) including explorative abilities during treatment using

science activities (vegetable stems) can train explorative abilities, experiencing a very good increase in the score results during the pretest. Based on the results of the posttest, it shows that the level of explorative ability in children has increased as evidenced by the average posttest score of the experimental group, the average child has increased, where at pretest the average child has developed according to expectations, has increased to develop very well and the child gets the highest score, namely with a score of 3. 7. Children who get a score of 3.7 show that their exploratory abilities are very well developed, that is, children are able to carry out science activities exploring and experimenting with natural materials, asking logical questions and having high curiosity) independently and are able to help their friends who have not yet reached their abilities, in accordance with the expected indicators, the lowest score was 3.2, the explorative ability developed as expected, because at the time of treatment the child still needed guidance or assistance when pouring water or slicing vegetable stems. The results of the posttest carried out on the control group showed that the level of children's exploratory abilities had increased, as evidenced by the average posttest score of the control group of children, which on average had increased, where at pretest, the average child had started to develop and had increased to develop according to expectations with 1 child getting the highest score, namely with a score of 3.4. Children who get a score of 3.4 show that their exploratory abilities are developing as expected, namely that children are able to carry out scientific activities (exploring and experimenting with natural materials, asking logical questions and have high curiosity) can carry out experiments independently and can be consistent without having to be reminded, or exemplified by researchers. The child who got the lowest score was 1 child who got a score of 2.8, his explorative ability developed as expected. This shows that children are able to carry out scientific activities (exploring and experimenting with natural materials, asking logical questions and having high curiosity) and can carry out experiments independently and consistently without having to be reminded or given examples by researchers. The score from pretest to posttest increased quile well, as evidenced by the large number of students who got high scores on the posttest.

Description of the results of the pretest and posttest of explorative abilities

The pretest score data will then be equated with the posttest score data to predict the difference in data values (scores) before treatment is given.

Research experienced the development of exploratory abilities after being treated with science activities (vegetable stems). In general, children aged 5-6 years experience an increase. The experimental group's lowest score when given the pretest was 2.2 (Starting to Develop) the experimental group's highest score when given the posttest was 3.7 (Developing According to Expectations). Meanwhile, in the control group the lowest score at pretest was 2 (Starting to develop) and the highest score at posttest was 3.4 (Developing According to Expectations). Based on research data, children have improved.

The difference in pretest and posttest scores between the two groups, namely the experimental group with 20 subjects and the control group with 20 subjects, regarding the explorative abilities of group B children at El-Hijaa Kindergarten Surabaya can be described through graphical data. This activity makes it easier to understand the research results. The graphical difference between the values obtained before and after the treatment is given is as follows:

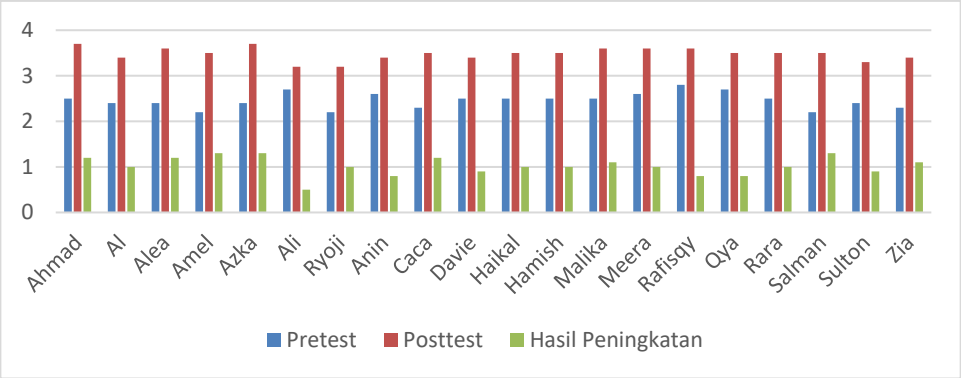

Figure 2. Graph of recapitulation results of pretest and posttest scores for the experimental group

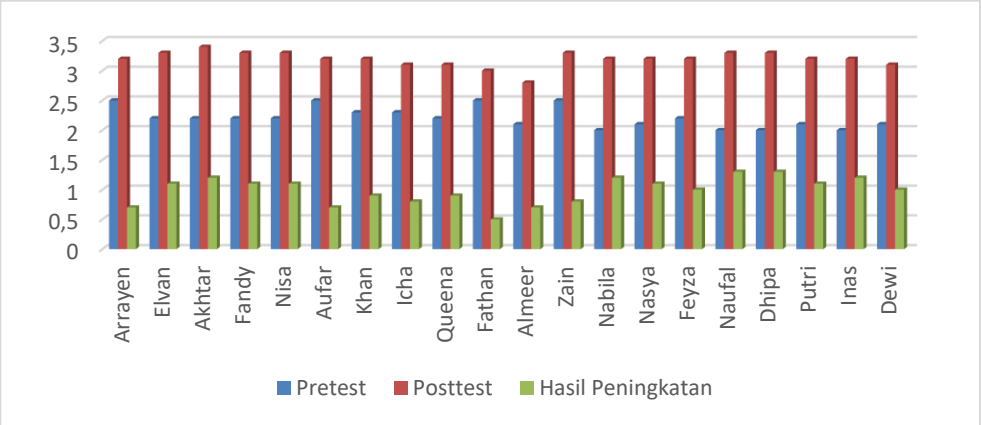

Figure 3. Graph of Recapitulation Results of Control Group Pretest and Posttest Scores

The graph above shows a difference between the experimental group and the control group that was obtained by experimental research group subjects before and after being given treatment (treatment) science activities (vegetable stems) developed the explorative abilities of children in group B. The experimental group graph shows the development of explorative abilities before being given the treatment and got a score 2.2 as the lowest score, while the highest score for the experimental group when given pretest namely 2.8. The control group graph shows that the child's explorative ability before being given treatment received 2 as the lowest score, while the highest score was 2.5. Therefore, the development of children's explorative abilities will be much better if they can be developed in science activities that are packaged in an interesting and fun way and use natural materials that are safe for children to develop explorative abilities optimally.

The results obtained by researchers after giving treatment to the experimental group using science activities (vegetable stems) were very satisfying, this happened because the results obtained by researchers in the field experienced an Increase with a score of 3.2 as the lowest score and a score of 3.7 as the highest score. The results obtained by researchers without giving treatment to the control group, this happened because the results obtained by researchers in the field experienced a development with a score of 2.8 as the lowest value and a score of 3.4 as the highest value.

Normality test

Data processing before conducting experiments is a prerequisite for normality research. Will carry out data processing after obtaining normally distributed pretest data.

The normality test determines whether the data obtained in the field is normally distributed or not. Because hypothesis testing is only used if the data is normally distributed.

The data tested is the average result of the pretest scores. The results of the normality test calculation using the Kolmogorov-Smirnov sample with a significance level of 5% (p = 0,05) are fitted and the hypothesis is obtained:

H^0 = sample starts from a normally distributed population

H^1 = sample starts from a population that is not normally distributed because Test H^0 is rejected if the asymptotic significant value of the Kolmogorov-Smirnov test is <0.05

The results of the normality test using IBM SPSS 29 Kolmogorov-Smimov test are in the following table:

Table 1. One - Sampel Kolmogrov-Smirnov Test

Pretest

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Pretest	Statistic	Df	Sig.	Statistic	df	Sig.
Nilai	Eksperiment	.157	20	.200*	.948	20	.334
	Kontrol	.415	20	<,001	.633	20	<,001

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

Posttest

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Posttest	Statistic	Df	Sig.	Statistic	Df	Sig.
Nilai	Eksperimen	.207	20	.025	.925	20	.122
	Kontrol	.424	20	<,001	.381	20	<,001

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

Normal distribution test

Conclusion: The results of the table show that the significance of the pretest score is 0.334 for the experimental group and <.001 for the control group. The significance of the posttest score for the experimental group was 0.122 and the control group had a significance of <.001, so it can be concluded that both groups of data have the same version or it can be said that both data have a normal distribution.

Homogeneity Test

After the two samples were shown to have a normal distribution. Then look for homogeneity to understand the two groups, so they are in a homogeneous condition or can have the same abilities. This research uses the IBM SPSS 29 application by testing the data and understanding that the samples obtained in the research are homogeneous

Hypothesis:

H^0 = data samples come from homogeneous populations or have the same

H^1 = data samples come from populations that are not homogeneous or not the same.

Because the Ho test if the asymptotic significant value is <0.05 is rejected and if it is significant >0.05 then Ho is accepted. The results of the Homogeneity test through values carried out using IBM SPSS 29 can be seen in the following table:

Table 2. Test of Homogenity of Varienc

Pretest

	Pretest	N	Mean	Std. Deviation	Std. Error Mean
Nilai	1	20	2,46	,169	,379
	2	20	1,85	,857	,191

Posttest

	Posttest	N	Mean	Std. Deviation	Std. Error Mean
Nilai	1	20	3,48	,139	,312
	2	20	3,06	,661	,147

Pretest

		Levene Statistic	df1	df2	Sig.
Nilai	Based on Mean	19.302	1	38	<,001
	Based on Median	4.152	1	38	.049
	Based on Median and with adjusted df	4.152	1	19.791	.055
	Based on trimmed mean	14.466	1	38	<,001

Posttest

		Levene Statistic	df1	df2	Sig.
Nilai	Based on Mean	2.201	1	38	.146
	Based on Median	.692	1	38	.411
	Based on Median and with adjusted df	.692	1	19.884	.415
	Based on trimmed mean	.673	1	38	.417

Conclusion: The results from the table above show that the pretest significance is <.001 but the posttest is 0.146. Because the significance is more than 0.005, it can be concluded that the two groups have the same variance or that both data are homogeneous

T-test

This research uses the t test (t-test), testing the null hypothesis (Ho) which reports that there is an effect of implementing SAINS (Vegetable Stem) activities on those who do not implement SAINS (Vegetable Stem) activities.

$$H_0 : \mu 1 = \mu 2 \text{ dan } Hi: \mu 1 > \mu 2$$

μ1 = Average value of children's exploratory abilities who implemented SAINS (Vegetable Stem) activities (experimental group)
μ2 = The average value of the explorative ability of children who did not apply SCIENCE (Vegetable Stems) activities (control group)
H^0 The average value of the explorative ability of children in the experimental group is the same as the explorative ability of children in the control group
H^1 = The value of the explorative ability of children experimental group children 2 control group children's explorative ability ability value.
The criteria used for the T test use a significance level = 0.05
H^0 = there is no difference between the experimental group and the control group H^1 = there is a significant difference between the control group and the experimental group. If

Posttest

	Levene's Test for Equality of Variances	t-test for Equality of Means						
				Significance				95% Confidence Interval of the Difference
	Sig.	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumes	.146	38	.000	.008	.42	1.51136	.114	.725
Equal variances not assumes		20.698	.000	.011	.42	1.51136	.105	.734

Pretest

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance				95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
Nilai	Equal variances assumed	1,93	<,001	3.121	38	.001	.003	,61	,195	,214	,1005
	Equal variances not assumed			3.121	20.488	.001	.005	,61	,195	,202	,101

In the statistical group table, it can be seen that the pretest average (mean) for the experimental group was 2.46 and the control group was 1.85, meaning that the score before the experiment showed similar scores between the experimental group and the control group. The average posttest score with the exploitative ability of the experimental group was greater than the average posttest score for the control group

A research hypothesis with a significance value of > 0.005 means Ho is accepted and if the significance value is < 0.005 then Ho is rejected and He is accepted. Based on the results of the t test using table 4.13, it is known that the significance value for (posttest) science activities (vegetable stems) is 0.000 ≤0.005. It was concluded that the t fest from science activities (vegetable stems) had a positive and significant effect on increasing children's explorative abilities. Events are indicated by a significance value of 0.000$0.005. The significance of the pretest treatment is 0.001. Because the significance value of the pretest treatment is less than 0.005 or (0.001 <0.005), on the basis of collecting the

provisions of the T. test (t-test), it is concluded that the data from the T test (t-test) can be used.

Discussion

UNESCO (United Nations Educational, Scientific and Cultural Organization) which is the United Nations educational, scientific and cultural organization and contributes to peace and security by promoting international cooperation in the fields of education, science, culture, communication and information agrees that early childhood in group class for children aged 0-8 years. The difference between RI Law no. 20 of 2003 with UNESCO, Sutini (2018) stated the principle of improvement and growth with the age of 6-8 years being a changing age which still requires more independent assistance from a physical, social, emotional. mental and intellectual perspective. Educators will see the development and growth that children need through independent assistance.

According to Jean Piaget's theory, children have an explorative attitude to explore knowledge of their environment (Hasibuan & Suryana, 2021). Increasing explorative abilities is influenced by external factors, namely environmental factors, especially schools. In line with research from Peyre et al., (2016) that children's exploratory abilities are influenced by school, peers, and parental education. Apart from that, the role of teachers in the learning process and the experiences children gain from a conducive environment influence children's explorative development.

The exploratory benefits of getting to know science for children are very important, there are many benefits for children and parents. As an internal factor, it can help children get to know nature through exploring animals, gardens with various flowers and leaves. This exploration will increase imagination and increase the child's vocabulary. In the school environment, teachers can also help improve children's explorative abilities through external factors in their school.

The type of research used with the title The Effect of SAINS (Vegetable Stem) Play Activities to Develop Explorative Abilities of Early Childhood Group B Kindergarten El-Hijaa Surabaya is Quantitative Research. Quantitative research is research used to find populations (Sugiyono, 2018). Quantitative research includes techniques for taking and using research instruments, statistical data analysis so that data consisting of numbers can be analyzed, which is used to research selected populations and samples.

This research design uses a Pre-Experimental Design with One-Group Pretest-Posttest Control Group Design, meaning one group is measured before and after treatment. The group data was divided into two, some were given training (experimental group) and some were not given training (control group). The control group and experimental group were given treatment twice at the beginning (Pre-test) then carried out treatment (Treatment) after which another assessment was carried out (Post-test). (Morisson, G.S, 2016).

This research was carried out at El-Hijaa Kindergarten Surabaya which is located in Surabaya, Jl. Kapas Baru XI No.6 Surabaya City, District. Tambaksari, Prov. East Java. This research started in January 2024. The samples used in the research were children aged 5-6 years at El-Hijaa Kindergarten Surabaya in class B1 and class B2 with a total of 40 children.

Sampling technique is a technique used by researchers to take research samples based on the characteristics and numbers controlled by the population itself. A sample is part of the number and characteristics possessed by the population or a small fraction of population members taken from a certain procedure, which is consequently represented in the

population. To ensure sampling in the following research, the researcher used a random sampling technique. Random Sampling is a sample that is determined to be random and all members of the population have the opportunity to represent members of the sample. (Lasma Roha Sitompul, Tien Rafisa, 2022). The sample used in class B1 and class B2 consisted of 40 children. This study used a control group and an experimental group, class B1 with 20 children as the control group and class B2 with 20 children.

This data uses research taken from observation data. Observations carried out Pretest and Posttest. The pretest is given before carrying out the experimental class treatment. Meanwhile, the experimental class and control class carried out a posttest after treatment.

CONCLUSION

SAINS activities (vegetable stems) are very influential on explorative abilities because it can be seen from the development before and after implementing SAINS activities (vegetable stems) for class B children who have not yet developed to become very well developed. This means that SAINS activities (vegetable. stems) can help develop explorative abilities into better and stimulated slowly, this aims to improve the child's explorative abilities. The use of SAINS activities (vegetable stems) in children aged 5-6 years at El-Hijaa Kindergarten in Surabaya can increase the development of explorative abilities as proven through hypothesis testing via the T test (t-test) with a value of sig = 0.001 less than 0.005 or (0.001). < 0.005), then as is the basis for decision making in the T test (t-test) above, it can be concluded that the data from the T test (t-test) can be used. Therefore, these results determine to reject Ho. The data obtained above concluded that there was an influence of SAINS activities (vegetable stems) on the development of exploratory abilities in children aged 5-6 years at El-Hijaa Kindergarten Surabaya. The SAINS activity (vegetable stems) can be used as a means to convey a sense of joy so that it can provide satisfaction, feeling free with what one is doing without having to be burdened, being able to carry out activities according to the child's wishes through the activity of splitting vegetable stems into 4 parts according to their creativity. (e.g. in the shape of a flower, geometry resulting from thick, thin, straight, slanted slices) with a toy knife, the activity of adding color to the water according to the desired color (in this case the child's creativity will emerge by mixing the colors), the activity of inserting the results of the slits vegetable stems into colored water, an activity to train patience in waiting and observing what will happen from the part of the stem until a scientific reaction occurs. This can increase an explorative attitude, to use creative ideas so that it can foster a critical thinking pattern and create a high level of curiosity. This activity also requires collaborative attitude, interaction with the environment (peers), enthusiastic, focused and careful in doing things.

REFERENCES

Addini, S.N. (2021) 'Effect Of Experimental Methods On Eearly Children's Creativity'Early Childhood Research Journal, 04(1), pp. 31-57. Monographic data for Kapas Madya Baru Village for March 2014

Faizah, F. (2019) 'Developing Children's Creativity Through Exploratory Activities', Thufuli: Scientific Journal of Early Childhood Islamic Education, 1(1), p. 1. Gusmaniarti and Magda, A. (2022) Fostering Early Childhood Interest in Reading Through Computer Applications. Surabaya: UM Surabaya Publishing

Hasibuan, R. and Suryana, D. (2021) The Influence of SCIENCE Experimental Methods on the Cognitive Development of Children Aged 5-6 Years. Journal of Early Childhood Education. Vol. 6 (2)

Izaludin, A. (2019) 'Science and Learning in Early Childhood', Journal of Education and Science, 1(3), pp. 353-365.

Kurniawati, R. and Mulyati, M. (2021) 'Developing Early Childhood Cognition Through Science Games, Tambusai Education Journal, 5, pp. 5730-5736

Lasma Roha Sitompul, Tien Rafida (2022). The influence of the snowball throwing learning model on the cognitive and motor skills of young children. Basiced

Kurniawati, R. and Mulyati, M. (2021) 'Developing Early Childhood Cognition Through

Science Games', Tambusai Education Journal, 5, pp. 5730-5736 Lasma Roha Sitompul, Tien Rafida. (2022). The influence of the snowball throwing learning model on the cognitive and motor skills of young children. Basicedu Journal, 6(1), 1-7

Morrison G.S., (2016). Early Childhood Education Today. Yogyakarta: Student Library Muhammad Fadillah (2014) Characteristics of Early Childhood Education: Concepts & Applications in preschool. Cet. 2. Jogjakarta: ar-Ruzz Media.

Muhammadiah, A.K.A.R.N.U.H.N. rizkiana D.M. et al. (2023) Early childhood education. Padang PT. global technology executive.

Palma, D.I., Lawalata, D.J. and Mpuang, T. (2020) 'Use of Scientific Calculators as Exploratory Media for Students to Find Exponential Properties', Proceedings of the National Mathematics Seminar, 3, pp. 377-384. Sari, Y.M. (2020) Exploratory Games in Science Learning. Age Children. Early. Skripsi dipulikasikan. Riau: Universitas Islam Sultan Syarif Kasim

Peyre, H., Bernard, J.Y., Hoertel, N., Forhanc, A., Charles, M.A., Agostini, M.D., et al. 2016. Differential Effects of Factors Influencing Cognitive Development at The Age of 5 to 6 Years Elsevier 40: 152-62

Setiawati, E. et al. (2022) 'Application of Edutainment in Improving Early Childhood Explorative Abilities', EDUSAINTEK Journal of Education, Science and Technology, 2(1), pp. 50-55

Sudirman, IN. (2021) Early Childhood Characteristics and Competency Module. Bali Nilachakra Publishing house

Sugiyono (2018) Quantitative. Qualitative and &D Research Methods Bandung: Alphabet,

Sutini (2018) Sampling Techniques for Surveys and Experiments Edition 4. Jakarta Renika Cipta

Veronica, N. (2022) 21st Century Education and Learning Innovations and Indonesian Biodiversity Books Google Com, pp. 77-89

Wahono, Issabella Hasiana, Amelia Vinayastri, (2022) Child Development Supporting MBKM Implementation. In M. P. Asy'ari. R. Panii Hermovo, Sandha Sumatri

A., Gusmaniarti, Arafatun Ni'mah, Wardah Suweleh, Nur Afifah Ayu Wiinarsih, N.N.N. (2023) 'The Effect of Experimental Methods (Flood Natural Symptoms) on Children's Critical Thinking Ability at Aisyiyah Bebekan Kindergarten', Journal on Education, 5(1), pp. 3174-3177

Gusmaniarti, M.Pd
Muhammadiyah University Surabaya
Jl. Sutorejo No. 59, Surabaya, East Java, 60113, Indonesia
Email: gusmaniarti@um-surabaya.ac.id

Dr. Drs. Wahono, M.Si
Muhammadiyah University Surabaya
Jl. Sutorejo No. 59, Surabaya, East Java, 60113, Indonesia
Email: wahono@um-surabaya.ac.id

Wardah Suweleh
Muhammadiyah University Surabaya
Jl. Sutorejo No. 59, Surabaya, East Java, 60113, Indonesia
Email: wardahsuweleh@um-surabaya.ac.id

Siti Mahfudoh
Muhammadiyah University Surabaya
Jl. Sutorejo No. 59, Surabaya, East Java, 60113, Indonesia
Email: sitimahfudoh841@gmail.com