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SCIENCE EDUCATION IN THE FAMILY ENVIRONMENT WITH THE EXPERIMENTAL METHOD OF FACIAL COSMETICS PLANT FERTILIZATION IN THE COVID-19 PANDEMIC ERA

S. Nursetiawati*[1], D. P. Josua[2], D. Atmanto[3], F. Oktaviani[4], A. L. Fardani[5]

[1,2,3,4,5]Cosmetology Education Program, Faculty of Engineering,
Jakarta State University

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ABSTRACT

The physical and non-physical family environment is one of the most critical factors in student learning outcomes. This research was assessed using a mixed-method descriptive qualitative and quantitative method to see how the family environment, both physical and non-physical, with experimental science learning was conducted on 60 Junior High School students. The requirements of the respondents in this study were 30 open school students and 30 non-open school students. The results showed that: (a) family involvement motivates students when conducting experiments; (b) the feasibility of the physical environment of the family allows students to complete the experiment of making simple liquid fertilizers to the application of these fertilizers to cosmetic plants, (c) students can complete the experiment by giving directions to the online method because of the high involvement family in the learning process. Other studies state that the family environment in the form of parents 'expectations of students' future careers in science is the main reason for high family participation in the experimental process to provide maximum student experimental results. In conclusion, the family's physical and non-physical environment dramatically determines and encourages students to optimize experimental science learning methods so that science education applied during the Covid-19 pandemic by studying at home can be continued and carried out experimentally. The New Normal Education Model through online and non-online methods for science learning can still be done at home, with the involvement of the family's physical and non-physical environments that support students to complete experiment-based science learning projects. Independent learning in junior high school students can also be done by providing direct control between educators and the students' non-physical environment, namely parents, to remain motivated.

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Keywords: experimental learning; family involvement in education; science education

INTRODUCTION

The world faces a Coronavirus (Severe Acute Respiratory Syndrome Coronavirus 2/ SARS-CoV-2/Covid-19) outbreak. Many orders have changed in the current state of emergency. One area that needs to be adapted is education. Formal schools are required to carry out learning at home to break the chain of disease transmission. To make it easier for students to receive educational learning materials designed with an online system and various techniques, the teaching and learning process continues without obstacles.

Students' difficulty absorbing the material is relatively significant, especially if a practical system requires the material. However, in science subjects themselves, students must understand the theory and need practical learning methods to absorb the material.

Student achievement in Indonesia, especially in science learning according to PISA (OECD, 2019), is at level 2, which means that

***Correspondence Address**
E-mail: sitti-nursetiawati@unj.ac.id

students will be better able to accept science lessons through the scientific exploration of the surrounding phenomena so that they can use their knowledge to draw truth from certain factual conclusions.

Science is a field that students find difficult, so misconceptions often occur (Soeharto et al., 2019). Science education is generally related to scientific competence and intelligence that is consciously acquired about the environment to scientifically solve natural problems and solve student curiosity and build student awareness (Jack et al., 2017).

Science learning today is no longer only possible at school, but students can also study science outside of school, such as at home, in museums, and at other science learning centers (Karim & Roslan, 2020). The trend of science education is beginning to shift. The environment, including the family environment, can be used as a science learning media.

Previous researchers have stated that the environment is more important in contributing to students' academic abilities in science. This atmosphere is very relevant to the students' science learning outcomes (Haworth et al., 2009). Of course, a pleasant environment arouses students' desire to learn science to provide more understanding to students.

Students' perceptions of their learning environment will show how the quality of education students receive. The educational climate positively affects student motivation, happiness, achievement, success, and satisfaction (Wach et al., 2016).

One of the obstacles in science education is the lack of student involvement in scientific activities. Previous research has proven that science education through the home assignment strategy can significantly improve junior high school students (Iksan et al., 2018).

Social factors have a lot of influence on student academic outcomes. These factors are devoted to the student's social network, the colonial capital the student has. The support of the social environment that students get from their families, surrounding culture, religious teachings of students, peers, and the academic climate's role in learning to play a role in student academic success (Mishra, 2020).

The scientific achievement of students in East Asia consistently and having high scores are factors related to the family environment in the form of the ease of students seeking literacy through the availability of books from home, parental education, gender, and students' attitude towards school. On the other hand, students' science learning achievement appears to be negatively correlated with the school and teacher environment, meaning that the school and teacher environment is not related to student science learning achievement in East Asia (Hu et al., 2018).

The learning environment at home, including within the family, also supports students in better understanding literacy, numeracy, and social development (Niklas et al., 2016). Family is an institution that is a leading educational institution for individuals. Class environment, family, and peers are the most critical factors affecting science learning in students. Families motivate students to learn science better. The study results indicated a significant positive relationship between science learning and family, such as science learning with parents and siblings. Science learning that adopts a family environment-based approach can improve science learning outcomes (Soltani, 2018; Sari & Islami, 2020).

Apart from supporting the research results, other studies have also found that the family environment can increase or even reduce school involvement with various lessons. Family support in student involvement in the learning process includes expectations, attribution, disciplinary orientation, family environment, parental participation, and family support systems to support student involvement, to family partnerships with schools (Reschly & Christenson, 2019).

One of the science learning techniques that can be done in a family environment is experimental learning. Experiments can be applied to various types of education, both science and other subjects. The experiment is based on John Dewey's educational psychology theory, prioritizing students to learn and act independently.

Experimental learning is the most effective approach to achieving high academic achievement and improving scientific process skills. This learning model provides scientific experiences to students so that in the science learning process, students can more easily absorb learning (Alkan, 2016).

Methods that learn through experimentation can arouse students to be more active than when educators use traditional lecture and discussion methods. Experiments provide space and time so that students can make decisions about the right way to gain knowledge according to themselves and engage in social interactions (Egbert & Mertins, 2010).

Experiments can satisfy and provide answers to students' curiosity by feeling, seeing, and touching the object of knowledge being studied. Students are more enthusiastic about carrying

out learning activities. In general, experiments are independent methods that students can choose according to their convenience. Science by experiment offers closer and more tangible learning. Students no longer only imagine abstract concepts.

Experiments are deemed suitable for use by adults through experience to make it easier to understand certain subjects. The function of scientific-based experimental learning is to hone metacognition and understanding of science. If experimental knowledge is applied to two different scientific linearity groups, it will give different results (Aini et al., 2019).

In this study, experimental learning involved students in making simple liquid organic fertilizers starting from the school experiments then continued with experiments at home involving the family environment, which would be used to fertilize and plant tree seedlings for cosmetic plants like ginger, lemongrass, *brotowali*, and turmeric.

Experimental learning is more widely used in science classes. With this breadth of knowledge, the application of experimental learning in social studies classes is now starting to develop. But at PISA 2019 (OECD, 2019), Data from the OECD states that the average proficient student and achievers in science who is creative and independent in applying science-based knowledge in Indonesia's various lives are only 7%. This figure is still relatively low compared to other countries. Therefore, other methods, techniques, and designs for science education are needed to foster motivation to learn science for students. The higher the level of student achievement in science.

This study discusses the family environment as the basis for experimental science education. The learning density at home also requires excellent support from the physical and non-physical environment of the family. This research is considered essential to do, considering that the material and non-physical environment play a role in the academic climate and student learning outcomes based on the previously described learning. The Ministry of Education and Culture (Kemdikbud) plans to expand and change the online-based school system. A reference is also needed to what extent the family environment, both physical and non-physical, is ready to support learning design in the familiar new era.

Referring to the explanation above, this study aims to see how learning science's effectiveness and success rate using experiments when applied in a family environment. The novelty of this research, from previous research, lies in the family environment, which is used as a learning support factor, especially in science learning and fertilization experiment learning techniques, and planting more specific plants in cosmetic plants.

This study aims to describe the physical environment of the family and the non-physical environment of the family in the form of family social and emotional support in experimental science-based learning through fertilizing cosmetic plants in the Covid-19 era, which requires students to study thoroughly in their respective homes.

METHODS

Research Design

This type of research is a mix of descriptive and quantitative analysis.

Research Respondents

This research population is Junior High School students of 138 East Jakarta who have a whole family and live in one house. The research sample was students of 138 Junior High School who were students of open schools and non-open schools. The model taken is 30 free school students and 30 non-open school students.

Instrument

The questionnaire was administered and filled out by family members online using Google Form referring to the 2015 Parents Questionnaire for PISA, with several items modified to suit this study's contents. The questionnaire was tested first and found the reliability coefficient value of 0.89, which means that the questionnaire can be said to be valid and reliable because it has met the criteria for an amount of α greater than 0.5, so the results of the questionnaire have an adequate level of reliability and can be trusted.

In this questionnaire, respondents' answers are divided into several types of choices; (a) Yes and No, (b) N = Never to give a statement, the thing in the question has never been the same, even though it has been done, OC = Once to explain, it has been done once, ST = Sometimes it is done to say it is not intense, Often = It is done every day and repeatedly, (c) N = Never done at all, TWY = Done but only once/twice a year, TWM = Done with a frequency of once/twice a month, ED = Almost every day.

Data Analysis Technique

Processing in this study used mixed methods shows descriptive statistics and different test results that show the value through the percentage.

Different treatment methods are carried out using open school students, given direct experimental learning to the fertilization process. Whereas for non-open school students, only experimental material was given via a YouTube link and tried themselves on the plants they already had in their respective homes, provided that they were obliged to include parents in the experimental process and after the experiment was given, they were required to fill out a questionnaire through The Google Form is the same as the respondents of open school students who live in the village environment.

Data analysis was conducted to see how the family environment plays a role in students' science education through student experiments ranging from fertilizers to planting cosmetic plants.

The analysis results are presented in figures, tables, and graphs with statistical tools, SPSS version 24, and Microsoft Excel. To make it easier to understand, the results of the study were then categorized descriptively into very high (100-80%), moderate (81-50%), and low (51-0%).

Operational Definition of Variables

To limit the research scope, this study has an operational definition for each variable. The working definition is:

Family environment-based science education is scientific education carried out by students by involving families in their respective environments. After first receiving science education for experimental methods in schools, before the Covid-19 pandemic in December 2019 - February 2020.

The family environment is the physical and non-physical environment of students involved as respondents in this study.

This research experiment uses bioremediation techniques to make a simple liquid fertilizer, then apply it to cosmetic type plants and see whether the plants given liquid bioremediation can grow well or not while the students are studying at home. Experiments were carried out with family in the home environment.

RESULTS AND DISCUSSION

Student Characteristics

The results showed that nearly three-quarters of respondents (72.2%) were female, and more than a quarter of respondents (27.8%) were male (Figure 1). This study did not look at the influence or relationship of gender with the learning outcomes of experimental scientific methods based on the family's physical and non-physical environments.

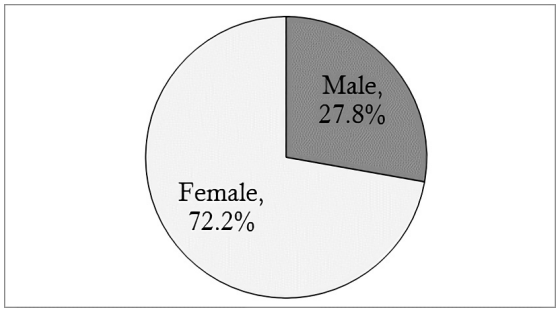

Figure 1. Respondent Gender

Although this study does not look at the influence or relationship of gender in the learning process, several relevant studies state that gender affects the teaching and learning process using multimedia methods. Men are shown to have advantages in various types of multimedia learning. Still, men are lower in retention ability (Heo & Toomey, 2020). Thus, at least, gender will affect the online learning process that uses various multimedia learning types.

Other research also states that in STEM (Science, Technology, Engineering, and Mathematics) learning, gender has an intrinsic relationship with this learning. Girls tend to be moderately motivated in learning mathematics, but in the learning process and learning aspirations, girls have a higher motivation than boys (Oppermann et al., 2020).

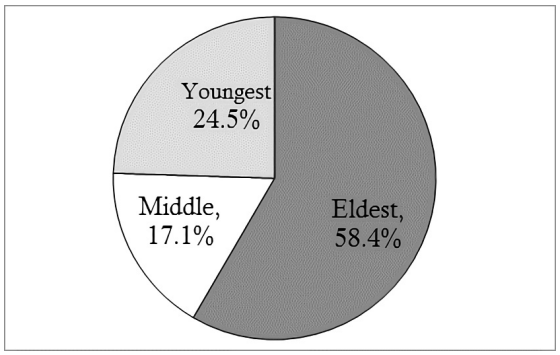

Figure 2. Order of Birth of Respondents

Based on the study results, more than a quarter of the respondents (27.3%) were the firstborn, two-fifths of respondents (40.0%) were middle children, and nearly a third of respondents were the firstborn. Respondents (32.7%) were the youngest (See Figure 2).

The results showed that parents' involvement in the family's physical and non-physical

environment in learning science experiments in this study was high. Previous researchers have suggested that birth order is a result of the educational process and varies. Birth order does not entirely affect students' academics (Esposito et al., 2020).

Another finding was that birth order and the non-physical environment in the form of family and parents' education in middle school affect parents' expectations, children's attitudes, academic achievement, and children's IQ entirely school. Significantly, the first child gained a more significant advantage in educational support (Kim, 2020). However, this data does not show any influence or relationship, only describes descriptive literacy studies regarding the respondents' birth order.

Family Characteristics

Family is an essential source in determining student academic achievement, including achievement and cognitive level of science learning. In this study, family characteristics include the socio-economic conditions of the family.

Table 1. Parents Social Economy

Father's Education	
Primary school	0.0
Junior High School	0.0
Senior High School	74.6
Diploma degree	15.4
Bachelor / Bachelor of Applied	10.0
Mother's Education	
Primary school	0.0
Junior High School	0.0
Senior High School	80.4
Diploma degree	17.3
Bachelor / Bachelor of Applied	2.3
Father's occupation	
Civil Servants (Hours of work 8 hours per day)	0.0
Private employees and employees of State-Owned Enterprises (Hours of work 8 - 10 hours)	67.5
Labor and entrepreneurship (Length of work is not limited)	8.3
Retired and others (Flexible and have full time at home)	24.2
Mother's occupation	
Civil Servants (Hours of work 8 hours per day)	2.6
Private employees and employees of State-Owned Enterprises (Hours of work 8 - 10 hours)	0.0
Labor and entrepreneurship (Length of work is not limited)	90.7
Retired and others (Flexible and have full time at home)	6.7
Father's monthly income	
IDR 0,000,000	17.7
Rp. 1,000,000, - 2,000,000, -	22.1
Rp. 2,000,000, - 3,000,000.-	21.1
Rp. 3,000,000, - 4,000,000, -	24.9
≥ Rp. 4,000,000, -	14.2
Mother's monthly income	
IDR 0,000,000	6.7
Rp. 1,000,000, - 2,000,000, -	10.0
Rp. 2,000,000, - 3,000,000.-	46.7
Rp. 3,000,000, - 4,000,000, -	12.0
≥ Rp. 4,000,000, -	24.6

Based on table 1, more than three-quarters of all respondent fathers (74.6%) have high school education/equivalent, and less than one-fifth of fathers (15.4%) have a Diploma degree, and as many as one-tenth of fathers (10%) have a bachelor's degree. Meanwhile, more than four-fifths (80.4%) had high school graduates, less than one-fifth (17.3%) had a diploma degree, and less than one-tenth (2.3%) mothers graduated with a bachelor's degree.

Regarding the respondents' parent occupations, table 1 shows that the highest proportion of the respondents' parent jobs is as employees in the private sector and employees of State-Owned Enterprises. Meanwhile, the respondent's mother worked more as an entrepreneur with more flexible and non-binding working hours.

Based on the research results, family income shows that the highest average family income is between Rp. 3,000,000 - 4,000,000,-. Family income and time spent by parents in this study are measured based on the type of work that determines the length of work hours of the father and mother, from the results of studies conducted by previous researchers, have a significant positive effect on academic achievement of parents' moral support for adolescent education. And career guidance provided by the family (Ion et al., 2020).

Physical and Non-Physical Environment Characteristics

The physical environment is seen from land ownership and the family's physical environment feasibility for planting cosmetic plant seeds used to plant cosmetic plant seeds.

Table 2. Family Physical Environmental Conditions

Variable	Support (%)	Does not support (%)
The level of occupancy density	68.0	32.0
Home area	81.0	26.7
Conditions and availability of land for planting	78.0	30.0
Lighting	74.2	23.3
Environmental humidity	72.3	16.7

The feasibility of the family's physical environment is seen in this study to assess the experimental results. If the family's physical environment is right, then there are no obstacles in planting cosmetic plants.

Based on the research results (see table 2), more than two-thirds (68.0%) of the physical environment of the family has a decent occupancy density, more than four-fifths (81.0%) have sufficient housing space, nearly four-fifths (78%) are available land for planting, almost three-quarters of the house (74.2%) with proper lighting, and more than seven tenths (72.3%) have adequate environmental humidity.

Viewed as a whole, the family's physical condition is in the very high category, which can be interpreted as the student's family physical environment to support students in conducting experiments for making simple organic liquid fertilizers and planting types of cosmetics. Plants in the physical environment of the family.

Cosmetic Plant Fertilization Experiments

The first experiments were carried out at school; Students learn experimentally and get material about making simple liquid bioremediation fertilizers through kitchen waste. After that, students practice at home by themselves. The visible result is the application of bioremediation fertilizers in planting cosmetic plants.

In group 2, respondents were given treatment such as online learning, which is currently often carried out by teachers, namely providing YouTube links and short material through the WhatsApp group. Students learn to understand independently with an audio-visual process and practice at home with their families.

Figure 3. Liquid Fertilizer Experiments

The results are reported in the same Google form as the first group. The cosmetic plants referred to in this study are plants that can be grown at home but have a function in cosmetology, which can be applied to the face, and used as necessary facial treatments such as *kencur*, ginger, and turmeric. These plants are plants that are readily available and planted.

Cosmetological properties in this study: when harvested or picked, these plants can be used for daily facial care by applying topically, added with other simple ingredients or only used as a drink that gives a beauty effect.

Turmeric, for example, can be used cosmetically to make face masks. The method of making this turmeric mask is relatively easy; it only needs to be cleaned, then pounded or finely blended, and then mixed with rice and or milk. This face mask can provide a relaxing effect, especially during the pandemic, making many people not do facial treatments because it is challenging to find a cure. Besides, cosmetic plants cultivated on their own are safer for adolescents' skin, especially in junior high school. At this age, adolescents

undergo hormonal changes resulting in acne, dullness, and oiliness. Rhizome types in cosmetics are generally used to solve this problem.

Simple organic liquid fertilizers that students learn through the experimental learning method are made using kitchen waste materials such as kitchen spices, unused vegetables, and fruit peels.

With the experimental method in this research, science education, based on the interview results, is more encouraging for students to be enthusiastic about learning science. Experiments involving the physical and non-physical environments of the family, as in this study, can be carried out and practiced by teachers, especially in the field of science. The scientific material included in this experiment is not only one subject. But there is: (a) Analyze the physical environment of the family; (b) Types of cosmetic plants; (c) How to make fertilizers; (d) Definition of organic and non-organic, and (e) Utilization of household waste.

The process of making fertilizer is by (a) separating organic and non-organic waste, then setting aside non-organic waste and using only organic waste, (b) organic waste and then reducing it by cutting, (c) after that, the organic waste is put into a can/a bucket that has a lid, (d) adding approximately 1.5 liters of water and a bio activator, (e) covering the barrel/bucket, (f) during processing it is not allowed to be opened for up to 2 weeks, (g) liquid fertilizer can be used (see figure 4).

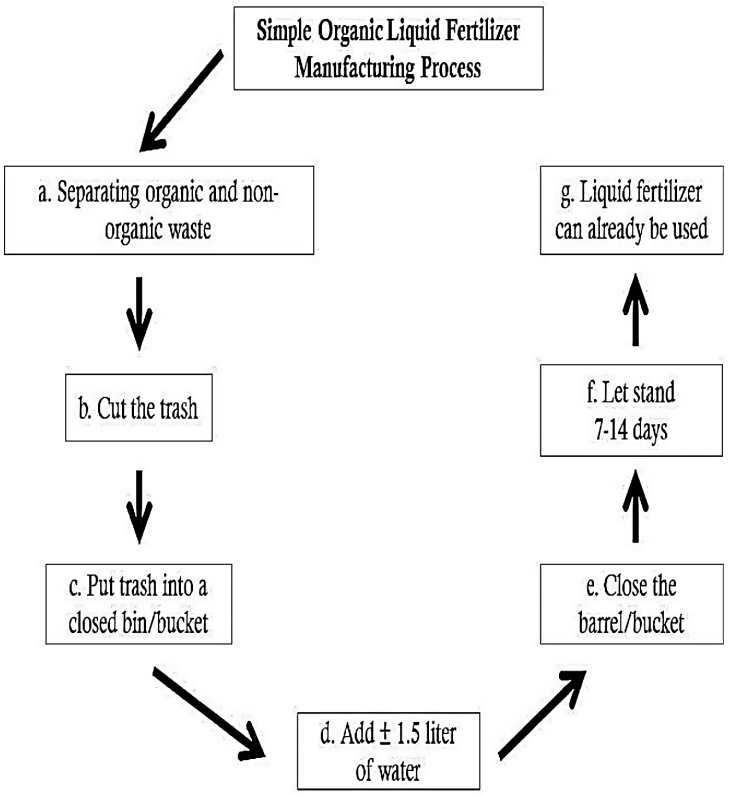

Figure 4. Making Simple Liquid Fertilizer

Students' understanding of making liquid fertilizer is relatively high because it is considered to attract students' attention and foster curiosity. However, based on the interview results, both students and parents in group 1 experienced problems in the long process of deposition in liquid fertilizer.

Whereas, in group 2, students who did not get the treatment of giving material directly first, resulting in less motivation. Because it is considered difficult to understand YouTube content if it is not synergized with clear instructions, the limited time for group 2 in the fertilization process is also an obstacle. Because in group 2, the bioremediation fertilizer fermentation was only carried out for 1x24 hours. It was then applied to cosmetic plants for facial care, and the fertilization results were not visible. This research data states that when students are given material only in a YouTube link, it will not run effectively. Teachers still have to interact with students even though they are online, for example, through WhatsApp

Group Video Calls, Zoom, Google Meet, and other online teleconferencing media.

In science learning itself, fully online learning methods during Covid-19 without reciprocity and interactions between teachers and the family's non-physical environment can reduce students' interest in science learning, especially if the science material exposed to students is considered difficult by students to solve.

Non-Physical Family Environment in Student Experimental Learning Process

During the Covid-19 pandemic, students repeated and continued the learning process of the experiment of making simple organic liquid fertilizer until they applied the fertilizer to cosmetic plants in their respective homes. In experimenting, students must involve family members in making fertilizer and planting cosmetic plant seeds.

After cosmetic plants started to shoot or grow, group 1 students and parents were given a questionnaire through Google Form to determine the non-physical family environment's role and see family involvement in this experimental science learning results.

Group 2 to students, only given short learning materials to make organic fertilizers using YouTube content, provide material online with Zoom, and provide discussion space through the WhatsApp group. For the most part, this method has been the most common method used in the education process since the Covid-19 Pandemic.

The results of the study (Table 3) state that students get support in the form of scientific stimulation at the age of fewer than ten years from their non-physical environment. The results showed as many as nine out of twenty respondent families (45.0%) often provided stimulation to children when they were young to foster motivation to learn science by watching science-themed TV frequently, a quarter of the respondent's family (25.0%) often read science-themed books, more than one-eighth of the respondents' families (13.3%) often traveled to museums or vacation spots related to science, nearly three-tenths of respondents' families (28.3%) often visited sites with a science theme, less than one tenth of respondents' families (3.3%) often introduced science to children through the community regarding science, less than one tenth of the respondents' families (8.3%) often played lego when children were still young to introduce science, three-fifths of the respondents' families (60.0%) often played with simple household appliances to introduce children to science, more than three tenths of respondents' families (31.7%) often invited children to improve With damaged electronics, less than a tenth of the respondents' families (8.3%) often conducted science experiments using readily available tools such as magnifying glasses and matches, and nearly one-eighth of respondents' families (11.7%) often played science games on their gadgets when respondents still a child.

Parents' parenting styles, including how parents educate their children when they are young, also affect parents' stress in this pandemic era because it is related to life satisfaction. At the time of the Covid-19 Pandemic, parents of children who attended junior and senior high school admitted to being more depressed than parents whose children were already at the college education level. This stress factor is triggered by anxiety, affecting family support for children at home (Wu et al., 2020).

Parenting styles and providing scientific stimulation to children will have a significant impact on children. Families who support children's science education certainly encourage students to get used to science itself to enjoy science.

Table 3. Science Stimulation When Students were Children

Variable	N	OC	ST	OFTEN
Watch TV about science	0.0	3.3	51.7	45.0
Read scientific books	8.3	25.0	41.7	25.0
Go to science-related tourist attractions	16.7	13.3	56.7	13.3
Visit websites on science topics	0.0	21.7	50.0	28.3
Has a science community	80.0	10.0	6.7	3.3
Playing lego	30.0	45.0	16.7	8.3
Create simple science games from scraps/ tools	3.3	16.7	20.0	60.0
Repair electronic objects	6.7	3.3	58.3	31.7

Experiment with science tools like a magnifying glass and matches	11.7	70.0	10.0	8.3
Play games with science content on your phone or laptop	13.3	55.0	20.0	11.7
Ask children about their scientific achievements in class	0.0	6.7	23.3	70.0
Invite children to learn science from home in a simple way	1.7	6.7	21.7	70.0
Discuss the knowledge used in everyday life	8.3	5.0	23.3	63.3

Information: N = Never, OC = Once, ST = Sometimes, Often = Often

Table 4 shows that more than three-tenths of the respondents' families (31.7%) communicated with children almost every day about their children's achievement at school, three-fifths of the respondent's families (60.0%) eat with their children nearly every day, seven-tenths of respondents' families (70.0%) had almost Every day telling stories and had positive interactions with children, nearly three-fifths (58.3%) of the respondents' families nearly every day helped children with science assignments, seven-tenths of respondents' families (70.0%) asked children about values and achievements in science in children, seven-tenths Respondents' families (70.0%) invited children to learn science quickly, more than five-eighths of the respondent's families (63.3%) discussed science used in everyday life.

Table 4. Habitual Science in the Home Environment

Variable	N	TWY	TWM	ED
Discuss children's achievements in school with the children	5.0	1.7	61.7	31.7
Eat together with children	5.0	6.7	28.3	60.0
Tell stories and interact	13.3	1.7	15.0	70.0
Helping children do science homework from school	3.3	8.3	30.0	58.3

Information: N = Never, TWY = Once / Twice a year, TWM = Once / Twice a month, ED = Almost every day

Table 5 states that more than two-fifths of the respondents' families (41.7%) work in science, more than half of the respondents' families (51.7%) think that their children are interested and interested in working in science, nearly seven-eighth of the respondents' families (85.0%) expect their children to work in science such as researchers, science teachers, doctors, and so on. More than seven-tenths of respondents' families (71.7%) see their children are more interested in continuing their education to science at Senior High School. As many as four-fifths of respondents' families (80.0%) hope or try the best steps so that their children can continue their education in the science field.

Table 5. Parents' Views and Expectations about the Future of Their Children, Especially in Science Careers

Variable	Yes	Not
There are family members who work in science	41.7	58.3
See and feel that the child shows an interest in working in science	51.7	48.3
Expect children to have careers in science	85.0	15.0
See children's interest in learning more science after graduating from school	71.7	28.3

Hope and try so that children can learn science	80.0	20.0

The results of other research from this study show that more than seven-eighth of the respondents' families (88.3%) consider it essential that their children understand the world and the universe through the context of science, more than four-fifths of the respondents' families (81.7%) state that science is valuable and can be used. In social life, nearly seven-eighths of respondents' families (85.0%) stated that science has a strong correlation in human life; nine-tenths of respondents' families (90.0%) agreed that science can encourage people to know and understand many things in life and the environment, nearly four-fifths. Respondents' families (78.3%) think that human social life will advance when science develops more rapidly (See table 6).

Table 6. Family Understanding of Science

Variable	Yes	Not
Understanding the world and the universe is important	88.3	11.7
Science is precious in social life	81.7	18.3
Science is relevant for human life	85.0	15.0
Science helps humans understand many things around us	90.0	10.0
The advancement of science will provide social benefits for us	78.3	21.7

Table 7 shows that almost all of the respondents' families (96.7%) did not feel bothered when participating in the child experiment; nearly seven-eighth of the respondents' families (86.7%) encouraged their children so that schoolwork in the form of this experimental project could be completed immediately, as many as nine-tenths of the respondents' families (90 %) provided material support for children while working on projects.

Table 7. Family Participation in the Experiment of Making Simple Organic Fertilizers and Planting Cosmetic Plants

Variable	Yes	Not
Don't mind taking part in children's experiments	96.7	3.3
Motivate children to complete tasks well	86.7	13.3
Support the child materially in this experiment	90.0	10.0
Feel happy when doing experiments with children	86.7	13.3
Trying to accompany the child so that the child gets the maximum result in this science experiment	93.3	6.7

In table 7, it is also explained, nearly seven-eighth of the respondents' families (86.7%) are happy to be involved in this experimental project, and almost all of the respondents' families (93.3%) try to accompany the children, cooperate, and provide the best for their children to be able to maximize themselves in this science experiment.

Learning online during the Covid-19 Pandemic has many challenges; previous studies say that one of these problems can be overcome by intense communication, which is quite time-consuming for parents, ultimately needing to help children in the learning process (Putri et al., 2020). The Covid-19 pandemic has placed a more significant burden on the responsibility for education on parents of students. Besides having to coordinate with the teacher, parents need to supervise the discipline of learning of children (Suryaman et al., 2020).

Teachers and schools are ultimately encouraged to continue learning online, even though the risk is relatively high (Lederman, 2020). However, online education in primary and secondary education can be useful. This research has seen that if parents are involved in children's science education, the child will carry out the projects and tasks given well.

Different tests on open school and non-school students showed no significant difference in the family's understanding of science. The non-physical environment of the family gave encouragement and motivation to children to excel in science. Overall, based on the students' experiments final results, it can be seen that students can make simple liquid fertilizer and have no difficulty involving their families. The liquid fertilizers tested on students can also be applied to cosmetic plants. The role of the family's physical and non-physical environment also increases students' motivation to complete experiments as much as possible.

The results showed that family stimulation in students' science education from childhood was moderate. This also contributed to the effect of the student experiment. According to previous researchers, since childhood, humans understand the physical world using their intuitions from eve-

ryday life so that they can construct a scientific framework of understanding science (Vosniadou, 2019).

Family support in stimulating science from childhood impacts student success, especially when given their families' experimental assignments. If the family environment, both physical and non-physical, supports students in the science learning process, it will produce exemplary achievements. This complements previous research, which states that when students in primary schools do not get the right learning methods, lack parental attention, and are negatively influenced by mass media, children lack concentration and motivation to learn (Maryani et al., 2018).

The non-physical family environment habits towards science learning in students in this study are classified as high. The experiences that students get with their families regarding science can encourage students to understand science better. According to previous research, the knowledge that comes from family experiences can motivate students to build student self-efficacy, make students more active, and facilitate science learning goals (Schulze & Lemmer, 2017).

According to students, the family's non-physical environment supports students in making liquid organic fertilizer and reminds them to watch the development of cosmetic plants planted every day. Parents' high hopes that students can complete their experiments also encourage students to be more optimal in doing science learning because they don't want to disappoint their families.

In addition to individual dependence on the environment, previous researchers conducted an interview study which revealed that parents are a positive factor in students' science learning. Parents provide support, academic hope, various assistance and are involved in student science education. When parents have high involvement, are carried out continuously, have an interest and hope for their children's scientific achievements, it will foster students' interest in learning science to improve students' science learning achievement (Halim et al., 2018).

High expectations from non-physical family environments, indicated by the research results that family expectations for students' future careers in science are high, spurring students to do science assignments consistently to produce quite good experiments and social context. Such as the values and expectations of students' social environment. Students will choose a career in science in the future, according to the socio-cognitive theory, which states that social factors influence a person's cognition when making choices in his life (Lent et al., 2008).

Students' success in conducting experiments in this study is also determined by personal encouragement from the family environment, both physical and non-physical, in the form of social motivation. Students are interested in science learning education because of intrinsic factors, namely pleasure, satisfaction, and the desire to try science. Extrinsic factors in the form of scientific assumptions can provide benefits to realize the plan.

This fact corroborates previous research and suggests that student engagement in science in the future is driven by scientific thought and activity being studied. Family factors vital in encouraging students to have future careers in science can make students more diligent in completing experiments. In the theory of fate determination, external motivation can create internal reasons so that when this motivation becomes intrinsic motivation, it gives more positive encouragement to students in learning science (Ryan & Deci, 2009).

High family perceptions of science enable students to complete their experiments through collaboration with their families. Their family preferences and involvement also mediate students' perceptions of science learning. Family perceptions of science learning can encourage student interest and independence better to understand science (Sha et al., 2016).

Students' success in the science experiment of making simple organic liquid fertilizer and planting cosmetic plants can be concluded because of the family environment's high involvement in the feasibility of the family's physical environment and the support provided by the non-physical environmental factors of the family.

The family environment's involvement will make students see themselves as worthy of being loved to develop their competence and foster self-efficacy in science learning. Family involvement is useful in students' psychological development, motivating learning, and increasing academic grades and student achievement (Bowlby, 1969; Pomerantz et al., 2012).

This study proves that the family's physical environment and non-physical factors motivate students to conduct experiments. The family environment is also responsible for student experimentation when family involvement is high. Increasing family participation in student science education will positively impact student learning outcomes, carried out experimentally.

CONCLUSION

The spread of the Covid-19 virus, which has changed Indonesia's educational system, can be seen from the research results through an experimental learning process. This study concludes that students, especially those in junior high school, cannot only learn science online using Zoom, Google Meet, and other virtual media. Students will be bored and not motivated if the teacher's learning method is solely face-to-face online. Moreover, for junior high school students, students are not fully able to learn independently.

Science experiment activities are one of the methods that can be done remotely, namely through (1) giving instructions beforehand by the teacher through online meetings, or providing educational video links that can be taken from YouTube, and made by the teacher himself, (2) students are given the opportunity to practice on their own and assisted by their families regarding the experiment, (3) students report what they find by filling in the Google Form, (4) other alternatives to interact and communicate with students during the experimental process, the teacher can create a study group via WhatsApp to monitor students and provide facilities for students if there is something to be discussed regarding experiments, (5) to be effective, also provide questionnaires or questions to the parents of students, because parental involvement provides students with higher motivation and responsibility to complete their schoolwork, (6) check the results of the questionnaire again, if the students are not optimal, give another try and communicate with their family to participate as school partners during distance learning in the era of the Covid-19 pandemic.

There was no significant difference for the non-physical family environment in student learning support, both from open and non-open students. The family did not mind participating in student school activities (96.7%), then the family encouraged students to complete the project (100.0%). The amount of family non-physical support is also enabled because parents feel happy to participate in children's experiments (86.7%) to try their best to accompany them (93.3%).

The increased physical and non-physical support of the family is one of the students' success factors in making simple liquid fertilizers to apply these fertilizers to cosmetic plants. This research shows that during Covid-19, the design of family participation in education units is because most of the learning is done at home, to continue and familiarize education that involves families and for families to create a physical and non-physical environment, which is conducive to student learning, so that knowledge can be maximized.

This research also needs to be continued by looking at the physical and non-physical family environments in student respondents' learning outcomes in academic units and other subjects, with learning methods besides experiments.

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