Volume 7 Issue 1 (2023) Pages 336-344
Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini
ISSN: 2549-8959 (Online) 2356-1327 (Print)

Online Learning on Children's Language Development During the COVID-19 Pandemic

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DOI: 10.31004/obsesi.v7i1.1993

Abstract
The period of the COVID-19 pandemic impacted education, especially on early childhood education aged 5-6 years. This study aims to determine the effect of online learning on developing language aspects of children aged 5-6 years. The method used is True Experimental Design by comparing face-to-face learning at school and online education at home. The research subjects consisted of two groups, namely experimental and control, with 40 PAUD children from Kindergarten Schools in Surabaya and Gresik. Based on the Asymp.Sig value shows that online learning significantly affects early childhood language development during the Covid-19 pandemic. The reason is, face-to-face learning cannot be done optimally, with reduced learning hours during the Covid-19 pandemic. Conversely, online learning can be done anywhere and anytime, even though the place and distance are different. 0.000 < 0.05. Online learning that is carried out has the advantage of not having space and time boundaries so that the need for increasing children's speaking, reading, and writing skills can be met.

Keywords: *online learning; pandemic covid-19; children's language development; early childhood*

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Received 7 April 2022, Accepted 9 June 2022, Published 17 January 2023

Introduction
The infectious and deadly disease coronavirus-19 has had an impact on the global economy. This tragedy also gave shocks to the education sector globally. As a result of this situation, it resulted in a change in the learning process from face-to-face to online learning. The choice of this learning method shows scenario planning to be an urgent need for academic development (Riley, 2020).

The problem facing the field of education today is the occurrence of pandemic covid-19, where all teaching and learning activities are centered in their homes. The school implements an online learning system so that educators and students are required to adapt to the online learning system. Online learning is distance learning. A distance learning system is a system that has existed since the mid-18th century (Tian & Chen, 2020) So online learning is learning by using the internet network. In early 2013, online learning grew rapidly, largely centered on "mobile-assisted seamless learning", which refers to unlimited learning (L. H. Wong et al., 2015).

Online learning is a constructivist form of the existing learning process. However, the essence of this learning does not detract from the primary goal of the teacher. Primary goal of the teacher is to transfer knowledge to students (Säljö, 2013). Land and Jonassen (2012) say

DOI: 10.31004/obsesi.v7i1.1993

learning is a process of dialogue carried out like negotiation. Online learning inspired social learning and constructivist knowledge.

Meanwhile, in a constructivist perspective, emphasizing aspects of the focus of the lessons carried out by students. Online learning raises various opinions, such as accessibility, affordability, flexibility, and learning methods. However, from several impacts that arise from online learning, this model has several advantages. The advantages obtained, among others, can reach remote areas. This has an impact on causing low costs in the education process (Dhawan, 2020). In addition, the advantage of this learning is the flexibility of learning. In other words, the learning process is not hindered by time and place. Online learning, a new learning method, is currently being used as a fundamental method in the education system. However, at the same time, it raises a point of deviation as differentiated from conventional. So that raises the question, how effective this learning is in students' educational and pedagogical process—especially experienced in early childhood learning, namely in kindergarten.

Early childhood education is divided into three parts: cognitive skills, school readiness, and social-emotional development. However, this development can be disrupted if children lack the extra stimulation that is given. Things that often arise are in bringing up children's learning readiness in learning. Their peers and the school environment influence the development of skills and competencies of early childhood (Henry & Rickman, 2007).

In other words, children will be encouraged by their learning abilities by interacting with friends in class. However, during the Covid-19 pandemic, many schools closed the implementation of face-to-face learning interactions. So that it causes no interaction between children and their classmates. However, some researchers say that technological developments can provide benefits to make learning more exciting and productive. In their research, (Shyamlee & Phil, 2012) stated that technology could affect language learning in early childhood. This is because technology can fulfill children's visual and auditory senses. Ttechnology had provided a unique learning process, tools, and teaching strategies to improve children's language skills (Gilakjani & Leong, 2012).

Research on the impact of technology on learning shows that technology can be used to improve student learning skills (Gilakjani & Sabouri, 2014; Schofield & Davidson, 2017). Technology help communication, makes teaching products and helping students' self-expression Gilakjani (2013). When using technology, students control their learning process and have access to more information (Gilakjani & Sabouri, 2014). This article provides a discussion of the impact of online learning on the language development of kindergarten students. This study places online learning as a predictor in measuring the improvement of children's language skills. Online learning has become an inevitable choice for schools during the Covid-19 pandemic.

This article aims to find out how significant online learning is in improving the language skills of kindergarten children in the region. This study places the impact of online learning on the language development of kindergarten students. Research on the impact of online learning has been done before. However, few studies have an impact on children's language development at the kindergarten level. Based on the results of previous research, it shows that there is a debate on the effect of online learning in improving the abilities of early childhood. Several studies have shown that online learning can improve children's abilities (Blair et al., 2014; Sharkins et al., 2017). However, other research results show that online learning negatively impacts children's abilities (Dong et al., 2020)

The impact of the covid-19 pandemic was experienced by kindergarten schools. The learning process of kindergarten or early childhood is generally done face-to-face in the classroom. According to Larimore (2020) , early childhood learning still needs direct teacher guidance because teachers are implementers as well as guides of the learning process in the classroom. Based on these problems, educators and parents of students are required to work together to make innovations in the current online learning process so that the child's

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development, such as language, expression, and dexterity of the child develops. One of the most important aspects of a child's development is language development. According to Vygotsky in (Susanto, 2019) states that language is a medium for expressing ideas and asking questions; language also creates concepts in categories of thinking.

Methodology

This study is an experimental study that aims to examine online learning as an independent variable on language development. Experimental research is carried out intending to obtain research data (Creswell & Creswell, 2017). The design of this study using a pretest-posttest nonequivalent control group (Bae, 2015; Tuckman, 1999; Tuckman & Harper, 2012). In this study, the selection of subjects was carried out by non-probability sampling.

The selection of subjects was carried out using the purposive sampling method, namely selecting students between five years and six years of age. Survey activities were carried out in this study to explain the existence of phenomena that occur (Simonson et al., 2001). In conducting the test, this study followed the opinion of Gall et al. (2003) for the pretest-posttest matching group. Gall et al. (2003) describe six steps, namely taking measurements of the dependent variable or variables closely correlated with the dependent variable to study participants, assigning participants to suitable pairs based on their scores on the measures described in the first step, randomly assigning one member of each pair to the experimental group and other members to the control group, expose the experimental group to the experimental treatment and provide no treatment or alternative medicine to the control group, adjust the size of the dependent variable to the experimental and control groups, and compare the performance of the experimental group and the control group at posttest using the statistical significance test.

In a traditional, classical design, this procedure involves the random assignment of participants to two groups. Both groups are administered both a pretest and posttest to both groups, but the treatment is provided only to experimental Group A (Creswell & Báez, 2020). In the data collection process, the steps in this study were to conduct a pretest and posttest of both classes, identify the implementation of the learning activities that were determined and make observations. Pretest and posttest were carried out on 40 students (20 experimenters and 20 controls). The treatment was given in the experimental class based on the online learning model, while the control class group used a conventional learning model (not online). Posttest was conducted to see the ability to master the language during the research period. This study involved 40 students in the age group of 5 years to 6 years in TK Islam Terpadu Wildani 2 Surabaya, TK Jambangan Jaya, RA Muslimat NU252 Al Huda II, and RA Walisonggo, Surabaya, Indonesia. Homogeneity of subjects, class conditions, number of students, facilities and infrastructure, teacher quality, and learning ability. This uniformity is assumed to provide no different opportunities for each student in learning—the division of class groups, determined by one experimental class and one control class. Class determination is carried out using the cluster random sampling technique to assume that all subjects are the same. For each class, a pretest and posttest were tested. Following in Table 1, the distribution of research subjects is based on class groups.

Based on the distribution of research subjects, Table 1 shows the number of each gender of the student. For example, in the experimental class, there were 11 male students and nine female students. Meanwhile, for the control class, the number of male students was 13 students, and the number of female students was seven. So that the total number of research subjects analyzed was 40 students.

The research instrument consisted of tests of students' abilities in understanding and following the language spoken by the teacher and using a digital literacy questionnaire. In the language proficiency test, the test is based on master concepts in the given lesson. Ability testing, measured using multiple tests—the description test and multiple-choice test, consisting of four answer choices. The test consists of 20 questions with a score of one for the

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correct answer and 0 for the wrong answer. The number of scores on multiple-choice, then multiplied by the number five as the highest score. So that in total, the highest score in multiple-choice is 100, and the lowest is 0.

Table 1. Distribution of Research Subjects

Class	Gender	N
Experiment	Male	11
	Female	9
	Total	20
Control	Male	13
	Female	7
	Total	20
Total	Male	24
	Female	16
	Total	40

Meanwhile, the essay test uses ten questions. The correct answer is given the student a score of two, while the wrong answer is 0. Each student's correct answer is multiplied by five so that the maximum score obtained is 100. The test is given to students, the same before and after learning. The test given is also adjusted to the lessons learned so that it is easier to see the development of student learning outcomes.

Result and Discussion

This study indicates that online learning can answer educational developments that can be integrated with technology (Mohammadi, 2015; Spiegel & Rodríguez, 2016). Online learning is a continuous learning strategy across the context of continuity of learning experiences (Wongchiranuwat, 2020) and allows it to be done anytime and anywhere (L. H. Wong & Looi, 2019). The main objective of the learning process is to improve students' ability to master concepts in increasing student self-confidence. One sign of mastery of concepts is the increased ability of students to communicate and tell stories. In learning, concept mastery focuses on cognitive processes compiled based on (Bloom et al., 1956) taxonomic indicators starting from understanding, application, analysis, evaluation, and creation. Based on the test results (table 2), data obtained that the average score of the experimental group pretest was 2.57, with a standard deviation value of 0.549. In contrast, the pretest score for the control group was 2.45, with a standard deviation of 0.597. Based on these results, it shows that the two groups are homogeneous. The next test obtained the post-test value in the experimental group of 3.25, with a standard deviation of 0.543. At the same time, the post-test results in the control group were 3.03, with a standard deviation of 0.620.

Table 2. Results of Group Pre Test and Post Test Values

Group	Mean	Standar Deviation
Pre Test Experiment	2.57	0.549
Pre Test Control	2.45	0.597
Post Test Experiment	3.25	0.543
Post Test Control	3.03	0.620

The data normality test aims to determine the symmetrical distribution of the data obtained (Ghozali, 2011). They were testing the normality of the data in this study, using Kolomogrov Smirnov and Shapiro-Wilk. The results of the data normality test are presented in Table 3. Based on the normality test results in Table 3, the Kolmogorov-Smirnov significance value for the pretest experiment class is 0.00, and the post-test results are 0.00. In comparison,

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the control class's results obtained a significance value of 0.00 pretest control and 0.00 post-test. Furthermore, the test results using the Shapiro-Wilk show a significant value in the experimental pretest class of 0.00 and the post-test class of 0.00. Meanwhile, the test results in the control class obtained a pretest result of 0.00 and a post-test result of 0.00. Therefore, based on the Normality Test table above, it is known that the significant value for the Kolmogorov-Smirnov test and the Shapiro-Wilk test < 0.05, it can be concluded that the research data did not have a NORMAL distribution.

Table 3. Data Normality Test Results using the Kolmogorov-Smirnov and Shapiro -Wilk Test

Class	A Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistics	Df	Sig.	Statistics	Df	Sig.
Pre-Test Experiments	0.380	40	0.000	0.677	40	0.000
Pre-Test Control	0.322	40	0.000	0.730	40	0.000
Post-Test Experiments	0.377	40	0.000	0.712	40	0.000
Post-Test Control	0.316	40	0.000	0.774	40	0.000

The homogeneity test in this study was conducted in two classes, namely the experimental class and the control class, using Levene's test. In Table 4, the results of the homogeneity test are presented.

Table 4. Homogeneity Test Results

		Levene Statistic	df1	df2	Sig.
Children's Language Development	Based on Mean	0.457	1	78	0.501
	Based on Median	0.053	1	78	0.819
	Based on Median and with adjusted df	0.053	1	77	0.819
	Based on trimmed mean	0.634	1	78	0.428

Based on the homogeneity test table in Table 5 above, it is known that the Based on Mean significance value is 0.501 > 0.05, so it can be concluded that the variance of the experimental class Post-test data and the control class Post Test data is the same or Homogeneous. The data normality test results in Table 3 above show that the data are not normally distributed. Therefore, this study cannot use the hypothesis test using the independent t-test— this study, using the Wilcoxon test and the Mann-Whitney test in hypothesis testing. The Wilcoxon test is a nonparametric test used to measure the difference from the average value of the sample group (P. Sugiyono, 2011). The Wilcoxon test is used to analyze the results of observing differences from data that are not normally distributed (Pramana, 2015; P. D. Sugiyono, 2017). Table 5, the Wilcoxon test results are presented.

Table 5. Wilcoxon Test Results

	Post-Test Experiments - Pre-Test Experiments	Post-Test Control - Pre-Test Control
Z	-5,196[b]	-4,796[b]
Asymp. Sig. (2-tailed)	,000	,000
a. Wilcoxon Signed Ranks Test		
B. Based on negative ranks.		

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Based on the results of the Wilcoxon test in Table 5 shows that the significance value is 0.0<0.05. These results indicate that it is feasible to test the hypothesis. Furthermore, these results follow the Wilcoxon test provisions where if significant <0.05, then the hypothesis Ha is accepted, and Ho is rejected. Meanwhile, if the significant value is> 0.05, then Ha rejects and accepts Ho. The Mann-Whitney test is a nonparametric test used to determine the difference in the median of the free group if the dependent variable data is ordinal and is not normally distributed {Formatting Citation}. Table 6, the results of the Mann-Whitney test are presented.

Table 6. Mann-Whitney Test Results

	Class	N	Mean Rank	Sum of Ranks
Children's Language Development	Pre-Test Experiments	40	29.88	1195.00
	Pre-Test Control	40	31.83	1273.00
	Post-Test Experiments	40	51.13	2045.00
	Post-Test Control	40	49.18	1967.00
	Total	40		

Based on the results of the Mann-Whitney test in Table 6, there are differences in the number of rankings of each class group. For example, following the calculation results, the first sample ranking for the pretest class experiment and control group R1 was 1.195, and the R2 ranking value was 1.273. Whereas the posttest group ranking obtained R1 2,045 and R2 value of 1,967. After obtaining the Wilcoxon and Mann-Whitney test results, the next step is to test the hypothesis by combining the Wilcoxon and Mann-Whitney test results. Table 7, the calculation results will be presented.

Table 7. Hypothesis Test Results

	Children's Language Development
Mann-Whitney U	375.00
Wilcoxon W	1195.00
Z	-4.74
Asymp. Sig. (2-tailed)	0.00

In testing the hypothesis, to determine the accepted hypothesis, it is carried out with several conditions. The provisions are, if the significant value is <0.05, then the hypothesis is accepted. However, if the significant value is> 0.05, the hypothesis is rejected. Based on Table 7, the results of hypothesis testing in each class, it is known that the Asymp.Sig. (2-tailed) of 0.000 < 0.05. So it can be concluded that the hypothesis is accepted. Thus it can be said that there is a significant development of children's language. So it can be concluded that there is an effect of online learning on children's language development during the Covid-19 pandemic in Surabaya.

Discussion

The results of the tests conducted show that the average value in the experimental class using online learning is higher than in the control class. The learning process using online learning has a real influence on children's language skills in the 5 to 6 year age group in kindergarten schools in Surabaya. Based on the results of hypothesis testing with the help of Wilcoxon and Mann-Whitney, it shows that there are significant differences between the experimental class and the control class. So from these results, it can be concluded that the hypothesis (Ha) is accepted and Ho is rejected. Contributing factors include good

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communication between teachers and students through technology and complete learning process using zoom and google classrooms. In other words, it can be concluded that with online learning, the learning process remains integrated where students can learn without time and space limits.

Learning in children aged five years to six years not only focuses on cognitive aspects but also affective and psychomotor. This agrees with (Krathwohl, 2002) that in the cognitive dimension, it is not only limited to knowledge but also at the practical stage (Çoklar et al., 2017; Ng, 2012; Shariman et al., 2012). The results of this study support previous research conducted by Blair et al. (2014), and Sharkins et al. (2017) (Blair et al. (2014) and Sharkins et al. (2017). (L.-H. Wong & Looi, 2010) in their research, states that learning has goodness in the aspects of formal and informal learning, personal and social learning, has no time limit, can be accessed without time and space limitations, there is access to knowledge from various sources, there is an integration of new knowledge and before, and can combine various pedagogical learning models (Wongchiranuwat, 2020). The results of this study indicate that online learning has a significant effect on improving children's language skills.

Conclusion

Based on analytical testing results, it shows that online learning has advantages that can improve the language skills of children aged five years to six years. From these results, it can be concluded that the hypothesis (Ha) is accepted and Ho is rejected. Contributing factors include good communication between teachers and students through technology and complete learning process using zoom and google classrooms. In other words, it can be concluded that with online learning, the learning process remains integrated where students can learn without time and space limits. Therefore, there is a need for support from both the school and parents to provide maximum support in implementing this innovative and integrated learning. Interestingly, not all schools and students have quality technology facilities (mobile phones, computers, laptops), so they do not have smooth learning applications. Nevertheless, many found that schools use the google class assistance application so that sometimes there are still disturbances.

Acknowledgments

Thnak you to the head of STKIP Bina Insan Mandiri for the opportunity to do this research.

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