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Effectiveness of Offline and Online Learning during COVID-19 Pandemic: Two-Factor Analysis of Variant Approach in S-1 Students of FKIP University PGRI Banyuwangi, Indonesia

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Abstract--This study aims to determine the effectiveness of offline learning and online learning with a two-factor analysis of variance approach. The subjects in this study were undergraduate students of FKIP PGRI Banyuwangi University from the history education study program. method Quasi Experimental Design which has two groups, namely online and offline, which cannot fully function to control external variables that can affect the experiment. The population of this research is the students of the Faculty of Teacher Training and Education as many as 132 students. Based on the results of the two-way ANOVA test, a significance result of $0.056 > 0.05$ was obtained, it can be concluded that there is no difference between Learning Effectiveness based on study programs at the teaching and education faculty at PGRI Banyuwangi University. but if seen from the results of the significance of $0.00 < 0.05$, it can be concluded that there is a difference between the effectiveness of learning based on teaching methods in the faculty of teacher training and education science at the PGRI Banyuwangi university.

Keywords---COVID-19, learning, offline, online, students.

Introduction

Corona Virus Disease 2019 is part of a virus that causes disease in animals and humans. In humans, it will cause respiratory infections from the common cold to more severe diseases, namely MERS and SARS (Noviandari & Febriani, 2021; Andayana, 2020). The new variant of the latest corona virus is COVID-19 which

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can be transmitted through the air and droplets. The first time this virus became an epidemic in 2019 to be precise in Wuhan, China and has now become a pandemic (Kurniawan, 2020).

The COVID-19 pandemic has made various changes in various sectors such as the paralysis of the economy, education and the limitations of direct social interaction (Andayana, 2020; Bahtiar & Saragih, 2020; Yuliejantiningasih, 2020; Syahrial, 2020; Shah, 2019). With the limitation of direct social interaction, it makes a significant impact on the world of education in the form of changes in the learning system (Dini, 2021; Sulata & Hakim, 2020; Martanti et al., 2021). The change in the learning system in question is face-to-face or off-line (offline) learning to online or in-network (online) learning.

The active spread of COVID-19 prompted the Ministry of Education and Culture to act to issue a Circular Letter of the Ministry of Education and Culture No.1 of 2020 dated March 9, 2020 regarding the Prevention and Handling of Corona Virus Disease (COVID-19) within the Ministry of Cultural Education (Nyandra et al., 2018). This was then followed up by the Ministry of Education and Culture. PGRI Banyuwangi University Campus through a circular letter in the form of changing the lecture process from face-to-face or offline to online or online learning. This is a challenge for FKIP students at PGRI Banyuwangi University with the change in the lecture process system (Mursidi & Noviardari, 2021). The online lecture process will be carried out with the main means being a good internet network. Through the internet network, the lecture process is flexible, it can be done anywhere and anytime with several applications that can be used such as Google classroom, video conferencing, Zoom Application and many more. Learning from is the answer to the ongoing pandemic challenges so that the lecture process continues (Jha et al., 2021; Mursidi et al., 2021). This study aims to determine the effectiveness of online learning and offline learning with a two-factor analysis of variance approach for FKIP students at PGRI Banyuwangi University. By knowing the effectiveness of the two learning processes, it will be a form of input to the learning process that builds the creativity of students and lecturers during the pandemic (Lewalter, 2003; Hedegaard, 2014).

During this pandemic, social relations must be done indirectly. It can be seen that the interactions that exist between students and students and students and lecturers are less than optimal because they are virtually limited and there is no direct interaction (Kanca et al., 2021; Ginaya et al., 2018). Social interaction is a dynamic relationship between personal and personal, personal with groups, or groups with other groups that are needed by every human individual (Aridarmaputri et al., 2016; Aji, 2020). Social value will be easily obtained through direct interaction rather than through virtual. As with many learnings that students complain about both online and offline. But there is no best choice, online learning is still done (Fryer & Bovee, 2016).

During the pandemic, learning has a new term, namely learning outside the network (offline) and in the net (online). Offline is the meaning of the term offline. In KKBI, offline is outside the network or those that are disconnected because they are not covered by the internet network (Utami & Firdaus, 2018; Masrurroh & Munastiwi, 2021). The term offline is the opposite of the term online. Offline

learning is learning that requires face-to-face and does not require an internet network as a learning tool. Offline learning activities also do not require computers and laptops because the types of activities are writing and collecting work (Hafemann et al., 2017).

Online is an abbreviation of within the network which requires electronic items such as cellphones, laptops, or computers and requires an internet network. In Indonesian, online can be said to be online (Moore et al., 2011). Online learning is learning that uses the network internet with accessibility, connectivity, flexibility, and the ability to bring up various types of learning interactions. The use of the internet and multimedia technology can change the way knowledge is conveyed and as an alternative to monotonous classroom implementation (Broadbent & Lodge, 2021; Rohaedi, 2020; Rohimah et al., 2020). Online learning is a learning that is able to bring together lecturers and students in an application to carry out learning interactions with the help of the internet during a pandemic (Dağ & Geçer, 2009).

Basically, the implementation of online learning requires the support of electronic devices such as mobile phones, smartphones, laptops, computers, tablets, and iPhones as a means to access information anytime and anywhere (Gikas & Grant, 2013). Online learning is a demand of the 21st century world, especially for the world of education in recent years (Alghasab, 2020; Cortes, 2020; Firdaus et al., 2020; Lockma & Schirm, 2020). Learning that started from face to face turned into a virtual meeting with the term online learning as a result of the COVID-19 pandemic (Rahayu et al., 2021). This causes learning to be carried out less efficiently, students do not understand the material presented by lecturers, lack of intensive interaction between lecturers and students, and lack of concentration of students when doing online learning which can be caused by an unsupportive learning environment (Limbong & Simarmata, 2020; Mastuty et al., 2020) Meta-analysis found that online learning is more effective than offline learning (Winarno, 2017; Frambach et al., 2014; Lockma & Schirm, 2020; Mursidi et al., 2019; Rahmawati, 2020; Utamajaya et al., 2020; Zeidler, 2016).

However, effectiveness is shown through how far the achievement of the specified learning objectives (Müller et al., 2018). Effectiveness is a measure that states how far the achievement of quantity, quality, and time can be achieved or if the percentage of targets achieved is large, the effectiveness will be higher (Yuliejantiningasih, 2020; Rohaedi, 2020; Valentin et al., 2013). Effectiveness in the context of learning activities has the same meaning. how far the goals that have been set can be achieved. Learning is said to be effective if successfully delivering learners achieve instructional goals that have been determined, providing an attractive learning experience, involving students actively to for supporting instructional and have the means - the means to support the teaching and learning process (Rohaedi, 2020; Ritonga et al., 2021). Hidayat & Astuti (2019), there beberapafaktor that influence the effectiveness of a learning which are quality (quality), accuracy (appropriateness), intensive (intensive), and time (time).

Method

This research is a quantitative research with design Two Way Anova (two-factor classification). The experimental method is observation under artificial conditions that are regulated by the researcher himself. This design is used because it is considered more effective. This research design uses a quantitative approach with research data in the form of numbers and uses statistical analysis. The research method used by the researcher is the method Quasi Experimental Design which has two groups, namely online and offline, which cannot fully function to control external variables that can affect the experiment.

The population of this research is the students of the Faculty of Teacher Training and Education as many as 132 students with random sampling from this study as many as 44 of the number of respondents who were conducted from each study program of history education, guidance and counseling, and Pancasila and Citizenship Education in the academic year 2021- 2022. The sample is part of the number and characteristics possessed by the population (Kuntanto, 2017; Rohimah et al., 2020). The study will look at the effectiveness of learning during the COVID 19 pandemic which took place in early 2020. The sampling technique is using probability sampling, namely cluster sampling is used when the population is in the form of groups that do not consist of individuals. Research according to the level of explanation (Explanation) is research that intends to explain the position of the variables studied and the relationship/influence or compare between one variable and another (Siregar & Zahra, 2020). Instruments and data collection methods use an instrument in the form of a google form, which one test was conducted on the three Study Programs to see the effectiveness of online or offline learning. Online and offline tests are tests that are used to determine or measure the effectiveness of learning within a certain period of time.

Discussion

Effectiveness of online learning

In the subject of online research in the History Education study program conducted on 44 students, the average value of the learning effectiveness of the online teaching model was 38.31, while the Guidance and Counseling study program obtained an average data of 37.14 which conducted on 44 students and the Pancasila and Citizenship Education study program obtained an average score of 41.90 which was conducted on 44 students.

The effectiveness of offline learning

In the subject of online research in the History Education study program conducted on 44 students the average value of the learning effectiveness results of the Offline teaching model was 46.04, while the Guidance and Counseling study program obtained an average data of 44.68 which was carried out on 44 students and The Pancasila and Citizenship Education study program obtained an average value of 44.81 which was carried out on 44 students.

Normality

Test the normality test was used to determine whether the data analyzed came from a normally distributed population or not. The test technique used is the Kolmogorof-Smirnov test at a significance level of 0.05. Based on the results of the normal test; the existing data using the help of the Statistical product and Service Solution (SPSS) 23 program for windows: a) The results of the effectiveness of learning both online and offline in the study program at the Faculty of Teacher Training and Education, PGRI Banyuwangi University, amounted to 0.062 scores. This is more than the value of the 0.05 significance level. Thus it is known that the data is normally distributed. This can be seen in table 1 below.

Table 1
Data normally distributed

	Tests of Normality					
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Standardized Residual for Learning Effectiveness	.119	132	.000	.964	132	.062

a. Lilliefors Significance Correction

Homogeneity

This analysis aims to test the validity of one of the assumptions for ANOVA, whether all variants have the same variance. One way to make a decision is by looking at the Levene's Test probability or significance of 5% (0.05). The results of the homogeneity test using the help of SPSS obtained a significance value of 0.059 meaning more than 0.05 then H_0 is accepted, which means the research data is homogeneous and has the same variance. So that the assumptions of the ANOVA are met and are suitable for use, then the data above can be tested for further hypotheses. This can be seen in table 2 below.

Table 2
Levene's Test of Equality of Error Variances^a

Dependent Variable: Learning Effectiveness				
F	df1	df2	Sig.	
2.711	5	126	.059	

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Program_Studi + Model_Pembelajaran + Program_Studi * Model_Pembelajaran

Anova

Test Anova Test. With the fulfillment of the normality and homogeneity of the data, the two-way ANOVA can be continued. In this study, hypothesis testing uses a two-way ANOVA, namely to see the differences in the effectiveness of online and offline learning in the historical education study program, guidance and counseling, as well as Pancasila education and citizenship. Based on the results of the two-way ANOVA test, a significance result of $0.056 > 0.05$ was obtained, it can be concluded that there is no difference between Learning Effectiveness based on study programs at the teaching and education faculty at PGRI Banyuwangi University. but if seen from the results of the significance of $0.00 < 0.05$, it can be concluded that there is a difference between the effectiveness of learning based on teaching methods in the faculty of teacher training and education science at the PGRI Banyuwangi university. So if seen overall results of significance of $0.29 < 0.05$, it can be concluded that there are differences with the study program teaching method in the effectiveness of learning in teachers college and university science education in Banyuwangi PGRI

Discussion

From the results of the data the effectiveness of learning by the student group taught by using online model teaching strategies and groups taught using offline teaching models, with a significance level of $\alpha = 5\%$ normally distributed, the effectiveness of student learning taught using offline teaching strategies is 45.18 and the average learning effectiveness using online is 45.18 of 39.12. It can be concluded that the effectiveness of the strategy learning offline teaching models more accepted by student of the teaching models online. The use of offline learning strategies that can increase the effectiveness of student learning is also stated [Lin et al. \(2017\)](#), is one of the innovative learning that can improve student learning abilities. In this study, it is presented with various learning media assistance tailored to the topic of discussion in learning so that all students can obtain teaching materials or other information related to learning knowledge information to improve student learning outcomes.

The results of the significance of $0.056 > 0.05$ so that the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted, which means "it can be concluded that there is no difference between Learning Effectiveness based on the study program at the faculty of teacher training and education at the PGRI Banyuwangi university "Initial abilities are very important in learning activities. Gagne argues that in learning there is a process of information transformation where students then process information so as to produce learning in the form of verbal information, intellectual skills, cognitive strategies, attitudes (affective), and motor skills, all of which are initial experiences that students get. The more students get, the more experience that will affect the learning process.

Based on the results of the significance of $0.00 < 0.05$ Learning Effectiveness based on online and offline teaching methods. So that the hypothesis (H_0) is rejected and the alternative hypothesis is accepted (H_a) is accepted, this means that "there is a difference between Learning Effectiveness based on teaching methods at the teacher training faculty and education science at the PGRI

Banyuwangi University". The interaction of the results of the teaching method is very influential with the effectiveness of student learning with the offline model it will be easier to receive lessons, than students who receive online learning (Song et al., 2004) argues that students who have high initial abilities tend to have high learning outcomes, this is because students who have the ability to receive lessons optimally and are able to explore the learning process so that they can develop more meaningful learning and produce optimal learning.

Conclusion

The conclusions of this study are: 1) there is no difference between Learning Effectiveness during the COVID-19 pandemic based study program on the Faculty of Teacher Training and Education, PGRI Banyuwangi University based on the results of the first hypothesis test. 2) there is a difference between Learning Effectiveness during the COVID 19 Pandemic based on teaching methods both from and offline at the Faculty of Teacher Training and Education, PGRI Banyuwangi University based on the results of the second hypothesis test. 3) there are differences between study programs and methods teaching in the effectiveness of learning during the COVID-19 pandemic at the Faculty of Teacher Training and Education, PGRI Banyuwangi University based on the results of the third hypothesis test.

Suggestions from this research are: 1) For teachers for all fields of study to continuously learn and innovate in using learning strategies to improve learning outcomes both online and offline. 2) Teachers should be creative in choosing an appropriate learning strategy, so that the delivery of material will be acceptable to students when using online teaching methods.

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