AXIOM : Jurnal Pendidikan dan Matematika
(2024) Volume 13, No. 1, Page 16-29
https://doi.org/10.30821/axiom.v13i1.17953

The comparison of the effectiveness of online and offline learning in the educational statistics course

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Received: 31 October 2023 / Accepted: 22 June 2024 / Published Online: 30 June 2024

Abstract
This research aims to compare the effectiveness of online and offline learning in the Educational Statistics course for Islamic Education (PAI) students in the fourth semester of IAIN Sorong, West Papua. The research method employed is a quasi-experimental design with a pre-experimental type - the one-shot case study design, which compares two classes with two different treatments. The subjects in this research were all students of Islamic Education in the fourth semester of the 2020/2021 academic year at IAIN Sorong, namely two classes and a total of 39 students. The sample was selected using a saturated sampling technique, namely one class was to implement online teaching and learning activities and the other class was to implement offline learning. Data collection techniques used implementation observation sheets, student activity observation sheets, questionnaire sheets, and learning results test sheets. Data analysis techniques used descriptive and inferential methods. The results of the research show that: (1) the learning outcomes of students taught using online learning achieved 84.24% learning completeness with a minimum score of 70/B and an average score of 75.21; (2) student activity reached 3.12 categorized as "Good". (3) student responses to the online learning model were positive; 4) students taught using offline learning achieved 100% learning completeness with a minimum score of 70/B and an average score of 80.79; (5) student activity reached 2.74 in the "Good" category; and (6) student responses to the offline learning model were also positive. Thus, it can be concluded that the offline learning model is more effectively applied to students in the fourth semester of PAI-B IAIN Sorong in the educational statistics course.

Keywords: Comparison, Effectiveness, Online learning, Offline learning, Education statistics

How to Cite: Mulyono & Trisnawati, N.K. (2024). The comparison of the effectiveness of online and offline learning in the educational statistics course. *AXIOM : Jurnal Pendidikan dan Matematika*, *13*(1), 16-29. https://doi.org/10.30821/axiom.v13i1.17953

Introduction

Education plays a crucial role in shaping individuals and advancing nations. The rapid development of information and communication technology has significantly impacted various sectors, including education. In the context of higher education, the utilization of both online and offline learning methods has become increasingly relevant to address the challenges of our time. This research aims to investigate and compare the effectiveness of online and offline learning in Educational Statistics course.

The implementation of learning at the IAIN Sorong, particularly within the Tarbiyah Department, is based on the experiences and observations of researchers conducted online classes during the odd semester of the 2020/2021 academic year. Field observations have revealed that many students expressed dissatisfaction with limited internet data and unstable networks during online learning. Despite the use of various online learning platforms, such as Zoom, a satisfactory solution to this problem has not yet been found. There is a strong desire among many individuals for face-to-face offline learning. This issue is not limited to students; even teaching staff, including lecturers, have encountered challenges such as sudden internet disruptions, affecting the concentration of both students and instructors during the learning process.

The research conducted by (Ekantini et al., 2020) found that (1) there were differences in the science learning outcomes of students in offline learning with the science learning outcomes of students in online learning, and (2) offline science learning was more effective than online science learning. This research contradicts the research carried out by (Abidin et al., 2020) in that he found learning was quite effective even though several obstacles interfered with distance learning such as problems with teachers' social interaction with students and students' economic conditions.

Research carried out by (Mela Pratika & Wahyuni, 2022) found that the implementation of learning at Krida Utama Middle School includes three stages, namely preparation, implementation, and evaluation. Through these three stages, learning has not been effective due to several obstacles experienced by teachers and students. The research results show that students' mathematics learning outcomes during online learning are better than students' mathematics learning outcomes when offline learning is limited (Hikmat et al., 2020). From his research, it was found that network/online learning with Zoom and WhatsApp was effectively applied to theory-based courses and conversely, it was found that from the results of his research, practicum-based courses or network/online field courses were less effective.

Thus, from several existing studies, researchers want to compare the effectiveness of online and offline learning, especially in Educational Statistics courses. Educational Statistics is one of the mandatory courses. Educational Statistics includes material related to mathematical calculations and theoretical decision-making, so the learning method cannot be equated with theoretical or rote material. This is what makes educational statistics one of the subjects that need to be researched on the type of learning, whether it can be done online or only offline. Based on the problems and background, the researchers carried out a study on the comparative effectiveness between online and offline learning in teaching educational statistics at IAIN Sorong.

Methods

This research looks at the differences between the two types of learning applied in educational statistics learning, namely using online and offline learning. The form of research that will be used is quasi-experimental research with two types of treatment. This research uses a pre-experimental type of design, the one-shot case study design.

Table 1. Pre-experimental Type of Design

Type of Learning	Post Test
X_1	O_1
X_2	O_2

X_1: Educational Statistics Lesson (Delivered Online)
X_2: Educational Statistics Lesson (Delivered Offline)
O_1: Postest / Learning Outcomes
O_2: Postest / Learning Outcomes

Experimental Unit and Treatments

The subjects in this research were all Islamic Education students in the fourth semester of the 2020/2021 academic year at IAIN Sorong, namely two classes and a total of 39 students. The two classes were assumed to be homogeneous because there were no superior classes and based on the results of the odd semester's final test for the 2020/2021 academic year they had The average score is good, namely B according to the criteria of the IAIN Sorong Siakad Portal. Samples were taken using a saturated sampling technique, namely one class implemented online teaching and learning activities and the other classes implemented offline learning.

The Research Instrument

The reasearch instrument are: (a) Observation sheet on the implementation of online and offline educational statistics learning; (b) Activity sheet for students studying online and offline; (c) Student response questionnaire, namely responses to online and offline learning; and (d) Test the learning outcomes of online and offline educational statistics learning.

Data Collection Technique

Implementing online and offline learning involves several different data collection methods. To measure the level of learning implementation, observations of the learning process are carried out from beginning to end. This observation includes online and offline learning activities, referring to the SAP (Lesson Plan) that has been prepared by the lecturer, especially the material on data concentration measures and statistical tests. The observation data will then be classified based on Table 2.

Table 2. Conversion Score of Learning Implementation Level

Learning Implementation Level	Criteria
$3{,}5 \leq$ TKP ≤ 4	Very Good
$2{,}5 \leq$ TKP $< 3{,}5$	Good
$1{,}5 \leq$ TKP $< 2{,}5$	Bad
TKP $< 1{,}5$	Very Bad

Data collection on student learning outcomes in the context of online and offline learning is carried out through preparing learning outcomes tests. This test was designed taking into account the revision of the validator and was given as a posttest to students at the final stage of learning, both online and offline learning. Data on student learning test results will then be classified based on Table 3.

Table 3. Learning Outcome Score

Score	Category
90 – 100	Very high
80 – 89	High
65 – 79	Medium
55 – 64	Low
≤ 54	Very low

To get an overview of student activities, observations were carried out using student activity observation sheet during the online and offline learning process. This observation sheet has been revised according to suggestions from education experts and submitted to the expert for evaluation. Student activity data was obtained through student activity observation instruments carried out during the learning process. Student activity indicators consist of 6 aspects of observation which are based on the learning characteristics applied to each class. Observations are carried out by observing each student's activity based on the instructions on the observation instrument carried out on each instrument. The data obtained from the instrument is summarized at the end of each meeting. This data uses a range of values from 1 to 4 and is the average value of student activity at meeting 1, meeting 2, meeting 3, and meeting 4. Data from observations of student activities are classified based on Table 4.

Table 4. Students' Activity Score

Average Score	Category
3,5 – 4	Very Good
2,5 – 3,4	Good
1,5 – 2,4	Bad
1,0 – 1,4	Very Bad

In addition, to collect data on student responses to online and offline learning, a questionnaire recommended by education experts was used. The response questionnaire is given to students at the end of the learning process in both online and offline classes. With this approach, all aspects of learning, including implementation, learning outcomes, student activities, and responses, can be measured and evaluated comprehensively. Data from the student response questionnaire will be classified based on Table 5.

Table 5. Students Responses

Average Score	Category
3,5 – 4	Very Good
2,5 – 3,4	Good
1,5 – 2,4	Bad
1,0 – 1,4	Very Bad

All research data obtained, starting from implementation data, learning outcomes, student activity results, and student response results will be analyzed descriptively and inferentially.

Result

Description of Learning Implementation

Based on Table 6, at the first to fourth meetings, the implementation of online learning was in the good category, based on the level of learning implementation, the implementation of lecturers' learning in teaching online was in the good category.

Table 6. The Results of Observation on Learning Implementation

Meeting	Online Class		Offline Class	
	Mean	Criteria	Mean	Criteria
I	3,1	Good	2,8	Good
II	3,25	Good	3.1	Good
III	3,25	Good	2,9	Good
IV	3,25	Good	3,05	Good
Mean	**3,20**	**Good**	**2,96**	**Good**

At the first to fourth meetings, the implementation of lecturers' and students' offline learning was in the good category. Based on the level of learning implementation, the implementation of lecturers' and students' learning in the offline learning model during the four meetings was included in the good category.

Describing the Learning Outcome

Student learning outcomes in classes taught using online learning are described based on analysis of final test data (Post-test). From the results of data processing on student learning outcomes in online classes, a recapitulation of student educational statistics learning outcomes data is obtained as shown in the table below.

Table 7. Descriptive Statistics on Online Class

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
VAR00001	19	59.75	27.75	87.50	75.2105	13.07444	170.941
Valid N (listwise)	19						

Based on Table 7, the educational statistical learning outcomes data for online class students in the post-test shows that the mean value is 75.21. Descriptively, it can be said that students' abilities in online classes are in a good category.

Table 8. Descriptive Statistics on Online Class

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
VAR00001	20	15.22	71.03	86.25	80.7945	4.29491	18.446
Valid N (listwise)	20						

Based on Table 8, the educational statistical learning outcomes data for offline class students in the post-test shows that the mean value is 80.79. Descriptively, it can be said that the ability of students in online classes is in the good category.

Table 9 shows that the scores are mostly in the high category, this means that students gain a good knowledge of educational statistics material after learning using the online learning model. Based on the minimum completeness criteria (KKM) that have been determined in the curriculum and SAP IAIN PAI class, namely 70, the level of achievement of completeness in

classical student education statistics learning outcomes in classes taught using the online learning model, can be seen in Table 10.

Table 9. Recapitulation of Student Learning Outcomes

Interval Score	Category	Online Class		Offline Class	
		Frequency	(%)	Frequency	(%)
90-100	Very high	0	0	0	0
80-89	High	11	57,89	15	75
65-79	Medium	6	31,58	5	25
55-64	Low	1	5,26	0	0
≤54	Very Low	1	5,26	0	0
Total			**100%**		**100%**

Table 10. The Distribution of Students' Successful Learning Outcomes

Interval Score	Successful Category	Online Class		Offline Class	
		Frequency	Percentage (%)	Frequency	Percentage (%)
0 – 69	Unsuccessful	3	15,79	0	100
70 – 100	Successful	16	84,24	20	100

The Description of Students' Activities

Student activity data was obtained through student activity observation instruments carried out during the learning process. Student activity indicators consist of 6 aspects of observation which are based on the learning characteristics applied to each class. Observations are carried out by observing each student's activity based on the instructions on the observation instrument carried out on each instrument. The data obtained from the instrument is summarized at the end of each meeting. This data uses a range of values from 1 to 4 and is the average value of student activity at meeting 1, meeting 2, meeting 3, and meeting 4. Student learning activity data can be seen in the attachment of the summary results of each observation presented in Table 11 below.

Table 11. Observation Results of Students' Activity in Online Class

Aspects Observed	Students' Activities in Every Session				Mean	Category
	I	II	III	IV		
1	3,5	3,5	3	3,5	3,37	Good
2	3	4	3,5	3	3,37	Good
3	2,5	4	3,5	3,5	3,37	Good
4	1,5	3	3,5	3,5	2,87	Good
5	3,5	3,5	3	3,5	3,37	Good
6	2	2,5	2,5	2,5	2,87	Good
Mean	**2,67**	**3,42**	**3,17**	**3,25**	**3,13**	**Good**

An activity aspect is said to be fulfilled if the activity score is in the good category. The average score of student activity for each meeting in classes taught using the online learning model is in a good category, reaching 3.13 as seen in Table 11. Meanwhile, the average score of student activity in offline classes is in a good category, namely reached 2.78 which can be seen in Table 12.

Table 12. Observation Results of Students' Activities in Offline Class

Aspects Observed	Students' Activities in Every Session				Mean	Category
	I	II	III	IV		
1	3	3	2	2	2.5	Good
2	3	3	3	2	2.75	Good
3	3	2	3	4	3	Good
4	3	2	2	2	2.75	Good
5	3	3	3	3.5	3.13	Good
6	3	4	2	4	3.25	Good
Mean	**3,00**	**2,83**	**2,50**	**2,80**	**2,78**	**Good**

Students Responses

Student response data in this learning was obtained from student response questionnaires filled out by students after four meetings in educational statistics learning by implementing online and offline learning, and there were four student response indicator items. In this indicator, students are asked for their opinion (very uninteresting/enjoyable, less interesting/enjoyable, interesting/enjoyable, and very interesting/enjoyable) regarding (1) the learning methods implemented by the teacher. (2) worksheets, (3) Student Books, (4) Class atmosphere related to the type of learning that has just been implemented. The results of student responses during learning can be seen in Table 13.

Table 13. Students Responses

Class	Aspects Asked						Mean
	1	2	3	4	5	6	
Online Class	3,3	3,5	3,9	3,6	3,4	3,2	3,48
Offline Class	3,97	3,56	3,8	3,88	3,96	3,86	3,84

The effectiveness categories for each lesson are presented in Table 14.

Table 14. The Effectiveness Category (Holistically)

Class	Effectiveness	Category
Online	3,2	Effective
Offline	3.52	Very Effective

The Results of Inferential Statistical Analysis

Normality test Testing the average normalized gain results in classes taught using the online model was carried out using a one-sample test. Based on data analysis, it was found that the p-value (sig. (2-tailed)) was 0.000<0.05, indicating that the average normalized gain in classes taught using the online learning model was more than 0.29. This means that H0 is rejected and H1 is accepted, namely the normalized gain of student learning outcomes in classes taught using the online learning model is greater than 0.29 (minimum medium category). The average post-test score of students after being taught using the online learning model was greater than 69.9 (KKM) using the one-sample test. Based on data analysis, it was found that the p-value (sig. (2-tailed)) was 0.000 < 0.05, indicating that the average student learning outcome after being taught using the online learning model was more than 69.9. This means that H0 is rejected and H1 is accepted, namely that the average post-test learning outcomes in classes taught using the online learning model are more than the KKM. Hypothesis Testing Results, Hypothesis testing was analyzed using the t-test to find out whether the

application of the online learning model was effective in learning educational statistics for PAI-A class students at IAIN Sorong. Student learning outcomes, student learning outcomes, namely the average post-test score is more than (average normalized gain exceeds 0.29).

The Comparison of the Results of Inferential Analysis

Test the difference in improving student learning outcomes in online and offline classes. The results of the t-test to find out whether there is a difference between the educational statistics learning outcomes of students in experimental class I and experimental class II. Then, after the data was declared to be normally distributed, the independent samples test was continued to obtain a value of sig. (2-tailed) = 0.014 which is less than the value of alpha = 0.05. This means that the hypothesis (H1) is accepted, namely that there is a significant difference in improvement in student learning outcomes. in online learning and offline learning. 2) Variance homogeneity test From the results of the SPSS analysis, the data tested is the gain value data from experiment 1 and experiment II from the test which can be seen in the P value > α which shows a result of 0.189, this means that the data used is data that has the same variance or homogeneous.

Discussion

The Implementation of Online Learning

Learning Implementation

The implementation of learning activities towards lecturer activities when implementing online learning in the PAI-A IAIN Sorong class, the level of learning implementation reaches an average of 3.20, this is in the interval $2.50 \leq <3.30$, this shows when the lecturer teaches Under the SAP which was made based on observations made by two observers, the level of implementation is at a good level. Learning activities carried out by lecturers can encourage students to be more active in learning, working together with other groups, and exchanging ideas among groups because during learning the lecturer provides guidance and direction so that students who experience learning difficulties can get help from the lecturer without ignoring other groups.

The implementation of learning when applying the offline learning in the PAI-B class IAIN Sorong achieved an average of 2.96, this is in the interval $2.50 < 3.30$, based on the table data on the level of learning implementation in Table 2, the level of implementation is at a good level. Learning activities carried out by lecturers can encourage students to be more active in learning, as well as being responsible for providing an understanding of the material to their theme group, working together with other groups, and exchanging ideas among groups because during learning the lecturer provides guidance and direction both when guiding the group leader and in groups so that when students experience difficulties while studying, they can get help from the lecturer by providing direction and guidance until the lesson is completed according to the available time.

This is in line with the results of research by (Siregar et al., 2023; Trisnawati, 2019) that well-planned learning through lesson plans that have been prepared under learning needs will make teachers better prepared to carry out the learning process in the classroom.

Students‘ Learning Outcomes

In this research, the lecturer becomes a facilitator and requires students to be more active. They are given practice questions based on problems that students have solved in LKM based on group work, and during the implementation of learning by applying the online learning model via the Zoom application, this is the activity that dominates student activities. This allows students to think better, be open in expressing opinions, and ask questions about problems that will be solved in groups, under the objectives of the online learning model. Finally, before asking for students' opinions regarding the learning process, students are given post-test questions. The analysis of the average score of student learning outcomes when applying the online learning model in the PAI-A class by giving a learning results test after going through learning activities for four meetings, the average learning results (post-test) for the PAI-A class taught by the online learning model is 75.21 with student learning completeness above 80%, in an inferential analysis of student learning outcomes with a P-value $< \alpha = 0.05$, which means it is greater than the KKM value. From the inferential analysis, it was found that students' educational statistics learning outcomes were significantly different with a P-Value $<\alpha=0.05$, which means that the average educational statistics learning outcomes after implementing online learning were good, before and after learning showed an average gain index. of 0.75 and is in the high category. This illustrates that learning by applying the online learning model can be applied in learning, which can make students understand the material as a whole, as well as individually. The results of this research are in line with research conducted by (Yustinaningrum, 2021; Mulyono et al., 2020) which states that virtual learning is effective in improving student learning outcomes.

Meanwhile, in classes with offline learning, analysis of the average score of student learning outcomes when applying the offline learning model in the PAI-B class by giving a learning results test after going through learning activities for four meetings, the average learning outcomes for the PAI-B class taught with an offline learning model of 80.79 student learning completion was 100%. This is in line with research conducted by (Mahendra et al., 2023; Musa’ad et al., 2023) that face-to-face learning which is varied with appropriate learning methods and media can improve learning outcomes.

Students’ Activity

The results of observations of PAI-A class student activity shown in learning that implemented the online learning model showed that student activity reached an average of 3.12 under the student activity category in Chapter III which was in the good category with an interval of $2.5 \leq < 3,4$. In student activities when implementing the online learning model at the beginning of the implementation, it was still seen that some students were still confused and the lecturers understood this condition, it could be said that they were still less active, but after the learning progressed, the students began to be able to adjust to the situation, which in the end the learning could run well. and effective.

The results of observations on the activities of PAI-B class students showed that in learning that implemented the offline learning model, student activity reached an average of 2.74, which was in the good category with an interval of $2.5 \leq < 3.4$. This is in line with research by (Arsyad et al., 2022; Trisnawati & Sundari, 2020; Setyo & Mulyono, 2019) that direct learning with a variety of methods can increase student activity in class, students feel more free to discuss and collaborate with classmates.

Students Responses

At the end of the lesson, after four meetings, students were given a response questionnaire containing 6 indicators to respond to the learning process that implemented the online learning model. From the results of student responses, good responses were obtained. After analysis, they obtained an average score of 3.5, which shows that the student response was positive. These results are in line with research from (Trisnawati et al., 2023; Setyo et al., 2022) that online learning can increase students' responses and interest in learning.

Meanwhile, the results of student responses carried out offline obtained good responses. After being analyzed, they obtained an average value of 3.84. This shows that student responses were positive based on the category of student response aspects in Table 5.

The Analysis Results of Learning Effectiveness

In determining the effectiveness of learning, the three effectiveness indicators that have been determined must meet the effective criteria. The three indicators in question are student learning outcomes, student activities, and student responses.

Based on Table 14, it appears that the effectiveness of online learning in learning educational statistics for PAI-A class students at IAIN Sorong is in the effective category. Meanwhile, it appears that the effectiveness of offline learning in learning educational statistics for PAI-B class students at IAIN Sorong is in the very effective category.

The Implementation of Online and Offline Learning

In this sub-chapter, the results of the research are discussed, including a discussion of the results of descriptive analysis and inferential analysis. The results of the descriptive analysis include the lecturer's ability to manage learning, student activities, student responses, and student learning outcomes. Meanwhile, inferential analysis includes student learning outcomes.

Learning Implementation

Based on the results of research on aspects of lecturers' abilities in managing learning, it was found that there are differences regarding lecturers' abilities in managing online and offline learning. The average ability of lecturers to manage learning in online learning is the highest, namely 3.20 (Good). Meanwhile, offline learning is 2.96 (Good). Based on researchers' observations, the level of lecturers' ability to manage learning shows an increase at each meeting, this can be seen in the lecturers' ability to manage online learning.

This is what causes the high level of lecturers' ability to manage learning from previous meetings because lecturers are getting used to using this type of learning. The lecturers' high ability to manage online learning is because they are used to using the learning platform that

they use, namely Zoom, which is relatively more difficult compared to offline learning, which requires the lecturer to guide students in group division/break out and then the group leader has to teach his group friends. Another factor is the high ability of lecturers to manage online learning. There are still several similarities to offline teaching which has often been carried out by lecturers. Thus, there are conveniences in implementing offline learning models compared to online.

Students‘ Learning Outcomes

The results of data analysis show that students' abilities in learning educational statistics obtained through the final test (post-test) after learning using online and offline models, have increased from low at the beginning of learning and is in the medium and high categories after learning. In the online learning model, the average normalized gain value for student learning outcomes is 0.83 or in the high category. For the offline learning model, the average gain value for student learning outcomes was 0.72. Shows that there is a difference in increasing student learning outcomes using online learning models and offline learning models.

Based on the KKM score, in online learning, the learning outcomes of students who reached the KKM score criteria were 16 people or around 84.24%, the highest student learning outcome score was 87.50, the lowest score was 27.75 and the standard deviation was 13.07 with an average score -The average (mean) learning outcome is 75.21. This shows that student learning outcomes in the online learning model are in the medium category. For offline learning, the value of student learning outcomes that reach the criteria for scores on the KKM is 20 people or 100%, the highest student learning outcome score is 86.25, the lowest score is 71.03 and the standard deviation is 4.29 with an average (mean) result value. learning is 80.79.

This shows that student learning outcomes in offline learning are in the high category. The difference in the average student learning outcomes in online learning and offline learning models, shows that learning outcomes in offline learning models are higher than online learning. Students are encouraged to master material or assignments individually, in addition to preparation for taking quizzes. with the demand to answer questions from the lecturer, every student gets the opportunity to do so, where learning like this makes students feel competitive and want to show their abilities in order to get praise or prizes in accordance with the learning model applied by the lecturer who gives the award because the students in each group Always be prepared to wait for the opportunity to answer questions. Meanwhile, in the online learning type, individual mastery of material or assignments is only limited to getting high grades and being able to answer quizzes given by other groups.

Students’ Activities

From the results of the data analysis, it was found that there were differences in the implementation of student activities in the two learning models. The average implementation of student activities for online learning is 3.12. Then in offline learning, the average implementation of student activities is 2.74. According to researchers' observations, online learning for student activity is higher than offline.

Students Responses

Based on the results of the student response questionnaire, overall the student response was positive towards learning educational statistics. In online learning, a score of 3.5 was obtained, included in the positive category. in offline learning, a score of 3.84 was obtained, included in the positive category. Obtaining student responses has met the effectiveness criteria, namely the average percentage of student responses for each aspect is in the ≥ 75% category. This means that almost all students responded positively to the two learning models. However, judging from the large student response, offline learning is better than the online learning model.

Inferential Analysis

Under the research hypothesis, it was found that there were differences in student learning outcomes for online and offline learning. The significant difference shows that learning using these two types makes different contributions to improving student learning outcomes. This is supported by analysis of the average student posttest and normalized gain analysis. After comparing the normalized gain results for the two types of learning using the t-test (independent simple test), it was found that H0 was rejected and H1 was accepted, thus offline learning was better than online learning. The effectiveness of learning is based on 3 (three) aspects, namely (1) the learning outcomes of students who study using the online learning model, there is an increase and there is a difference in improvement, and the post-test score exceeds the KKM. (2) the activity of students taught using offline learning shows that online is higher than offline (3) while the response of students after being taught using online and offline learning models shows that the response of students taught online is lower than offline. Thus, in general, the application of offline learning, according to educational statistics at IAIN Sorong, can be said to be effective.

Based on Table 14, it can be seen that the effectiveness in experimental class I, Effective, and experimental II is in the very effective category. Based on the effectiveness criteria that have been determined, it can be said that the educational statistics course for students in the PAI-A class at IAIN Sorong using the online learning model can be said to be effective. Based on the effectiveness criteria that have been determined, it can be said that the educational statistics course for PAI-B class students at IAIN Sorong using offline learning can be said to be very effective. Based on the effectiveness criteria that have been determined, it can be said that in the educational statistics course, the application of learning to students in the PAI-B class at IAIN Sorong using the offline learning model is more effective compared to students in the PAI-A class at IAIN Sorong using the online learning model. This is per the results of research conducted by (Sitinjak & Simatupang, 2023; Selvie et al., 2022; Ekantini et al., 2020) that offline learning is more effective than online learning.

Conclusion

Based on the research results and discussion, the author draws the following conclusions in this research: It can be said that the educational statistics course for students in the PAI-A class at IAIN Sorong using the online learning model can be said to be effective. In the educational statistics course for PAI-B class students at IAIN Sorong, using offline learning

can be said to be very effective. Therefore, it can be concluded that in educational statistics the application of learning to students in the PAI-B class at IAIN Sorong using the offline learning model is more effective compared to students in the PAI-A class at IAIN Sorong using the online learning model.

Declarations

Author Contribution	:	M: Conceptualization, Writing - Original Draft, Resources, and Data Curation. NFT: Writing - Review & Editing, Formal analysis, Validation, and Supervision.
Funding Statement	:	This research was independently funded.
Conflict of Interest	:	The authors declare no conflict of interest.
Additional Information	:	This research was conducted during the pandemic. Offline class learning is carried out while adhering to health protocols, while online classes are carried out from each person's home via an online platform.

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