



A COMPARATIVE STUDY OF EFFECTIVENESS OF ELEARNING DURING COVID 19: EVIDENCE FROM ERNAKULAM AND IDUKKI DISTRICTS OF KERALA

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ABSTRACT

The testing times of Covid Pandemic had forced upon students eLearning without getting any sort of preparations. Though inevitable, the onslaught of eLearning into hitherto undeterred lives of students made profound impacts in varying magnitudes. The present study aimed to analyze a spatial comparison of the effectiveness of eLearning among students based on data collected from 100 student respondents belonging to the Ernakulam and Idukki districts of Kerala. The frequency analysis and Chi-Square analysis were applied to study the data and found that there was a significant difference in the preference for the device of eLearning and the problems faced in accessing online classes among students between these two districts.

KEYWORDS: eLearning, Student Preferences, Chi-Square

1. INTRODUCTION

The world witnessed unprecedented closing down of universities and educational institutes globally due to the Covid pandemic. Nobody was prepared for such a game-changing transition causing hiccups and adjustment lags in the teaching-learning process. (Siby K M, 2021) The availability and accessibility of several online platforms made this transition somewhat painless. The student's readiness towards the adoption of online learning is still lurking in the dark. (Neupane et al., 2020) In this context, the present study intends to make a spatial analysis of the effectiveness of eLearning among graduate and postgraduate students between the Ernakulam and Idukki districts of Kerala.

The present study is structured in the following ways. Section two delineates the objectives and hypotheses of the study. Section three briefly depicts the methodologies used in the study. Section four gives a brief review of the literature. Section five elaborates the results and its discussions. Section six summarizes the important findings of the study.

2. OBJECTIVES AND HYPOTHESES

The primary objective of the study was to make a comparative analysis of the effectiveness of eLearning among students between the Ernakulam and Idukki districts of Kerala. The following hypotheses were formulated for meeting these objectives.

H₀₁: There is no significant difference in the interest of students in eLearning between the Ernakulam and Idukki districts of Kerala.

H₀₂: There is no significant difference in the preference of device for eLearning by students between Ernakulam and Idukki districts of Kerala.



H₀₃: There is no significant difference in the preference of app for eLearning by students between Ernakulam and Idukki districts of Kerala.

H₀₄: There is no significant difference in the satisfaction levels of students for eLearning between Ernakulam and Idukki districts of Kerala.

H₀₅: There is no significant difference in the issues faced by students in eLearning between the Ernakulam and Idukki districts of Kerala.

H₀₆: There is no significant difference in the offline/online class preference of students between the Ernakulam and Idukki districts of Kerala.

H₀₇: There is no significant difference in the preference of class methodology of students between Ernakulam and Idukki districts of Kerala.

H₀₈: There is no significant difference in the problems in accessing online classes among students between Ernakulam and Idukki districts of Kerala.

3. RESEARCH METHODOLOGY

The sample of the study was composed of 100 students of which 50 students belonged to Ernakulam district and the other 50 students were from the Idukki district of Kerala. A well-structured questionnaire was constructed and data were collected online to ensure that all respondents had Internet facilities. The study also made use of frequency analysis and chi-square analysis to find out the effectiveness of eLearning among students of Ernakulam and Idukki districts.

4. REVIEW OF LITERATURE

Mridul Bisht et al., in their study, analyzed the impact of Covid 19 on the mental health of students. The researcher concluded that the majority of students experienced moderate Depression 27(16.98%), Anxiety 27 (16.98%), and stress 23 (14.46%) due to online classes (Mridul et al., 2021). Dr. Varun V Varghese and Siby KM analyzed the attitude of students towards Internet and online classes and found that gender and age categories had no significant association with time spent on online classes while the education category of students shows a significant association (Siby K M, 2021). Joseph Paschal M. Mkulu D. G. in their study of online classes during Covid 19 concluded that students learned more in less time and liked their classes more when ICT-based instruction was included (Joseph Paschal & Mkulu, 2020)

5. RESULTS AND DISCUSSION

This section is classified into segments

- 1) Demographic Profile of the respondents
- 2) District wise Characteristics of eLearning among students
- 3) Chi-square analysis

5.1) DEMOGRAPHIC PROFILE

Variable	Characteristics	Frequency	Percentage
Gender	Male	38	38
	Female	62	62
Age	Age 17-20	7	7
	Between 20 and 23	61	61
	Between 23 and 26	32	32
Religion	Hindu	44	44
	Christian	50	50
	Muslim	4	4
	Others	2	2
Caste	General	51	51
	OBC	37	37
	OEC	2	2



	SC/ST	7	7
	Others	3	3
Residential Region	Rural	78	78
	Urban	22	22
Parental Education	Below SSLC	23	23
	Plus Two/ITI/Polytechnic	48	48
	Graduation	21	21
	Post Graduation	8	8
Annual Income	Below 50000	54	54
	50000-200000	32	32
	200000-500000	10	10
	Above 500000	4	4

5.2) District wise Characteristics of eLearning among students

5.2.1 District wise interest in eLearning among students

Table 2: District wise interest in eLearning among students			
District		Frequency	Percent
1 Ernakulam	1 Yes	26	52.0
	2 No	10	20.0
	3 Maybe	14	28.0
	Total	50	100.0
2 Idukki	1 Yes	29	58.0
	2 No	7	14.0
	3 Maybe	14	28.0
	Total	50	100.0

5.2.2 District wise preference of device for eLearning among students

Table 3: District wise preference of device for eLearning among students			
District		Frequency	Percent
1 Ernakulam	1 Mobile	33	66.0
	2 Laptop	17	34.0
	Total	50	100.0
2 Idukki	1 Mobile	44	88.0
	2 Laptop	6	12.0
	Total	50	100.0

5.2.3 District wise preference of apps for eLearning among students

Table 4: District wise preference of apps for eLearning among students			
District		Frequency	Percent
1 Ernakulam	1 Zoom	9	18.0
	2 Google meet	24	48.0
	3 Whatsapp	9	18.0
	4 YouTube	8	16.0
	Total	50	100.0
2 Idukki	1 Zoom	9	18.0
	2 Google meet	22	44.0
	3 Whatsapp	11	22.0
	4 YouTube	7	14.0



	5 Mail	1	2.0
	Total	50	100.0

5.2.4 District wise preference of offline and online class among students

District		Frequency	Percent
1 Ernakulam	1 Classroom	41	82.0
	2 eLearning	9	18.0
	Total	50	100.0
2 Idukki	1 Classroom	46	92.0
	2 eLearning	4	8.0
	Total	50	100.0

5.2.5 District wise preference of teaching methodology among students

District		Frequency	Percent
1 Ernakulam	1 Google classroom	8	16.0
	2 Blackboard	42	84.0
	Total	50	100.0
2 Idukki	1 Google classroom	11	22.0
	2 Blackboard	39	78.0
	Total	50	100.0

5.3) Chi-square Analysis

5.3.1) Testing of the first Hypothesis

Null Hypothesis: There is no significant difference in the interest of students in eLearning between the Ernakulam and Idukki districts of Kerala.

Alternative Hypothesis: There is a significant difference in the interest of students in eLearning between the Ernakulam and Idukki districts of Kerala.

Table 7: District * Interest in eLearning Cross tabulation

			Interest in eLearning			Total
			1 Yes	2 No	3 Maybe	
District	1 Ernakulam	Count	26	10	14	50
		Expected Count	27.5	8.5	14.0	50.0
		% Within District	52.0%	20.0%	28.0%	100.0%
	2 Idukki	Count	29	7	14	50
		Expected Count	27.5	8.5	14.0	50.0
		% Within District	58.0%	14.0%	28.0%	100.0%
Total	Count	55	17	28	100	
	Expected Count	55.0	17.0	28.0	100.0	
	% within District	55.0%	17.0%	28.0%	100.0%	

Table 8: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.693 ^a	2	.707

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.50.



From the resulting output, it is evident that there is no significant difference in the interest of students in eLearning between Ernakulam and Idukki districts of Kerala, Pearson chi-square (2, N=100) = .693, $p = 0.707$.

Students in the districts of Ernakulam and Idukki show no significant difference in the interest of eLearning. They have similar patterns of interest in eLearning. 52% of students from Ernakulam district and 58% of students from Idukki district show interest in eLearning. The assumptions of the chi-square test are not violated since zero cells have an expected count of less than 5

5.3.2) Testing of the second hypothesis

Null Hypothesis: There is no significant difference in the preference of device for eLearning by students between Ernakulam and Idukki districts of Kerala.

Alternative Hypothesis: There is a significant difference in the preference of device for eLearning by students between Ernakulam and Idukki districts of Kerala.

Table 9: District * The preference of device for eLearning Cross tabulation

			The preference of device for eLearning		
			1 Mobile	2 Laptop	Total
District	1 Ernakulam	Count	33	17	50
		Expected Count	38.5	11.5	50.0
		% within District	66.0%	34.0%	100.0%
	2 Idukki	Count	44	6	50
		Expected Count	38.5	11.5	50.0
		% within District	88.0%	12.0%	100.0%
Total		Count	77	23	100
		Expected Count	77.0	23.0	100.0
		% within District	77.0%	23.0%	100.0%

Table 10: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.832 ^a	1	.009		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.50.

b. Computed only for a 2x2 table

From the resulting output, it is evident that there is a significant difference in the preference of device for eLearning by students between Ernakulam and Idukki districts of Kerala, Pearson chi-square (1, N=100) = 6.832, $p = 0.009$.

Students in the districts of Ernakulam and Idukki show a significant difference in their preference of device for eLearning. In Ernakulam district, only 66% of students preferred mobile for eLearning whereas, in Idukki district, it went up to 88%. The assumptions of the chi-square test are not violated since zero cells have an expected count less than 10 (2x2 table).

5.3.3) Testing of the third hypothesis

Null Hypothesis: There is no significant difference in the preference of app for eLearning by students between Ernakulam and Idukki districts of Kerala.

Alternative Hypothesis: There is a significant difference in the preference of app for eLearning by students between Ernakulam and Idukki districts of Kerala.



Table 11: District * Preference of app for eLearning Cross tabulation

		Preference of app for eLearning					Total	
		1 Zoom	2 Google meet	3 Whatsapp	4 YouTube	5 Mail		
District	1 Ernakulam	Count	9	24	9	8	0	50
		Expected Count	9.0	23.0	10.0	7.5	.5	50.0
		% within District	18.0%	48.0%	18.0%	16.0%	0.0%	100.0%
	2 Idukki	Count	9	22	11	7	1	50
		Expected Count	9.0	23.0	10.0	7.5	.5	50.0
		% within District	18.0%	44.0%	22.0%	14.0%	2.0%	100.0%
Total	Count	18	46	20	15	1	100	
	Expected Count	18.0	46.0	20.0	15.0	1.0	100.0	
	% within District	18.0%	46.0%	20.0%	15.0%	1.0%	100.0%	

Table 12: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.354 ^a	4	.852

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is .50.

From the resulting output, it is evident that there is no significant difference in the preference of app for eLearning by students between Ernakulam and Idukki districts of Kerala, Pearson chi-square (1, N=100) = 1.354, $p = .852$ 48% of students in Ernakulam district prefer Google meet of eLearning in comparison to 44% of students in Idukki district. The assumptions of the chi-square test are not violated since zero cells have an expected count of less than 5.

5.3.4) Testing of the fourth hypothesis

Null Hypothesis: There is no significant difference in the satisfaction levels of students for eLearning between Ernakulam and Idukki districts of Kerala.

Alternative Hypothesis: There is a significant difference in the satisfaction levels of students for eLearning between the Ernakulam and Idukki districts of Kerala.

**Table 13: District * Satisfaction with eLearning Cross tabulation**

			Satisfaction with eLearning			
			1 Yes	2 No	3 Maybe	Total
District	1 Ernakulam	Count	18	14	18	50
		Expected Count	15.5	16.5	18.0	50.0
		% within District	36.0%	28.0%	36.0%	100.0%
	2 Idukki	Count	13	19	18	50
		Expected Count	15.5	16.5	18.0	50.0
		% within District	26.0%	38.0%	36.0%	100.0%
Total	Count	31	33	36	100	
	Expected Count	31.0	33.0	36.0	100.0	
	% within District	31.0%	33.0%	36.0%	100.0%	

Table 14: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.564 ^a	2	.457

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 15.50.

From the resulting output, it is evident that there is no significant difference in the satisfaction levels of students for eLearning between Ernakulam and Idukki, Pearson chi-square (1, N=100) = 1.564, $p = .457$

64% of students in Ernakulam district have no satisfaction or indeterminate regarding satisfaction in eLearning in comparison to 74% of students in the Idukki district. The assumptions of the chi-square test are not violated since zero cells have an expected count of less than 5.

5.3.5) Testing of the fifth hypothesis

Null Hypothesis: There is no significant difference in the issues faced by students in eLearning between Ernakulam and Idukki districts of Kerala.

Alternative Hypothesis: There is a significant difference in the issues faced by students in eLearning between the Ernakulam and Idukki districts of Kerala.

Table 15: District * issues during eLearning Cross tabulation

			Issues during eLearning			
			1 Yes	2 No	3 Maybe	Total
District	1 Ernakulam	Count	20	10	20	50
		Expected Count	25.5	7.5	17.0	50.0
		% within District	40.0%	20.0%	40.0%	100.0%
	2 Idukki	Count	31	5	14	50
		Expected Count	25.5	7.5	17.0	50.0
		% within District	62.0%	10.0%	28.0%	100.0%
Total	Count	51	15	34	100	
	Expected Count	51.0	15.0	34.0	100.0	
	% within District	51.0%	15.0%	34.0%	100.0%	

**Table 16: Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.098 ^a	2	.078

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.50.

From the resulting output, it is evident that there is no significant difference in the issues faced by students in eLearning between Ernakulam and Idukki districts of Kerala, Pearson chi-square (1, N=100) = 5.098, $p = .078$. 40% of students in Ernakulam district face issues in eLearning in comparison to 62% of students in the Idukki district. The assumptions of the chi-square test are not violated since zero cells have an expected count of less than 5.

5.3.6) Testing of the sixth hypothesis

Null Hypothesis: There is no significant difference in the offline/online class preference of students between the Ernakulam and Idukki districts of Kerala.

Alternative Hypothesis: There is a significant difference in the offline/online class preference of students between the Ernakulam and Idukki districts of Kerala.

Table 17: District * Class Preference Cross tabulation

			Class Preference		Total
			1 Classroom	2 eLearning	
District	1 Ernakulam	Count	41	9	50
		Expected Count	43.5	6.5	50.0
		% within District	82.0%	18.0%	100.0%
	2 Idukki	Count	46	4	50
		Expected Count	43.5	6.5	50.0
		% within District	92.0%	8.0%	100.0%
Total	Count	87	13	100	
	Expected Count	87.0	13.0	100.0	
	% within District	87.0%	13.0%	100.0%	

Table 18: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.210 ^a	1	.137		
Fisher's Exact Test				.234	.117

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.50.

b. Computed only for a 2x2 table

From the resulting output, it is evident that there is no significant difference in the offline/online class preference of students between Ernakulam and Idukki districts of Kerala, Pearson chi-square (1, N=100) = 2.210, $p = .137$, Fisher's Exact Test $p = .234$.

82% of students in Ernakulam district prefer offline class to eLearning in comparison to 92% of students in the Idukki district. The assumptions of the chi-square test are not violated since zero cells have an expected count of less than 5.



5.3.7) Testing of the seventh hypothesis

Null Hypothesis: There is no significant difference in the preference of class methodology of students between Ernakulam and Idukki districts of Kerala.

Alternative Hypothesis: There is a significant difference in the preference of class methodology of students between Ernakulam and Idukki districts of Kerala.

Table 19: District * Effective Method to run the class Cross tabulation

			Effective Method to run class		Total
			1 Google classroom	2 Blackboard	
District	1 Ernakulam	Count	8	42	50
		Expected Count	9.5	40.5	50.0
		% within District	16.0%	84.0%	100.0%
	2 Idukki	Count	11	39	50
		Expected Count	9.5	40.5	50.0
		% within District	22.0%	78.0%	100.0%
Total	Count	19	81	100	
	Expected Count	19.0	81.0	100.0	
	% within District	19.0%	81.0%	100.0%	

Table 20: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.585 ^a	1	.444		
Fisher's Exact Test				.611	.306

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.50.

b. Computed only for a 2x2 table

From the resulting output, it is evident that there is no significant difference in the preference of class methodology of students between Ernakulam and Idukki districts of Kerala, Pearson chi-square (1, N=100) = .585, $p = .444$, Fisher's Exact Test $p = .611$

The assumptions of the chi-square test are not violated since zero cells have an expected count of less than 5. 84% of students in Ernakulam district blackboard to Google classroom in comparison to 78% of students in Idukki district.

5.3.8) Testing of the Eighth hypothesis

Null Hypothesis: There is no significant difference in the problems in accessing online classes among students between Ernakulam and Idukki districts of Kerala.



Alternative Hypothesis: There is a significant difference in the problems in accessing online classes among students between Ernakulam and Idukki districts of Kerala.

Table 21: District * Problems in accessing online class Cross tabulation

		Problems in accessing online class			Total	
		1 Yes	2 No	3 Maybe		
District	1 Ernakulam	Count	17	17	16	50
		Expected Count	22.5	11.0	16.5	50.0
		% within District	34.0%	34.0%	32.0%	100.0%
	2 Idukki	Count	28	5	17	50
		Expected Count	22.5	11.0	16.5	50.0
		% within District	56.0%	10.0%	34.0%	100.0%
Total		Count	45	22	33	100
		Expected Count	45.0	22.0	33.0	100.0
		% within District	45.0%	22.0%	33.0%	100.0%

Table 22: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.265 ^a	2	.010

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.00.

From the resulting output, it is evident that there is a significant difference in the problems in accessing online classes among students between Ernakulam and Idukki districts of Kerala, Pearson chi-square (1, N=100) = 9.265, p = 0.010.

Students in the districts of Ernakulam and Idukki show a significant difference in the problems in accessing the online class. In Ernakulam district, only 34% of students face problems in accessing online classes in comparison to 56% in the Idukki district. The assumptions of the chi-square test are not violated since zero cells have an expected count of less than 5.

6. CONCLUSION

The predominant conclusion of the study based on the sample data analysis was that there was a significant difference in the preference for devices and the problems faced in accessing online classes among students between the two districts. On the other hand, there was no significant difference concerning interest in eLearning, preference of apps used in eLearning, satisfaction levels of students, issues faced during online classes, preference for offline/online classes, and preference for the methodology of teaching among students between Ernakulam and Idukki districts. The study found that 84% of students in Ernakulam district preferred blackboard to Google classroom in comparison to 78% of students in Idukki district. It is also found that in Ernakulam district only 66% of students preferred mobile for eLearning whereas, in Idukki district, it went up to 88%. The preference for Google meet as a platform for eLearning was 48% among students in Ernakulam district in comparison to 44% in Idukki district. From the study, it is found that students prefer eLearning only as a temporary solution in times of Covid and eager to get back to interactive sessions of classroom learning. A majority of students find that the network issues and lack of gadgets make their learning painful and counterproductive. But still, there is a segment of the students who get accustomed to this transition and believe that the future of learning is eLearning.

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