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A Study on Students' Attitude towards Online Learning Using Paired Comparison Technique

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The purpose of this paper is to assess students' attitude towards online learning using a paired comparison technique. A total of five stimuli were selected and paired in 10 combinations. A shift in the ranking of stimulus when compared with other stimulus would indicate a change in attitude. The questionnaires were distributed to 45 college students using google forms. Analysis of the paired comparisons resulted in rankings for the stimulus from least to most preferred. Findings of the study shows that online learning is effective and it reported that online learning makes learning interesting followed by it motivates the students to taking up advanced courses often developed a positive attitude of students towards online learning.

Keywords: Online learning; attitude; paired comparison; advanced course.

1. INTRODUCTION

Education plays a vital role in the all-around and inclusive development of students as well as nations. Education provides the individual with knowledge and skill as well as the ability to understand his duties and rights. It expands vision and outlook to see the whole world. It helps us to fight against corruption, injustice and many other evils in the society. Therefore, it is important to protect the learning of all students at all ages and stages.

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In today's technologically enabled world, education can make a huge advancement by ensuring that students learn in the way they learn best rather than the way they are taught. When learning is incorporated into instructional programming in an innovative way and produces outcomes in a timely manner, learning may become stimulating and appealing [1]. Since we are currently living in an era of e-learning or online learning, it is crucial to educate students about its significance and benefits. Using the computer as a learning tool and online learning as a framework for educational delivery, researchers discovered a pattern of using online learning as a teaching and/or learning tool. Researchers who used online learning as a method of delivering education to students who used computers as learning tools discovered that the practise of using online learning as a teaching and/or learning tool is currently swiftly advancing into training [2]. Online education is a new method of learning. The learning environment enabled by online learning tools depends critically on the student's attitude toward the medium. The practise of using online education as a teaching and learning tool is currently rapidly advancing into training. A small number of studies have looked at how people's attitudes toward online learning differ around the world. However, in India, simply tying research to this topic was insufficient [3]. According on the study's findings, an effective instructional film lasts 5 to 10 minutes. Students will be more interested in watching the next lesson video if it is not too long and has a short duration. The pupils' ability to focus on learning will be diminished if the video lesson is too long since they will be exhausted and sleepy [4].

Recent research [5] have shown that the three main issues that students in online learning encounter are: (1) Poor internet accessibility; (2) Expensive learning; and (3) Lack of prompt feedback. The majority of earlier research studies identify characteristics that affect students' interest in online learning as well as obstacles to using it. However, few research has used the paired comparison technique to properly examine students' attitudes toward online learning. Singh [6] reported that urban students have a more favourable attitude towards online learning whereas rural students have not so favorable attitude towards online learning due to lack of technological resources like computer, tabs and smart phones etc. Therefore, from the perspective of the researcher, this subject is of utmost significance and requires special attention. Studies must be done on every facet of online learning because it is a developing and new topic. Hence, the current study will aid in understanding how students responded to and thought about online.

2. METHODOLOGY

The survey method is used in the study to collect data. The main objective of the study is to find out the students' attitudes towards online learning. To evaluate students' attitudes about online learning, the survey instrument for this study employed a paired comparison technique. Therefore, rather than directly addressing attitudes toward online learning, the comparison is used. When compared to other items, a change in an item's rating should signify a change in attitude. A lowering of the ranking of item would indicate a more positive attitude.

To form the attitude instrument, each item was paired with every other item for a total of 10 combinations. Each item was listed first in the pair an equal number of times since order might have an effect on selection, using a procedure similar to that suggested by Ross [7]. There are 45 students in the study group. After a review of the literature regarding paired comparison method, five items about online learning were developed. These items were chosen as the stimulus, and a suitable template was made for them with instructions for paired comparison. To eliminate response bias, both items in each pair are randomly arranged. All five pairs of statements are distributed to the 45 students and asked them to make comparative judgement as to which item of each pair is the more favourable. Then frequency table was created corresponding to the number of times that each stimulus or statement is judged more favorable than every other statement. All students were given brief information about the type of scale and shown the way on how it should be filled with instructions.

When there are more than two stimuli to judge (n stimuli), the number of judgments required in a paired comparison is given by the following formula:

$$N = n (n-1)/2$$

Where
N = number of judgments
n = number of stimuli or objects to be judged

3. FINDINGS AND DISCUSSION

The data were tabulated using the method for paired comparisons described by Edwards [8]. For calculation, Microsoft Excel is used. Table 1 represents the proportion of the five stimulus. Proportions were obtained based on the number of times each item was selected as the less preferred of the pair. A matrix of proportions for all the items was formed. A larger proportion reflects that the item listed in the column was less preferred than the item in the corresponding row. In Table 2 the stimulus or statements are rearranged in rank order of the column sums of the P matrix with the stimulus with the smallest column at the left and that with the highest at the right following Edwards [8] method. Then, the normal deviates (Z scores) corresponding to the proportion each item was ranked less preferred were calculated and a matrix based on the resulting Z scores was formed in Table 3.

Table 4 represents the scale values and rank order of the stimulus. For this instrument, the scale value reflects the extent to which each stimulus was indicated as the less preferred of the pair, i.e., higher scale value means lower preference. First item is the important stimulus regarding attitude of students' towards online learning. We can say that the item ranked at the bottom in order of importance in online learning was "Online learning causes tiredness when staring at screen " and the item ranked at the top in order of importance in online learning was "Online learning makes learning interesting". From Table 4, we can interpret that students have a positive attitude toward learning and they are interested in online learning followed by online learning motivating the students to take up the advanced courses.

Table 1. Proportion showing how frequently items were selected as the less preferred for the pairs (Pij)

Statement number	Statements	Statement number				
		1	2	3	4	5
1	Online learning highly motivate the students for taking advanced course	0.500	0.733	0.533	0.400	0.667
2	Online learning causes tiredness when stare at screen	0.267	0.500	0.267	0.222	0.511
3	Quality of learning can be increased through online learning because it integrates various type of media	0.467	0.733	0.500	0.289	0.600
4	Online learning makes learning interesting	0.600	0.778	0.711	0.500	0.778
5	Slow computer and poor internet connection discouraged to use online learning	0.333	0.489	0.400	0.222	0.500
	Sum	2.167	3.233	2.411	1.633	3.056

Table 2. Rearranging stimulus from smallest column sum lowest at the left and highest at the right

Statement number	Statements	Statement number				
		4	1	3	5	2
4	Online learning makes learning interesting	0.500	0.600	0.711	0.778	0.778
1	Online learning highly motivate the students for taking advanced course	0.400	0.500	0.533	0.667	0.733
3	Quality of learning can be increased through online learning because it integrates various type of media	0.289	0.467	0.500	0.600	0.733
5	Slow computer and poor internet connection discouraged to use online learning	0.222	0.333	0.400	0.500	0.489
2	Online learning causes tiredness when stare at screen	0.222	0.267	0.267	0.511	0.500
	Sum	1.633	2.167	2.411	3.056	3.233

Table 3. Z matrix corresponding to proportions (Zij)

Statement number	Statements	Statement number				
		4	1	3	5	2
4	Online learning makes learning interesting	0.000	0.253	0.556	0.765	0.765
1	Online learning highly motivate the students for taking advanced course	-0.253	0.000	0.083	0.432	0.622
3	Quality of learning can be increased through online learning because it integrates various type of media	-0.556	-0.083	0.000	0.253	0.622
5	Slow computer and poor internet connection discouraged to use online learning	-0.765	-0.432	-0.253	0.000	-0.028
2	Online learning causes tiredness when stare at screen	-0.765	-0.622	-0.622	0.028	0.000
	Sum	-2.339	-0.884	-0.236	1.478	1.981
	Mean	-0.468	-0.178	-0.047	0.296	0.392
	Add largest –ve value	+0.468	+0.468	+0.468	+0.468	+0.468
	Rank (Scale value)	0.000	0.290	0.421	0.764	0.860

Table 4. Ranks of stimulus based on scale value

Statements	Scale values	Rank	Order of importance
Online learning makes learning interesting	0.000	5	1
Online learning highly motivate the students for taking advanced course	0.290	4	2
Quality of learning can be increased through online learning because it integrates various type of media	0.421	3	3
Slow computer and poor connection discouraged to use online learning	0.764	2	4
Online learning causes tiredness when stare at screen	0.860	1	5

4. RELIABILITY OF THE SURVEY

Based on Edwards' [8] method, a measure of internal consistency was computed for the survey. The internal consistency was calculated by comparing the observed or empirical proportions Pij with those to be obtained in terms of theoretical or expected or derived scale values. For this the first step is to obtain the theoretical normal deviates Zij'. Table 5 shows the theoretical normal deviates Zij' where the scale values are written in the left hand side are then subtracted columnwise from the scale values written at the top of the table. Table 6 represents the theoretical proportions Pij' corresponding to the theoretical normal deviates Zij' by consulting the table of normal deviates. As shown in Table 7 the internal consistency measure involves comparing the observed proportions of Pij of Table 2 and with those theoretical Pij' of Table 6 based on the derived scale values. The value obtained for the average discrepancy between observed and theoretical proportions was 0.028. According to Edwards (1982), the average discrepancy values usually reported for paired comparisons ranges from .024 to .032.

Average Discrepancy (AD)= $\sum |Pij - Pij'| /n (n-1)/2$

where Pij is the observed proportion and Pij' is the theoretical proportion corresponding to the normal deviate Zij, n= no of stimuli

Table 5. Theoretical normal deviate Zij' corresponding to the scale distance between the statements

Statement number	Statements	Statement number					
		Scale value	4	1	3	5	2
4	Online learning makes learning interesting	0.000					
1	Online learning highly motivate the students for taking advanced course	0.290	-0.290				
3	Quality of learning can be increased through online learning because it integrates various type of media	0.421	-0.421	-0.131			
5	Slow computer and poor connection discouraged to use online learning	0.764	-0.764	-0.474	-0.343		
2	Online learning causes tiredness when stare at screen	0.860	-0.860	-0.570	-0.439	-0.096	

Table 6. Theoretical proportion Pij' corresponding to normal deviate (Zij)

Statement number	Statements	Statement number				
		4	1	3	5	2
4	Online learning makes learning interesting					
1	Online learning highly motivate the students for taking advanced course	0.386				
3	Quality of learning can be increased through online learning because it integrates various type of media	0.337	0.448			
5	Slow computer and poor connection discouraged to use online learning	0.222	0.318	0.366		
2	Online learning causes tiredness when stare at screen	0.195	0.284	0.330	0.462	

Table 7. Discrepancies between observed proportion of Pij and the theoretical proportion Pij'

Statement number	Statements	Statement number				
		4	1	3	5	2
4	Online learning makes learning interesting					
1	Online learning highly motivate the students for taking advanced course	0.014				
3	Quality of learning can be increased through online learning because it integrates various type of media	-0.048	0.019			
5	Slow computer and poor connection discouraged to use online learning	0.000	0.015	0.034		
2	Online learning causes tiredness when stare at screen	0.027	-0.017	-0.063	0.049	
	Sum	0.089	0.051	0.097	0.049	

5. CONCLUSION

Based on the study it can be concluded that majority of the students had positive attitude towards online learning. Consideration of students' attitude towards "Online learning makes learning interesting" is an important stimulus mostly preferred by the students followed by "Online learning highly motivate the students for taking advanced course". The educational programme must be able to measure attitudes and any desired change in attitudes. The paired comparison method used in the attitude survey provides an efficient way to

measure attitudes and has a wide range of possible uses in educational programmes. So online learning can be encouraged in universities. The study recommended that the government ought to establish and formulate goals and objectives for ensuring initiation of e–learning programs. This study focused only on few aspects of online learning. Future studies can concentrate on evaluating the respondent's attitude using the paired comparison technique with more dimensions since there are no study findings on these strategies.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Divjak B, Begicevic N. Imaginative acquisition of knowledge-strategic planning of e-learning. Proceedings of 28th International Conference on Information Technology Interfaces. 2006;47-52. June.
2. Lee JA, Busch PE. Factors related to instructors' willingness to participate in distance education. The Journal of Educational Research. 2005;99(2):109-115.
3. Baker JD. An investigation of relationships among instructor immediacy and affective and cognitive learning in the online classroom. The Internet and Higher Education. 2004;7(1):113.
4. Daniel SJ. Education and the COVID-19 pandemic. Prospects. 2020;49: 91-96.
5. Nadeem T, Shareef A, Zeeshan M, Ramey AM, Husain W. An Exploration of the Attitude and Readiness of Students towards Online Learning Experiences at University Level. Palarch's Journal of Archaeology of Egypt/Egyptology. 2021;18 (2):159-166.
6. Singh K. A study on secondary school students' attitude towards online learning during covid-19. International Journal of Multidisciplinary Educational Research. 2020;2(3):2277-7881.
7. Ross RT. Optimal orders in the method of paired comparisons. Journal of educational Psychology. 1939;25:417-421.
8. Edwards AL. Techniques of attitude scale construction. pp. 30-52. Irvington Publishers, New York; 1982.

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