A Scale to Measure the Attitude of Students towards Online Learning

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ABSTRACT

Covid-19 has transformed the centuries old, chalk and talk method of teaching to technology driven teaching. Indeed online education is an alternate to face to face education which has come to the rescue of students and teachers in pandemic. But there are some issues in online education from students point of view. Educational institutions should make every effort to make online education interesting to the students. Technology driven education system need to be strengthened to cope up with the pandemic situation. As a teacher it is very important to know what students are feeling about online education. The negative feelings need to be taken care and efforts need to be made by the teacher to correct them by taking appropriate measures in online teaching. The positive feelings need to be maintained and promoted. Due to the non-availability of a standardized scale to measure the attitude of students towards online learning in the present situation, it was felt necessary to construct a scale. At this point of time a scale was constructed to measure the attitude of students towards online education using equal appearing interval scale developed by Thurstone and Chave (1929). Twenty statements were included in the final scale.

***Key words**: Attitude; Online; Learning; Students; Scale;*

As a measure to contain the spread of the Covid – 19, the State governments across the country began shutting down schools and colleges temporarily in the second and third week of March 2020. Days passed on but there is no certainty when they will reopen and functions in full fledge as it was prior to the pandemic. To prevent the impact on the continuity of students learning educational institutions started online education in the pandemic situation. Teacher and students started meeting online for educational purpose. The educational institutions charted out the time tables for synchronous online education where in the teacher and students come online at a predetermined time in a video conference application. The educational institutions round the globe are now utilizing digital platforms to educate their students. We cannot estimate how long this pandemic situation would continue and how long the educational institutions need to educate their students online. It is needless to say, that the pandemic situation has transformed the centuries old, chalk and talk method of teaching to technology driven teaching. Online education is an alternate to face to face education which has come to the rescue of students and teachers. But there are some issues in online education from students' point of view. However educational institutions should make every effort to make online education interesting to the students. Technology driven education system need to be strengthened to cope up with the pandemic situation. As a teacher it is very important to know what students are feeling about online education, what are their thoughts, mid-set towards online education. The negative feelings need to be taken care and efforts need to be made by the teacher to correct them by taking appropriate measures in online teaching. The positive feelings need to be maintained and promoted. At this juncture a study was planned to construct a scale to measure the attitude of students towards online education.

METHODOLOGY

The educational institution where chalk and talk method of teaching was prominent adopted synchronous

online education system during the pandemic situation. Synchronous online education is a system where teacher and students meet online at a predetermined time at virtual interface for educational purpose. For the purpose of the attitude scale construction online learning was operationalised as the learning that is taken place by the student in online synchronous education.

Attitude is a psychological, a mental and emotional entity that describes a person. It is complex and acquired through experience. It is an individual's predisposed to think, feel, perceive and behave towards a cognitive object. It is personal disposition which impels an individual to react towards some objects or situation whether favourable, unfavorable or neutral (*Kerlinger, 1964*). In turn attitude influences the individual's thoughts and actions.

A scale to measure the attitude of students towards online education was developed using equal appearing interval scale developed by *Thurstone and Chave (1929).* After consulting relevant literature, discussion with the experts, students and considerable thinking vital aspects related to attitude of students towards online education were delineated. In the first instance 57 statements, about the chosen topic were framed to measure the attitude of students towards online education. The wordings of these statements were discussed with the experts and modified appropriately. The statements were edited on the basis of criteria suggested by *Thrustone and Chave (1929), Likert (1932)* and *Edward (1957).* The statements referring to the past, statements referring to present, factual statements, statements that may be interpreted in more than one way, statements that are irrelevant, statements that are likely to be endorsed by almost everyone or almost no one were avoided. Statements that are believed to cover the entire range of the effective scale of interest are retained. Care was taken to keep the language of the statements simple, clear and direct. Short statements not exceeding 20 words were framed. At most precaution was taken to keep one thought in a statement. Statements containing universals such as all, always, none, never, often, etc were avoided. Ambiguous statements were avoided. Words such as only, just, merely, only, just, merely and others were avoided. Statements were written in simple sentences. Difficult words, double negative words were avoided in statements. Out of eighty statements, thirty statements

were retained after editing. These statements were administered on equally spaced 7 point psychological continuum to 50 judges.

Calculation of scale and inter quartile range values : After receiving the responses from the judges Scale value (S) and inter quartile range value (Q) for each statement were calculated. Median was used as the scale value to show the favorableness or unfavourableness and quartile deviation as the Q-value, as a measure of variance for a given statement. Scale value was calculate using the formula

$$S = l + \left[\frac{(0.50 - \sum Pb)}{Pw}\right] i$$

S = Median or scale value of the statement
l = Lower limit of the interval in which the median falls
Pb = The sum of the proportion below the interval in which the median falls
Pw = The proportion within the interval in which the median falls
i = The width of the interval which is assumed to be equal to 1.00

$$Q = C_{75} - C_{25}$$

Q = Inter quartile range

$$25^{th} \text{ centile} = C_{25} = l + \left[\frac{(0.25 - \sum Pb)}{Pw}\right] i$$

$$75^{th} \text{ centile} = C_{75} = l + \left[\frac{(0.50 - \sum Pb)}{Pw}\right] i$$

The median is the value above and below which 50% of the ratings fall. The median is the 50th percentile. The first quartile (Q1) is the value below which 25% of the cases fall and above which 75% of the cases fall, in other words the 25th percentile. The third quartile Q3, is the 75th percentile. The inter quartile range is the difference between third and first quartile, or Q3 - Q1.

When there is a good agreement among the subjects in judging the degree of favourableness of a statement, Q value will be small. A large Q value indicates disagreement among the judges as to the degree of attribute possessed by a statement and it is therefore taken as an indication that there is something wrong with the statement. *Thrustone and Chave (1929)* regarded large Q values primarily indicate that the statement is ambiguous or the statement is interpreted in more than one way by the subjects.

Selection of attitude statements for inclusion in final scale : Scale and Q values were calculated for the statements and out of which 20 statements were selected whose Q values were relatively small. These

statements were then arranged in the order and presented to subjects with instructions to indicate those that they are willing to agree and that those they disagree or reject with. Taking only the statements with which the subjects has agreed, an attitude score was obtained from the scale values of these statements that were regarded as an indication of the location of the subject on the psychological continuum. When there was good agreement among the judges in judging the degree of favorableness or unfavourableness of a statement, Q value was small as compare with the value obtained when there was relatively little agreement among the judges. Based on the following criteria, 20 statements were finally selected for attitude scale. The scale values of the selected statements ranges from 2.2 to 5.5 Q values from 1 to 4.1 with seven class intervals. The S and Q values of the statements are indicated in Table 1.

Scoring procedure and final format of the scale : Out of the twenty selected statements nine statements were the indicators of favourable attitude and eleven statements were the indicators of unfavourable attitude. The selected twenty statements were randomly arranged to avoid bias. Against each of the selected statements there were seven columns representing a seven point continuum of very strongly agree, strongly agree, agree, undecided, disagree, strongly disagree, very strongly disagree with weight age of 7, 6, 5, 4, 3, 2,1 for favourable statements and 1, 2, 3, 4, 5, 6, 7 for un favourable statements. Final attitude scores were obtained.

Determining reliability of attitude scale : Reliability is the accuracy and precision of the measuring instruments. Split half method was used to determine reliability of attitude scale as followed by *Gopal et. al., (2019); Naveenkumar et. al., (2020); Poornima and Husain (2021).*

Split half method of reliability : The scale with twenty statements was divided into two equal halves by putting odd numbered items in one half an even numbered items in another half. Both the halves were considered as separate schedules with ten statements each. Each set of half part of a schedule was administered on the same group of 50 respondents alternatively. Correlation coefficient was calculated using Spearman Brown prophecy formula to find the agreement between the two sets of the statements of the schedule. Where roe is the coefficient of reliability of two half tests.

$$r_{11} = \frac{2(\text{roe})}{1 + \text{roe}}$$

Determining validity of attitude scale : Validity is the extent to which a measurement is well-founded and likely corresponds accurately to the real world. The validity of a measurement tool is the degree to which the tool measures what it claims to measure. Validity is based on the strength of a collection of different types of evidence. The internal validity of the sale is measure by taking the square root of the reliability coefficient. The final scale was administered to 50 respondents or the validity of the scale. The coefficient of validity was found to be 0.80. The content, logical, construct and concurrent validity of the scale was ensured through jury validation a properly selecting the statements to cover the whole universe of the content with the help of literature. Thus the scale met the reliability and validity test satisfactorily and indicated its ability as an instrument to measure the attitude of students towards online learning

RESULTS AND DISCUSSION

The final scale consisted of twenty statements namely. I find the students can turn anywhere with internet access and electricity into a classroom; I feel I listen to online classes comfortably and relaxed; Sometimes I feel online learning lacks practical learning; I find online learning saves time as I need not travel to class room; I find online learning is boredom; I believe online learning helps in exploring more about the subject; I think flipped classroom approach would be better; I feel I am disconnected with my class mates in online learning; I find online learning includes increased workloads; I believe online learning enhanced the quality of teaching; Sometimes I find lower retention rate for online learning; I think I am not getting enough time for brainstorming in online classes; I find the online learning made learning easy; I feel online learning makes students less responsible and less accountable in class; I find in online learning it is difficult to manage study time at home; I feel online learning is stressful; I think online learning made me tech savy.

The above scale statements indicate both positives and negatives of online learning. The content covered the affective component encompassing feelings; behavioural component encompassing the effect of attitude on behavior; cognitive component encompassing

Table 1. Scale developed for measuring the attitude of students towards online learning

Statement		B	C	D	E	F	G	H	I	J
Online learning enhance the knowledge level	f	0	12	2	6	13	8	9	3.2	3.2[R]
	p	0	0.24	0.04	0.12	0.26	0.16	0.18		
	cp	0	0.24	0.28	0.40	0.66	0.82	1		
Online learning is effective than conventional learning	f	0	15	2	7	6	15	5	4.3	3.89[R]
	p	0	0.30	0.04	0.14	0.12	0.3	0.1		
	cp	0	0.30	0.34	0.48	0.60	0.90	1		
Opportunity of interaction with the teacher is enhanced	f	12	1	2	8	18	5	4	5.1	4.1[R]
	p	0.24	0.02	0.04	0.16	0.36	0.1	0.08		
	cp	0.24	0.26	0.30	0.46	0.82	0.92	1		
I find the students can turn anywhere with Internet access and electricity into a classroom	f	5	6	9	6	11	8	5	4.4	1[A]
	p	0.10	0.12	0.18	0.12	0.22	0.16	0.1		
	cp	0.10	0.22	0.40	0.52	0.74	0.90	1		
I feel I listen to online classes comfortably and relaxed	f	11	8	17	0	8	2	4	4.9	1.1[A]
	p	0.22	0.16	0.34	0	0.16	0.04	0.08		
	cp	0.22	0.38	0.72	0.72	0.88	0.92	1		
Online learning increased attention towards lecture	f	0	13	1	6	8	13	9	4.6	3.6[R]
	p	0	0.26	0.02	0.12	0.16	0.26	0.18		
	cp	0	0.26	0.28	0.4	0.56	0.82	1		
Sometimes I feel online learning lacks practical learning	f	3	5	13	2	14	4	7	2.9	1.9[A]
	p	0.06	0.10	0.26	0.04	0.28	0.08	0.14		
	cp	0.06	0.16	0.42	0.46	0.74	0.82	0.96		
I find online learning saves time as I need not travel to class room	f	1	13	15	2	2	1	14	3	1.4[A]
	p	0.02	0.26	0.30	0.04	0.04	0.02	0.28		
	cp	0.02	0.28	0.58	0.62	0.66	0.68	0.96		
Online learning helps in exploring more about the subject	f	0	4	15	4	8	9	10	3.5	2.8[R]
	p	0	0.08	0.30	0.08	0.16	0.18	0.2		
	cp	0	0.08	0.38	0.46	0.62	0.80	1		
I find online learning is boredom	f	8	11	17	3	2	3	6	2.5	1.91[A]
	p	0.16	0.22	0.34	0.06	0.04	0.06	0.12		
	cp	0.16	0.38	0.72	0.78	0.82	0.88	1		
I am diverted in online learning	f	0	0	10	5	5	16	14	5.1	2.7[R]
	p	0	0	0.20	0.10	0.10	0.32	0.28		
	cp	0	0	0.20	0.30	0.40	0.72	1		
I believe online learning helps in exploring more about the subject	f	1	4	5	4	15	12	9	3.4	1.73[A]
	p	0.02	0.08	0.10	0.08	0.30	0.24	0.18		
	cp	0.02	0.10	0.20	0.28	0.58	0.82	1		
I think flipped classroom approach would be better	f	0	0	5	8	13	16	8	5.2	1.8[A]
	p	0	0	0.10	0.16	0.26	0.32	0.16		
	cp	0	0	0.10	0.26	0.52	0.84	1		
I feel I am disconnected with my class mates in online learning	f	0	5	6	5	15	14	5	4.3	1.86[A]
	p	0	0.10	0.12	0.10	0.30	0.28	0.1		
	cp	0	0.10	0.22	0.32	0.62	0.90	1		
I find online learning includes increased workloads	f	1	2	1	4	16	12	14	4	1.52[A]
	p	0.02	0.04	0.02	0.08	0.32	0.24	0.28		
	cp	0.02	0.06	0.08	0.16	0.48	0.72	1		
No much learning takes place in online classes	f	11	8	4	4	8	10	5	4.5	3.1[R]
	p	0.22	0.16	0.08	0.08	0.16	0.20	0.1		
	cp	0.22	0.38	0.46	0.54	0.70	0.90	1		

Statement		B	C	D	E	F	G	H	S	Q
I hardly concentrate in online classes	f	0	5	11	5	5	11	13	3.7	2.5 [R]
	p	0	0.10	0.22	0.10	0.10	0.22	0.26		
	cp	0	0.10	0.32	0.42	0.52	0.74	1		
I believe online learning enhanced the quality of teaching	f	5	6	2	4	13	12	8	3.8	1.37 [A]
	p	0.10	0.12	0.04	0.08	0.26	0.24	0.16		
	cp	0.10	0.22	0.26	0.34	0.60	0.84	1		
Sometimes I find lower retention rate for online learning	f	4	4	10	4	13	8	7	2.4	1.6 [A]
	p	0.08	0.08	0.20	0.08	0.26	0.16	0.14		
	cp	0.08	0.16	0.36	0.44	0.70	0.86	1		
I think I am not getting enough time for brainstorming in online classes	f	7	6	5	3	22	3	4	2.2	1.8 [A]
	p	0.14	0.12	0.10	0.06	0.44	0.06	0.08		
	cp	0.14	0.26	0.36	0.42	0.86	0.92	1		
Online learning provide flexible environment	f	2	9	2	10	6	9	12	4.3	2.4 [R]
	p	0.04	0.18	0.04	0.20	0.12	0.18	0.24		
	cp	0.04	0.22	0.26	0.46	0.58	0.76	1		
There is no substitute for online learning	f	5	7	4	8	11	9	6	3.9	2.2 [R]
	p	0.1	0.14	0.08	0.16	0.22	0.18	0.12		
	cp	0.1	0.24	0.32	0.48	0.70	0.88	1		
I find the online learning made learning easy	f	4	5	7	6	13	8	7	3.7	1.75 [A]
	p	0.08	0.10	0.14	0.12	0.26	0.16	0.14		
	cp	0.08	0.18	0.32	0.44	0.70	0.86	1		
I feel online learning makes students less responsible and less accountable in class	f	3	4	3	8	11	15	6	4.6	1.62 [A]
	p	0.06	0.08	0.06	0.16	0.22	0.3	0.12		
	cp	0.06	0.14	0.20	0.36	0.58	0.88	1		
I find note taking is avoided in online learning	f	9	3	2	7	7	9	13	3.9	1.96 [R]
	p	0.18	0.06	0.04	0.14	0.14	0.18	0.26		
	cp	0.18	0.24	0.28	0.42	0.56	0.74	1		
I find in online learning it is difficult to manage study time at home	f	9	4	6	9	6	10	6	2.9	1.3 [A]
	p	0.18	0.08	0.12	0.18	0.12	0.2	0.12		
	cp	0.18	0.26	0.38	0.56	0.68	0.88	1		
Online learning made studying easy and comfortable	f	3	2	3	9	9	10	14	4.1	2.5 [R]
	p	0.06	0.04	0.06	0.18	0.18	0.2	0.28		
	cp	0.06	0.10	0.16	0.34	0.52	0.72	1		
I feel online learning is stressful	f	8	7	3	6	12	5	9	3.4	1.2 [A]
	p	0.16	0.14	0.06	0.12	0.24	0.1	0.18		
	cp	0.16	0.30	0.36	0.48	0.72	0.82	1		
My platform skills are reduced due to online learning	f	0	0	3	8	16	13	10	4.89	3.75 [R]
	p	0	0	0.06	0.16	0.32	0.26	0.2		
	cp	0	0	0.06	0.22	0.54	0.80	1		
I think online learning made me tech savy	f	11	4	3	4	9	4	15	4.9	1.65 [A]
	p	0.22	0.08	0.06	0.08	0.18	0.08	0.3		
	cp	0.22	0.30	0.36	0.44	0.62	0.70	1		

B,C, D = Least Favourable,   *E* = Neutral;   *F, G, H* = Most Favourable,   *I* = S Value;   *J* = Q Value

A = Accepted.   *R* = Rejected,

f = frequency,   *P* = Proportion,   *CP* = Cumulative proportion

belief and knowledge. As the scale satisfied reliability and validity, hence can be used to study the attitude of students towards online learning.

CONCLUSION

It is very much necessary to understand and analyse the participants attitude towards online learning. Efforts need to be made to develop positive attitude towards the alternate system of education i.e. online teaching and learning. At this juncture the scale developed to study the attitude of students towards online learning showed reliability and validity of the attitude scale indicating precision and consistency of the results. Hence the scale is fit to study the students towards.

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