



A Scale to Measure the Attitude of Teachers towards Information Communication Technologies (ICTs)

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ABSTRACT

A scale was developed to measure the attitude of teachers towards ICTs based on Likert's method of summated rating. A tentative list of 67 statements each expressing the attitude of teachers towards ICTs was collected and edited in the light of the informal criteria suggested by Thrustone and Chave, Likert and Edward. These statements were framed such that they expressed the positive or negative attitude. The respondents were asked to indicate their degree of agreement or disagreement with each statement on a five point continuum ranging from strongly agree to strongly disagree. The score of each individual item on the scale was calculated by summing up the weights of the individual items. On the basis of the total score, the respondents were arranged in descending order. The top 25 per cent of the respondents with their total scores were considered as the high group and the bottom 25 per cent as the low group, so that these two groups provide criterion groups to evaluate individual items. In order to find out the discriminating index for each item, 't' value was calculated using the formula and procedure given by Edwards . The scale so developed finally consisted of 24 statements (14 positive and 10 negative).

Key words : Attitude, Continuum, ICT, Reliability, Validity.

ICTs can be broadly interpreted as technologies that facilitate communication and the processing and transmission of information by electronic means. Information Communication Technologies (ICTs) in this study was confound to the applications of computers and internet. The applications of computer included Microsoft word, power point slides and Microsoft excel while the applications of internet included e- mail and world wide web.

Attitude is an organized predisposition to think, feel and perceive and behave towards a cognitive object. A cognitive object may be any symbol, phrase, slogan, person, institution, idea towards which people can differ with respect to positive or negative affect. Attitude in this study was operationalised as the degree of positive or negative feeling of teachers towards ICTs. A statement is anything that is said about a cognitive object.

MATERIAL AND METHODS

For measuring the attitude, different types of scales developed by Thrustone, Likert and several others differ markedly in type and method of construction, but the objective in every case was to assign an individual a position along a quantitative scale.

In this study, attitude of teachers towards ICTs was measured using the Likert's method of summated rating because of following reasons.

- a) Hall (1934) had indicated that the likert type of scales with fewer statements will give high reliability coefficients.
- b) In this scale each item was judged on a five point continuum rather more rejection of the item as in Thrustone's scale. By this method, we get more information about the item than Thrustone's scale.
- c) No judges are required to rank the items as in case of Thrustone's scale. This saves time, labour, and money and also simplifies the procedure.
- d) It is relatively simple and easier than equal appearing interval scale which have been claimed by Likert (1932) and supported by Hall (1934).
- e) The item on a Likert scale provide data of the individual about the specific issue covered by the single item as well as total score on the attitude dimension being studied.

Table 1. Scale developed for measuring the attitude of teachers towards ICTs

Sl. No.	Statement	't' value
1.	ICT is a wonderful means of organizing information for teaching	4.128*
2.	ICT is an indispensable tool for teaching in the competitive world	2.976*
3.	By using ICT tools in teaching decreases my attention	3.992*
4.	ICT can effectively communicate the technical information	4.638*
5.	Using ICTs cuts down my preparation time drastically	3.357*
6.	ICT makes the job of teaching difficult	1.971*
7.	ICT improves presentation of information	4.666*
8.	ICT makes teaching convenient	2.243*
9.	I am sure I can improve the quality of teaching using ICTs	3.405*
10.	ICT is a great tool for effective communication and building team skills among students	4.632*
11.	ICT search normally results in voluminous information which is useless	4.837*
12.	Using ICT in teaching do not give a professional touch to the students	3.256*
13.	ICT tools always provide new ideas for designing effective lessons	3.833*
14.	I do not find any relevant information for my teaching using ICTs	3.118*
15.	ICT encourage me to gather more information	3.313*
16.	ICT based tools enrich teaching and make it interesting to the students	3.939*
17.	ICTs use in teaching do not give a personal touch to the students	2.143*
18.	ICTs are very helpful in maintaining the database of the students	2.986*
19.	Students find newness if ICTs are used in teaching	2.076*
20.	ICTs use can bring creativity in teaching	3.870*
21.	Using ICT in teaching means wasting valuable time	2.230*
22.	Using ICT means depending on the mercy of others	3.573*
23.	ICT makes the job of teaching easy and exciting	3.198*
24.	ICT makes lessons less diverse	2.076*

(*) Indicates the statements having the 't' values greater than 1.75 and are included in the final attitude scale

The statements expressing the attitude of teachers towards ICTs were collected from available literature, in consultation with the specialists in the field of ICT. Then the statements were edited on the basis of criteria suggested by Thrustone and Chave (1929), Likert (1932) and Edward (1957). These statements were administered to 40 respondents .

The respondents were asked to indicate their degree of agreement or disagreement with each statement on a five point continuum ranging from strongly agree to strongly disagree. The scoring pattern adopted was 5 weights to strongly agree response, 4 to agree response, 3 to undecided response, 2 to disagree response and 1 to strongly disagree response, if it was positive statement and for negative statement, the scoring pattern was reversed viz., 'strongly agree' response with 1 weight, 'agree' with 2, 'undecided' with 3, 'disagree' with 4

and strongly disagree with 5 weights in that order. Their responses were recorded and summated score for the total statements was obtained.

Calculation of 't' value: Based on the total scores, the respondents were arranged in descending order. The top 25 per cent of the respondents with their total scores were considered as the high group and the bottom 25 per cent as the low group, so as these two groups provide criterion groups in terms of evaluating the individual statements as suggested by Edwards (1957). Thus, out of 40 teachers to whom the items were administered for the item analysis, 10 teachers with highest scores and 10 teachers with lowest scores were used as criterion groups to evaluate individual items.

The critical ratio, the 't' value which is a measure of the extent to which a given statement differentiates between the high and low

groups of respondents for each statement was calculated by using the formula suggested by Edwards (1957).

$$t' = \frac{\bar{X}_H - \bar{X}_L}{\sqrt{\frac{(X_H - \bar{X}_H)^2 + (X_L - \bar{X}_L)^2}{n(n-1)}}$$

where,

$$\sum (X_H - \bar{X}_H)^2 = \sum X_H^2 - (\sum \bar{X}_H)^2$$

$$\sum (X_L - \bar{X}_L)^2 = \sum X_L^2 - (\sum \bar{X}_L)^2$$

\bar{X}_H = The mean score on a given statement for the high group

\bar{X}_L = The mean score on a given statement for the low group

$\sum X_H^2$ = Sum of squares of the individual score on a given statement for high group

$\sum X_L^2$ = Sum of squares of the individual score on a given statement for low group

$\sum X_H$ = Summation of scores on a given statement for high group

$\sum X_L$ = Summation of scores on a given statement for low group

n = Number of respondents in each group

Σ = Summation

RESULTS AND DISCUSSION

Sixty seven statements each expressing the attitude of teachers towards ICTs were collected from available literature, in consultation with

the specialists in the field of ICT. The statements were edited. Out of sixty seven statements, sixty statements were retained after editing. These statements were administered to 40 respondents and the respondents were asked to indicate their degree of agreement or disagreement with each statement on a five point continuum ranging from strongly agree to strongly disagree.

Selection of Attitude statements for final scale:

After computing the 't' value for all the items (Table I) statements comprising of fourteen positive and ten negative statements with highest 't' value equal to or greater than 1.75 were finally selected and included in the attitude scale.

Validity of the scale: As the content of the attitude thoroughly covered the entire universe of the teachers with special emphasis on ICTs through literature consultation and expert opinion, it was assumed that present scale satisfied the content validity.

Reliability of the scale:

Test-retest method was used to find out the reliability. In this method, the scale was further administered to 40 respondents and the 't' value was found significant validating the scale.

To conclude, a scale was developed and standardized to measure the attitude of teachers towards ICTs. The scale was found to be valid as well as reliable. The present study would enable the researchers to measure the attitude of teachers towards ICTs. The respective educational institutions can plan for correction of the negative attitudes to promote the use of ICTs in education. The attitude scale can further be used with little or no modifications elsewhere where similar situations prevail.

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