CONSTRUCTION AND STANDARDISATION OF TEACHER INTERPERSONAL RELATIONSHIP SCALE (TIRS)

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Introduction

Education is a social process and the classroom is a social system in which the teacher and the students interact as organizational members. The teacher in this periphery defined, is a constructive weaver of human relationship. The interpersonal interactions of a teacher are with pupils, colleagues, parents, community and school administration. The quality of classroom relations is dependent on the activities of both the instructor and the students. According to N.C.E.R.T. (1997), teachers are expected to perform their professional activities in the five major dimensions.

1. Teacher in relation to pupils: The teacher's relation with the pupils should be of a friend, philosopher and a guide. He should respect the individuality of every child recognising the individual differences.

2. Teacher in relation to parents or guardians: Teacher should maintain good relationship with parents with sympathetic, helpful and understanding attitude towards them regarding their child schooling problems. He should participate in parent-teacher and other similar activities. He should be available to parents at scheduled times to discuss their pupil progress and behaviour.

3. Teacher in relation to society and the nation: The teacher should participate in community affairs and assure through personal behaviour that school-staff image in the community is favourable.

4. Teacher in relation to profession, colleagues and other professional organizations: The teacher should show a personal pride and an open mind in the teaching profession. He should believe in team work, refrain from criticizing, shifting responsibility to others and interfering in the affairs of colleagues. He should give due credit for assistance received

and help colleagues with constructive ideas. He should become active member of professional organizations.

5. Teacher in relation to management and administration: The teacher should extend full co-operation and honour any contract entered into with the management and administration. He should refrain from getting unearned favours from higher authorities.

In the past decade, the rise of interest in interpersonal relationships in education is mirrored by an increased focus on the importance of relationships among educators. Recent studies suggest that relationships among teachers are important in building strong school communities (Penuel, Riel, Krause and Frank, 2009), and that strong teacher networks can enhance teacher commitment and give teachers a sense of belonging and efficacy (Grodsky and Gamoran, 2003). Moreover, strong social relationships in and among schools are found to play a crucial role in policy implementation, instructional change, and teachers professional development in support of increased student achievement (Baker-Doyle and Yoon, 2010; Daly and Finnigan, 2010; Moolenaar, 2010; Veugelers and Zijlstra, 2002) and interpersonal relationships among teachers are important as they provide access to information, knowledge and expertise (Frank, Zhao and Borman, 2004), facilitate joint problem solving (Uzzi, 1997) and shape an environment of trust (Bryk and Schneider, 2002).

. After reviewing the available literature in this field (Brok, Tartwijk, Wubbels and Veldman (2010), Brady (2011), Fan (2012) and Wentzel (2012) the investigator felt the need to develop the teacher interpersonal relationship scale owing to the fact that human relationships have drastically changed over the period of time due to the impact of digital media and ever-changing socio-economic behaviour pattern. Studies also indicate that interpersonal relations of the teachers to different dimensions and especially with the students can play a vital role in creation of smooth teaching learning environment in the class rooms and academic achievement of the students is always influenced positively by cordial and democratic relations.

The process of construction and standardization of Teacher Interpersonal Relationship Scale (TIRS) is as follows:

1. The Process of Scale Construction

The process of scale construction was carried out in three phases:

1   Planning Phase

2   Construction Phase

3   Standardization Phase.

1.1 Planning Phase

Planning phase involved:

(I)   Identification of the Dimensions of the Scale (TIRS)

(II) Operational definitions of Teacher Interpersonal Relationship Scale and ;

(III) Methodology for scale construction.

1.2   Identification of the Dimensions of the Teacher Interpersonal Relationship Scale

The content was selected by consulting research journals, educational journals, surveys, reports, newspapers, research books, web pages, religious and spiritual books and also by interviewing teachers, students, parents and members of community and school management. After considering the definitions, meanings and factors affecting relations of teachers, the following dimensions of Teacher Interpersonal Relationships were identified:

1. Relationship of teacher with students.
2. Relationship of teacher with fellow teachers.
3. Relationship of teacher with parents.
4. Relationship of teacher with community.
5. Relationship of teacher with school administration.

1.3   Operational Definition of Interpersonal Relationship of Teachers

The present scale was designed to measure the interpersonal relations of teachers in the light of the operational definition of teacher interpersonal relationship as follows:

"Interpersonal relationship of teachers is the social interactions, associations, connections or affiliations with the students, fellow teachers, parents, community and school administration. His/her relationship with pupils is taken as that of a friend, philosopher, guide, parent approachable yet firm in conduct, and that with parents, colleagues, administration and community viewed as cordial, respectful and as a responsible individual while working in a team. Education is a social process and the teacher in periphery defined, as a constructive weaver of human relationship."

1.4   Methodology for Scale Construction

The methodology of Thurstone(1928) and Likert(1932) was used for scale construction. Although considerable controversy is there on the relative merits of Thurstone and Likert methods, much of which is technical, yet as per Edward and Kenny(1946) there is high correlation between the scales prepared by these two methods. Therefore , the technique

chosen to construct the present scale was of " Scale Product Method" which combines the techniques of Equal Appearing Interval Scale" of Thurstone (1946) for selection of the items and Likert,s (1932) techniques of " Summated Rating" for ascertaining the responses on the scale.

2. **Construction Phase:** Construction phase includes the following steps:

(I)   Preparation of Item Pool

(II)   Editing of the Items

(III)   Directions for the Respondents

(IV)   Try Out of the Scale

(V)   Item Analysis

(VI)   Selection of Items and Preparation of the Final Draft and;

(VII)   Scoring System.

2.1 Preparation of Item Pool

An important step in the development of a scale is the construction of the item pool. The item pool is otherwise known as definition of the universe (Jackson, 1970). On the basis of available literature and varied dimensions of interpersonal relations of teachers, a number of statements were framed on each dimension. The statements were discussed with the supervisor of the research study and necessary modifications were made for the preliminary draft. 61 items were tentatively framed in the form of statements for the preliminary draft of the scale.

2.2 Editing of the Items

The editing process is very important in the Likert technique of scale construction. The statements were reviewed and edited thoroughly by examining the grammatical correctness, repetitiveness and ambiguity of the scale items. Under this phase, preliminary draft of 61 items was shown to different experts having long standing experience in the field of education and teaching from different schools and colleges. The comments and observations of the experts were discussed thoroughly and 50 statements were finalized for the provisional draft of teacher interpersonal relationship scale. Table 1.1 shows the different dimensions of Teacher Interpersonal Relationship Scale with the number of favourable and unfavourable items assigned to each area.

Table 1.1: Showing Area Wise Distribution of Items in the Provisional Draft

of Teacher Interpersonal Relationship Scale

Sr.no	Dimension	Area Code	Sr. No. of Favourable and Unfavourable Items		Items in Each Area
			Favourable Items	Unfavourable Items	
1	Students	I	2,4,5,8,10,11,12,13,14	1,3,6,7,9,15,16	16
2	Fellow Teachers	II	17,19,20,25	18,21,22,23,24	9
3	Parents	III	26,27,28,31,33,34	29,30,32	9
4	Community	IV	36,37,38,40,41,42,44	37,39,43	10
5	School Administration	V	46	45,47,48,49,50	9
6	Total		27	23	50

Table 1.1 reveals area code and serial number of favourable and unfavourable items assigned to each dimension of the scale i.e. for relations of teachers with Students (Code- I), for Fellow Teachers (Code-II), for Parents (Code-III), for Community (Code-IV) and for School Administration (Code-V).   In this way provisional draft teacher interpersonal relationship scale comprising 50 items was ready. Out of 50 items, 27 items were favourable and 23 items were unfavourable to teacher interpersonal relationship.

2.3   Directions for Respondents

On the top of the booklet, the following directions were given for respondents:-

This is a study of interpersonal relationships of teachers with the students, fellow teachers, parents, community and school administration. Kindly read the statements carefully.

➢ If you strongly agree with the statement, then encircle the column **Strongly Agree (SA).**

➢ If you agree with the statement, then encircle the column **Agree (A)**.

➢ If you are undecided with the statement, then encircle the column **Undecided (U)**.

➢ If you disagree with the statement, then encircle the column **Disagree (D)**.

➢ If you strongly disagree with the statement, then encircle the column **Strongly Disagree (SD)**.

1. Record your first impression that flashes your mind as you read the statement.

2. There is no right or wrong answer to the statement, so please don't leave any item unmarked.

3. Sincere cooperation is sought and responses will be kept confidential. These will be used for research purpose only.

2.4 Try Out of the Scale

The tryout of the scale was carried out on a group of 100 secondary school teachers selected randomly from ten senior secondary schools from both the districts. Teachers were equally balanced among male- female across Gender, science- arts across Stream, govt.-private across Type of School and rural-urban across Locale. The data obtained from 100 school teachers on provisional draft of the scale was noted down for the purpose of item analysis.

2.5 Item Analysis

In order to make selection of items objectively and scientifically, item analysis was done by computing Scale Value and 'Q' value for every test item included in the provisional draft of 50 items. Computation of Scale and 'Q'- Values is necessary for placing the statements evenly in the scale from extreme negative to extreme positive. Thurston and Chave's (1929), formula was used for computing the Scale and 'Q'- values of every test item.

➤ **Scale Value**

The responses given by the teachers were classified separately for each statement into five categories of responses used in the provisional draft of Teacher Interpersonal Relationship Scale. The responses collected on the five point's continuum as follows:

Table 1.2: Showing response choices as well as the corresponding score values for Favourable and Unfavourable Test Items of Teacher Interpersonal Relationship Scale.

For Favourable Items		For Unfavourable Items	
Response Choice	Score	Response Choice	Score
Strongly Agree(SA)	5	Strongly Agree(SA)	1
Agree(A)	4	Agree(A)	2
Undecided(U)	3	Undecided(U)	3
Disagree(D)	2	Disagree(D)	4
Strongly Disagree(SD)	1	Strongly Disagree(SD)	5

As a result of the said scoring procedure frequencies of each item were found and the Scale Value as required by Thurstone and Chave technique was worked out. The Scale Value for a particular item was calculated by finding the median and this representing the degree of agreement or disagreement among the respondents.

➢ **The Q-Value**

Q-value as required by Thurston's technique was calculated after noting down the frequency of responses in each category for each statement. Any statement which is placed at different points on the scale shows variations in its interpretation by the respondents. Such statements were not worth to be included in scale. Thurston and Chave(1929) used the Semi inter quartile range or 'Q' as a measure of this variation. Lower the Q-value more is the agreement among the respondents on that statement. Thurston and Chave(1929) regarded large Q-value as an indication that a statement is ambiguous. Example for calculating Scale and Q-value is given as under:

(i) Tabulating the frequencies of each item

Item No.22	Strongly Agree(5)	Agree(4)	Undecided(3)	Disagree(2)	Strongly Disagree(1)
Frequency	27	35	10	20	8

(ii) Calculating the Scale Values by finding out the Median

$$Md = L + \left[\frac{N/2 - F}{f} \right] \times i$$

Where

L= Exact Lower Limit of the Median Class.

N= Total of all the frequencies.

F= Total of all the frequencies before the Median class.

f = Frequency of the Median class.

i = Class Interval

The data available in the form of frequency distribution is like the following:-

Score	f
5	27
4	35
3	10
2	20
1	8
	N=100

By applying the above formula the median of the given distribution was computed in the following way:

$$Md = 3.5 + \left[\frac{50-38}{35} \right] \times 1 = 3.84$$

In this way the Scale value of item number 22 is 3.84.

(iii)   Finding the Q-Value

The computation of the Semi- Interquartile Range or 'Q' is determined by middle 50 percent of the scores in the distribution. The lower 25 percent and upper 25 percent do not enter into its final computation. The Q-value was calculated by using the following formula:

$$Q = \frac{Q_3 - Q_1}{2}$$

In this formula Q_3 stands for the third quartile and Q_1 stands for the first quartile.

$$Q_1 = 1.5 + \left[\frac{25-8}{20}\right] \times 1 = 2.35$$

$$Q_2 = 3.5 + \left[\frac{75-38}{35}\right] \times 1 = 4.56$$

$$Q = \frac{4.56 - 2.35}{2} = 1.10$$

In this way the Scale- Value of Item No. 22 is 3.84 and Q-Value is 1.10. Following the above statistics Scale and Q- values for all the 50 items of provisional Draft of Teacher Interpersonal Relationship Scale were calculated which have been presented in Table 1.3.

Table 1.3: showing Scale Value and Q-Value of Items included in Provisional Draft of Teacher Interpersonal Relationship Scale.

Item No.	Scale-Value	Q-Value	Item No.	Scale-Value	Q-Value
1	4.05	0.38	26	4.30	0.61
2	3.73	0.83	27	4.05	0.56
3	3.69	0.94	28	3.95	0.58
4	3.81	0.56	29	4.38	0.52
5	3.76	1.05	30	3.32	0.92
6	4.05	0.36	31	4.37	0.51
7	3.85	0.97	32	3.91	0.66
8	3.57	0.84	33	4.18	0.52
9	2.31	1.00	34	4.59	0.54
10	3.00	0.93	35	4.00	0.43
11	4.02	0.51	36	3.98	0.55
12	3.04	0.66	37	2.44	0.96
13	4.19	0.52	38	2.92	0.84
14	2.26	1.98	39	3.22	0.79
15	3.92	0.46	40	3.77	0.70
16	4.38	0.52	41	3.82	0.84
17	3.87	0.74	42	3.69	0.93

18	4.21	0.53	43	3.70	0.92
19	3.58	1.17	44	3.85	0.77
20	3.21	0.95	45	4.14	0.53
21	4.01	0.32	46	4.09	0.54
22	3.84	1.10	47	3.40	0.39
23	3.95	0.66	48	3.24	0.77
24	3.71	0.91	49	2.27	1.01
25	2.87	1.31	50	3.98	0.55

2.6 Selection of Items and Preparation of the Final Draft

Following the Thurston's Technique of Scale construction, items for final draft were selected on the basis of Q- value and Scale Value i.e. the item should be fairly and evenly spread on the scale continuum.

In consonance with Thurston and Chave(1929) parameters the items which had Q-value lower than 0.5 and high than 2.0 were rejected at this stage(Koul,2009). This resulted into rejection of 6 items from different areas of Teacher Interpersonal Relationship Scale. In this way final form of teacher interpersonal relationship scale comprised of total 44 items.

2.7 Scoring System

Each item has a response option on Likert's 5 point continuum viz SA (Strongly Agree),A (Agree), U(Undecided), D(Disagree) and SD(Strongly Disagree) with response weights of 5,4,3,2 and 1 for favourable items and 1,2,3,4 and 5 for unfavourable items. The scoring procedure is presented in Table 1.4.

Table 1.4: Scoring Procedure

Items	Score Assigned				
	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
Favourable Items	5	4	3	2	1
Unfavourable Items	1	2	3	4	5

Teacher Interpersonal Relationship score of the subject is the sum total of items scores of all the five areas. The theoretical range of scores is from 44 to 220. High scores reflect relatively higher level of interpersonal relationship of teachers and vice-versa.

3.   Standardization Phase

3.1 Establishing the Reliability of the Scale

There are many procedures by which one can establish the reliability of the test. Guilford (1979) has suggested three main categories:

(I) Alternative forms reliability.

(II) Internal consistency reliability

(III)   Retest reliability or test –retest reliability.

The reliability of the Teacher Interpersonal Relationship Scale was determined by using the test–retest reliability criterion. For this the scale was administered to 100 different school teachers of the study area. To the same teachers, the same scale was administered after the gap of one month for the test − retest reliability. The product co-efficient of correlation between two sets of scores was computed. It was found to be 0.765. This was fairly high to testify the soundness of the scale.

3.2 Establishing the Validity of the Scale

Ebel(1961), Thorndike and Hegan(1962), Anastasi(1968), Grounlund(1976), Guilford (1979) and many others suggested a variety of validity measures to establish validity of a test scale. But in the field of educational and psychological testing, the three main types are used to determine the validity of a test scale. These are Content Validity, Face Validity and Construct Validity.

Since there are no other such tools available to determine the concurrent validity of the Teacher Interpersonal Relationship Scale, the investigator made efforts to establish the content and face validity of the scale as follows:

➢ **Content Validity**

The content validity involves essentially the systematic examination of test content to determine whether it covers a respective sample of the behaviour to be measured. As regards its content validity test was shown to experts from the field of both teacher education and school education for obtaining their verdict on validity. Beside this items of the scale were selected after carefully scrutinizing the definitions of Teacher Interpersonal Relationship Scale and its various dimensions, hence scale has fair degree of content validity.

➢ **Face Validity**

The face validity refers to know whether Teacher Interpersonal Relationship Scale looks valid to the subjects who take it. (Anastasi,1968). The face validity of the same test was established by having the reactions of the subjects for whom the test was meant.

For establishing face validity, scale was also shown to eminent psychologists and sociologists. Its language, format, instructions and size were found suitable for respondents. All specialist were unanimous in their opinion hence the scale has fair degree of face validity.

3.3 Preparing the Norms of the Scale

Norms are the average scores or values determined by actual measurement of a group of individuals who are representative of a specified population. It is a criterion level against which the value of certain activity is compared against determined levels. Norms of a standardized test provides us a basis for the practical interpretation and analysis of results. A set of norms was prepared after collecting final data on the sample of 600 teachers on Teacher Interpersonal Relationship Scale constructed by investigator. Raw scores(X) obtained were tabulated in ascending order. Norms have been prepared in the form of Z-scores and T- scores. For establishing norms the investigator calculated the mean and standard deviation of the scores of 600 school teachers on Teacher Interpersonal Relationship Scale. Z-scores were calculated by using the formula Z= X-M/S.D. and T-scores were calculated by T-scores = 50+10Z. Repeated raw scores and their corresponding Z-scores and T-scores were not included in the Table 1.5.

Table 1.5: Showing Norms for Teacher Interpersonal Relationship Scale

Sr. No.	Raw Scores (X)	Z- scores	T-scores
1.	140	-3.120	18.80
2.	143	-2.938	20.62
3.	144	-2.878	21.22
4.	145	-2.817	21.83
5.	146	-2.756	22.44
6.	147	-2.696	23.04
7.	148	-2.635	23.65
8.	149	-2.574	24.26
9.	155	-2.211	27.89
10.	158	-2.029	29.71
11.	159	-1.968	30.32
12.	160	-1.907	30.93
13.	161	-1.847	31.53
14.	162	-1.786	32.14

15.	165	-1.604	33.96
16.	166	-1.543	34.57
17.	167	-1.483	35.17
18.	168	-1.422	35.78
19.	169	-1.362	36.38
20.	171	-1.240	37.60
21.	172	-1.180	38.20
22.	173	-1.119	38.81
23.	174	-1.058	39.42
24.	175	-0.998	40.02
25.	176	-0.937	40.63
26.	177	-0.876	41.24
27.	178	-0.816	41.84
28.	179	-0.755	42.45
29.	180	-0.694	43.06
30.	181	-0.634	43.66
31.	182	-0.573	44.27
32.	183	-0.513	44.87
33.	184	-0.452	45.48
34.	185	-0.391	46.09
35.	186	-0.331	46.69
36.	187	-0.270	47.30
37.	188	-0.209	47.91
38.	189	-0.149	48.51
39.	190	-0.088	49.12
40.	191	-0.027	49.73
41.	192	0.032	50.32
42.	193	0.093	50.93
43.	194	0.154	51.54
44.	195	0.214	52.14
45.	196	0.275	52.75
46.	197	0.335	53.35
47.	198	0.396	53.96
48.	199	0.457	54.57
49.	200	0.517	55.17
50.	201	0.578	55.78
51.	202	0.639	56.39
52.	203	0.699	56.99
53.	204	0.760	57.60
54.	205	0.821	58.21
55.	206	0.881	58.81
56.	207	0.942	59.42
57.	208	1.003	60.03
58.	209	1.063	60.63
59.	210	1.124	61.24
60.	211	1.184	61.84
61.	212	1.245	62.45
62.	213	1.306	63.06
63.	214	1.366	63.66

64.	215	1.427	64.27
65.	216	1.488	64.88

3.4 Interpretation

For the purpose of interpretation of scores these raw scores and T-scores were put into five categories by preparing the range of scores as shown in Table 1.6.

Table 1.6: Showing Norms for interpretation of Z-score for the Teacher Interpersonal Relationship

Raw Scores(X)	T - Scores	Interpretation
130 and below	Below 30	Very low level of relationship
130-150	30-40	Low level of relationship
150-170	40-53	Moderate level of relationship
170-190	53-63	High level of relationship
190 and above	Above 63	Very high level of relationship

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