Development and Validation of Teacher Self Efficacy Scale

S.Vincent De Paul

Reader, State Council of Educational Research and Training, DPI Campus, College Road, Chennai,600006, Tamilnadu, India,

Abstract: *The present study examined the factorial validity of scores on the Teacher Self-Efficacy Scale across the sample of 82 teachers of Pudukkottai District of Tamil Nadu. Self-efficacy theory posits that self-efficacy beliefs are linked to specific activities. Teaching is associated with specific activities. Hence it was hypothesized that the Teacher Self-Efficacy comprised of six different activities namely Job Commitment, Attainment of Excellence Commitment, Organizational commitment, Value Commitment, Student Commitment and Community Commitment. Factor analysis results from the sample supported the hypothesis by showing an adequate fit of a five-factor model with the subscales of Job Commitment (9), Value Commitment (8), Community Commitment (7), Student Commitment (4), and Organizational Commitment (5). Scores from the five subscales (33 items) yielded coefficient alphas in excess of 0.9273.*
Keywords: *Development, Factor Analysis, Teacher Self Efficacy, Validation*

I. Introduction

Self-efficacy, which stands at the core of social cognitive theory, has generated a growing body of literature in psychology, medicine, nursing, education, and business administration since the publication of Bandura's article "Self-efficacy: toward unifying theory of behaviour change" in 1977. Teachers play a dominant role in reshaping and redesigning the students into a quality product (citizen) which suits to the democratize or policy principles of the nation. This is achievable only when teachers have the confident of executing the duties and responsibilities.

II. Perceived Self-efficacy

Perceived self-efficacy refers to personal beliefs about one's capabilities to perform actions at designated levels (Bandura, 1997). Efficacy judgments are "concerned not with the number of skills one has, but with what one believes one can do with what one has under a variety of circumstances" Self-efficacy beliefs can influence human functioning in numerous ways. They influence the courses of action people choose to pursue, how much effort they put forth in a given endeavors, how long they will persevere in the face of obstacles and failures, their resilience to adversity, whether their thought patterns are self-hindering or self-aiding, how much stress and depression they experience in coping with taxing environmental demands, and the level of accomplishments they realize (Bandura, 1997). These subsequent performances are influenced by self-efficacy, whereas the self efficacy beliefs are affected and altered by how individuals interpret the results of their performance attainments in turn (Brownell *et al*., 1996).

III. Sources of Efficacy Beliefs

According to Bandura (1997), there are four main sources of information upon which individuals base their self-efficacy beliefs: enactive mastery experiences, vicarious experiences, verbal persuasions, and physiological states.

3.1 Enactive Mastery Experiences

The most influential source of information comes from mastery experiences because they provide the most realistic information to learners' on their ability to do whatever it takes to succeed. As learners master skills, they tend to raise the expectation that they will be able to master those skills further. Success tends to raise self-efficacy, whereas failure tends to lower it (Bandura, 1997).

3.2 Vicarious experiences

Efficacy beliefs are also influenced by vicarious experiences mediated through modeled attainments. Thus, modeling serves another tool for promoting self-efficacy. The more closely the observer identifies with the model, the stronger will be the impact on efficacy. Observing others perform tasks successfully raises expectations of personal success on the same task (Bandura, 1997).

3.3 Verbal persuasions

The third means of modifying self-efficacy is verbal persuasions. This refers to "others persuading a learner that he or she is capable of succeeding at a particular task" (Driscoll, 2000). Bandura (1997) considers verbal persuasion as a weak method of altering efficacy beliefs. While verbal persuasion may be capable of influencing the learner to perform certain tasks, it tends to be disregarded by the learner if it is not verified to be successful.

3.4 Physiological states

Finally, emotional arousal serves as an indicator to the learner. For example, learners can stop performing the task because they tend to associate emotional arousal such as anxiety or fear as signs of personal incapability (Bandura, 1997).

3.5 Integration of efficacy information

Efficacy beliefs are developed by cognitively processing diverse sources of information. That is, learners weight and integrate multidimensional information while making their efficacy judgments. In this weighting process, the value of each source of information and how to combine those sources change for each individual and for different situations (Bandura, 1997).

IV.   Teacher's Sense of Efficacy

The primary factor affecting teacher efficacy is believed to be the interpretation of four sources of information proposed by Bandura (1997): verbal persuasion, vicarious experiences, physiological arousal, and mastery experience. However, as consistent with our previous knowledge, efficacy perceptions are accepted as task and context specific; i.e., teachers show varying levels of sense of efficacy in particular situations or for teaching different subjects.

According to Tschannen-Moran *et al.* (1998) teacher efficacy considers not only the perceived competence to perform specific behaviours but also the teaching task and its context (concepts are related but not the same as previously identified teacher efficacy dimensions, personal teaching efficacy and general teaching efficacy, respectively). While teachers are making judgments about their efficacy, they consider the specific elements that are necessary for teaching. For example, they assess the students' motivation, the quality of instructional materials, teaching methods, the climate of the school etc. This analysis of resources and difficulties would lead to beliefs about how to succeed in that setting (Tschannen Moran *et al*., 1998). The difference of this concept from general teaching efficacy is that task analysis is more specific and considers the impact of resources and support in addition to the constraints in the teaching situation. Tschannen Moran *et al.* (1998) suggested that teachers first assess their current abilities, and these resulting judgments will lead to beliefs about future performance, which is self-efficacy. The researchers proposed that the task analysis and the personal teaching competence occur at the same time and interact with each other; as a result, teacher efficacy beliefs are developed. Tschannen Moran *et al.* (2002) argued that the insignificant effects of support by administrators, colleagues, and/or community might be due to the isolation of persons in the teaching profession and the typical absence of constructive feedback from either administrators or peers.

Goddard *et al.* (2000) expanded the model to the organizational level. They found that the task analysis and personal competence dimensions were strongly correlated.

Teacher efficacy is defined as the extent to which the teacher believes he or she has the capacity to affect student performance (Berman *et al.*, 1977), or as "teachers' belief or conviction that they can influence how well students learn, even those who may be difficult or unmotivated" (Guskey *et al.*, 1994). Teacher efficacy refers to "the teacher's belief in his or her capability to organize and execute courses of action required to successfully accomplishing a specific teaching task in a particular context" (Tschannen-Moran *et al.,* 1998).
The term Teacher Efficacy is a complex phenomenon. Teacher efficacy is thus the beliefs that teachers possess in terms of school environment, classroom environment and community environment. From the above preceding sections one can conclude that teachers should have efficacy in classroom related, school related and community related activities.

V.   Need for the Present Study

Teachers play a vital role in redesigning the society through the development of child given to them in schools. The investment in Primary education helps the students to develop good character and sound knowledge about health and mind. It also helps them to be economically sound. But the real outcome depends on the teachers' Self Efficacy. Evidence from the literature reveals that various version of teacher efficacy scale were developed mainly in United States of America (Faleye, 2008). In India no serious attention has been given to the development of measuring instrument for the construct Teacher Efficacy. Faleye, (2008) argued that empirically derived factor structure of Teacher Efficacy Scale (TES) has not been agreed upon. Variations exist in the factor structure of exploratory as well as confirmatory factor analyses of Teacher Efficacy Scale

across researchers (Browers, 2003; Campbell, 1996, Tschannen-Moran & Woolfolk-Hoy, 2001). The way of preparing teachers in western countries is different from India. Therefore there is a need to develop instrument in India to measure Teacher Efficacy of teachers in general and elementary teachers in particular.

VI. Objective of the Study

The objectives of the present study were to:
➢ Develop Teacher Self Efficacy Scale (TSE)
➢ Determine the reliability of the Teacher Self Efficacy Scale (TSE)
➢ Estimate the Teacher Self Efficacy Scale (TSE)
In the pursuant of these objectives the following research questions were investigated
❖ What items would be adjudged to measure Teacher Self Efficacy Scale (TSE)?
❖ What is the Factorial Validity of the Teacher Self Efficacy Scale (TSE)

VII. Sample

The instrument was distributed to 100 teachers of Pudukkottai District who were selected randomly. These teachers were from Primary schools / Elementary Schools and Primary Sections of Middle Schools of Pudukkottai district. Among them 82 teachers responded completely. Hence the sample for the present study was 82.

VIII. Development of Teacher Self Efficacy Scale (TSES)

The items for the TSES were drawn from various sources like personal interviews conducted with teachers, VEC members and discussion with experts in the field and the review of related literature.

8.1 Perceived Factors of Teacher Self Efficacy Scale (TSES)

Items selected for TSES consisted of the following factors.

8.1.1. Classroom Environment

Teacher should have the efficacy in handling the classroom effectively. He should have the capacity of developing knowledge, skills and values among the children by adopting appropriate teaching methods. He/She should have a problem solving skill and develop the same among the children. He should have the efficacy of understanding the level of students, using appropriate teaching learning material, making the students to follow instructions, coping with the classroom situation, bringing out the latent potentials of students, developing decision making skills among the students, Teacher should have the efficacy of motivating the learners, managing the classroom situation when conflict arises and teaching without gender bias.

8.1.2. School Environment

Teachers should have the efficacy in identifying the needs of the school, creating good impression about the school towards officials, participating in the school decision making, solving problems faced by the school, developing good interpersonal relationship among staff and students.

8.1.3. Community Environment

Teachers should have the efficacy of developing good impression about the impact of school on community, expressing the importance of education among the parents and community, involving community in the school activities like enrolment drive, reducing dropout, increasing retention, improving the infrastructure of the schools, solving school problems by discussion with community, improving the interpersonal relationship with community, identification of right people for Village Education Committee.

8.2 Scrutiny & Evaluation of Items

Keeping in view the above three factors, 60 items in total, 20 items under classroom environment, 17 items under school environment and 23 items under community were pooled. These items were subjected to a more careful scrutiny. The items which seemed to overlap with one another were critically examined. An item conveying the objectives of the tool was retained and care was taken to maintain the language of the items simple and meaningful. This process of scrutiny and evaluation finally yielded 57 items.

8.3 Evaluation of Items by Expert

In order to establish whether a given item really belongs to that particular factor, the items were arranged in a random order and subjected to expert scrutiny. The experts were drawn from the field of Primary / Elementary Education (faculty from District Institute of Education & Training, State Council of Educational Research and Training, and University Department). In order to facilitate the experts judging the items, they

were presented with operational definition of factors. The experts were asked to indicate whether items were clearly stated and easily understood by the teachers and to suggest necessary modification if any. The items of the scale had five categories of responses, viz., Strongly Agree. Agree, Undecided, Disagree and Strongly Disagree (Five Point Scale). This process finally yielded 50 items.

8.4 Administration of Items

The Teacher Self Efficacy Scale thus developed was given to a sample of 100 teachers of Pudukkottai District. The investigator explained the objectives of the study to the teachers and asked them to rate appropriately in one of the five response categories against each item. Teachers were asked to mark every item without omitting anyone. No time limit was imposed. Among them 82 teachers responded completely. The filled in Teacher Self Efficacy Scales were scored in the order of 5, 4, 3, 2, and 1 for the responses Strongly Agree. Agree, Undecided, Disagree and Strongly Disagree for positive items. The scoring procedure was reversed for the negative items, that is, 1, 2, 3, 4, 5 for the responses Strongly Agree. Agree, Undecided, Disagree and Strongly Disagree. Scores obtained by each individual were summed up and used for further analysis.

8.5 Item Analysis

In order to select the valid items for the final study, item- total correlation coefficient were calculated. The Table 1 shows the item-total correlation coefficient of each item in the scale. The item-total correlation coefficient of the TSES ranged from 0.136 to 0.719. Items which are significant at 0.000 level and r value equal and greater than 0.403 were selected for final scale. Following the criteria stated above, 45 items out of 50 were selected.

8.6. Factor Analysis

In order to identify the factors of Teacher Self Efficacy Scale (TSES), factor analysis was carried out. Principal component analysis, Varimax Rotation and forced choice solution of the seven factors were executed.

TABLE 1
ITEM SELECTED FOR TEACHER SELF EFFICACY SCALE (TSES)

S. No. of the Items	r	Level of Significance	Whether Selected	Factor	
				Loading	Number
1	0.554	0.000	Yes	0.585	3
2	0.403	0.000	Yes	0.543	4
3	0.299	0.006	No	–	–
4	0.136	0.225	No	–	–
5	0.568	0.000	Yes	0.542	7
6	0.548	0.000	Yes	0.552	4
7	0.641	0.000	Yes	0.427	4
8	0.468	0.000	Yes	0.662	3
9	0.472	0.000	Yes	0.729	4
10	0.599	0.000	Yes	0.648	3
11	0.530	0.000	Yes	0.710	4
12	0.616	0.000	Yes	0.509	1
13	0.616	0.000	Yes	0.595	1
14	0.697	0.000	Yes	0.470	1
15	0.507	0.000	Yes	0.793	3
16	0.598	0.000	Yes	0.500	3
17	0.539	0.000	Yes	0.454	3
18	0.431	0.000	Yes	0.504	6

S. No. of the Items	r	Level of Significance	Whether Selected	Factor	
				Loading	Number
19	0.414	0.000	Yes	0.593	3
20	0.515	0.000	Yes	0.464	2
21	0.335	0.002	No	–	–
22	0.551	0.000	Yes	0.755	1
23	0.480	0.000	Yes	0.383	6
24	0.457	0.000	Yes	0.664	4
25	0.719	0.000	Yes	0.727	2
26	0.626	0.000	Yes	0.775	2
27	0.576	0.000	Yes	0.377	1
28	0.535	0.000	Yes	0.564	6
29	0.522	0.000	Yes	0.643	1
30	0.593	0.000	Yes	0.519	1
31	0.586	0.000	Yes	0.607	1
32	0.569	0.000	Yes	0.732	2
33	0.619	0.000	Yes	0.373	1
34	0.483	0.000	Yes	0.672	6
35	0.447	0.000	Yes	0.340	7
36	0.460	0.000	Yes	0.548	6
37	0.614	0.000	Yes	0.521	5
38	0.606	0.000	Yes	0.613	2
39	0.614	0.000	Yes	0.560	2
40	0.525	0.000	Yes	0.697	4
41	0.615	0.000	Yes	0.671	2
42	0.542	0.000	Yes	0.715	7
43	0.640	0.000	Yes	0.668	1
44	0.264	0.017	No	–	–
45	0.493	0.000	Yes	0.345	7
46	0.578	0.000	Yes	0.699	5
47	0.341	0.002	No	–	–
48	0.514	0.000	Yes	0.733	5
49	0.585	0.000	Yes	0.409	3
50	0.521	0.000	Yes	0.632	5

The Table 1 shows the result of Principal Component Analysis with Varimax Rotation. The factor analysis with Varimax Rotation produced 7 factors accounting for 60.40 % of the variance The Table 1 further indicates the factor loading ranged from 0.373 to 0.755 for factor I, from 0.464 to 0.775 for factor II, from 0.409 to 0.793 for factor III, from 0.427 to 0.729 for factor IV, from 0.52110 0.632 for factor V, from 0.383 to

0.676 for factor V and 0.340 to 0.715 for factor VII. Items with factor loadings 0.3 and above alone were selected. As per the criteria 45 items were selected under seven factors. The factors were given the name by scrutinizing the items for their nature and tone. The identified seven factors are, Community Environment Efficacy, School Environment Efficacy. Classroom Environment Efficacy, Problem Solving Efficacy, Linkage Efficacy, Role Model Efficacy and Coping Efficacy. Thus the scale consisting of 45 items meant for Teacher Self Efficacy Scale (TSES) was finalized.

8.7 Reliability of Teacher Self Efficacy Scale (TSES)

The reliability of Teacher Self Efficacy Scale (TSES) was established by calculating Cronbach alpha and Split Half method. The split half reliability value is 0.90 (N=82). The Cronbach alpha value for each factor and total are as shown in the Table 2.

TABLE 2
RELIABILITY COEFFICIENT OF TEACHER SELF EFFICACY SCALE (TSES)

S. No.	Name of the Factor Emerged from Factor Analysis	Item Numbers	No. of items	Cronbach alpha value
1.	Community Environment Efficacy	10, 11, 12, 19, 24, 26, 27, 28, 30, 40	10	0.8752
2.	School Environment Efficacy	18, 22, 23, 29, 35, 36, 38	7	0.8786
3.	Classroom Environment Efficacy	1, 6, 8, 13, 14, 15, 17, 44	8	0.8254
4.	Problem Solving Efficacy	2, 4, 5, 7, 9, 21, 37	7	0.8096
5.	Linkage Efficacy	34, 42, 43, 45	4	0.7941
6.	Role Model Efficacy	16, 20, 25, 31, 33	5	0.7032
7.	Coping Efficacy	3, 32, 39, 41	4	0.6233
	All factors combined	3,32,39,41	45	0.9446

Thus from the two coefficients, it may be concluded that the Teacher Self Efficacy Scale (TSES) is highly reliable.

8.8 Validity of Teacher Self Efficacy Scale (TSES)

The validity of the tool was established by circulating the tool to the expert in the field. The intrinsic validity was established by taking the square root of the reliability coefficient. The reliability coefficient is 0.9446 and hence the intrinsic validity is 0.9719. Thus, it may be concluded that the Teacher Self Efficacy Scale (TSES) is highly valid.

IX. Conclusion

The final version of the Teacher Self Efficacy Scale (TSES) is designed with the 45 valid items and 7 dimensions. This scale is a Likert Type five point rating scale (Strongly Agree. Agree, Undecided, Disagree and Strongly Disagree). The scoring is 5, 4, 3, 2, and 1 for Strongly Agree. Agree, Undecided, Disagree and Strongly Disagree respectively for positively worded items and reverse for the negatively worded items. The maximum possible score is 225 and the minimum is 45. The highest score indicates the existence high efficacy in teachers.

References

[1]   Bamidele. A. Faleye (2008) Reliability & Factor Analyses of a teacher Efficacy Scale forNigeriam Secondary School teachers Electronic Journal of Education & psychology 16 6 (3) pp. 823-846
[2]   Bandura, A. (1977). Self-efficacy: toward unifying theory of behaviour change. Psychological Review, 84, 191-215
[3]   Bandura, A. (1997). Self-efficacy: The exercise of control. New York: W.H.Freeman and Company.
[4]   Berman, P., McLaughlin., M., Bass, G., Pauly, E. and Zellman, G. (1977). Federal Programs supporting educational change. Vol. VII Factors affecting implementation and continuation (Report No. R-1589/7-HEW). Santa Monica, CA: The Rand Corporation (ERIC Document Reproduction Service No. 140432).
[5]   Brouwers, A., & Tomic, W. (2003). A test of the factorial validity of the Teacher Efficacy Scale. Research in Education, 69, 67–80
[6]   Brouwers, Andre and Tomic, Welko. (2000). A Longitudinal Study of Teacher Burnout and Perceived Self-Efficacy in Classroom Management. Teaching and Teacher Education, 16 (2).

[7]   Campbell, J. (1996). A comparison of teacher effi-cacy for pre and in-service teachers in Scotland and America. Education, 117, 2–11.
[8]   Driscoll, M.P. (2000). Psychology of learning for instruction (2nd ed.). Needham Heights, MA: Allyn & Bacon.
[9]   Faleye,B.A. Reliability   and Factor Analyses of a Teacher Efficacy Scale for Nigerian Secondary School Teachers (2008) Electronic Journal of Research in Educational Psychology 6 (3),2008, 823-846
[10]   Goddard, Roger. D., Hoy, W. K. and Woolfolk, A. (2000). Collective teacher efficacy: Its meaning, measure, and effect on student achievement. American Education Research Journal, 37(2).
[11]   Guskey, T. R. and Passaro, P. D. (1994). Teacher efficacy: A study of construct dimensions. American Educational Research Journal, 31, 627-643.
[12]   Tschannen-Moran, M., Woolfolk Hoy, A. and Hoy, W. K. (1998). Teacher Efficacy: Its Meaning and Measure. Review of Educational Research, 68 (2).
[13]   Tschannen-Moran., M; Woolfolk Hoy, A. (2001). Teacher Efficacy: Capturing an Elusive Construct. Teaching and Teacher Education, 17 (7).
[14]   Tschannen-Moran., M; Woolfolk Hoy, A. (2002). The influences of resources and support to teachers' efficacy beliefs. Paper presented at the annual meeting of the American Educational Research Association, New Orleans. Retrieved December 8, 2005, from http://www.coe.ohio-state.edu/ahoy/AERA%202002%20megan.pdf