

DEVELOPMENT AND VALIDATION OF TEACHERS' SELF EFFICACY SCALE

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ABSTRACT

Teachers' self-efficacy plays a crucial role in the effectiveness and well-being of a teacher. It refers to teachers' beliefs in their ability to handle tasks, obligations, and challenges related to their professional work. From the theoretical background of teachers' self-efficacy that has been built by previous researchers, this article enhances existing work toward measuring the concept of Teachers' Self Efficacy. Fostering teachers' self-efficacy contributes to a positive teaching environment and better student outcomes. The purpose of this study was to develop and validate a scale to measure the efficacy of teachers in their occupational roles. Measuring teachers' self-efficacy is essential to ensure that they feel confident and competent in their teaching abilities, which in turn can significantly impact overall school effectiveness. The study is based on the data collected twice under the different stages and validated by different methods including statistical analysis. This novel scale fills the gap in the literature by enabling practitioners and researchers in anticipating a teachers' ability to survive in the long run.

INTRODUCTION

Teaching is a profession which requires skill and passion to reach out to its beneficiaries. By fostering affirming learning environments and strong student connections, teachers may play a critical role in assisting students in feeling secure, supported, and connected. Teachers' self-efficacy is a multifaceted construct that encompasses instructional efficacy, classroom behavior management efficacy, emotional support efficaciousness, and change adaptability (Tschannen-Moran & Woolfolk Hoy, 2001). It is important for the well being and functioning of the teacher to possess self efficacy (Jennings & Greenberg, 2009). Due to its consequences for student academic success, instructional practices, and teaching effectiveness, teachers' self-efficacy has gradually acquired importance in school psychology research (Klassen et al., 2009; Klassen and Tze, 2014). Researchers have demonstrated that instructors who possess high levels of self-efficacy possess better levels of work satisfaction, less stress linked to their jobs, and less difficulty in handling the students and situations (Caprara et al., 2003).

The concept of Teachers' self- efficacy is underpinned to Albert Bandura' concept of self-efficacy derived from Bandura's social-cognitive theory of behavioral change (Bandura & Adams, 1977). He originally proposed the concept, in his own words, as a personal judgment of "how well one can execute courses of action required to deal with prospective situations".

Self-efficacy, or one's belief in one's own capacity to carry out desired actions in support of valued goals, has been well-represented in educational research (Bandura, 1997), and its influence on the behaviors of students and teachers is increasingly being recognized. As per Bandura (1997), personal determinants in social cognitive theory are created by self-efficacy beliefs, behavioral and environmental factors. Self efficacy capabilities is an intrapersonal inspiration variable for an individual, with the fundamental components of human organization, which are addressed as the efforts put out to accomplish wanted results. Teaching is a very noble profession which demands confidence and beliefs of teachers to accomplish the goals. In this regard teachers' self-efficacy has been understood as an important topic of research. Teachers' self-efficacy has been shown to have an impact on their instructional practices, enthusiasm, dedication, and teaching behaviors (Skaalvik & Skaalvik, 2007). Additionally, it improves teachers' perseverance when working with students who are difficult to handle.

Though Teachers' Self efficacy was understood as a topic that had to be considered seriously, there were not any scales to measure the same. According to Tschannen-Moran et al., 1998, developing a questionnaire to measure Teachers' Self Efficacy was to investigate teachers' beliefs regarding their capacity to influence student achievement. The influential TSE measure developed by Gibson and Dembo in 1984 consisted of two factors: one measured personal teaching efficacy (PTE), which is essentially teachers' beliefs about their competence, and the other measured general teaching efficacy (GTE), which is teachers' expectations that their effectiveness is constrained by environmental factors (Gibson & Dembo, 1984). The pertinence and reasonable sufficiency of GTE has been raised in doubt about, with worries raised particularly about the consideration of natural settings under the pennant of self-efficacy of teachers' (Tschannen-Moran et al., 1998). Even though environmental factors impact the way individuals work, researchers are of the opinion that self-efficacy is concerned not only with environment around, but rather with an individuals own beliefs about his/her own capacities to do a work/task, even in a challenging environment (Bandura, 1997).

There were concerns with the Gibson and Dembo measurement scale, and this gave way to the creation of various scales to measure Teachers' Self Efficacy (TSE). One of the prominent scales developed during that period was Teachers' Self Efficacy Scale (TSES) by Tschannen-Moran et al. (1998). In the year 2001, Tschannen-Moran and Woolfolk Hoy developed a 24 item long scale, and a 12 item long scale using three major factors: Student engagement, Instructional practices and classroom management. Later various researchers have identified learning support, teaching support, behavior support and cooperation as important factors to measure teachers' self efficacy, but the existing scales did not measure these dimensions in a single scale. The authors have identified this gap in literature and have tried to develop and validate a scale to measure Teachers' Self Efficacy accommodating the factors that were identified from the review of literature.

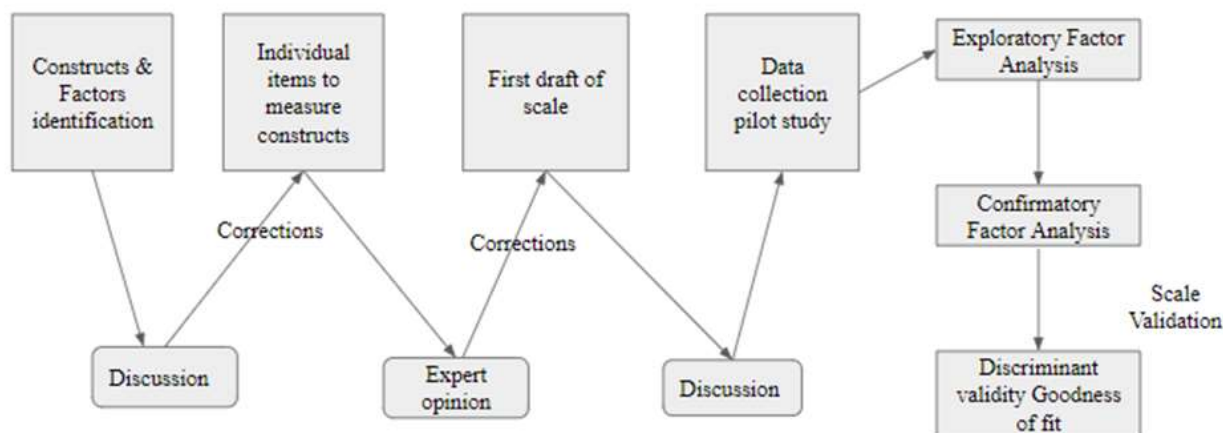
Researches in the topic of Teachers' Self Efficacy have gained importance in recent years as it is about the belief of a teacher in oneself. At the point when teachers' emotional well-being is compromised because of work stress or lack of confidence, they will not be able to meet the educational needs of their students. This has raised the importance of understanding and measuring teachers' self efficacy. Though there are validated scales to measure the concept, there were certain other factors that were identified by researchers over the years and not incorporated in the existing scales that measure Teacher' self efficacy, which led to the development of a new scale.

METHODOLOGY

To develop and validate the Teachers' Self Efficacy scale, different stages were involved during the period 2022- 2023. The first stage involved a thorough review of literature using various

prominent databases like MDPI, Proquest central, PsycInfo, Science Direct, Wiley, Sage, EBSCOhost, Taylor and Francis, Springer, Google Scholar etc. The various reviewed literatures involved articles on the underlying theories, key definitions, dimensions, the existing scales that measures Teachers' Self Efficacy, leading to the identification of various factors that measures the construct. Post identification of factors, an in- depth interview was conducted with experts accordingly certain modifications were made and factors were finalized. Based on the factors that measure the construct, a pool of items were prepared. The pool of items went through multiple rounds of scrutiny with the help of experts in the field: additions and deletions were incorporated. The questionnaire was distributed at the initial stage among a small population and Cronbach's alpha of the construct was above 0.7 which is considered as statistically acceptable reliability coefficient (Nunnally, 1978). At the second stage of data collection, the questionnaire was administered to a larger population based on convenience sampling and data was collected, this was subject to a detailed analysis of data. (Jackson et al., (2003), Litalien, et al., (2015), Morgan, et al., (2018), Ahmad, et al., (2019), Branson, et al., (2019), Asempapa & Asempapa (2019), Steele & Day (2020), Deng et al., (2020), Siddiquei & Khalid (2021). Suzuki, et al., (2021), Huxster, et al., (2021), Kurudayıoğlu, et al.,(2021))

Figure1: *Depicting the process used for developing the proposed questionnaire*



RESULTS AND DISCUSSION

The study used both deductive and inductive methods to generate items, Literature reviews and in-depth interviews with teachers were conducted in the initial phase of item development. An initial pool of 36 items were developed based on the four factors which are relevant among teaching professionals. Multiple rounds of discussions with teaching professionals and experts in the field of education, psychology, human resource management and organizational behavior led to the rephrasing of and deletions of few items. The pool of items were screened and removed systematically in various phases of scale development and validation such as discussion with teachers, establishing content validity by subject matter experts, screening the items for item total correlation and finally statistical analysis. The final questionnaire was validated with 21 items to measure the construct Teachers' Self Efficacy.

Figure 2 : Second Order Measurement Model of Teachers' Self Efficacy with standard regression estimates

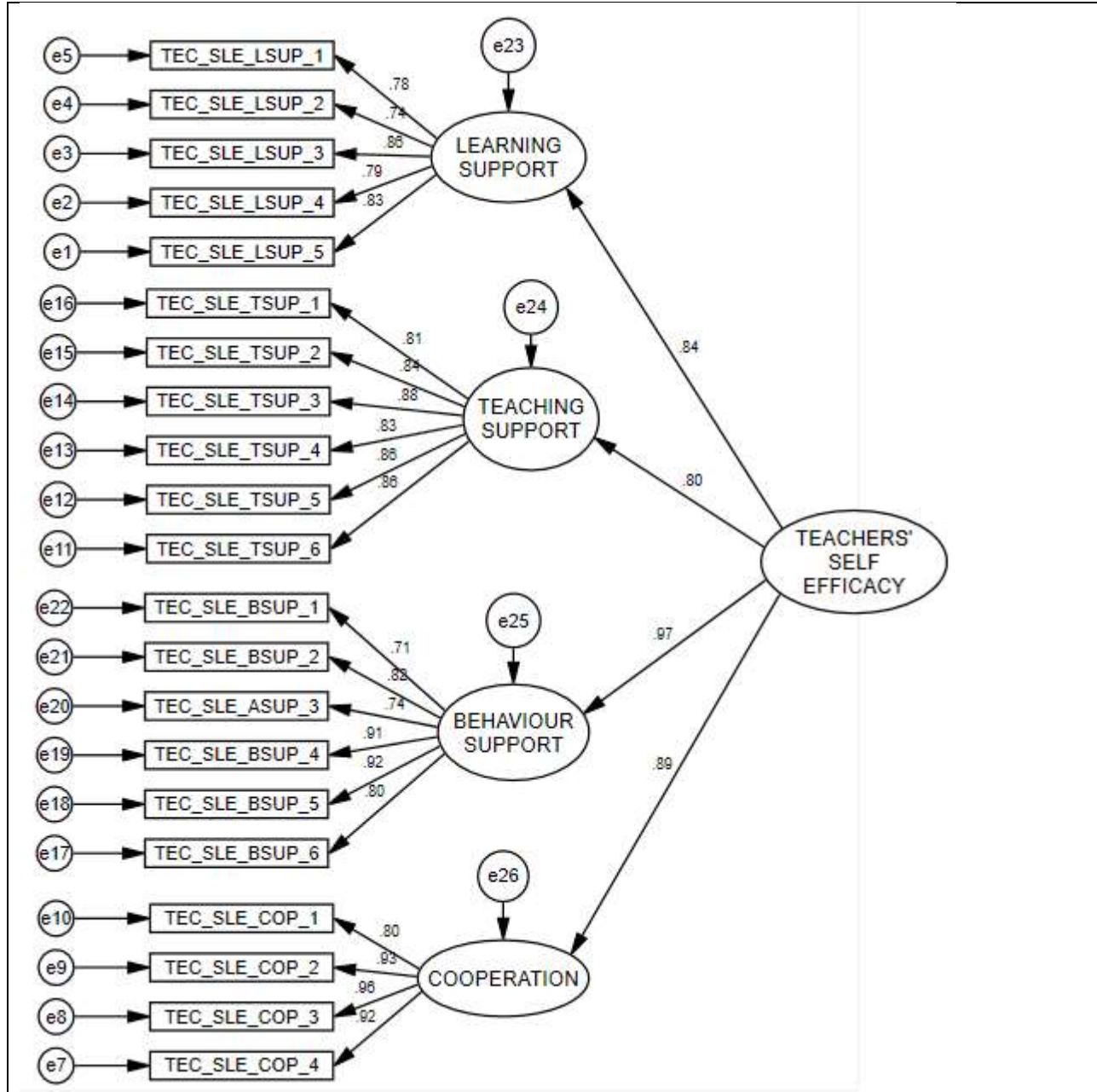


Table 1: Item wise Unstandardized and Standardized Regression coefficients of **Teachers' Self Efficacy** sub dimensions

Latent Variable	Indicators	Standardized loadings (β)	Un standardized loadings (B)	C.R	P-value
Learning Support (LSUP)	TEC_SLE_LSUP_1	0.781	0.837	9.988	***
	TEC_SLE_LSUP_2	0.739	0.863	9.096	***
	TEC_SLE_LSUP_3	0.858	1.012	11.926	***
	TEC_SLE_LSUP_4	0.785	0.851	10.079	***
	TEC_SLE_LSUP_5	0.834	1.000		
	TEC_SLE_TSUP_1	0.812	0.907	11.065	***
	TEC_SLE_TSUP_2	0.839	0.944	11.82	***

Teaching Support (TSUP)	TEC_SLE_TSUP_3	0.878	1.017	13.063	***
	TEC_SLE_TSUP_4	0.830	0.989	11.562	***
	TEC_SLE_TSUP_5	0.859	0.937	12.411	***
	TEC_SLE_TSUP_6	0.858	1.000		
Behavior Support (BSUP)	TEC_SLE_BSUP_1	0.707	0.836	8.842	***
	TEC_SLE_BSUP_2	0.822	1.034	11.618	***
	TEC_SLE_BSUP_3	0.739	0.987	9.518	***
	TEC_SLE_BSUP_4	0.914	1.149	14.975	***
	TEC_SLE_BSUP_5	0.920	1.142	15.224	***
	TEC_SLE_BSUP_6	0.797	1.000		
Cooperation (COP)	TEC_SLE_COP_1	0.798	0.898	11.636	***
	TEC_SLE_COP_2	0.931	1.007	17.891	***
	TEC_SLE_COP_3	0.961	1.055	20.345	***
	TEC_SLE_COP_4	0.917	1.000		***
<i>Second order loadings of Sub dimensions of Teachers' Self Efficacy</i>					
Teachers' Self Efficacy	LSUP	0.843	1.000		
	TSUP	0.804	1.025	6.977	***
	BSUP	0.971	0.989	7.417	***
	COP	0.889	1.089	8.206	***

Table 2: Correlation (Covariance) result of sub dimensions of Teachers' Self Efficacy

	LSUP	TSUP	BSUP	COP
LSUP	-	0.774	0.790	0.740
TSUP	-	-	0.768	0.683
BSUP	-	-	-	0.816

Table 2 shows the inter item Correlation (Covariance) result of sub dimensions of **Teachers' Self Efficacy**. Accordingly, it is observed that there is a very good correlation (> 0.70) between sub dimensions.

Speaking about the Reliability factor for sub dimensions of **Teachers' Self Efficacy**, it is observed from Table 3 that LEARNING SUPPORT sub construct has a composite reliability value of 0.899 and a cronbach alpha of 0.899; TEACHING SUPPORT sub

Table 3: Reliability and Item Loadings of Teachers' Self Efficacy sub dimensions

Latent Variable	Indicators	Standardized loadings (β)	Composite Reliability	Cronbach Alpha	Average Variance Explained (AVE)
Learning Support (LSUP)	TEC_SLE_LSUP_1	0.781	0.899	0.899	0.641
	TEC_SLE_LSUP_2	0.739			
	TEC_SLE_LSUP_3	0.858			
	TEC_SLE_LSUP_4	0.785			
	TEC_SLE_LSUP_5	0.834			
Teaching Support (TSUP)	TEC_SLE_TSUP_1	0.812	0.938	0.938	0.716
	TEC_SLE_TSUP_2	0.839			
	TEC_SLE_TSUP_3	0.878			
	TEC_SLE_TSUP_4	0.830			

	TEC_SLE_TSUP_5	0.859			
	TEC_SLE_TSUP_6	0.858			
Behavior Support (BSUP)	TEC_SLE_BSUP_1	0.707	0.924	0.925	0.673
	TEC_SLE_BSUP_2	0.822			
	TEC_SLE_BSUP_3	0.739			
	TEC_SLE_BSUP_4	0.914			
	TEC_SLE_BSUP_5	0.920			
	TEC_SLE_BSUP_6	0.797			
Cooperation (COP)	TEC_SLE_COP_1	0.798	0.947	0.947	0.817
	TEC_SLE_COP_2	0.931			
	TEC_SLE_COP_3	0.961			
	TEC_SLE_COP_4	0.917			

construct with a composite reliability of 0.938 and a cronbach alpha of 0.938; BEHAVIOR SUPPORT sub construct has a composite reliability value of 0.924 and a cronbach alpha of 0.925 and COOPERATION sub construct with a composite reliability of 0.947 and a cronbach alpha of 0.947. The findings reveal that most of the constructs are higher than the required reliability. Hence it could be concluded that all the items grouped completely converge to its respective sub dimensions and consider all items for the full-fledged study. Furthermore, the cronbach alpha values across each of the dimensions depicted in the above table have more than 0.70 which is again higher than the required threshold value indicating the data consistency and addressed to relevant respondents.

Table 4: Discriminant Validity result for sub dimensions of *Teachers' Self Efficacy*

	LSUP	TSUP	BSUP	COP
LSUP	0.801*			
TSUP	0.774	0.846*		
BSUP	0.790	0.768	0.820*	
COP	0.740	0.683	0.816	0.904*

* Square root of original AVE values shown in Table 3.

The inter correlation values (Table 4) establish the discriminant validity among the latent variables in that they do not statistically overlap each other and are free from the problem of multicollinearity for these two sub dimensions.

Table 5: Goodness-of-fit & Incremental Indices of Measurement model for sub dimensions of *Teachers' Self Efficacy*

	(χ^2/df)	GFI	RMSEA	AGFI	NFI	CFI	IFI	RFI	PCFI	PNFI
Accepted Value	< 5	> 0.90	< 0.10	> 0.80	> 0.90					> 0.50
Model Value	3.183	0.893	0.087	0.813	0.869	0.877	0.859	0.835	0.721	0.670

The Goodness-of-fit & Incremental Indices for sub dimensions of *Teachers' Self Efficacy* for full-fledged data depicted in Table 5 indicates an overall acceptable fit.

Table 6: *Final Draft of items to measure Teachers' Self Efficacy:*

1	I can help students to gain interest in academics.
2	I am capable of teaching my students how to learn and excel.
3	I initiate, facilitate and moderate classroom discussions to promote an open learning environment.
4	I can efficiently control the students in the classroom to maintain a disciplined atmosphere.
5	Disciplined and participative classroom atmosphere helps me to deliver the best.
6	I use various proven teaching styles to deliver the lessons.
7	I can quote examples that increase the general awareness of the students.
8	If I feel students are not satisfied with a given explanation, I can explain in a different way and make students understand.
9	I can remain calm in the most unexpected situation.
10	I critically evaluate my teaching process.
11	I am confident in implementing new teaching pedagogies.
12	I am ready to support the administration to ensure a healthy learning environment for the students.
13	I am capable of giving valuable suggestions to improve the teaching learning experiences.
14	I can come up with alternate teaching strategies if the administration asks me to do so.
15	I can manage the student behavior to follow the institutional rules.
16	I am committed to ensure the academic integrity of the institution.
17	I can motivate the students to believe in themselves and excel.
18	I work in accordance with the institutional policies, rules and regulations.
19	I can cooperate with the teaching and non teaching staff in achieving institutional objectives.
20	I can effectively interact with the parents and cooperate with them in the student development.
21	I am open to constructive advice from my colleagues.

CONCLUSION

The proposed scale to understand Teacher' Self- Efficacy will help to measure teachers' beliefs in their ability using four factors: learning support, teaching support, behavior support and cooperation each of which have a significance in teachers' belief about their skills which are required in the profession. The development of a standardized tool to measure teachers' self efficacy enables comparisons across populations. Thus, the authors believe that this scale will be a good base for future research on the factors influencing teachers' self-efficacy. There is also a scope for validating the scale with other populations of teaching professionals including teacher trainees and in-service teachers. In addition the study encourages career management practitioners

and counselors to integrate proactive behaviors into counseling techniques to equip clients with necessary skills and deal with unfavorable job experiences, thereby engendering favorable job outcomes for teaching professionals.

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