Development and Validation of an Attitude Scale towards Teaching

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Abstract

A successful teaching-learning process depends heavily on teaching. Wherein the teaching process greatly benefits from the involvement of prospective teachers. They need to approach the teaching with a positive attitude for the teaching-learning process to be effective. Therefore, a reliable instrument is required for assessing the prospective teachers' attitudes toward teaching. The study sample was chosen using convenient sampling and snowball sampling techniques due to the challenges and constraints associated with contacting prospective teachers. The study used 818 prospective teachers' derived scores for exploratory and confirmatory factor analyses. After the literature review, draft scale items were developed. Field experts assessed the items for face and content validity, and the scale was finalized. Researchers tested the construct validity using EFA. The scale included twenty-eight (28) items with seven sub dimensions, according to the analysis's findings. Following EFA, eighteen (18) items across seven sub dimensions were kept. Finally, CFA examined the scale, which consisted of 18 items, to create a path diagram. To assess the scale's reliability, the internal consistency coefficients for Cronbach Alpha were evaluated. The attitude scale is able to measure prospective teachers' attitudes toward teaching, according to all of these findings. The final scale will be play significant role for measuring attitudes towards teaching for prospective teachers as well as in-service teachers.

Keywords: Attitude Scale, Prospective Teachers, Teaching, Scale Development

Introduction

As a lamp lights up a room, a teacher lights up a youth society by imparting his inner-knowledge. Teachers are the persons who could develop and mould the learners as good citizens (Chakraborty & Mondal, 2014). We live in the modern world, nowadays education is a basic needs of every human being. Education is responsible for the holistic development of individual and society (Parvez & Shakir, 2013). The teacher effectiveness reflects teacher's attitude, skill and behavioral characteristics in classroom environment (Chauhan & Sharma, 2022). A teacher ought to consider themselves uniquely ordained to carry out this work, primarily for the love of it rather than the potential financial gain (Parvez & Shakir, 2013). Teachers' sense of efficacy, that is, 'their belief in their ability to have a positive effect on student learning' (Ashton, 1985).

Effective teachers employ different approaches for different kinds of students, whereas ineffective teachers apply the same tactics to every student (Samaddar et al., 2023). In today's rapidly evolving educational environment, teaching has become much more complex, with educational institutions increasingly employing state-of-the-art methods to manage students in a classroom (Ray & Sikdar, 2023a). The willingness of instructors is the primary factor influencing school success (Kara & Ada, 2021).

It takes more than just defining teaching strategies and activities to raise educational standards; instructors' emotions, drives, and, most importantly, attitudes must also be taken into account (Korur et al., 2016). For making a quality education need to developed qualities of teacher (Ray et al., 2023). Those pursuing a B. Ed. program or receiving training to become teachers are known as prospective teachers. They go by several names, including would be teachers, pupil teachers, student teachers, and future teachers (Parvez & Shakir, 2013). Through teaching teachers transforming their knowledge and students acquire their knowledge (Samaddar & Sikdar, 2023). The foundation of prospective teachers' professional experiences is first gained in schools during their fieldwork, which is a two-way process that benefits both mentors and candidate teachers (Schon, 1990). Field experiences provide aspiring educators with a variety of chances to put what they have learned in teacher preparation programs into practice (Tarman, 2012).

An attitude is a frame of mind that influences one's thoughts and behavior (Olakunle & Salman, 2020). Attitude is of crucial importance for organizational behavior since it is directly related to behavior (Polat, 2022). Three basic dimensions - cognitive, affective, and behavioral - are where attitudes are generated and expressed (McGuire, 1989; Wood 2000). Teachers' attitudes on their professions are typically correlated with their passion for their work, dedication to it, and understanding of the importance and value of their profession in society (Ayik & Atas, 2014). Attitude is the result of a person's mind making a judgmental judgment based on their own perception of divine truth (Raghuvanshi, 2016).

The teacher educators' attitude towards 2-year B.Ed. programme is more favorable than the attitude of student teachers (Swain & Mishra, 2022). It is necessary to establish the connection between aspiring teachers' motivation to teach and their attitude toward uncertainty (Senol & Akdag, 2018). Teachers' skills and expertise depends on the attitude they possess for the career (Olatunde-Ajyedun, 2021). Developing a positive attitude toward teaching among student teachers is a key component of our teacher education program, as it is a significant predictor of future teachers' teaching competency (Goswami, 2021).

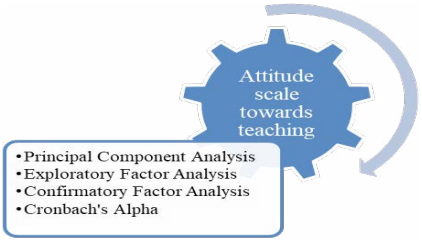
As per previous mentions, the purpose of the study was to develop and validate an attitude scale towards teaching for measuring the teaching attitude level among the prospective-teachers. The newly developed attitude scale towards teaching will be used to provide information on the relationships between pre-service teachers' positive and negative attitudes towards teaching. With the aid of this scale, researchers could ascertain the causes behind pre-service teachers' negative attitudes towards instruction, and with further research, they might try to suggest strategies for replacing these negative attitudes with positive ones that will improve the efficiency of the teaching and learning process.

Objectives

In this study, the researchers have aimed to development and standardization of an attitude scale towards teaching for the prospective-teachers. In this regard the researchers also framed some objectives as follows-

- To examined the factor loading by factor analysis for judging the construction of the scale.
- To find out the alpha value for standardization the scale.

Conceptual Research Framework



Attitude Scale

According to Allport attitude is "a mental and neural state of readiness, organized through experience, exerting a directive and dynamic influence upon the individual's response to all objects and situations with which it is related" (Schwarz & Bohner, 2001; Allport, 1935). It was possible to ascertain how future potential instructors felt about the teaching using a Likert scale of five points, where one marked absolute disagreement and one marked strong agreement, another one marked partially agree and last one marked partially disagree to various assertions regarding the teaching. The proposed scale, which consists of 28 items, is designed to determine whether the three primary components of attitude "Cognitive, Affective, and Behavioral" are present.

Factor Analysis and its Concept

Using statistical techniques, factor analysis (FA) enables us to examine the underlying dimensions that explain the relationships between a number of complex variables or items (Tavakol & Wetzel, 2020). We check the validity of the research through the method of factor analysis. For the validity analyses; content, structure and criterion validity are calculated (Akcay et al., 2018). A researcher can more readily comprehend the relationship between items in a scale and the underlying factors that the items may have in common by using FA to simplify a matrix of correlations (Tavakol & Wetzel, 2020). Principle component analysis, exploratory factor analysis, and confirmatory factor analysis are the three common types of factor analysis. In the stage of developing and adapting measurement tools, two types of factor analyses are typically conducted to ensure the construct validity of the scale (Akcay et al., 2018).

Principle Component Analysis (PCA)

A data table with observations described by multiple dependent variables that are generally intercorrelated is analyzed by PCA (Abdi & Williams, 2010). Additionally, by showing the observations and variables as points on maps, PCA illustrates the pattern of similarity between them (Abdi & Williams, 2010; Jackson, 1991; Jolliffe, 2002; Saporta & Keita, 2009).

Exploratory Factor Analysis (EFA)

It is frequently employed in the early phases of research to obtain data regarding the relationships between a group of variables and is used to verify dimensionality (Shrestha, 2021; Pituch & Stevens, 2015). Its purpose is to determine the implicit structure of the scale (Secer, 2015). EFA is utilized to determine the scale's factor structure and assess construct validity (Ahmad et al., 2021).

Confirmatory Factor Analysis (CFA)

A more intricate and advanced set of methods called confirmatory factor analysis is employed in the research process to test particular theories or hypotheses about the structure underlying a collection of variables (Hair et al., 2006; Pallant, 2020). Construct validity is taken into account in CFA along with the confirmation of the scale factor structure (Ahmad et al., 2021; Buyukozturk et al., 2009). It gives researchers more informative analytical options in addition to allowing them to test the hypotheses for factor structure and model fit (Akcay et al., 2018).

The reliability of the scale is evaluated using EFA, while the model's reliability is evaluated using CFA (Sencan, 2005). Several investigations looked at and talked about using factor analysis to narrow down a big data set and find the factors that were taken out of the analysis (Shrestha, 2021; Cerny & Kaisr, 1977; Dziuban & Shirkey 1974; Bartlett, 1951; Maccallum, et al., 1999).

Cornbach's Alpha

A questionnaire's reliability is assessed using Cronbach's alpha (Shrestha, 2021). The alpha coefficient, a criterion for internal consistency that Cronbach developed, is proposed as a means of assessing the reliability of a Likert-type attitude scale (Ahmad et al., 2021). In the process of creating and modifying a measurement tool, reliability is defined as consistency (Akcay et al., 2018). The content validity is supported by the Kuder Richardson-20 (KR-20) and Cronbach's alpha internal consistency value (Akcay et al., 2018). The higher alpha coefficient value demonstrates that the items chosen for the final scale are consistent and comprise the items required to measure the factors of the same characteristics (Tavancil, 2014). When

measurements are repeated, consistency is achieved by getting comparable or identical results (Akcay et al., 2018; Buyukozturk, 2009).

Research Questions

- What is the value of items of the attitude scale regarding teaching among the prospective-teacher?
- How many items are considered as effective items for Confirmatory Factor Analysis?
- Does the teaching attitude scale have appropriate validity?
- Does the teaching attitude scale have suitable reliability?

Methodology

Design

This study's results were obtained using a quantitative approach. Creswell clearly defined quantitative research in 1994 as a kind of study that uses numerical data collection and mathematically based analysis (especially statistics) to explain phenomena (Creswell, 1994). Researchers used the descriptive research method in this study. The goal of descriptive research is to provide the most accurate description of the phenomena that are currently occurring. In contrast to experiment research, which observes both the current phenomena and the phenomena following a specific treatment period, descriptive research uses the term "existing phenomena" (Atmowardoyo, 2018). For the current study, data was gathered using the survey method. Through critical analysis and examination of the source materials, data analysis and interpretation, and the development of generalization and prediction, the survey research uses applications of the scientific method (Salaria, 2012). Scientific sampling and questionnaire design are used in survey research to statistically accurately quantify demographic characteristics. Statements and questions about the independent and dependent variables are included in the questionnaire, which was created based on instruction.

Sampling Technique

According to Singh and Masuku (2014), sampling is the process of choosing a subset of people from a population in order to estimate the characteristics of the entire population. When the population is large, sampling is a crucial research tool. Accordingly, it was separated into two categories: (1) Probability and (2) Non-Probability (Bhardwaj, 2019).

Researchers used random sampling in this case. For highly homogeneous populations, simple random sampling is used, in which research participants are chosen at random to take part in the study (Noor et al., 2022; Bhardwaj, 2019). According to Acharya et al. (2013), each person in the population has an equal chance of being chosen for the sample using this method. Simple random sampling is frequently used in quantitative designs & surveys (Rahi, 2017).

Participants

Researchers administered the test to 818 participants (prospective teachers) from various teachers training institutes in West Bengal, India, to determine the item validity and reliability. Researcher conducted the test with 306, 220 and 292 prospective teachers for measuring exploratory factor analysis, confirmatory factor analysis and item reliability respectively.

Tool Construction

In the process of creating a "Attitude Scale" many different kinds of steps are used. To prepare the attitude item/statements, at first researcher gathered various informations from numerous sources (Karmakar et al., 2022). During this study, six primary steps were taken in order to create an attitude scale that would be valid and reliable for assessing pre-service teachers' attitudes towards teaching.

Prepare a Draft Tool

Through a survey of the literature on the topics connected to teaching, existing attitude scales were explored. While some of the items were pulled by the authors, others were taken from published sources. After then, with the assistance of experts in the field, both positive and negative attitude items were generated (Chaudhuri et al., 2023).

Development Subscales

This attitude scale is constructed based on different dimensions. The dimensions are- general

perception, social aspect, value aspect, competency, commitment and communication. An attitude scale of 28 items was constructed based on these dimensions.

Scale Development

There are 28 items on 5-point Likert scales that make up the attitude scale for teaching in this study. The scale used to record the students' responses ranged from 1 (strongly disagree) to 5 (strongly agree). 28 is the lowest possible score on the scale (rating 1 for each of the 28 items), and 140 is the highest possible score (rating 5 for each of the 28 items) (Mukherjee et al., 2018). The researchers have used both favorable and unfavorable statements to develop the scale. The score of each item was distributed as Strongly Agree=5, Agree=4, Neutral=3, Disagree=2, Strongly Disagree= 1 (Ray & Sikdar, 2023b) in section of favorable items. In unfavorable statements score distributed as Strongly Disagree=5, Disagree=4, Neutral=3, Agree=2, Strongly Agree=1.

Item Validation

The validity of a test, or of any measuring instrument, depends upon the field with which it measures what is intend to measure (Gupta et al., 2023; Garret, 2005). The validity of the content has been confirmed by experts. A key concept in research methodology is content validity, which describes how well a test ascertains the behavior it is meant to measure (Gupta et al., 2023; Cicchetti & Sparrow, 1981). Researchers enlisted the aid of an expert team to build the tool and set up the test. Every item was checked and modified by judging the face and content validity (Halder & Sikdar, 2023).

Data Collection Procedure

The target population was given a series of questionnaires to fill out, and data was collected by going to the locations where they were handed out in person. The rest of the data is collected using Google Forms. After data collections, data is organized in score and then every single item/data is analyzed (Maity et al., 2022).

Factor Analysis

The information gathered during the scale's implementation was examined using SPSS version 21.0 to establish the scale's factor structure. The analysis of data carried out using two main factor analysis techniques like Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA).

Kaiser-Meyer-Oklin (KMO) measures are another way to assess whether data are suitable for factor analysis. Between 0 and 1, KMO statistics fluctuate (Kalpana & Shibu, 2014). The factor analysis can proceed if the test result is higher than 0.5 (Sencan, 2005). According to Kaiser (1974), a value below 0.5 is unacceptable, one within 0.5 is miserable, one in the 0.6 range is poor, one in the 0.7 range is average, one in the 0.8 range is meritorious, and one in the 0.9 range is wonderful. For sample sizes under 100, an average value > 0.6 is acceptable; for sample sizes between 100 and 200, an average value between 0.5 and 0.6 is acceptable (Tabachnick & Fidell, 2013; Guttman, 1954; Kaiser, 1970; Tucker & MacCallum, 1997). Finding factors with an eigenvalue greater than one is the popular criterion for evaluating eigenvalues (Ozdamar, 2016).

Reliability

Using SPSS 21.0, the Cronbach's alpha internal consistency coefficient was computed for each dimension and the entire scale. In respect of reliability coefficient, values that scores between the range of 0.00 with much error and 1.00 with no error usually reflects the amount of error in scores (Drucker-Godard et al., 2001). All items in each reliability analysis had item-total correlation scores greater than 0.30, which yielded results that were deemed acceptable (Field, 2013; Erdogan et al., 2012).

Results

Principal Component Analysis

Kaiser-Mayer-Olkin (KMO) and Barlett Sphericity Tests are recommended for determining whether the data is suitable for factor analysis (Ugulu, 2011). According to popular belief, a KMO value of 0.60 is required to qualify for the factor analysis (Pullant, 2001). The KMO test value in this principal component factor analysis instance is 0.695. Table 1 displays the findings of the KMO and Barlett tests, which are necessary to perform factor analysis.

Table 1 KMO and Bartlett's Test for PCA

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.695
Bartlett's Test of Sphericity Approx. Chi-Square	1248.760
df	378
Sig.	.000

Table 2 Communalities for PCA

	Initial	Extraction
VAR00001	1.000	.699
VAR00002	1.000	.627
VAR00003	1.000	.613
VAR00004	1.000	.548
VAR00005	1.000	.429
VAR00006	1.000	.389
VAR00007	1.000	.361
VAR00008	1.000	.563
VAR00009	1.000	.634
VAR00010	1.000	.496
VAR00011	1.000	.621
VAR00012	1.000	.613
VAR00013	1.000	.505
VAR00014	1.000	.616
VAR00015	1.000	.598
VAR00016	1.000	.249
VAR00017	1.000	.710
VAR00018	1.000	.410
VAR00019	1.000	.592
VAR00020	1.000	.448
VAR00021	1.000	.589
VAR00022	1.000	.504
VAR00023	1.000	.585
VAR00024	1.000	.609
VAR00025	1.000	.432
VAR00026	1.000	.549
VAR00027	1.000	.474
VAR00028	1.000	.610

According to the study's Bartlett's Test results, the chi-square was significant (χ^2 (300) = 1248.760; p > 0.001). Consequently, factor analysis's two necessary presumptions are met. Ten of the 28 items that were subjected to Principal Components Factor Analysis had values below 0.5 using a fixed number of factors. Low communality variables (less than 0.5) do not combine with other variables, which causes an abnormally high number of factors in the analysis's output (Raghuvanshi, 2016). Thus, those ten items were not included. The next level factor analysis is indicated by 18 of the 28 items.

Exploratory Factor Analysis

Principal component analysis and varimax rotation were employed in the exploratory factor analysis to identify the scale's primary factors, or dimensions. In order to increase the burden of substances on a factor and make it easier for factors to identify the substance that has the strongest relationship with them, the Varimax vertical rotation technique is used to identify the dimensions in which substances are collected (Ozturk & Korkmaz, 2019). Table 2 shows that the KMO value was 0.691 and that the Barlett's test result was significant. Seven distinct factors with eigenvalues greater than 1.0 were extracted by EFA on this attitude scale.

Table 3 KMO and Bartlett's Test for EFA

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.691
Bartlett's Test of Sphericity Approx. Chi-Square	665.859
df	153
Sig.	.000

The scale has seven factors, as shown in Table 3. Following an analysis of the EFA results, seven dimensions were proposed in the Scree Plot.

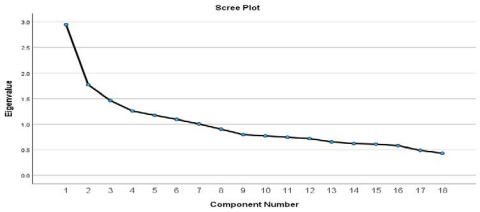


Figure 1 Scree Plot of EFA

The scale's first factor has an Eigenvalue of 2.94, the second factor has an Eigenvalue of 1.769, the third factor has a value of 1.461, the fourth factor has a value of 1.256, the fifth factor has a value of 1.171, and the sixth factor has a value of 1.092. 1.005 is the seventh factor. These values indicate that the first factor of the scale accounts for 13.575% of the total

variance, followed by the second factor at 8.359%, the third at 7.949%, the fourth at 7.788%, the fifth at 7.334%, and the sixth at 7.233%. 7.213% of it is described by the seventh factor (see Table 4).

Table 4 Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.946	16.369	16.369	2.946	16.369	16.369	2.946	13.575	13.575
2	1.769	9.830	26.198	1.769	9.830	26.198	1.769	8.359	21.934
3	1.461	8.119	34.318	1.461	8.119	34.318	1.461	7.949	29.883
4	1.256	6.979	41.297	1.256	6.979	41.297	1.256	7.788	37.672
5	1.171	6.506	47.803	1.171	6.506	47.803	1.171	7.334	45.006
6	1.092	6.068	53.871	1.092	6.068	53.871	1.092	7.233	52.239
7	1.005	5.582	59.453	1.005	5.582	59.453	1.005	7.213	59.453

Table 5 Rotated Component Matrix[a]

	Component						
	1	2	3	4	5	6	7
VAR00005	.581						
VAR00006	.591						
VAR00013	.579						
VAR00018	.661						
VAR00020	.606						
VAR00027	.636						
VAR00012		.713					
VAR00015		.740					
VAR00019			.762				
VAR00026			.769				
VAR00011				.670			
VAR00014				.733			
VAR00001					.782		
VAR00003					.762		
VAR00004						.727	
VAR00028						.732	
VAR00008							.832
VAR00009							.711

Karagoz and Kostereliogluu (2008) state that each factor group is given a suitable name based on the common characteristics of the substances within the group. In this situation, factors are considered while considering the substances' comparable properties and contents (Karagoz & Kostereliogluu, 2008). First factor is called General Perception, Second factor is called Social Aspect, third factor is called Value Aspect, Fourth factor is called Verbal Communication, fifth factor is called Social Communication, and Sixth factor is called Commitment, Seventh factor is called Professionalism.

Confirmatory Factor Analysis

The researcher used JAMOVI to perform Confirmatory Factor Analysis (CFA) in order to validate the factor structure that emerged from exploratory factor analysis. The structure produced by CFA analysis was tested for accuracy and consistency, and causality relationships were identified (Duzgun & Kirkic, 2023; Seker & Gencdogan, 2020). In this section, the compatibility of the seven sub-factor structures identified by EFA was examined. Several fit indices were employed to evaluate the suitability of CFA models. The Comparative Fit Index (CFI), which ranges from 0 to 1, represents the total co-variation in the model and is one of the several goodness-of-fit tests required for CFA. Both the Root Mean Square Error Approximation (RMSEA) and Tucker and Lewis's Index of Fit (TLI). The analysis of residuals is the foundation of RMSEA (Kelloway, 1998).

Table 6 CFA Test for Exact Fit

χ^2	df	p
224	114	<.001

According to Table 6, the chi-square degrees of freedom ratio was low (224/114=1.964) and the chi-square value for CFA compliance [χ^2=224, df=114, p<.001] was statistically significant.

Table 7 Fit Measures for CFA

			RMSEA 90% CI	
CFI	TLI	RMSEA	Lower	Upper
0.890	0.852	0.0666	0.0537	0.0794

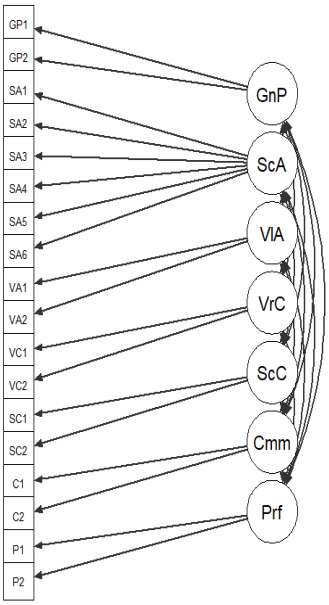


Figure 2 Path Diagram

The NFI, CFI, RMSEA, and other four indexes were used to assess the model's fitness. The RMSEA index showed a good fit value (RMSEA = 0.066); a good model-data fit should most likely have a value below 0.08 (Kline, 2011). However, other indexes, such as the CFI, NFI, and TLI, did not yield an acceptable range (CFI = 0.89, and TLI = 0.85), which led to a questionable fit between the model and the data (see table 7).

Cronbach's Alpha

The Cronbach's alpha internal consistency coefficient was computed using SPSS 21.0 for both the entire scale and each dimension. These eighteen items were grouped into seven smaller dimensions. Table 8 displays the reliability values of these items' sub-dimensions. Acceptable results, which are greater than 0.30, were obtained from each reliability analysis's item-total correlation score for every item (Field, 2013; Erdogan et al., 2012).

The below table showed that the Cronbach's alpha value of the first sub-dimension, general perception, was 0.614, the Cronbach's alpha value of the second sub-dimension, social aspect, was 0.699, the Cronbach's alpha value of the third sub-dimension, value aspect, was 0.497, the Cronbach's alpha value of the fourth sub-dimension, verbal communications, was 0.745, the Cronbach's alpha value of the fifth sub-dimension, social communications, was 0.599, the Cronbach's alpha value of the six sub-dimension, commitment, was 0.504, the Cronbach's alpha value of the seven sub-dimension professionalism was 0.631, and the Cronbach's alpha value of the overall scale was 0.781.

Table 8 Cronbach's Alpha and its Sub-Dimensions

Dimensions	n	Cronbach's Alpha
General-Perception	292	0.614
Social-Aspect	292	0.699
Value-Aspect	292	0.497
Verbal-Communication	292	0.745
Social-Communication	292	0.599
Commitment	292	0.504
Professionalism	292	0.631
Attitude Scale towards Teaching (ASTT)	292	0.781

The split-half method yielded Cronbach Alpha coefficients for the first and second halves of 0.631 and 0.612, respectively. For both equal and unequal lengths, the Spearman-Brown coefficients were determined to be.828. Additionally, 0.822 was determined to be the Guttman Split-Half Coefficient.

Table 9 Results of Split-Half Reliability (Guttman Split-Half Coefficient, Spearman Brown Coefficient, Correlation Between Forms, Cronbach's Alpha for both halves)

Cronbach's Alpha	Part 1	Value	.631
		N of Items	9[a]
	Part 2	Value	.612
		N of Items	9[b]
	Total N of Items		18
Correlation Between Forms			.706
Spearman-Brown Coefficient	Equal Length		.828
	Unequal Length		.828
Guttman Split-Half Coefficient			.822

a. The items are A1,A3,A5,A7,A9,A11,A13,A15,A17

b. The items are A2,A4,A6,A8,A10,A12,A14,A16,A18

The analysis's Cronbach Alpha coefficients should be at least 0.60, the correlation coefficient should be between 0.20 and 0.90, and the Spearman Brown coefficient should be greater than 0.70 in order to guarantee internal consistency and reliability (Duzgun & Kirkic, 2023; Basar, 2016). The scale's high reliability was demonstrated by the Cronbach's Alpha for each half as well as the Spearman-Brown and Guttman Split-Half Coefficient values (Terzi, 2019).

Final Scale

The final scale of Attitude towards teaching consists eighteen (18) items in seven dimensions. The distributions of the items are shown in Table 10.

Table 10 Distribution of Items in the Final Form of Attitude Scale towards Teaching

Dimension	Item No.		Total Items
	Favorable	Unfavorable	
General Perception		1, 2	2
Social Aspect		3, 4, 5, 6, 7, 8	6
Value Aspect	9, 10		2
Verbal Communication	11, 12		2
Social Communication	13, 14		2
Commitment	15, 16		2
Professionalism	17, 18		2
Total	10	8	18

Discussion and Conclusion

The need for a positive attitude towards teaching has been described in the above section. Describing the data obtained, it can be said that the need for Attitude Scale towards Teaching (ASTT) is sufficient in the field of education. Factor analysis with varimax rotation was used to investigate the construct validity of ASTT. This scale was constructed with 28 items with help of Likert "5" point scales (Mukherjee et al., 2018) where fifteen (15) questions are favorable and thirteen (13) questions are unfavorable. In the first phase of data collection is completed and the data analysis is done through validity verification which is done by Factor analysis.

The KMO test value in this instance of principal component factor analysis is 0.695 (see table 1), and in this instance of exploratory factor analysis, it is 0.691 (see table 3), both of which are significant. According to Goni et al. (2020), if the KMO value was greater than 0.5 and the Bartlett's test was significant ($P<0.001$), the sample was deemed adequate. According to Floyd and Widaman (1995), items with a loading factor greater than or equal to 0.3 were deemed acceptable. Lang et al. (2005) and Martin-Dunlop and Fraser (2008) also supported the recommendation that factor loading ≥0.30 be used for item loadings (Lang et al., 2005). Items that did not have a factor loading of 0.50, however, were not included in the final scale for this study. Since the result was less than 0.5, the ten (10) questions were eventually removed, and a new question with seven dimensions was created. The instrument's seven factors, including General Perception, Social Aspect, Verbal Communication, Social Communication, Commitment, and Professionalism, were identified by the factor analysis results. These seven factors account for 59.453% of the scale's variance, which is regarded as adequate variation explanations in teaching attitudes.

The accuracy and consistency of the structure derived from EFA were assessed using CFA (Duzgun & Kirkic, 2023). In conclusion, Ahmad et al. (2021) found that the ASTT had seven factors underlying 18 items measured on a 5-point Likert scale. They also found that the Biology Attitude Scale had five factors underlying 18 items measured on a 5-point Likert scale (Ahmad et al., 2021). To balance the number of positive and negative issues, the negative questions' responses were recoded by flipping their order, and some items' wording was changed (Perez-Rodriguez et al., 2017). Eight (8) questions are negative and ten (10) are positive on this scale. Convergent validity was then achieved by calculating the AVE of the remaining constructs with a threshold above > 0.5. High convergent validity is defined as having a factor loading of all items ≥ 0.6 (Hair et al., 2010). With satisfactory fit indices (CFI = 0.89, TLI = 0.853, and RMSEA = 0.068), researchers discovered that there was a good fit. When the correlations between the constructs are less than 0.85, the measurement of this study satisfies discriminate validity (Kline, 2011).

The 18-item draft was distributed to various colleges at the fourth stage. A Google Form was used to gather participant responses, and a response sheet was produced. SPSS 21 was used to analyze the data in the final stage of scale development (Sangwan et al., 2021). Additionally, each factor's internal consistency was calculated by Cronbach coefficient. For the corresponding scales, the reliability results ranged from.497 to.781, which is satisfactory. According to Nunnally (1978), scales with a reliability coefficient greater than 0.60 are deemed suitable for use in research. The Attitude Scale Towards Teaching (ASTT) was found to have a reliability coefficient of 0.781.

The current scale is significant because it is the first effort in the field to gauge the opinions of potential teachers. The "Attitudes and Values" section of the "General Competencies of the Teaching Profession" report was included by the Ministry of National Education, which highlights the significance of attitudes as well as subject-matter expertise and abilities as prerequisites for teachers.

Limitations of the Study

It was challenging for the researcher to get survey responses from prospective teachers because they shunned him out of fear of being exposed in the media and social stigma. To gather the data, the researcher employed purposive random sampling.

Implications

According to Haigh and Katterns (1984), teaching is a very complex activity that requires constant decision-making and interaction between the teacher, students, task, and contextual factors. Developing and validating a trustworthy scale to gauge aspiring teachers' attitudes toward teaching was the aim of the current study. As previously stated, this study demonstrates the importance of better understanding the process through which the fundamental beliefs and metaphors of aspiring teachers evolve over time, as well as the factors that impact these changes (Bell & Robinson, 2004). Therefore, before moving on to the subsequent measurement of relationship, moderation, and mediation, it is crucial to confirm that all of the constructs involved have achieved validity and reliability (Shau, 2017).

The current scale is important since it represents the first attempt in the field that helps in assessing prospective teacher opinions. The Ministry of National Education has included the title "Attitudes and Values" in the "General Competencies of the Teaching Profession" report, citing the importance of attitudes in addition to field knowledge and skills as qualifications for teachers. Additionally, the scale's validity may be confirmed after being translated into another language. Similar to how it can be utilized in other nations to confirm their reliability and validity.

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Authors have declared that no competing interest exists.

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