

Original Research Article

Assessing Teacher Accountability: Development and Validation of the Teacher's Professional Accountability Scale (TPAS)

ABSTRACT

This study aims to develop and validate the Teachers' Professional Accountability Scale (TPAS), which addresses the need for a comprehensive tool to measure professional accountability among Secondary school teachers. Professional accountability, defined as the obligation of educators to adhere established standards and practices with competence and integrity, is crucial for improving educational quality and ensuring favorable student outcomes. A descriptive survey method was employed, and the TPAS was constructed and standardized through a pilot study. The scale consists of 94 items across four dimensions: procedural responsibility, consequential responsibility, instructional responsibility, and school and classroom responsibilities for student outcomes. Item analysis and selection resulted in a final draft of 74 items with satisfactory discrimination power. Reliability analysis using split-half method and Cronbach's alpha yielded coefficients of 0.85, indicating high internal consistency. Content validity was established through expert reviews, and norms were developed based on z-scores from a sample of 281 Secondary school teachers. The TPAS provides a validated measure for assessing professional accountability, contributing to the advancement of educational research and practice.

Keywords: assessment of teachers; professional accountability; Secondary schools; tool construction; standardization.

1. INTRODUCTION

The concept of professional accountability has garnered substantial attention in the educational field, particularly regarding teachers' performance and responsibilities. It refers to the obligation of educators to adhere established standards and practices, ensuring that their obligations are carried out competently and with integrity. As defined by Segen's Medical Dictionary (2011), professional accountability involves comparing a worker's professional judgment and activities or behaviours to those of others. In the educational context, this means that teachers are responsible for their instructional methods, classroom management, and the student's overall outcomes.

Professional accountability plays a crucial role in improving the quality of education and ensuring that students experience a consistent, high level of instruction. It fosters transparency, encourages ongoing professional growth, and ensures that teachers are fulfilling their responsibilities effectively. Despite its significance, there is a notable absence of standardized tools to measure professional accountability among teachers. Existing tools often fail to capture the multifaceted nature of

accountability in education. This gap underscores the need for a comprehensive and validated scale specifically designed to assess professional accountability in teachers.

1.1 Objective of the study:

To develop and validate Teachers' Professional Accountability Scale (TPAS).

2. METHODOLOGY

2.1 Research method: Descriptive survey method was used to achieve the objective of the present study.

2.2 Pilot study: Teacher's professional accountability scale (TPAS) was constructed and standardized by the researcher.

2.3 Scoring procedure: The scale consists of a total of 94 items, having 44 positive and 50 negative statements distributed across four dimensions: 22 items pertain to procedural responsibility, 18 items to consequential responsibility, 25 items to instructional responsibility and 29 items to school and classroom responsibilities for student outcomes. Scoring for all items was conducted using a 5-point Likert scale, such as Always, Frequently, Sometimes, Rarely, and Never. The scoring is done in Table 1 as follows-

Table 1: Scoring of the scale

Sl. No	Nature of statements	Alternatives				
		Always	Frequently	Sometimes	Rarely	Never
1	Positive	4	3	2	1	0
2	Negative	0	1	2	3	4

3. RESULTS AND DISCUSSION

3.1 Item analysis /Item selection: The following steps were followed for item analysis of the draft Teachers' Professional Accountability Scale.

- The draft of the proposed scale was applied to 150 Secondary school teachers using the scoring key, as mentioned in Table 1 and organized from the highest score to the lowest score.
- For the calculation of the discrimination power of the items, high and low-scoring groups have been formed under conditions by keeping 27% in the top and 27% in the bottom group on the basis of the total score.
- The mean scores for each individual item were computed for high scoring and low scoring groups.
- The difference between the mean scores obtained by the high scoring and low scoring groups on a particular item was determined. The difference was taken into consideration to determine the discrimination power of that particular item.
- To compare the mean scores between two groups, the 't' value for each item was calculated. The 't' value calculation has been calculated in Microsoft excel.
- Items with $t > 1.75$ or $t = 1.75$ were then identified and considered as eligible for the final form, while other items were excluded.
- Out of 94 items in the draft scale, 20 items were excluded and 74 items were retained. The total 28 positive items and 46 negative items were selected for the final draft of the scale. Table 2 shows the distribution of the calculated "t" value for the items in the draft Teachers' Professional Accountability Scale.

Table 2: Distribution of 't' value for draft Teachers' Professional Accountability Scale

<i>Sl. No</i>	<i>Dimensions</i>	<i>Item No</i>	<i>"t" value</i>	<i>Category</i>	<i>Results</i>
1	Procedural responsibility	1	0.731803902	Positive	Rejected
		2	5.062864182	Negative	Accepted
		3	5.005585186	Negative	Accepted
		4	4.234431612	Negative	Accepted
		5	0.736041582	Positive	Rejected
		6	-0.22305771	Positive	Rejected
		7	2.429786169	Positive	Accepted
		8	4.223045156	Negative	Accepted
		9	5.346302064	Negative	Accepted
		10	1.0170428	Positive	Rejected
		11	1.715803683	Positive	Rejected
		12	2.25065908	Positive	Accepted
		13	-0.35645958	Negative	Rejected
		14	6.28519103	Negative	Accepted
		15	5.654976623	Negative	Accepted
		16	2.628514963	Positive	Accepted
		17	1.326217312	Positive	Rejected
		18	1.565325981	Positive	Rejected
		19	0.952736417	Positive	Rejected
		2	Consequential responsibility	20	3.890943617
21	3.332266583			Positive	Accepted
22	4.39183567			Positive	Accepted
23	1.060354941			Positive	Rejected
24	5.280021317			Negative	Accepted
25	0.389305922			Positive	Rejected
26	4.726734554			Positive	Accepted
27	2.137539704			Negative	Accepted
28	1.998441218			Positive	Accepted
29	4.079653836			Positive	Accepted
30	0.963170708			Negative	Rejected
31	6.223073951			Negative	Accepted
32	2.083952289			Positive	Accepted
33	0.004299003			Positive	Rejected
34	-0.69216152			Positive	Rejected
35	4.635205752			Negative	Accepted
36	7.383213564			Negative	Accepted
37	1.964914434			Negative	Accepted
38	0.557096487			Positive	Rejected
39	3.65292884			Negative	Accepted
40	5.694450016			Negative	Accepted
41	4.507223543	Negative	Accepted		
3	Instructional responsibility	42	3.167270993	Positive	Accepted
		43	6.384163372	Negative	Accepted

		44	6.005970829	Negative	Accepted
		45	1.102561903	Negative	Rejected
		46	5.092169527	Negative	Accepted
		47	6.858726886	Negative	Accepted
		48	4.754844175	Positive	Accepted
		49	-0.00530784	Negative	Rejected
		50	3.502770844	Negative	Accepted
		51	3.522808297	Positive	Accepted
		52	6.898534069	Negative	Accepted
		53	2.44276419	Negative	Accepted
		54	2.95863529	Negative	Accepted
		55	8.279172105	Negative	Accepted
		56	5.366347669	Negative	Accepted
		57	4.129950187	Negative	Accepted
		58	3.151851038	Negative	Accepted
		59	4.754447243	Negative	Accepted
		60	5.531251516	Negative	Accepted
		61	5.407564819	Positive	Accepted
		62	3.021126611	Positive	Accepted
		63	3.510277388	Positive	Accepted
		64	3.261054066	Positive	Accepted
		65	3.692165519	Positive	Accepted
4	School and Classroom responsibility for student's outcome	66	2.968850567	Negative	Accepted
		67	2.778326854	Positive	Accepted
		68	-1.61006896	Positive	Rejected
		69	2.85568565	Positive	Accepted
		70	6.64482809	Negative	Accepted
		71	5.458312612	Negative	Accepted
		72	4.166628659	Negative	Accepted
		73	6.045485688	Negative	Accepted
		74	2.572120765	Negative	Accepted
		75	6.156233192	Negative	Accepted
		76	4.056530705	Negative	Accepted
		77	6.730406997	Negative	Accepted
		78	5.253765992	Positive	Accepted
		79	5.488917026	Negative	Accepted
		80	5.012657061	Positive	Accepted
		81	-2.40510057	Positive	Rejected
		82	4.182065939	Positive	Accepted
		83	1.910623805	Positive	Accepted
		84	4.784768314	Negative	Accepted
		85	3.497625737	Negative	Accepted
		86	4.525286963	Positive	Accepted
		87	2.480780439	Positive	Accepted

	88	0.766184113	Positive	Rejected
	89	4.351569492	Positive	Accepted
	90	5.333801595	Positive	Accepted
	91	8.842363533	Negative	Accepted
	92	6.405556406	Negative	Accepted
	93	4.045326611	Negative	Accepted
	94	4.218775676	Negative	Accepted

3.2 Selection and final form of TPAS: The investigator decided to select 74 items from the 94 items with satisfactory 't' values for the final draft of Teachers' Professional Accountability Scale. The distribution of items in the final form of Teachers' Professional Accountability Scale is shown in Table 3 and the maximum and minimum total score range of an individual is shown in Table 4.

Table 3: Distribution of items in the final form of Teachers' Professional Accountability Scale

Sl. no	Dimensions	No. of items		Total
		Positive	Negative	
1	Procedural responsibility	6	7	13
2	Consequential responsibility	4	8	12
3	Instructional responsibility	8	15	23
4	School and classroom responsibilities for student's outcome	10	16	26
	Total	28	46	74

Table 4: Maximum and minimum individual total score range of Teachers' Professional Accountability Scale

Individual total score range	Positive statements	Negative statements	Total
Maximum	112	184	296
Minimum	28	46	74

3.2.1 Reliability: A procedure was adopted to compute the internal consistency reliability of the Teachers' Professional Accountability Scale using the split-half method. The Final draft of Teachers' Professional Accountability Scale was administered to 181 Secondary school teachers of Dhemajidistrict, Assam. The coefficient of correlation between two halves was calculated using the product moment coefficient of correlation. The reliability of the half-test was found to be 0.74. Furthermore, the Spearman-Brown Prophecy formula was applied to estimate the coefficient of reliability of the overall test, which was found to be 0.85. The reliability of Cronbach's alpha was also calculated and found to be 0.85.

3.2.2 Validity: To determine the content validity of the test, the researcher seeks expert advice on the Teachers' Professional Accountability Scale. It was given to a number of experts in the field for judgment regarding the content coverage and language. Finally, all suggestions received from the experts are incorporated to ensure their validity.

3.2.3 Norms: To estimate the standard score norms in z-score, the researcher used the following formula: $z = (X - M) / \sigma$ where, z =Sigma score or z score, X =Raw score, M =Mean of the distribution, and σ = Standard deviation of the distribution.

From the collected data, the calculated mean and standard deviation (S.D.) were found to be 192 and 54, respectively. The researcher employed z-score to determine the norms of the scale during data interpretation. Samples of 281 Secondary school teacher were taken to estimate the norms of the scale. The details of the z scores are presented below in Table 5

Table 5: z score norms for Teachers' Professional Accountability Scale Mean = 192, S.D. = 54, N =281

<i>Raw score</i>	<i>Z score</i>	<i>Raw score</i>	<i>Z score</i>	<i>Raw score</i>	<i>Z score</i>
59	-2.46296	171	-0.38889	233	0.759259
60	-2.44444	172	-0.37037	237	0.833333
64	-2.37037	173	-0.35185	238	0.851852
68	-2.2963	174	-0.33333	239	0.87037
70	-2.25926	175	-0.31481	240	0.888889
73	-2.2037	176	-0.2963	242	0.925926
77	-2.12963	177	-0.27778	244	0.962963
83	-2.01852	178	-0.25926	246	1
91	-1.87037	179	-0.24074	247	1.018519
93	-1.83333	180	-0.22222	248	1.037037
94	-1.81481	181	-0.2037	249	1.055556
96	-1.77778	182	-0.18519	250	1.074074
97	-1.75926	183	-0.16667	251	1.092593
98	-1.74074	184	-0.14815	253	1.12963
100	-1.7037	185	-0.12963	257	1.203704
103	-1.64815	186	-0.11111	258	1.222222
109	-1.53704	187	-0.09259	259	1.240741
110	-1.51852	188	-0.07407	260	1.259259
112	-1.48148	189	-0.05556	261	1.277778
113	-1.46296	190	-0.03704	262	1.296296
115	-1.42593	191	-0.01852	263	1.314815
116	-1.40741	192	±0.00	264	1.333333
119	-1.35185	193	0.018519	265	1.351852
120	-1.33333	197	0.092593	267	1.388889
123	-1.27778	198	0.111111	271	1.462963
125	-1.24074	200	0.148148	272	1.481481
127	-1.2037	201	0.166667	279	1.611111
128	-1.18519	204	0.222222	283	1.685185
129	-1.16667	206	0.259259		
131	-1.12963	207	0.277778		
135	-1.05556	208	0.296296		
136	-1.03704	209	0.314815		
137	-1.01852	211	0.351852		
138	-1	212	0.37037		
139	-0.98148	213	0.388889		
140	-0.96296	214	0.407407		
141	-0.94444	215	0.425926		
142	-0.92593	216	0.444444		
143	-0.90741	217	0.462963		
145	-0.87037	218	0.481481		
146	-0.85185	219	0.5		
147	-0.83333	221	0.537037		
148	-0.81481	222	0.555556		
149	-0.7963	223	0.574074		
151	-0.75926	225	0.611111		
152	-0.74074	226	0.62963		
155	-0.68519	227	0.648148		

161	-0.57407	228	0.666667
162	-0.55556	229	0.685185
164	-0.51852	230	0.703704
169	-0.42593	231	0.722222
170	-0.40741	232	0.740741

Based on the z-score, the researcher categorizes the Teacher's Professional Accountability Scale into five (05) distinct groups to facilitate score interpretation. Table 6 provides detailed information regarding the norms for the interpretation of the scale.

Table 6: Norms for interpretation of Teacher's Professional Accountability Scale

<i>Sl. No</i>	<i>z score</i>	<i>Range of raw score</i>	<i>Categories</i>
1	Above $+0.85\sigma$	Above 238	High accountability
2	$+0.01\sigma$ to $+0.85\sigma$	193-238	Above Average accountability
3	-0.83σ to $+0\sigma$	147-192	Average accountability
4	-1.6σ to -0.85σ	101-146	Below Average accountability
5	Below -1.6σ	Below 101	Low accountability

3.3 Usefulness of the study: The development and validation of the Teachers' Professional Accountability Scale (TPAS) provides a significant contribution to the assessment of teachers, professional development, policy making, comparative study, school improvement, teacher education, teacher evaluation and educational research and practice.

4. CONCLUSION

The present study demonstrated a successful tool in the area of teacher assessment by developing and validating the Teachers' Professional Accountability Scale (TPAS), which consists of 74 items divided into four dimensions: procedural responsibility, consequential responsibility, instructional responsibility, and school and classroom responsibilities for student outcomes, whereas, the norm of the scale categorizes teachers into five distinct levels according to their individual scores. The high reliability and validity of the scale ensure the accuracy of measurement. In conclusion, the TPAS is a valuable tool in the field of educational measurement, providing a comprehensive and reliable means of assessing and improving professional accountability among Secondary school teachers. Its application can lead to more targeted interventions and improved educational practices, ultimately benefiting both teachers and students.

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