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

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Abstract

This study aims to develop and validate the Teachers' Professional Accountability Scale (TPAS) constructed by the researcher, which addresses the need for a comprehensive tool to measure professional accountability among Secondary school teachers. Professional accountability is 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, The study reached some recommendations, including the commitment of the school administration and senior management to the accountability standards reached, and the provision of joint workshops to ensure the efficiency of the implementation of professional accountability standards for teachers.

Keywords: Assessment of Teachers, Professional Accountability, Secondary Schools, Tool Construction, Standardization.

1.   Introduction

In the rush of radical changes in the field of teacher education and school management, the concept of professional accountability has gained considerable attention, particularly in teachers' performance and responsibilities. Due to the changes of this system, the educators are anticipated to oblige the established ethics, standards and practices [National Council for Teacher Education (2021)]. As mentioned by National Council for Teacher Education (2021), there are four standards namely core values & ethics, professional knowledge & understanding, professional competence & practice and professional development & growth. The 'core values & ethics' is meant to abide by the educators at every stage of their career. The standard 'professional knowledge & understanding' is having mastery over the subject. The 'professional competence & practice' is for effective application of professional knowledge and skills. The 'professional development & growth' is to continuous upliftment

of an educator professionally throughout the career. In order to ensure it whether the standards are carried out competently or not is the need of the hour.

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. According to Lakshminarayana (2019), Dar and Lone (2020), and Basak and Ghosh (2021), professional accountability is essential in raising the standard of education and giving students a consistent learning environment. It ensures that teachers are dutiful, promotes sincerity, and engaging themselves in continuous professional growth. Despite its significance, there is notably lack of standardized tools that measure teachers' professional accountability effectively. This gap emphasizes the need of a verified scale to measure teachers' professional accountability. Additionally, the researcher attempted to grasp the nature and extent of the existing accountability scale as developed by Rajkhowa (2018) for Secondary school teacher based on various dimensions. Likewise, the scale of Priya (2019) was based on opinion collected from students' perception, Kowsalya (2021) scale was for primary school teachers, and Behera (2021) scale was for SAMARTHYA- trained Secondary school teachers of Odisha. These scales varied in their design, context, dimensions and language. The review of these research works helped the researchers to identify a right direction in developing the Teachers' Professional Accountability Scale (TPAS).

The Problem of the Study

The problem of the research is to contribute to the work of the Teacher Professional Accountability Scale (TPAS) in order to develop the performance of the educational system at the secondary stage, improve the quality of education, and improve students' educational and learning outcomes. As mentioned in the introduction, there are four standards and these are inevitable for the upliftment of the career of a teacher. A very few research has been carried out on the standards of the teachers to check the ground reality. However, there is a need for identification of the issues lingering on different   schools; their responsibilities, awareness and its solutions. Therefore, this study seeks to explore the following primary research question:

> *What is the scale of professional accountability for teachers in improving their professional performance, and this key question is further divided into the following sub-questions:*
> *How can the professional accountability scale for teachers at the secondary stage be developed and validated?*
> *How can teachers' performance be developed and their professional responsibilities developed in the classroom?*

Objective of the Study

> *To develop and validate Teachers' Professional Accountability Scale (TPAS).*
> *To improve teachers' performance and strengthen their responsibilities in the classroom or classroom environment through TPAS.*

Significance of the Study

> *Developing teachers' professional performance to meet the most critical educational standards.*
> *Enhancing the performance of students within the classroom setting, facilitated by the teacher's professional accountability.*
> *Increasing students' educational achievements, which in turn supports the school system in effectively meeting its established goals.*

Terms of the Study
Professional   Teacher Accountability
Continuous professional learning for teachers is defined as the learning process that enables communities of practice to build knowledge of the subject, develop pedagogical skills, attitudes and beliefs. Participant accountability is defined as the conscience and responsibility that key curriculum practitioners must bear. Curriculum implementation is defined as curriculum implementation in the classroom. Communities of Practice are defined as practitioners who have the responsibility to perform professional development activities to improve their required competencies in the classroom.

2.   Methodology
Research Method
Descriptive survey method was used to achieve the objectives of the present study.

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

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
Item Analysis /Item Selection
The following steps were followed for item analysis of the draft Teachers' Professional Accountability Scale. The draft of the scale was applied on 150 Secondary school teachers of Dhemaji district, selected using purposive sampling technique.

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 SPSS.V. 20.

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
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, shows the total distribution of both positive and negative items in the scale, with 28 positive items and 46 negative items, making a total of 74 items across four dimensions.

Table 4, shows that a teacher responding to all the items in both the positive and negative categories can score a maximum of 296, with a minimum score of 74 on the scale.

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 Dhemaji district, 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.

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.

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 = 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. A sample of 100 Secondary school teachers was taken in addition to the main sample size of 181 with the help of simple random sampling technique, bringing the total to 281, in order to estimate the norms of the standardized scale. The details of the z scores are presented below in Table 5.

Based on the z-score of Table 5, 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 2. Distribution of 't' value for draft teachers' professional accountability scale

Sl. No	Dimensions	Item No	"t" value	Category	Results
1	Procedural responsibility (Responsibility to conduct task or activity, quality of interpersonal dealings, collaborative practices and building of trust, showing reflective quality, conducting school work programs and procedures)	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	-0.223057712	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
		20	3.890943617	Positive	Accepted
		21	3.332266583	Positive	Accepted
		22	4.39183567	Positive	Accepted

Sl. No	Dimensions	Item No	"t" value	Category	Results
2	Consequential responsibility (Responsibility of one's own action 'positive' or 'negative', responsibility for the outcomes of decisions and behaviour, capacity of making wise and informed decision in complex and unfamiliar situations, reflective practices done in and out of the institution)	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

Sl. No	Dimensions	Item No	"t" value	Category	Results
		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
3	Instructional responsibility (Focusing on standard based curriculum, instructional methods, teaching skills and student's assessment, responsiveness to various needs of children)	41	4.507223543	Negative	Accepted
		42	3.167270993	Positive	Accepted
		43	6.384163372	Negative	Accepted
		44	6.005970829	Negative	Accepted
		45	1.102561903	Negative	Rejected
		46	5.09216952	Negative	Accepted

Item	Value	Type	Decision
	7		
	6.85872688		
47	6	Negative	Accepted
	4.75484417		
48	5	Positive	Accepted
49	-0.00530784	Negative	Rejected
	3.50277084		
50	4	Negative	Accepted
	3.52280829		
51	7	Positive	Accepted
	6.89853406		
52	9	Negative	Accepted
53	2.44276419	Negative	Accepted
54	2.95863529	Negative	Accepted
	8.27917210		
55	5	Negative	Accepted
	5.36634766		
56	9	Negative	Accepted
	4.12995018		
57	7	Negative	Accepted
	3.15185103		
58	8	Negative	Accepted
	4.75444724		
59	3	Negative	Accepted
	5.53125151		
60	6	Negative	Accepted
	5.40756481		
61	9	Positive	Accepted
	3.02112661		
62	1	Positive	Accepted
	3.51027738		
63	8	Positive	Accepted
	3.26105406		
64	6	Positive	Accepted
	3.69216551		
65	9	Positive	Accepted
	2.96885056		
4 School and Classroom responsibility 66	7	Negative	Accepted

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

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

Raw score	Z score	Raw score	Z score	Raw score	Z score
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		
Raw score	Z score	Raw score	Z score	Raw score	Z score
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		

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

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

Table 6, presents the z-score categorization and the range of raw scores divided into five categories of teachers' professional accountability as High accountability, Above Average accountability, Average accountability, Below Average accountability, and Low accountability.

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

Improving school performance, teacher education, teacher evaluation, educational research and practice and in the development of the entire educational process.

Results of the Study

The study emphasizes the importance of teachers possessing both personal and organizational skills to effectively manage school responsibilities.

Teachers should have the necessary experience in developing the school's overall policy and managing classrooms effectively.

School work programs should be created in accordance with the established accountability standards.

Accountability of professional standards for teachers helps change in a more efficient and effective way.

Teachers' satisfaction with their work after agreeing to use professional accountability standards in favor of developing students' performance within the school.

In practice, the standard scale for teachers emphasizes the confirmation of school success for secondary school students.

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.

5.   Recommendations

School administration and senior management should demonstrate strong commitment to upholding the established accountability standards.
Organizing collaborative workshops is essential to ensure the effective application of professional accountability standards for teachers.
Teachers and other staff members should receive training to successfully implement the professional accountability standards in place.
Financial support to be enforced by the central government to provide professional accountability standards for teachers, ensuring a high-quality educational process.
To boost student performance, emphasis should be placed on continuous professional development and training aligned with modern accountability practices.

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