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SCALE FOR ASSESSMENT OF TEACHERS' PROFESSIONAL KNOWLEDGE

Abstract

Professionally competent teachers are the nation builders in true sense. Such teachers not only impart the knowledge in the effective way but also inculcate cultural heritage, social norms and above all the national harmony. National professional standards were formulated by the Government of Pakistan in 2009 to make the teachers aware of their professional responsibilities and to check the level of their professional development. The present study is an effort to develop a scale to assess teachers' professional knowledge in the light of the specified standards. Therefore, a scale was developed in the light of national professional standards and validated through expert opinion. The scale consisted of 26 items with three sub-scales namely teaching learning, classroom management and assessment. After incorporating the changes suggested by experts the scale was launched to collect data from the prospective teachers. The results of the study revealed that the scale was reliable for application in future.

Introduction

This fact cannot be denied by anybody that the teacher has an important place in any system of education. Only teachers are the key elements who are playing a pivotal role in running of any system. Success of any system in the field of teacher education majorly depends upon the well trained teachers. Generally, it is observed that incompetent and not fully trained teachers are the cause of failure of any system in offering the teacher education programs.

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Arora (2001) not only highlights the role of the teacher but also realizes us that society trusts upon the teachers who are responsible in paving way towards the development of a society. No doubt, teacher is the main source who actively takes part in the process of curriculum development. He also makes effort to plan and devise the co-curricular activities that prove supportive not only in motivating the learners of teacher education programs, but also for proper implementation of the curriculum. In this way, he is a service provider for community development. He bridges the gap between the introduction of the innovations and its implementation in different fields of the society.

Verwimp (2000) also lays great stress on the importance of different capabilities of a good teacher who prepares the prospective teachers for meeting the societal needs. Good teacher can never achieve the desired professional standards without the proper and efficient use of its time for improving the quality of the school. The good qualities of a teacher always cast an effective impact on the process of developing a standardized school.

These qualities are the product of suitable training of the Prospective teachers who can only be trained though the teacher education programs. Ultimately, the same prospective teachers take the responsibilities as head teachers and sometimes as administrators of the schools. So the teacher education programs are equally important and effective in teaching and training the teachers, head teachers and administrators in the field of education.

Bacon (1995) highlights the importance of professional standards in developing the curriculum for teacher education programs. He further adds that the national professional standards can never be achieved without the key role of competent teachers who make attempts to inculcate these standards into the students during teaching learning process.

Cochran-smith & Fries (2005) proves through historical review of research conducted in the field of teacher education that teacher preparation institutions plays a pivotal role in offering different teacher education programs.

Before beginning the any teacher education program, oriental sessions are planned for the students who join the program. These oriental sessions are proved very effective in arousing the motivational level of the prospective teachers for serving to the community.

These prospective teachers are not trained only a single teacher training program and single system of education. So, prior to finding out the effectiveness of teacher education programs offered through different systems of education, it is better to take a brief historical view of offering these programs in different universities of the Punjab, Pakistan.

No doubt, the pioneer institution in Punjab that offered the programs in the Teacher Education field after graduation is Institute of Education & Research (1960), Punjab University (PU) Lahore .However, department of education (1986),Bahuddin Zakariya University(BZU) Multan also contributed in the field of teacher education.

In this department, the programs of Teacher education were initially offered through annual system. After few years of the establishment of department of education at BZU, the Islamia University Bahawalpur (IUB) also took step to establish the same department. Likewise the BZU, IUB also initially adopted annual system for starting the programs in the teacher education field.

It is also worth mentioning that in 2002, a first university in the field of teacher education, University of Education (UE) Lahore was established in Punjab, Pakistan. This was a great initiative of the Public sector for uplifting the standards of teacher education institutions for preparation of Prospective teachers. The main focus of this university is to train the teachers through pre-service and in-service training programs. In this way a standardized change was brought though offering diversified programs of teacher education. Moreover it is pointed out that a strong urge for offering the teacher education programs based on certain professional standards was being strongly felt since long before.

Like other countries, Government of Pakistan (2009) approved professional standards on the recommendations of its policy and planning wing which is the integral part of the Ministry of Education. These professional standards provide guidelines towards the initial preparation of the teachers through offering the teacher education programs under different systems of education. These standards not only consist of subject matter knowledge but also human growth and development. These professional standards also include the knowledge of Islamic ethical values along with social life skills. In addition to the above mentioned professional standards, policy and planning wing also proposed some other standards like instructional planning and strategies, assessment and learning environment.

It was also proposed to include the effective communication and proficient use of information communications techniques, collaboration and partnership, continuous professional development, code of conduct and teaching English as second/foreign language in the proposed standards list. Each of the above mentioned professional standards has further composition consisting of the three parts. These parts are knowledge and understanding (content)-What teacher knows? Dispositions-behaviors, attitude and values and performances (skills)-What teacher can do and should be able to do?

In the light of these proposed professional standards for initial preparation of Teachers in Pakistan, it is essential to conduct a study developing a scale for assessing the teachers' professional knowledge. For the carrying out such studies the teacher education institutions can be used for certain type of experiments.

As far as professional knowledge of the teachers is concerned it comprises of different aspects. The most important aspects include the classroom management and organization, students' motivation and retention, organization of resources, incorporating different learning theories as well as pedagogical theories. (Shulman, 1986). If a teacher is well oriented with these aspects of professional s/he can perform well in the classroom.

On the other hand Ernest (1989) argues that such type of knowledge is acknowledged in one way or the other, as it helps in developing mental state of preparation needed for the comprehension and management of the classroom. In the same way it is necessary for lesson planning, as it guides the teacher's didactic choices (Ernest 1989)

Meijer et al. (1999) state that the teachers with hoard of professional knowledge can handle the students more effectively as they are more aware of the techniques and measures to do so. But, on the other hand this body of the knowledge, that can promise a teacher's success, is determined by existing situation and circumstances, as well as the personal experiences, needs and beliefs of particular teacher. Nevertheless, there are certain knowledge fields that constitute an important prerequisite for every teacher, or at least for the most of them, (Meijer et al. 1999, Meijer et al. 2001)

Moreover, Connell (1985) acknowledges that the knowledge regarding the aspect "how to teach" is more complicated and instinctive. So it is difficult to state and explain it in a precise manner. For the purpose of finding out a proper way of describing the professional knowledge of the teachers, Clandinin and Connelly (1995) used the metaphor of 'professional knowledge landscape'. They stated that the expansive nature of a landscape could really represent "notion of professional knowledge as composed of a wide variety of components and influenced by a wide variety of people, places and things".

Hence the assessment of teachers' professional knowledge had never been an easy task for the administrators. Especially in the context of Pakistan, no such effort had ever been made by any organization or individual.

Purpose and Scope of the Study

The knowledge about different professional capabilities of the teachers is important for their accurate execution in the classroom. Teachers well acquainted with different professional knowledge can prove effective as compared with those who do not possess

such knowledge. At the same time it is important that the teachers' professional knowledge is accurately assessed. Such assessment of the teachers' professional knowledge is helpful in improving their teaching competence.

The present study aimed at developing a scale to assess the teachers' professional knowledge. As there are different dimensions of teacher education therefore, the present study was delimited to the assessment of teachers' knowledge about the following aspects;
    a) Teaching and learning
    b) Classroom management
    c) Assessment

For the development of the scale only the indicators described is National Professional Standards for Teachers (Govt. of Pakistan, 2009) were used. The scale initially targets the prospective teachers who are the students of one year teachers' training program, Bachelor of Education (B.Ed.), offered under the University of Education Lahore, Punjab, Pakistan.

The scale thus developed consists of 26 items. These items actually reflect the minimum level of professional knowledge possessed by the teachers. The number of items for each aspect stated above is as under:

Table 1: Detail of Factors and Items of the

Aspects of Professional Knowledge	Number of Items	Item Labels
Teaching and learning	9	a1, a2, a3,………………..a9
Classroom management	9	b1, b2, b3, ……………….b9
Assessment	8	c1, c2, c3………………...c8

Methodology

The study at hand is a mixed method one as it used both the qualitative as well as quantitative methods for the development of scale (Cohen, Manion, L & Morrison 2007; Fraenkel & Wallen 2009). The qualitative aspect of the study comprised of document analysis, expert opinion and classroom observation by the researcher. On the other hand the quantitative aspect of the study was conducted through the developed scale. It was initially tried out on a limited sample and then delivered to a relatively larger sample after incorporating necessary amendments and revisions.

The first step towards the development of the instrument was to review previously developed scales and the related literature to finalize dimensions of new scale. After a detailed review three factors were selected for the scale. For the assessment of teachers' professional knowledge different indicators and outcomes described in National Professional Standards for Teachers (Govt. of Pakistan, 2009) were used.

After extracting different items these were discussed with a group of experts from the field of teacher education. Number of items was revised as a result of the experts opinion about the developed scale. It was validated by three experts. On the bases of the expert opinion content and face validity was ensured.

The final i.e. the quantitative stage of the study consisted of a survey. The developed scale was administered to the sampled prospective teachers. Fifty percent of the B. Ed. (Elementary) students of the final semester i.e. 2nd semester were randomly selected from different campuses the Education University from the Punjab province of Pakistan. A total of 285 prospective teachers were selected for data collection. But, actually 254 prospective teachers responded to the survey scale. Thus the response rate was 90.12%.

Results and Findings

For the analysis of the data different measures were adopted including calculation of coefficient of correlations, factor analysis and the needed descriptive statistics. The statistical analysis of the collected data yielded the following results;

Table 2: Inter-item correlation for the sub-scale namely teaching and learning

	A1	A2	A3	A4	A5	A6	A7	A8	A9
A1	1	.193**	.264**	.029	.213**	.212**	.202**	.194**	.171**
A2		1	-.015	.182**	.248**	.217**	.178**	.129*	.139*
A3			1	.199**	.063	.207**	.274**	.076	.270**
A4				1	.172**	.191**	.160*	.270**	.199**
A5					1	.260**	.220**	.182**	.340**
A6						1	.292**	.019	.250**
A7							1	.208**	.287**
A8								1	.309**
A9									1

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).

As far as the inter-item correlation for sub-scale viz. teaching learning is concerned it is significant and positive for most of the items. The coefficient of relationship ranges from $r=.129$ to $r=.340$.

Table 3: Inter-item correlation for the sub-scale namely classroom management

	B1	B2	B3	B4	B5	B6	B7	B8	B9
B1	1	.140*	.137*	.095	.163**	.239**	.219**	.094	.072
B2		1	.237**	.198**	.264**	.350**	.257**	.280**	.225**
B3			1	.238**	.300**	.233**	.262**	.245**	.243**
B4				1	.243**	.230**	.258**	.320**	.228**
B5					1	.205**	.308**	.265**	.184**
B6						1	.209**	.325**	.138*
B7							1	.228**	.215**
B8								1	.305**
B9									1

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).

Similarly the inter-item correlation for the sub-scale i.e. classroom management is also consistent. The Correlation is significant for all the items except three. Correlation ranges from r=.137 to r=.350.

Table 4: Inter-item correlation for the sub-scale namely assessment

	C1	C2	C3	C4	C5	C6	C7	C8
C1	1	.312**	.217**	.296**	.207**	.176**	.126*	.016
C2		1	.205**	.355**	.139*	.254**	.195**	.184**
C3			1	.292**	.259**	.208**	.142*	.206**
C4				1	.297**	.406**	.145*	.275**
C5					1	.244**	.238**	.170**
C6						1	.136*	.114
C7							1	.172**
C8								1

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).

Consistency in correlation again prevails for the sub-scale namely assessment. The range of significant and positive correlation for this sun-scale is r=.114 to r=.406.

For determining the mutual correlation of different factors of the scale, inter-factor correlation was also calculated.

Table 5: Inter-Factor Correlations

		Teaching Learning	Classroom Management	Assessment
Teaching Learning	Pearson Correlation	1	.614**	.582**
	Sig. (2-tailed)		.000	.000
	N	254	254	254
Classroom Management	Pearson Correlation	.614**	1	.647**
	Sig. (2-tailed)	.000		.000
	N	254	254	254
Assessment	Pearson Correlation	.582**	.647**	1
	Sig. (2-tailed)	.000	.000	
	N	254	254	254

**Correlation is significant at the 0.01 level (2-tailed).

All the sub-scales of the SATPK are between significantly and positively correlated. There exists relatively stronger correlation (r=.647) between sub-scales classroom management and assessment as compared to other two sub-sales namely teaching learning and classroom management (r=.614) and teaching learning and assessment (r=.582).

Table 6: Coefficient of Reliability for each Sub-scale of SATPK

Sub-Scales of SATPK	Total No. of items	Coefficient of Reliability
Teaching and learning	9	.685
Classroom management	9	.727
Assessment	8	.685

Factor Analysis of SATPK

The principal axis factor analysis with Varimax rotation and Kaiser Normalization was applied to examine the internal structure of SATPK. Table 3 below shows the factor loadings thus obtained. According to Nelson (2005) only those items in an instrument are retained whose factor loading is at least 0.30 on its own scale and less than 0.30 on all the other scales.

The table below also shows that the percentages of the variance were 28.724 % teaching and learning, 31.622 % for classroom management and 31.767% for assessment. In the same way, the Eigen values for three sub-scales of SATPK ranged from 2.846 to 2.446. Overall, the analyses reported a strong structure for 26 items with three sub-scales of final version of SATPK. The detail of the factor loading and other relevant aspects is given in the below

Table 7: Factor Analysis of SATPK

Item No.	Teaching Learning	Classroom Management	Assessment
a1	.502		
a2	.444		
a3	.476		
a4	.476		
a5	.579		
a6	.564		
a7	.610		
a8	.482		
a9	.652		
b1		.367	
b2		.598	
b3		.582	
b4		.564	
b5		.591	

Item No.	Teaching Learning	Classroom Management	Assessment
b6		.586	
b7		.590	
b8		.630	
b9		.509	
c1			.526
c2			.605
c3			.566
c4			.731
c5			.569
c6			.589
c7			.429
c8			.437
Eigenvalue	2.585	2.846	2.541
%age of Variance	28.724	31.622	31.767

The internal consistency of the scale is usually judged through the inter-item correlation as well as inter-factor correlation. The scale at hand is therefore, possesses internal consistency as the values of the coefficient of internal consistency i.e. Coefficient of Reliability are greater than .600. The values of the coefficient of reliability are stronger enough to be considered as reliable and consistent for future use of the scale.

Table 8: Scale Statistics

Mean	Variance	Std. Deviation	N of Items
88.57	75.147	8.669	26

N= 254

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	Total Items
.861	.862	26

N= 254

The overall reliability of the scale is considerably strong i.e. .861. It reflects that the developed scale is highly reliable and consistent.

References

Arora (2001), School experience program. Portsmouth, NH: Heinemann.

Bacon, J. (1995). The place for life and learning. Journal of Education and Behavioral Problems 3(4), 42-45.

Best, J. W. (1970). Research in Education. Englewood Cliffs, NJ: Prentice Hall.

Cochran-smith, M. & Fries, K.(2005) Research on teacher education in changing times, changing paradigms in hand book of teacher education..-3rd ed, published by Routledge 270 Madison Ave, New York, NY 10016

Clandinin, D. & Connelly, M.(1995). Teachers' Professional Knowledge Landscapes. New York : Teachers College Press.

Cohen, L., Manion, L., & Morrison, K. (2007). Research methods in education. New York: Routledge.

Connell, R.W. (1985). Teachers' Work. Sydney: George Allen & Unwin.

Ernest, P. (1989). The knowledge, beliefs and attitudes of the Mathematics teacher: a model. Journal of Education for Teaching, 15, 1, pp. 13-33.

Fraenkel, J. R., & Wallen, N. E. (2009). How to design and evaluate research in education. New York: McGraw-Hill.

Govt. of Pakistan (2009). National professional standards for teachers in Pakistan. Policy and Planning Wing, Islamabad: Ministry of Education.

Meijer, P.C., Verloop, N. & Beijaard, D. (1999). Exploring language teachers' practical knowledge about teaching reading comprehension. Teaching and Teacher Education, 15, pp. 59-84.

Meijer, P.C., Verloop, N. & Beijaard, D. (2001). Similarities and differences in teachers' practical knowledge about teaching reading comprehension. The Journal of Educational Research, 94, 3, pp. 171-184.

Shulman L.S. (1986). Those who understand: knowledge growth in teaching. Educational Research, pp. 4-14

Virwimp, (2000), Defining qualifying in education. Working paper Series, Education Section, United Nations' Children's fund, New Yark, NY.10017.