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RESEARCH PAPER

Exploring Teachers' Competencies on Subject Matter Knowledge with Reference to National Professional Standards for Teachers in Punjab

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ABSTRACT

Based on the National Professional Standards for Teachers (NPST), the current study explored the subject-matter competencies of teachers. The study's goal was to explore teachers' subject-matter expertise in the light of Pakistan's national professional requirements for teachers. Data were collected through observation sheet personally by the researcher from 500 public elementary school teachers from ten districts of ten divisions of Punjab. The data analysis showed that the teachers' subject matter knowledge competencies were not only subpar, but also very poor. Less than half were found at level-1 (Emerging Teacher). Majority of the teachers were found Level-2 (Developing teacher). Some of the teachers were placed in the category of level-3 (Proficient Teacher), and however a very few teachers were found as accomplished teachers. Overall results of the study identified that Majority of teachers were found at Developing Level. Only few teachers were found at accomplished level. MPhil teachers have high competencies than M.A teachers. 25-30 years old teachers were demonstrated high level of competencies than 40-45 years old teachers and teachers having 5-15 years' experience found better than 16-25 years experienced teachers. This study helps the teachers to improve their subject matter knowledge competencies for quality of education.

Keywords: Classroom Observation, Professional Standards, Subject Matter Knowledge, Teachers' Competency

Introduction

It is now acknowledged as one of the most effective approaches to improve students' learning and accomplishment that the quality of education and the quality of teachers are "hot topics" among teachers and administrators. In both teaching and learning, the teacher is essential. Even the best curriculum and educational system would fail if the teachers are incompetent. To ensure the caliber of instruction and the efficiency of their instruction, teachers must therefore increase their competences. The knowledge and abilities needed for a teacher to instruct in schools are known as the teachers' competences. (Cooper, 1994) These competences comprise a high degree of knowledge, values, skills, and personal characteristics, sensibilities, and talents, as well as the capacity to use such combinations in the right way (Burke, 1989).

Human resource development experts held a conference on competencies in 1995 in Johannesburg. According to Parry (1996), a competency is a collection of information, abilities, and character traits that contribute significantly to a person's job, are related to job performance, can be measured against output standards, and can be improved through training and development. According to Van den Brule (2008), a teacher's competency includes having a comprehensive understanding of the educational modules related to his field and being able to implement innovation into educational programs. According to Saeed and Khalid (2002), a teacher's competency includes their knowledge, aptitudes, capacities,

and dispositions. The 21st century demands of teachers include topic knowledge, instructional prowess, dispositions, abilities, and skills. Competencies include the teachers' knowledge of the subject matter, skills, and attitude, all of which have an impact on students' understanding and learning. Teachers are judged on their subject-matter expertise, classroom management skills, and ability to communicate with students. Competence refers to the standard knowledge, skills, and mental states needed for professional performance, whereas capacity in teaching refers to the viable skills and capable capacities that teachers must develop in order to fully realise their potential. Kumari & Srivastava (2005); Haider, Qasim, & Ameen (2015).

Literature Review

For Pakistani school teachers, a teacher assessment system was created in 2014 by Shakir and Adeeb. On the basis of Pakistani national professional standards, they evaluated the proficiency of the secondary school teachers. The study's conclusions showed that Pakistani teachers' knowledge, comprehension, and skills needed to be improved urgently.

The professional standards of a teacher are assertions of the attributes that make them a good professional, as well as their level of skill and knowledge. They make it crystal obvious what is expected of the professional at each stage along the way. The teachers' standards are a set of professional standards that are expected to be upheld by teachers and trainees. To increase professionalism, there has been a great deal of attention in the last three decades in "identifying, codifying and implementing professional norms of practice to the teaching force" (Goodson & Hargreaves, 1996a, p. 1).

The fundamental goal of standards is to define the essential information, abilities, and attitudes required to carry out a certain role successfully. Subject-matter expertise is a crucial component of instruction that aids in the transfer of clear concepts and increases student understanding (Shakir & Adeeb, 2014). The national curricular framework should be known to and understood by the instructors in accordance with Standard 1: (Subject Matter Knowledge): (Knowledge and Understanding). To effectively teach their subjects, they need be familiar with the fundamental ideas, theories, histories, structures, and learning methods. They should be aware of the nature, requirements, and innovative teaching strategies for the particular subject. The most recent theories, researches, and trends at the national and worldwide levels should also be known to the teachers. They should be well-versed in the subject, its connections to other fields and topics, and its applicability in real-world situations. They could connect the domain to concepts from reading, writing, and math.

The Disposition of the Standard states that teachers should value and be devoted to facilitating learners through diverse means in knowledge development and acquisition. They need to make a commitment to applying information to situations that occur in the actual world. They ought to make it a priority to cultivate self-confidence and subject matter competency in each student in a manner that is tailored to their individual strengths. They need to have the mindset that every student is capable of achieving success and learning at high levels.

The Performance and Skills section of the standard states that in order for instructors to demonstrate their level of knowledge and comprehension, they should be able to effectively convey the subject matter from a variety of points of view. They should make use of the proper methods of inquiry based on the nature of the subject and material, taking into consideration what the students already know about the topic. They should be able to provide instances of how the material can be used in real-world situations (Ministry of Education) (2009b).

Teaching is a rewarding job, and educators play a significant part in the intellectual, personal, and social growth of the students in their classrooms. Educational community has been taking interest in quality of education and quality of teachers. Teachers are required to develop their competencies with respect to national professional standards for teachers (NPST) in Pakistan. The standard's disposition states that teachers should value their students and be committed to helping them build and acquire knowledge in a variety of methods. They should pledge to apply their learning to actual situations. All pupils should be encouraged to grow in their subject knowledge and self-confidence in accordance with their unique talents. They ought to have the conviction that every pupil is capable of excelling academically.

The teachers should exhibit their knowledge and understanding by skillfully presenting the subject from many angles, as per Performance and Skills of the standard. They should take into account the students' prior knowledge and employ the proper methods of inquiry given the subject and content. They should be able to use real-world examples to illustrate how the material can be applied.

Teachers play a significant part in the academic, social, and personal growth of their pupils, making teaching a wonderful career. The quality of instruction and the caliber of teachers have attracted the attention of the educational community. In Pakistan, instructors must develop their competences in accordance with national professional norms.

Research Hypothesis

H₀₁: What is the level of teachers' competencies on subject matter knowledge with respect to national professional standards for teachers (NPST)?

H₀₂: What is the level of teachers' competencies on knowledge, disposition and performance skills based on national professional standards for teachers (NPST)?

H₀₃: Is there any difference among teachers' competencies on the basis of demographic variables (gender, designation, qualification, age and experience)?

Material and Methods

A descriptive survey was chosen as the methodology for this research project's research design. All of the Punjab's elementary school teachers who worked for public schools made up the study's population. As stated by School Information System (SIS) School Education Department (SED) (2022) there were 7180 Elementary Schools in the Province of Punjab and there were 192362 Primary School Teachers (PSTs) and 103522 Elementary School Teachers in the Province of Punjab. The sample of the study was 500 (260 female 240 male) elementary school teachers (250 PSTs and 250 ESTs) from 100 public elementary schools of ten districts of Punjab. To choose a sample of teachers from the population, the multistage sampling technique was utilized. At stage-I ten districts out of thirty-six districts in Punjab were selected randomly, at stage-II, 100 public elementary schools from ten districts were be selected randomly. At stage-III, 500 teachers from 100 public high schools were being selected randomly. In this particular research, the observational sheet served as the tool for data collection. The issue was investigated using quantitative methods since the subject matter knowledge abilities of elementary school teachers could be evaluated more accurately using an observational checklist. The researcher took notes on the respondents' abilities as they were shown in a natural situation, such as during class. Two sections or pieces made up the observational sheet: The first section/ part of the tool consisted of demographic information and the second section/part consisted of eleven statements divided into three areas (knowledge, disposition and skills) was adapted from a previous similar research study conducted by Muhammad Shakir (2014).

Table1
Factor Wise Items of observation sheet

Sr.No	Factor	No of items	Item No
1	Knowledge	5	1, 2, 3, 4, 5,
2	Disposition	3	6, 7, 8
3	Skills	3	10, 11

Results and Discussion

The research problem addressed in this study was to explore the teachers' competencies on subject matter knowledge with respect to national professional standards for teachers (NPST)?

H₀1: What is the level of teachers' competencies on subject matter knowledge with respect to national professional standards for teachers (NPST)?

Standard-1: Subject Matter Knowledge (SMK)

Table 2
Competency-1. Understanding of the national curriculum framework by teachers

	EMERGI NG%	DEVELO PING%	PROFICI ENT%	ACCOMPLISHED %
SMK-1: Understanding of the national curriculum framework by teachers	56.8	23.8	10.2	9.2
SMK-2: Teachers understand the fundamentals of learning a subject	6.8	74.8	10.2	8.2
SMK-3: Teacher is aware of how students learn new material	32.6	49.0	10.2	8.2
SMK-4: The teacher is aware of the need of maintaining subject knowledge	6.6	44.6	40.6	8.2
SMK-5: The teacher is skilled in bridging the gap between the subject at hand and other fields of study /subject	6.8	30.6	54.4	8.2
SMK-6: Through the use of various instructional methods, teachers help pupils learn	6.8	13.2	71.8	8.2
SMK-7: Teachers value applying knowledge to practical situations	7.2	74.4	10.2	8.2
SMK-8: Every student's unique talents are valued by the teacher in order to foster confidence	13.8	67.8	10.2	8.2
SMK-9: The teacher uses a variety of methods to explain the subject matter	6.8	74.8	10.2	8.2
SMK-10: Inquiry methods are chosen by the teacher in light of the students' prior knowledge	22.2	59.4	10.2	8.2
SMK-11: The teacher illustrates subject knowledge by connecting it to the students' daily lives	12.8	68.8	10.2	8.2

Table 1 shows that at SMK-1, 56.8% of the elementary school teachers were found at level-1(Emerging Teacher) having slightly awareness about national curriculum frame work, 23.8% were found at level-2 (Developing Teacher) having basic knowledge of national curriculum frame work. At SMK-2 74.8% of the teachers were found to be at level 2 (Developing Teacher). they understand the fundamentals of learning a subject and 10.2% of the teachers were found to be at level 3 (Proficient Teacher) with a better understanding of acquiring subject knowledge. At SMK-3, 32.6% of the teachers were found at level-1 (Emerging Teacher) knowing a bit about the process of acquiring subject knowledge, 49.0% of the teachers were found at level-2 (Developing Teacher) having a basic understanding about the process of acquiring subject knowledge. At SMK-4, 40.6% of the teachers were found to be at level-3 (Proficient teacher). which indicates that they have updated their subject knowledge and they were aware of the need of maintaining subject knowledge. At SMK-5, It was discovered that 54.4% of the teachers had a level-3 (Proficient teacher) understanding of how to relate subject knowledge with other disciplines, and it was discovered that 8.2% of the teachers had a level-4 (Accomplished teacher) understanding

of how to relate subject knowledge with other disciplines in a good way. They were skilled in bridging the gap between the subject at hand and other fields of study /subject. At SMK-6, 71.8% of the teachers were found to be at level three (Proficient teacher) having used a variety of teaching techniques. Through the use of various instructional methods, teachers help pupils learn. At SMK-7, 74.4 teachers were found to be at developing level. At SMK-8, 67.8% of the teachers were found to be at level-2 (Developing teacher). which indicates that they valued the diverse talents of all students to develop confidence. At SMK-9, 74.8% of the teachers were found at level-2 (Developing teacher). which means they explained the subject matter in multiple ways but only slightly. At SMK-10, 59.4% of the teachers were found to be at level-2 (Developing teacher). which means that they frequently used inquiry tools to the students' prior knowledge. At SMK-11, 68.8% of the teachers were found at level-2 (Developing teacher). which means they demonstrated to relate the subject matter knowledge.

H₀₂: What is the level of teachers' competencies on knowledge, disposition and performance skills based on national professional standards for teachers (NPST)?

Table3
Gender wise level of teachers' competencies on knowledge, disposition and performance skills

GENDER		SMK.K	SMK.D	SMK.S
male	Mean	12.0333	7.3750	6.6625
	N	240	240	240
	Std. Deviation	3.52738	2.08627	2.25717
female	Mean	11.9808	7.3115	6.5308
	N	260	260	260
	Std. Deviation	2.73467	1.61289	1.80599
Mean		12.0060	7.3420	6.5940

The table shows the level of teachers' competencies regarding knowledge, disposition and skills of subject matter knowledge. It is indicated that female teachers have high level of competencies in knowledge $M=12.00$ than disposition $M=7.3$ and skills $M=6.6$. while, male teachers showed similar pattern.

H₀₃: Is there any difference among teachers' competencies on the basis of demographic variables

Table 4
Comparison of subject matter knowledge competencies of teachers regarding experience

Achievement	Sum of Squares	Df	Mean square	F	P
Between Groups	243.230	4	60.808	6.448	.000
Within Groups	4667.752	495	9.430		
Total	4910.982				

$p \leq 0.05$

To investigate the relationship between experience and competency level, a one-way between-groups analysis of variance was performed. grouped into five kinds of subjects. Given that $F(4,495)=6.44$, $p=.000$, there were significant differences in the subject-matter competence of the teachers. Since there is no discernible difference between teachers' subject-matter skills, the null hypothesis was accepted. Therefore, it is evident that the teachers' levels of subject-matter competency vary. In reality, there wasn't much of a difference between the two groups' mean scores. We were able to calculate the effect size using eta squared, which was .06. The findings of post-hoc comparisons using the Tukey HSD test revealed that Group 1's mean score ($M=12.47$, $SD=3.26$) was substantially different

from Group 4's ($M=10.86$, $SD=2.01$) and Group 5's ($M=5.66$, $SD=.57$) scores, but not statistically different from Group 1's or Group 2's.

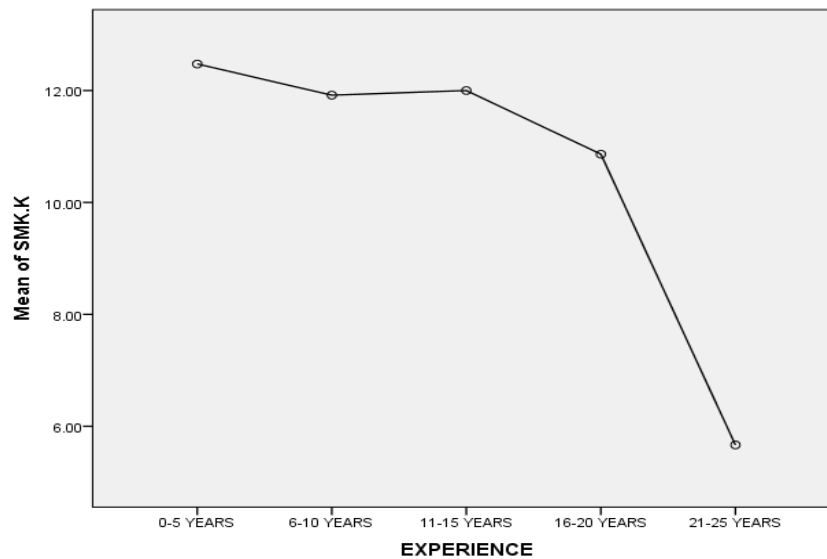


Fig. 1: Means of SMK-knowledge on the basis of experience

The means plot shows that the teachers having 0-5years experience had highest level of competencies regarding subject matter knowledge (knowledge) while the teachers having 21-25years experience had least level of competencies regarding subject matter knowledge (knowledge). However the teachers having 16-20years experience had better competencies than the teachers having 21-25 years experience and the teachers having 11-15years experience had better competencies than the teachers having 16-20 years experience regarding subject matter knowledge (knowledge).

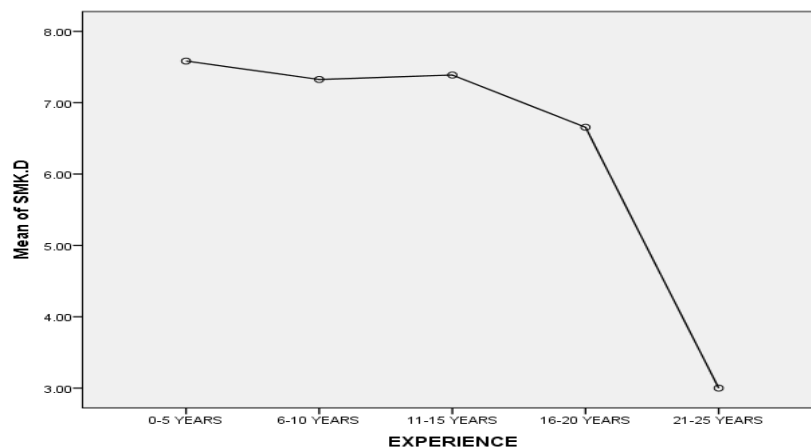


Fig. 2: Means of SMK-Disposition on the basis of experience

The means plot shows that the teachers having 0-5years experience have highest level of competencies regarding subject matter knowledge (Disposition) while the teachers having 21-25years experience have least level of competencies regarding subject matter knowledge(knowledge). However the teachers having 16-20years experience had better competencies than the teachers having 21-25 years' experience and the teachers having 11-15years experience had better competencies than the teachers having 16-20 years experience regarding subject matter knowledge (Dispostion).

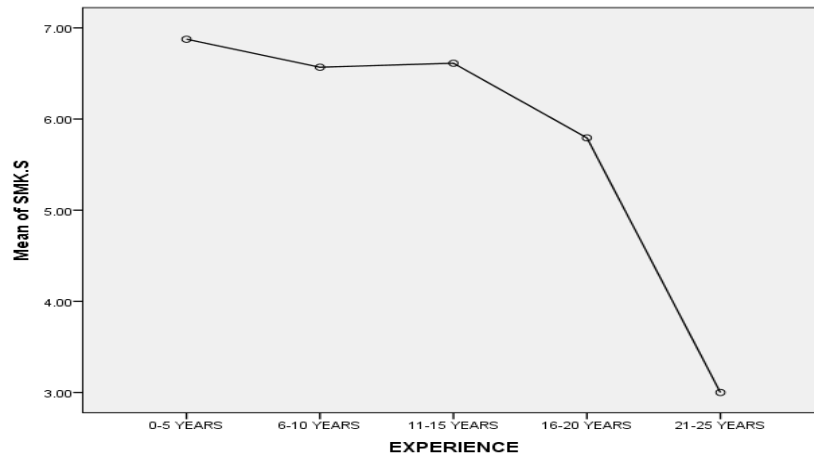


Fig. 3: Means of SMK-Skills on the basis of experience

The means plot shows that the teachers having 0-5years experience have highest level of competencies regarding subject matter knowledge (Skills) while the teachers having 21-25years experience have least level of competencies regarding subject matter knowledge(Skills) . However the teachers having 16-20years experience had better competencies than the teachers having 21-25 years experience and the teachers having 11-15years experience had better competencies than the teachers having 16-20 years experience regarding subject matter knowledge (Skills).

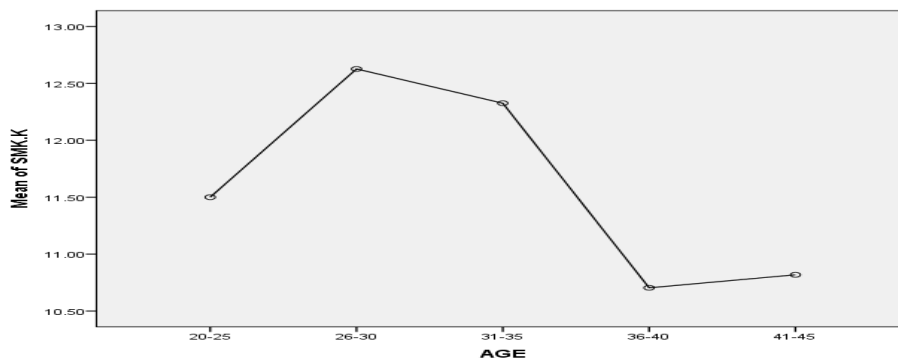


Fig 4: Means of SMK-Knowledge on the basis of age

The means plot shows that 26-30 years old teachers had highest level of competencies regarding subject matter knowledge(knowledge) while 36-40 years old teachers had least level of competencies regarding subject matter knowledge.

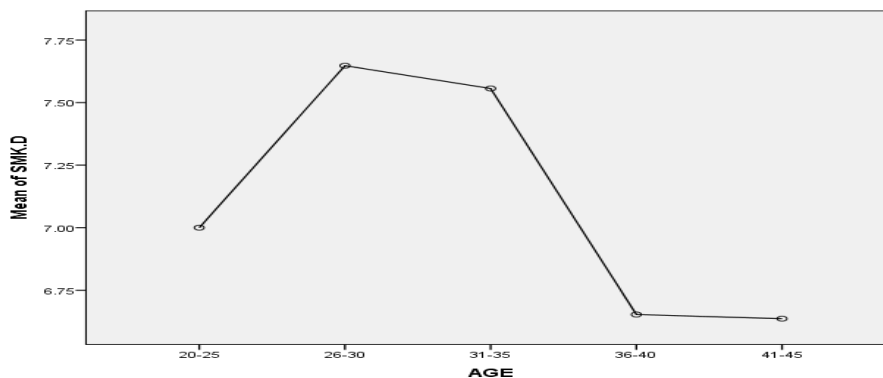


Fig. 5: Means of SMK-Disposition on the basis of age

The means plot shows that 26-30 years old teachers have highest level of competencies regarding subject matter knowledge (Disposition) while 41-45 years old teachers have least level of competencies regarding subject matter knowledge. However 20-25 years old teachers were found rather better than 36-40 years old teachers. 31-35 years old teachers had better competencies than 20-25 years old teachers regarding subject matter knowledge (Disposition).

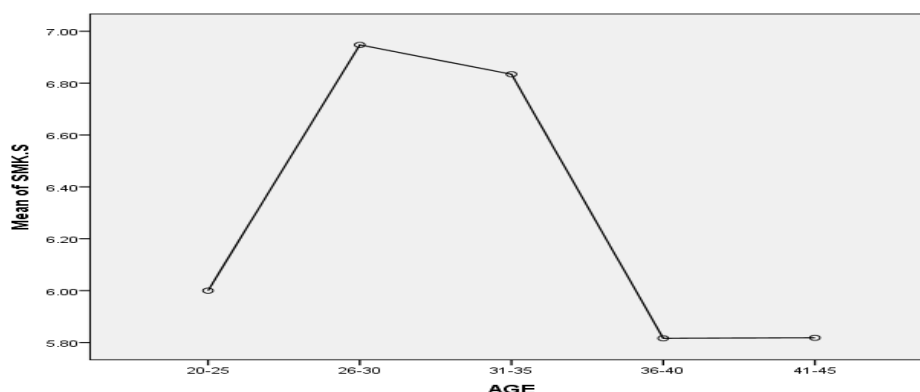


Fig. 6: Means of SMK-Skills on the basis of age

The means plot shows that 26-30 years old teachers have highest level of competencies regarding subject matter knowledge (skills).

Table 5
Gender wise difference of teachers' competencies regarding Subject matter knowledge (knowledge and understanding)

Gender	N	Mean	SD	Df	T	P
Male	240	12.03	3.52	498	.185	.85
Female	260	11.98	2.73			
Male	240	7.37	2.0	449	0.37	0.70
Female	260	7.31	1.61			
Male	240	6.66	2.25	457	0.717	0.47
Female	260	6.53	1.80			

$p \leq 0.05$

Table presents the findings of a t-test that was conducted using independent samples to compare the levels of subject matter knowledge possessed by male and female instructors. According to the result of the test, there is not a statistically significant difference in the mean scores of responses given by male primary school teachers and female primary school teachers on knowledge, disposition and skills.

Conclusions

It was concluded that many teachers lacked the competencies required by Pakistan's national professional standards for teachers (NPST). The majority of the teachers were classified as level 2 (Developing Teachers). and they required to increase their subject-matter proficiency (standards-1). It was determined that both male and female teachers possessed the same level of subject-matter expertise. Teachers' competencies in category 1 (Knowledge) were found to be higher than those in categories 2 (Disposition) and 3. (Skills). Based on Pakistan's national professional requirements for teachers, it was determined that rookie teachers, who had less experience, had higher competence than older instructors, who had more experience. Based on Pakistan's national professional standards for teachers, it was also determined that young teachers (aged 26 to 30) had higher competences than older instructors (aged 44 to 45).

Recommendations

On the basis of finding and conclusion of this study, researcher gives some recommendations for further education. In the light of the objectives of the study some recommendations for practitioners are as under:

1. It is recommended that Higher education institutions may arrange meetings, seminars and workshops for awareness about national professional standards for teachers in Pakistan.
2. It also recommended that to hold introductory workshop sessions for teachers, head teachers and administrators about importance of national professional standard for teachers and assessment competencies criteria.
3. It was concluded that teacher had less competencies in disposition and skills so it is recommended that these two categories should be great emphasized.
4. Aged and more experienced teachers had low level competencies so it is suggested that updated refresher courses should be arranged for them.
5. It is recommended that teachers should be updated their subject matter knowledge.
6. It is also recommended that teachers should be evaluated against national professional standards for teachers in Pakistan and evaluation criteria should be adopted recommended by Ministry of Education Pakistan.

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