

Teacher's Professional Competencies in Knowledge of Subject Matter at Secondary Level in Southern Districts of Khyber Pakhtunkhwa, Pakistan

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Abstract

This study was conducted with the aim to know the professional competency of subject matter of secondary school teachers, working in various districts so that recommendation may be given according to the training needs of the secondary school teachers. The population of the study comprised all the secondary school teachers working in secondary schools in eight districts of the Southern region of Khyber Pakhtunkhwa, Pakistan. A sample of 700 teachers was selected out of 2147 secondary school teachers using a simple random sampling method. The theoretical framework of the study has been taken from the ten National Professional Standards for Teachers in Pakistan, published in February 2009 by Policy and Planning Wing, Ministry of Education, Government of Pakistan. A questionnaire was developed of five statements on five point Likert Scale. The collected data was entered in SPSS 16 and the results were generated according to the objectives of the study using mean, standard deviation, Analysis of Variance, and Sheffe Post hoc test, as statistical tests. It was concluded that the secondary school teachers working in various districts of the southern region of the Khyber Pakhtunkhwa, Pakistan possessed sufficient knowledge of their subject matter. However, their weakest area is to make the subject matter applicable to the real world situation. Competency in the knowledge of the subject matter of the teachers who were working in the district Hangu is significantly weak as compared to the teachers working in the district Bannu, D.I.Khan, and Peshawar.

Keywords: *Subject matter, Pedagogical skill, Professional Competencies, Secondary School, Khyber Pakhtunkhwa, Pakistan*

Introduction

A teacher competent in his profession has a thorough knowledge of subject matter or knowledge of contents. The teacher who has command over subject matter can provide more and more information to the students in

the classroom (Spear-Swerling, Brucker, & Alfano, 2005). Knowledge of key concepts, inquiry tools, and structures and its implication are essential for combined part and lesson planning for the class. For the development of reliable cross-curriculum linkages, the teachers must have adequate knowledge sharing about subject matter of the subject being taught in the class (De Nobile, 2007). Further, through integrated lesson planning, the class teachers are capable of an authentic knowledge sharing and teaching learning strategies which are helpful to strengthen student learning and develop of creative thinking (Davis & Simmt, 2006).

In the United States, numerous government-initiated school reform programs focus mainly on the professional learning of teachers (Hassel, 1999; NPEAT, 2003). Subject matter teaching experts similarly look for the most excellent knowledge, how to prepare teachers of adolescents to fulfill the demands unique to their specialization (Borko, 2004; Shanahan & Shanahan, 2008).

Due to low achievement and the recent students' achievement gaps in the subject matter concerned to the area of reading, writing, mathematics and science, this issue has come into view with even greater importance. The answers to the question, how to teach students effectively is that: teaching depends on the learning of teachers. If all teachers are trained, will there be some need of teacher's professional growth? The research process and general observations have discovered that the teacher's knowledge of subject matter has great influence on students' learning. (Gess-Newsome & Lederman, 2001).

The idea of instructional skills is not, a new one. Shulman (1986), a teacher's education researcher has the view that overlooked questions dealing with the element or content of the lessons taught. He is of the opinion that for a teacher not only knowledge of contents is required but he also requires learning about the intersection and its re-organizational knowledge of contents and pedagogy. Shulman (1987) has also proposed few fundamental elements of pedagogical content knowledge: which are (1) knowledge of demonstration of subject matter; (2) knowledge of students' learning of the subject and (3) knowledge of teaching strategies or teaching methodologies (4) curriculum knowledge; (5) knowledge of educational contexts; and (6) knowledge of the purposes of education.

Knowledge of subject matter theory enquires about the value of knowing everything about a subject if a teacher does not have first hand knowledge about the subject matter how students will learn and how his teaching method would be the best instructional strategies, if his teaching strategies cannot deliver high quality subject matter knowledge. Ultimately, existing professional development principles guide the process of teaching learning in such direction that supports knowledge of subject matter. We have the best for practices of research that delineates the best overall approach, context, strategies, and content of professional development (NPEAT, 2003; Von Frank, 2008).

Teaching students according to national and international standards, teachers need to have knowledge about subject matter profoundly and flexibly so they can guide the students for the creation of useful cognitive maps, he has to correlate one idea to another and aware the students about misconceptions. Teachers are needed to see how some conceptions are interconnected across fields and related to everyday life. This type of knowledge on the part of the competent teacher provides a foundation for pedagogical contents knowledge that facilitates teachers to make ideas accessible to others (Shulman, 1987).

Shulman (1986) introduced the slogan pedagogical content knowledge for professional competent teacher and glimmered on teachers' knowledge subject matter and the significance of such knowledge for flourishing competent teaching. According to Shulman's theoretical framework, teachers require to have command over two types of knowledge: (a) knowledge of the subject matter/ content, and (b) knowledge of the curricular development. Content knowledge was referred by Bruner (as cited in Shulman, 1992) as the "structure of knowledge"– i.e. information about the theories, principles, and concepts of a particular discipline. Knowledge of content is particularly important because it deals with the teaching learning process, including the most useful forms of instructional and behavioural strategies and it also deals with how students' can learn in the best way about the specific concepts and topics of a subject. "Successful teachers must wrestle at the same time with issues of pedagogical content as well as general pedagogy" (Ornstein, Thomas, & Lasley, 2000).

Professionally competent teachers must possess Instructive reasoning. He must adopt some activities to make his teaching proficient (Shulman 1986, 1987):

- 1. Comprehension:** firstly teacher needs to understand purposes, know about composition of subject matter, and have best ideas inside and outside the discipline. Secondly teachers must know about what they teach and, when to teach and how to teach?

2. **Transformation:** Intersection of content and teaching principles in the teacher's capacity to transform content knowledge into forms that are pedagogically powerful and yet adaptive to the variety of student abilities and backgrounds are the key to the unique knowledge base of teaching. The thoroughly comprehended ideas must be transformed by a competent teacher in such a manner as to be easily and effectively taught. For transformations the following processes are included:
 - a) Preparation: The competent teacher is to be well prepared for teaching the given text material, i.e. it is the process of critical interpretation.
 - b) Presentation: The competent teacher presents the ideas in the form of new analogies and metaphors. He should use figurative language and metaphors in this regard (Glatthorn, 1990).
 - c) Instructional selections: The teacher can select materials from among an array of teaching methods and models.
 - d) Adaptation: The teacher is to provide opportunities to student for adaptation of teaching materials and activities to reflect the characteristics of student learning styles.
3. **Instruction:** Instruction consists of the variety of teaching acts, instruction comprises of the nearly all decisive characteristic of learning principles, management, presentations, interactions, group work, discipline, humor, questioning, and discovery and inquiry instruction.
4. **Evaluation:** Teachers need to think about testing and evaluation for students' that how many students are understanding and those students who have not understood what is the reason during interactive teaching as well as testing students' understanding at the end of lessons or units. It also includes evaluating teacher's own performance and adaptation to different circumstances.
5. **Reflection:** This is the stage of reviewing, reconstructing, reenacting, and critically analyzing teacher's own teaching capabilities and then re-organizes these reflected explanations into evidence of changes that need to be made to become a better teacher. Lucas (as cited in Ornstein et al., 2000) argued that reflection is a significant part of professional development. All teachers must have a sound knowledge to scrutinize outcomes and decide the reasons for success or failure. Due to reflection, teachers focus on their content area concerned, they very well understand their own teaching style and so they improve themselves as well as their colleagues as teachers. By reflection teachers learn to listen carefully to each other, which also provide them insight in teaching learning process (Ornstein et al., 2000).
6. **New Comprehension:** Through teaching the teacher achieves new understanding of the educational purpose, the subjects he taught, the students responses, and the processes of pedagogy themselves (Brodkey, 1986). Similarly students are another important component for the teacher's consideration using a pedagogical model. A skillful teacher shapes out students knowledge and their concept about a topic and how these learners are likely to "hook into" new ideas. (Grimmet & Mackinnon, 1992). Getting hold of this complicated knowledge and mounting a practice that is different from teachers self experienced as students; have need of learning opportunities for teachers that are further prevailing than merely reading and talking about new learning concepts (Ball & Cohen, 1996). Teachers learn more and more through studying, by doing and thinking, by collaborating with other colleagues' teachers, by observing students and their work, and by sharing with the students. Such type of education cannot be found in colleges and schools. The colleges are deprived of practices while the schools are devoid of knowledge to interpret practices. High-quality environment for teaching learning process in colleges and schools offer many chances for research and inquiry, for evaluation and testing, for discussion about and evaluating the results of learning and teaching process. The amalgamation of theory and practice (Miller & Silvernail, 1994) takes place most effectively at the time when questions arise in the context of genuine students and work in progress and where research and disciplined inquiry conducted regularly.

Darling-Hammond (1994) note down that for such type of learning better environment are come into existence. In United States of America nearly 300 educational schools have launched four-year bachelor's degree program that offer both education and subject-matter course work, integrated with clinical training inside schools. For recent bachelor students there some are one or two year graduate programs. For the graduates who want entry into teacher education there is a five year programme. The fifth year permits graduates to focus entirely on the assignment of getting ready for teaching, one year span internship in schools are provided to

students for teaching and learning. Research studies have found this preparation more effective and principals, their colleagues, and cooperating teachers consider it better. This program is used both for university and school teaching but the preliminary teachers get a more coherent learning experience at the time of their organization in teams with these faculties and with each other. Senior and experienced teachers intensify their learning through serving as co-researchers and teacher leaders. So, these schools can assist to produce the rub between theory and practice, at the same time as producing additional professional responsibilities for teachers and constructing knowledge is more constructive for of practice and theory. (Darling-Hammond, 1994). Many Experts, trainers and organizations have been working on suggesting standards and values for teachers' education and their profession and have been striving hard to invent new dimension characterizing the teachers through a focus on their "competencies" in their profession.

According to De-Ketele (1996) "competency is a collection of planned activities, which takes action on subject matter in a available subject in order to solve a problem." A Competency as an capability to complete a particular standardized assignment or action. According to De Bueger-Vander Borgh C. (1996), "competence refers to a state of being well-qualified to perform an activity, task or job function. A competent person can achieve his assignment in a recognizable and verifiable manner in a particular field or area.

The teachers working in secondary schools of Khyber Pakhtunkhwa, Pakistan are well trained having completed all the pre-requisite trainings and courses. But due to curriculum update and change in the global scenario of education there are some problems that a teacher is being faced in the class room. The teachers must possess strong professional background which is enough to solve their own problems and fulfill the needs of training and achievement of knowledge about the subject matter, reinforcement and abreast with updates.

Objectives of the study

This study was conducted with the following objectives:

1. To investigate the professional competencies of the knowledge of subject matter of secondary school teachers.
2. To make teachers well vocal with the means that makes their knowledge of subject matter proficient, knowledgeable, capable, talented and adept.
3. To investigate the knowledge limitations about the subject matter among the secondary school teachers working in different districts of Khyber Pakhtunkhwa, Pakistan.
4. To recommend district wise training needs of the secondary school teachers to improve their knowledge of subject matter.

Delimitations of the study

This study was delimited to the views of the male teachers teaching at 9th and 10th level working in the southern region districts of Khyber Pakhtunkhwa.

Research Methodology

The population of the study comprised all the secondary school teachers working in the secondary schools of the southern region (eight districts) of Khyber Pakhtunkhwa Pakistan. A sample of 700 teachers was collected out of 2147 secondary school teachers using a simple random method

The response of the teachers was collected on a self-developed questionnaire on five points Likert scale on the basis of National Professional Standards for Teachers in Pakistan.

Questionnaires were distributed personally by one of the researcher among the secondary school teachers working in secondary schools of southern region of Khyber Pakhtunkhwa, Pakistan. The views of secondary school teachers were tabulated, analyzed and interpreted. The collected data were entered in the Statistical package for Social Sciences 16 and the results were generated according to the objectives of the study using mean, standard deviation, Analysis of Variance, and Sheffe post hoc test, as statistical tool.

Analysis and Interpretation of Data

The following scale was applied in descriptive analysis of this study:

Weight	Scale	Range of Mean
1	Strongly Disagree	1:00 – 1.50
2	Disagree	1.51 - 2.50
3	Undecided	2.51 – 3.50
4	Agree	3.51 – 4.50
5	Strongly Agree	4.51 – 5.00

Table 1: Secondary School Teachers Competencies in Knowledge of Subject Matter

S.No	Statements	M	SD
1	I effectively explain the subject matter in multiple perspectives and relating all required structural components of the discipline.	4.45	.88
2	I develop the subject matter for keeping abreast of new ideas and understanding of teaching the subject matter.	4.24	.89
3	I know use of the new emerging concepts and theories of researches and latest trends at national and international level	4.06	1.09
4	Making the relationship of the subject to other disciplines is my preference.	4.24	.96
5	Subject matter is made applicable to the real world situation.	3.97	1.17
	Overall	4.19	1.00

Table 1 shows that the respondents are "Agree" (3.51 – 4.50) with the statement "I effectively explain the subject matter in multiple perspectives and relating all required structural components of the discipline", "I develop the subject matter for keeping abreast of new ideas and understanding of teaching the subject matter", "I know use of the new emerging concepts and theories of researches and latest trends at national and international level", "Making the relationship of the subject to other disciplines is my preference" and "Subject matter is made applicable to the real world situation" with M = 4.45, 4.24, 4.06, 4.24, 3.97 and SD = 0.88, 0.89, 1.09, 0.96 and 1.17 respectively. Respondents are also overall "Agree" (3.51 – 4.50) with their competencies in knowledge of subject matter with M = 4.19 and SD = 1.00

Table 2: Comparison of Competencies in Knowledge of subject matter of Secondary School Teachers working in different districts

Districts	M	SD	f	P
a. Lakki Marwat	4.04	0.658		
b. Bannu	4.31	0.534		
c. Dera Ismail Khan	4.38	0.466		
d. Hangu	3.75	1.134		
e. Karak	4.14	0.872		
f. Peshawar	4.34	0.656		
g. Kohat	4.05	0.528		
h. Tank	4.19	0.962	5.64	.00*

*P < 0.05

Table 2 shows that there is a significant difference among the teachers competencies in the knowledge of subject matter working in different district of Khyber Pakhtunkhwa, Pakistan (f=5.64, P=00). The mean scores and standard deviation for different districts are; Lakki Marwat (4.04, 0.658), Bannu (4.31, 0.534), Dera Ismail Khan (4.38, 0.466), Hangu (3.75, 1.134), Karak (4.14, 0.872), Peshawar (4.34, 0.656), Kohat (4.05, 0.528), Tank (4.19, 0.962) respectively.

The above ANOVA table shows significant differences between the competencies of the knowledge of subject matter of the teachers working in different districts; therefore this is followed by Scheffe post hoc test.

Table 3: Scheffe Post Hoc Test for District and Knowledge of subject matter Competencies

Sr.No	District (I)	District (J)	Mean Difference (I-J)	P
1	Lakki Marwat	Bannu	-1.33	.13
		D.I.Khan	-1.70	.08
		Hangu	.146	.74
		Karak	-.49	1.00
		Peshawar	-1.4	.18
		Kohat	-.02	1.00
		Tank	-.73	.98
		2	Bannu	Lakki Marwat
D.I.Khan	-.37			1.00
Hangu	2.79			.02*
Karak	.84			.90
Peshawar	-.15			1.00
Kohat	1.31			.21
Tank	.60			.99
3	D.I.Khan			Lakki Marwat
		Bannu	.37	1.00
		Hangu	3.16	.01*
		Karak	1.21	.72
		Peshawar	.22	1.00
		Kohat	1.68	.13
		Tank	.97	.92
		4	Hangu	Lakki Marwat
Bannu	-2.79			.02*
D.I.Khan	-3.16			.01*
Karak	-1.95			.48
Peshawar	-2.94			.02*
Kohat	-1.48			.74
Tank	-2.19			.36

*P < 0.05

Table 3 predicts that there is a significant difference among the knowledge of subject matter competencies of the teachers of district Bannu and Hangu ($P=.02$) and teachers of the district (Dera Ismail Khan) D.I.Khan and Hangu ($P=.01$) and teachers of district Hangu and Peshawar ($P=.02$) at $P=0.05$ level of significance.

Conclusions

Therefore, on the basis of the analysis and interpretations of the data in above tables, it can be concluded:

- 1 Generally, the secondary school teachers working in different districts of the southern region of the Khyber Pakhtunkhwa, Pakistan had sufficient knowledge of their subject matter. However, their utmost weakness area is to make the subject matter applicable to the real world situation.
- 2 Knowledge of the subject matter competency of secondary school teachers of district Dera Ismail Khan, Peshawar and Bannu was of highest level while this competency among the teachers of district

Tank, Kark, Kohat and Lakki Marwat was of mediocre level. However, teachers of district Hangu were on lowest level for the competency among all the districts.

3. Competency in the knowledge of the subject matter of the Secondary school teachers who were working in district Hangu was significantly more weakened as compared to the teachers working in district Bannu, D.I.Khan, and Peshawar.

Recommendations

Keeping in view the results of this study the following recommendations can be suggested to improve the situations in secondary schools of southern regions of Khyber Pakhtunkhwa, Pakistan.

1. There is a need to arrange proper trainings/workshops to improve the knowledge of subject matter of the secondary school teachers. Especially, focusing on the activities to make the subject matter practicable in daily life.
2. The teachers need training to integrate the subject matter with practical life, science and technology.
3. The secondary school teachers working in district Hangu need more attention for enhancement of their subject matter knowledge among all other districts.

References

- Alexandria, Va. (2003) National Partnership for Excellence and Accountability in Teaching (NPEAT), Principles of Effective Professional Development, Research Brief: Association for Supervision and Curriculum Development, Vol. 1, No. 15.
- Ball, D. L., & Cohen, D. K. (1996). Reform by the book: What is-or might be-the role of curriculum materials in teacher learning and instructional reform? *Educational Researcher*, 25(9), 6-8.
- Borko, H. (2004). Professional Development and Teacher Learning: Mapping the Terrain, *Educational Researcher*. Vol. 33, No. 8, 3-15.
- Brodkey, J. J. (1986). Learning while teaching. Unpublished doctoral dissertation, Stanford University.
- Darling-Hammond, L. (1994). Will 21st-century schools really be different? *The Education Digest*, 60, 4-8.
- Davis, B. & Simmt, E. (2006). Mathematics-for-teaching: An ongoing investigation of the mathematics that teachers (need to) know. *Educational Studies in Mathematics*, 61(3), 293-319.
- De Bueger-Vander Borgh C. (1996). The epistemology in classroom practice? Acts XVIIIth International Workshop on Communication, Education, Culture Scientific and Technical Chamoni: A. Giordan, Martinand J-L, 1995, p. 193-196
- De Nobile, J. (2007). Primary Teacher Knowledge of Science Concepts and Professional Development: Implications for a case study. *Teaching Science - the Journal of the Australian Science Teachers Association*, 53(2), 20-23.
- De-Ketele, J. M. (1996). Evaluation of Educational Achievement: What? Why? for what? *Journal Tunisian Science Education*, No. 23, 17-36.
- Gess-Newsome, J., and N.G. Lederman (2001). Examining Pedagogical Content Knowledge: The Construct and its Implications for Science Education, *Contemporary Trends and Issues in Science Education*.
- Glatthorn, A. A.(1990). Supervisory leadership. New York: Harper Collins.
- Grimmet, P., & MacKinnon, A. (1992). Craft knowledge and the education of teachers. In G. Grant (Ed.), *Review of research in education* 18, pp. 59-74 Washington, DC: AERA.
- Hassel, E. (1999). Professional Development: Learning from the Best: A Toolkit for Schools and Districts Based on the National Awards Program for Model Professional Development (Oakbrook, Ill.: North Central Regional Education Laboratory).
- Miller, L.,& Silvernail, D. L. (1994). Wells Junior High School: Evolution of a professional development school. In L. Darling-Hammond (Ed.), *Professional development schools: Schools for developing a profession* (pp.56-80). New York: Teachers College Press.
- National Partnership for Excellence and Accountability in Teaching (NPEAT) (2003). "Principles of Effective Professional Development," Research Brief (Alexandria, Va.: Association for Supervision and Curriculum Development, 2003). Vol. 1, No. 15.
- Ornstein, A. C., Thomas, J., & Lasley, I. (2000). *Strategies for effective teaching*. New York: McGraw-Hill.
- Shanahan, C., and T. Shanahan (2008). *Teaching Disciplinary Literacy to Adolescents: Re-thinking Content Literacy*, Harvard Educational Review

- Shulman, L. (1992). Ways of seeing, ways of knowing, ways of teaching, ways of learning about teaching. *Journal of Curriculum Studies*, 28, 393-396.
- Shulman, L. S. (1986). Those Who Understand: Knowledge Growth in Teaching. *Educational Researcher*, 15 (2), 4-14.
- Shulman, L. S. (1987). Knowledge and Teaching: Foundations of the New Reform. *Harvard Educational Review*, 57, 1-22.
- Spear-Swerling, L., Brucker, P. O., & Alfano, M. P. (2005). Teachers' literacy-related knowledge and self-perceptions in relation to preparation and experience. *Annals of Dyslexia*, 55, 266-296.
- Von Frank, V. (2008). *Professional Learning for School Leaders* (Oxford, Ohio: National Staff Development Council).