Professional Knowledge and practices of Teachers at Secondary level

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Abstract
The study was aimed to explore the professional knowledge and experiences of teachers at secondary level in District Nowshera. The key objective of the study was to examine the teachers' professional knowledge and practices at secondary level. The population of the study comprised all the 138 principals/headmasters and 948 SST male working teachers of secondary schools in District Nowshera. Random sampling technique was used for selecting the sample. A sample of 69 male principals/headmasters and 510 male working teachers from 85 Government Schools of District Nowshera was randomly selected in such a way that six teachers from each school were selected for collection of data. Data were collected through three point's questionnaires. The data were then analyzed through chi-square. The study revealed that the professional knowledge helped the teachers to know the classroom problems from discussion with their students to help and assess them. The study found out that trained teachers know the individual differences of students and contact their parents to solve the problems regarding the progress of students. On the basis of the findings the following recommendations were drawn. It is recommended that teachers must be providedtraining, guidance and counseling regarding students' problems. The heads should facilitate students to interact with them and teachers for their academic achievement.

Keywords: *Professional Knowledge, Practice, Significance, Educational Authorities.*

1. Introduction

Professionalism is a comprehensive term and it is based on different domains. It encompasses the specific services, understanding the art and knowledge of the contents, unique attitudes, and diverse motivational variables that develops mastery of particular experiences (Epstein & Hundert, 2002; Klieme, Hartig, & Rauch, 2008;Kunter, et al 2013). Improvement in professional abilities of teachers depends on different factors like the role of acquired academic degrees(Jackson, Rockoff and Staiger, 2014), and a little bit role is also contributed by the motivational level of the teacher (Berliner, 2001).Similarly, a significant improvement is recorded through gradual experiences by teaching same contents for several years (Kini & Podolsky, 2016). While effective improvement is noted when supportive environment is available; the behavior of students is ideal and good mentoring colleagues cooperate in the presence of effective leadership (Kraft & Papay, 2014). Hence, the overall improvement in skills, practice and attitude of teachers is called professional development (Fletcher-Wood & Zuccollo, 2020). Professional development requires content knowledge and its practical

application in the field, which makes the professionals notable. According to Fishman et al., (2003), professional developmental programs boost extrinsic behaviors of teachers which lead them towards better and effective teaching practices. Buczynski and Hansen (2010) said that successful teachers use their knowledge and experience in teaching. The professional development of teacher has remained a hot issue among most of the countries (Avalos, 2011; Cordingley, Bell, Evans, & Firth, 2005), and most of them investing most of their resources to engage the teachers in professional developmental activities, but the most common deficiency recorded was the lack of establishing a link with classroom activities (Darling-Hammond, 2013; Hill, Beisiegel & Jacob, 2013; Kennedy, 2016). Further, Goodson (1997) advocates that professional training in education aims at improving the quality of teaching learning process. Therefore, these programs must be research-based and practical based. In this connection, to enhance the level of teacher quality in Pakistan, major reforms have been brought in practice in both pre-service and in-service teacher education programs(Butt, Khan & Malik, 2020). These professional programstry to update the subject matter, teaching methodology, instructional strategies, and social skills of teachers which help the teachers in the application of professional knowledge (Malm, 2009).

Shulman (1986) said professional knowledge is helpful in understanding students' mind and behavior and is also helpful in understanding the contents which they want to teach because the main focus of professional training lies on the content knowledge, teaching methodologies and teaching practices. But still there are some problems raised by Darling-Hammond et al. (2005) that teacher's professional knowledge does not cope with existed nature of problems in education sitting. So, a daring need noted by Korthagen, Loughran and Russell, (2006) to explore the comprehensive use of professional knowledge of teacher to know the existing status that may build a sound ground for future research. The evidence/debate is still ambiguous to support teacher education programs that claim the enhancement of professional knowledge (Kulgemeyer & Riese, 2018).In this connectionhere,the current study wants to explore the teachers' professional knowledge and practices of teachers at secondary level. The study may be helpful for teachers, educational planners and policy makers and it will also prove the fact that professional knowledge and its practice influence the performance of teachers at secondary level. The study has highlighted the gaps between professional and non-professional teaching practices. The results of the study would provide guideline to policymakers to think over the impact of professional knowledge on the performance of teachers and on the academic achievement of students. It will also provide a roadmap for future researchers.

2. Literature Review

In general, teacher is a person, irrespective of age, gender, caste and creed as well as religion, who conveys or transfer knowledge to students. In the process of learning, the teacher'sguide, counsel and lead the students. The research conducted by Government of Punjab (1998) shows that teachers play an important role in the promotion of educational standards which can further playa role in the development of a nation. Teachers need continuous guidance, counseling and motivation in order to play better role in the nation's building (Kruse & Louis, 2008). Further Yala and Wanjohi (2011); Andeyemi, (2010) confirmed that teachers' qualification and experience have direct effects on students' academic achievement. Similarly, Maijer et al., (1999) say that professionally trained teachers are always successful in achieving the academic progress of the students. The mentoring of new teachers or peer learning and experiences further reduce problems of teachers (Hobson et al., 2009; Ullah, Tabassum & Kaleem, 2018). According to Iqbal (1996),"Teaching is an arrangement and manipulation of certain situations in which a learner strives to overcome the problems related

to learning". Similarly, Torrington (2003) said "Teaching comprises series of actions and intends to facilitate the learning process as teaching is a multidimensional set of activities". Therefore, competency in subject and professional training of teachers is essential for good teaching(Smith etal.,2003). Subject knowledge and the methods of how to transfer the contents to students are learned through professional training (Gore et al., 2017). Professionally trained teachers ensure good academic achievements of students (Blank & de las Alas, 2009). Classrooms problems are enhancing day by day; therefore, teachers should be equipped through professional training with techniques of action research which may enable teachers to solve all their problems instantly through their own abilities (Noris, 2019). Maijer, et al. (1999) categorized professional knowledge into three categories: the subject knowledge, understanding of students' psychology and knowledge of teaching methodologies. Further,Nadkarni (2003) emphasized on understanding and having latest teaching methods that ensure effective teaching. Further, pedagogical knowledge, contextual knowledge and self-knowledge are developed with professional training. In addition, the professionalism of the teachers is gradually developed through teaching practice and experience (Harris & Sass, 2011). Lastly, to sum up, teaching is an art and teachers are the artists of this field. Therefore, professional training is must for teachers to make them professionally well equipped. The study will try to solve the question raised that whether professional knowledge is necessary for good teaching or not.

2.1 Theoretical Framework

During recruitment of teachers, the persons with latest professional knowledge and high relevant qualification may be preferred (Yeh, 2009; Zumwalt & Craig, 2005). Here, the idea, "*Bright Person Hypothesis*" Kennedy et al. (2008), and "*Knowledgeable Teacher Hypothesis*" Anderson et al., (1995); Shulman, (1998) may be encouraged to implement during selection of teachers. Kennedy et al. (2008) were in favor to bring cream and highly knowledgeable people to education as education system has many challenges that could only be met by such talented peoples (Feldon, 2007). Good career and incentives in the education system may also be ensured to keep such talented teachers intact in the system (OECD, 2005).Both strong correlation and zero correlation noted between teacher's intellectual abilities and student's performance(Aloe & Becker, 2009; Yeh, 2009). The proponents of "*Knowledgeable Teacher Hypothesis*" advocate that specific professional knowledge is utmost necessary for achieving their targets in educational field (Shulman, 1987). This professional knowledge can only be obtained through formal professional institutional and non-formal programs of teacher education. The contents of professional knowledge are further very diverse in nature; they include specific content knowledge, specific pedagogical orientation and contents of psychology related to learning principles and behavior of students (Krauss et al., 2008; Baumert et al., 2010). The other important factor noted by the researchers is the professional competence which plays an important role in the success of teachers (Klieme, Hartig & Rauch, 2008; Kane, 1992). Here, professional competency means the skills, attitude, motivation and behavior that help to control and master specific situation (Epstein & Hundert, 2002). These traits are also teachable and learnable (Weinert, 2001).Moreover, significant contributions are noted in education sector by applying the concept of professional competency in teacher education program (Oser, Achtenhagen & Renold, 2006).

Numerous evidences are available which certify that intended and desired outcome may be achieved if teachers practically apply their professional abilities in classroom (Kennedy et al., 2008; Brouwer & Korthagen, 2005). Teacher has the knowledge of how to teach and the role of teachers is very crucial for development of education in a country (Birman et. al., 2000).

Therefore, trained teachers are guarantors of students' academic achievement. Education is conveyed and transferred through teachers. Other than this, communication skills of teachers also enhance the efficiency of teacher (Spiegel, 2006). Ahmad (2001) observed that the developed countries have taken reformative initiatives in all sectors including education and achieved outstanding results in the recent past. This is because of good education systems in those countries. Education is a key to success and prosperity. A good education system is amust for survival in the modern world (Saeed, 2001). In the teaching learning process, there should be friendly interaction between students and teachers. In the teaching learning process,teachers transfer knowledge and students receive it. The teaching profession, especially in Pakistan, needs a lot of reforms for bringing improvement in the whole system. Professional training of teachers is must if we want to bring change in the system. Trained teachers know all the aspects of their student through personal contact and family knowledge that give more control to teachers over their students. Young et al., (2011) says that if a teacher adopts friendly and positive approach, it affects the behavior and personality of learners positively and productively. It promotes the confidence of students and enables them to face the real-world challenges. Nobody can claim that he is a perfect teacher because numerous changes occur in life every day. Therefore, teachers need to be provided training on regular basis and should be able to adopt flexibility according to situations. Professional trainings help the teachers in the development of teaching methods and updating their subject knowledge for better experiences in classroom activities. In order to proceed the current study a null hypothesis was tested through statistical analyses on the basis of data obtained from the questionnaire to lead towards the purpose of the study.

H_0: Teachers do not use their professional knowledge in classroom activities at secondary level.

3. Methods and Procedure

Research methodology is the road that leads you towards your goal. According to (Zhang, Luo, Huo, and Zhu, 2012; Kim, et. al., 2013) the success of the research is highly dependent on the suitable selection of research design and methodology.

3.1 Research Design

Research design is the base and foundation of the whole research. The entire system and how it will function depends upon the research design (Martinez, Basford, De Jager, &Hart, 2012).Survey design was used to investigate the responses of the participants because the nature of the study was descriptive and quantitative.

3.2 Population and sampling technique

The population of the study comprisedall the 138 male workingprincipals/ headmasters and 948 SST male working teachers at secondary level from boys at Government Secondary Schools of District Nowshera. According to the Annual Statistical Report of Government Schools, there are138 maleprincipals/ headmasters and 948 (SST) male working teachers at secondary levels in District Nowshera (EMIS, 2016-17). Random sampling was used for selecting the sample. A sample of 69 male principals/headmasters and 510 male working teachers from 85 Government Schools of District Nowshera was randomly selected in such a way that six respondent teachers from each school were selected for sample.

Table 1

S. N	Respondent Group	Population	Sample size	G.Total
1	Principals/H.M	138	69	69
2	Science Teachers	948	510	510
Total		10 8 6	579	579

3.3 Data collection Instrument

For collection of data, a questionnaire was used. Questionnaire composed10 items used for getting information from principals/headmasters and male (SST) working teachers.

Validity and Reliability

The validity and reliability of the questionnaire was ensured through pilot testing which improved the quality of questionnaire items. The questionnaire was discussed with educationists and the views/suggestions of the experts were then incorporated in the final draft and then it was subjected to pilot testing for finding the reliability through test-retest method and the scores attained from both trials were correlated and test-retest reliability co-efficient was calculated which was found 0.92. It indicates that the reliability level of the test was satisfactory.

3.4 Delimitation of the study

This study was delimited only to male public elementary and secondary schools of District Nowshera.

3.5 Data Analysis and Interpretation

A statistical tool chi-square was used to find out the difference between observed and expected observation. Therefore, chi-square was used for data analysis. The declaration on top of each table was sustained, in case the value obtained from calculation comes in elevation than critical point in table, ($\chi^2 = 5.99$) at 0.05 level of the significance and regretted in case of low value from critical point. Similarly, lower p-value than 0.05 also supports the statement. The following tables present an analysis of the data obtained for this study.

Table 2: Teachers involve their students in learning process.

Respondents	Mostly	To some extent	Not at all	Total	df	χ^2	P-value
Principals/Head Masters	41	21	7	69	2	25.38	0.00
Male working Teachers(SST)	280	165	65	510	2	136.16	0.00

Table value at 0.05 level = 5.99

The table 2 noted that the obtained χ^2 value was found to be (25.38) as a result of responses from Principals/Head Masters which is greater than the table value at 0.05 level of significance, and calculated χ^2 value also found to be (136.16) as a result of responses from male working teachers.The p-values are also less than 0.05 level of significance; hence responses go in favor of statement. In both cases significance goes in favor of positive response. Since both are in favor of the statement "Teachers involve their students in learning process" hence it is accepted. Keeping in view the apparent difference in calculated $\chi 2$ value in both cases the male working teachers were found strongly in favor of statement as compared to principals/headmasters.

Table 3: Teachers apply their professional knowledge in teaching.

Respondents	Mostly	To some extent	Not at all	Total	df	χ^2	P-value
Principals/Head Masters	47	18	4	69	2	41.18	0.00
Male working Teachers(SST)	310	145	55	510	2	196.75	0.00

Table value at 0.05 level = 5.99

The table 3 noted that the value of χ^2obtained from the calculation of the responses from Principals/Head Masters was (41.18) which is in elevation than critical point at the table at 0.05 level, and calculated χ^2 value of the responses from male working teachers was also found to be significant (196.75). The p-values are also less than 0.05 level of significance; hence responses fall in favor of statement. In both cases significance goes in favor of positive response. Since both are in favor of the statement "Teachers apply their professional knowledge in teaching" hence it is accepted. Keeping in view the apparent difference in calculated $\chi 2$ value in both cases the male working teachers were found strongly in favor of statement as compared to principals/headmasters.

Table 4: Teachers know the psychology of students.

Respondents	Mostly	To some extent	Not at all	Total	df	χ^2	P-value
Principals/Head Masters	39	24	6	69	2	23.73	0.00
Male working Teachers(SST)	297	117	96	510	2	143.36	0.00

Table value at 0.05 level = 5.99

Table 4 shows that the value of χ^2obtained from the calculation from the responses of male principals/headmasters was equal to (23.73) which is grander than the critical point at 0.05 level of significance, and calculated χ^2value of male working teachers was also found to be significant (143.36).The p-values are also less than 0.05 level of significance; hence responses go in favor of statement. In both cases, significance goes in favor of positive response. Since both are in favor of the statement "Teachers know the psychology of students" hence it is accepted. Keeping in view the apparent difference in calculated $\chi 2$ value in both cases the male working teachers were found strongly in favor of statement as compared to Principals/Head Masters.

Table 5: Professional education is the source of change behavior.

Respondents	Mostly	To some extent	Not at all	Total	df	χ^2	P-value
Principals/Head Masters	44	19	6	69	2	32.42	0.00
Male working Teachers(SST)	285	195	30	510	2	196.75	0.00

Table value at 0.05level = 5.99

Table 5 shows that the value of χ^2 obtained from the calculation of the responses from male principals/headmasters was (32.42) which is more than the critical point at 0.05 level of significance, and calculated χ^2value of male working teachers was also found to be significant (196.75).The p-valuesare also less than 0.05 level of significance; hence responses fall in favor of statement. In both cases, significance goes in favor of positive response. Since both are in favor of the statement "Professional education is the source of change behavior" hence it is accepted. Keeping in view the apparent difference in calculated $\chi 2$ value in both cases the male working teachers were found strongly in favor of statement as compared to Principals/Head Masters.

Table 6: Teachers' encourage the students for discussion.

Mostly	**Respondents**	**To some extent**	**Not at all**	**Total**	**df**	**χ^2**	**P-value**
37	Principals/Head Masters	29	3	69	2	27.47	0.00
210	Male working Teachers(SST)	205	95	510	2	49.69	0.00

Table value at 0.05level = 5.99

The table 6 expresses that the value of χ^2obtained from the calculation of the responses from the male principals/headmasters was (27.47) which is more than the critical point at 0.05 level of significance and calculated χ^2 value of male working teachers was also found to be significant (49.69). The p-values are also less than the0.05 level of significance; hence, responses go in favor of statement. In both cases, significance goes in favor of positive response. Since both are in favor of the statement "Teachers' encourage the students' for discussion" hence it is accepted. Keeping in view the apparent difference in calculated $\chi 2$ value in both cases the male working teachers were found strongly in favor of statement as compared to Principals/Head Masters.

Table 7: Teachers make groups for discussion during teaching.

Respondents	**Mostly**	**To some extent**	**Not at all**	**Total**	**df**	**χ^2**	**P-value**
Principals/Head Masters	38	27	4	69	2	26.16	0.00
Male working Teachers(sst)	218	175	117	510	2	30.21	0.00

Table value at 0.05level = 5.99

The table 7 shows that the value of χ^2obtained from the calculation of the responses from male principals/headmasters was (26.16) which is more than the critical point at 0.05 level of significance and the calculated χ^2 value of male working teachers was also found to be significant (30.21). In both cases, significance goes in favor of positive response. Since both are in favor of the statement "Teachers make groups for discussion during teaching";hence, it is accepted. Keeping in view the apparent difference in calculated $\chi 2$ value in both cases, the male working teachers were found strongly in favor of statement as compared to principals/headmasters.

Table 8: Teachers know individual differences of students.

Respondents	Mostly	To some extent	Not at all	Total	df	χ^2	P-value
Principals/Head Masters	46	19	4	69	2	39.38	0.00
Male working Teachers(sst)	245	198	67	510	2	100.09	0.00

Table value at 0.05level = 5.99

The table 8 expressed that the obtained value of χ^2 from the responses from male principals/headmasters was (39.38) which is larger than the critical point at 0.05 level of significance and the calculated χ^2 value of male working teachers was also found to be significant (100.09). The p-values are also less than 0.05 level of significance; hence, responses go in favor of statement. In both cases significance goes in favor of positive response. Since both are in favor of the statement "Teachers know individual differences of students" hence it is accepted. Keeping in view the apparent difference in calculated $\chi 2$ value in both cases the male working teachers were found strongly in favor of statement as compared to principals/headmasters.

Table 9: Teachers discusses class room problems with students.

Respondents	Mostly	To some extent	Not at all	Total	df	χ^2	P-value
Principals/Head Masters	43	19	7	69	2	29.21	0.00
Male working Teachers(SST)	287	199	24	510	2	210.84	0.00

Table value at 0.05 level = 5.99

The table 9 noted that the value obtained of $\chi^2$from the responses from male principals/headmasters was (29.21) which is more than thecritical value at 0.05 level of significance and the calculated χ^2value of male working teachers was also found to be significant (210.84).The p-values are also less than 0.05 level of significance; hence responses fall in favor of statement. In both cases significance goes in favor of positive response. Since both are in favor of the statement "Teachers discusses class room problems with students"; hence, it is accepted. Keeping in view the apparent difference in calculated $\chi 2$ value in both cases, the male working teachers were found strongly in favor of statement as compared to principals/headmasters.

Table 10: Teachers share student's problems with them.

Respondents	Mostly	To some extent	Not at all	Total	df	χ^2	P-value
Principals/Head Masters	39	25	5	69	2	25.38	0.00
Male working Teachers(SST)	305	189	16	510	2	267.53	0.00

Table value at0.05 level = 5.99

Table 10 points that the obtained χ^2 value of the responses from the male Principals/Head Masters was (25.38) which is elevated than the critical value at 0.05 level, and calculated

χ^2 value of male working teachers was also found to be significant (267.53).The p-valuesare also less than 0.05 level of significance; hence responses go in favor of statement. In both cases, significance goes in favor of positive response. Since both are in favor of the statement "Teachers share student's problems with them"; hence, it is accepted. Keeping in view the apparent difference in calculated $\chi 2$ value in both cases the male working teachers were found strongly in favor of statement as compared to principals/headmasters.

Table 11: Teachers contact parents regarding the progress of students.

Respondents	**Mostly**	**To some extent**	**Not at all**	**Total**	**df**	χ^2	**P-value**
Principals/Head Masters	35	32	2	69	2	28.45	0.00
Male working Teachers(SST)	301	197	12	510	2	252.06	0.00

Table value at0.05 level = 5.99

Table 11 specifies that the obtained χ^2value of the responses frommale principals/headmasters was (28.45) which is larger than the critical value at the significance value of 0.05 and the calculated χ^2 value of male working teachers was also found to be significant (267.53).The p-valuesare also less than the 0.05 level of significance; hence, responses go in favor of statement. In both cases significance goes in favor of positive response. Since both are in favor of the statement "Teachers contact parents regarding the progress of students" hence, it is accepted. Keeping in view the apparent difference in calculated $\chi 2$ value in both cases, the male working teachers were found strongly in favor of statement as compared to principals/headmasters

4. Findings

The findings from the responses of the principals were different in some areas from the findings of the responses of working teachers. The male working teachers'viewswere different from principals in calculated $\chi 2$ value in both cases the male working teachers were found strongly in favor of statement as compared to principals/headmasters. It was found out that majority of the qualified working teachers can motivate their students to learn. Most of therespondents agreed that professional knowledge changed teachers' behaviors and the professional knowledge helped teachers to understand the psychology of the students and improved their teaching skills. A large number of respondents agreed that professional knowledge enabled the teachers to do positive discussion and involve the students in the teaching learning process. A lot of teachers (χ^2 =100.09) had the view that professional knowledge helped teachers to understand individual differences of the students. Majority (χ^2 =210.84) of the respondents had the view that working teachers discuss and share students' problems with them. Most of the respondents (χ^2 =252.06) had the view that teachers who were professionally trained contact students'parents regarding progress of the students indicating the use of professional knowledge of teachers.

5. Discussion and Conclusions

The study revealed that teachers' professional knowledge and its practice had great impact on teaching learning process. In reality, the professional knowledge and its application is the back bone of teaching learning process. It keeps the teachers on road towards the target goals through timely feedback. It promotes the performance of the teachers and aware the students of their problems and hurdles in their learning process. The study pointed out the use of professional knowledge in actual teaching. Buczynski and Hansen (2010); Kennedy et al.,

(2008) also have the views about the proper use of teachers' knowledge for students' academic achievements. The study result shows teachers' behavior is changed due to their professional knowledge. Young et al., (2011), in similar context suggested that professional education changed the behavior of teachers. Professional knowledge helped teachers to understand students' psychology. The result of the study matched with the views of Shulman (1986). The study finds out professionally trained teachers involved their students in the teaching learning process, made groups for discussion and encouraged them for discussion during teaching in the class. Maijer et al., (1999) and Dawes (2012) are in line with the study findings. The study revealed that the professional knowledge helped the teachers to know the classroom problems from discussion with their students to help and assesses them. The view is also supported by Melissa (2013). The study finds out that trained teachers know the individual differences of students and contact their parents to solve the problems regard in the progress of students. Brookfield (2006) and Sybouts (1994) support the view.It was concluded that professionally trained teachers bitterly address the problems of students and can enhance academic performance of the students. Good behaviors noted of professionally trained teacher which has further helped the teachers in understanding of student's psychology as well in class room problems.

6. Recommendations

1. The study revealed that professionally trained teachersinvolve their students more in the teaching learning process, showing the application of teachers' professional knowledge. Therefore, it is recommended that professional training should be provided to all the teachers in the department.
2. The study found out that professionally trained teachers know the student's problems very well and provide guidance and counseling to students regarding personal problems which reflects the teachers' professional knowledge and its practice. Therefore, professional training should be provided to all teachers to share students' problems with them.
3. The study also revealed that teachers, students and parents are the troika of the teaching learning process. Therefore, it is recommended that principals should encourage parents' and teachers' interactions in schools regarding the progress of the students.
4. Education department at diverse level may encourage activities to address the professional abilities of teacher for the improvement of slow and neglected areas of education system.

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