

The Influence of Teachers' Professional Competencies on Students Achievement: A Quantitative Research Study

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ABSTRACT:- This study aimed at to assess the competency level of teachers' professional knowledge and technology integration and its impact on student's achievement in Karachi Pakistan, for this purpose quantitative research design was employed and data was collected through a cross-sectional survey. Data was analyzed through SPSS and SMART PLS version 3.2.9. The data analysis revealed that teachers' professional knowledge in terms of their teaching practices and Technology Integration has a positive significant impact on Students' Achievement. Secondly, teachers had a high perceptions and understanding of their self-professional development in terms of improvement in professional knowledge and technology integration. Teachers in this study had high scores on all three constructs of the model, indicating that they were able to perform, understand or know most of the activities indicated in the items of the questionnaire. this study also sought that teachers self-professional development in the different areas of professional knowledge i.e. technological knowledge, pedagogical knowledge and subject matter knowledge has a significant positive impact on students achievement as all the hypothesis of the current study were accepted. This investigation has uncovered how the qualities of teachers' TPACK move and change. Teachers' competency levels of three fundamental builds of TPACK has been seen an exceptional. The investigation has uncovered that teachers move their levels of TPACK to suit the relevant variables. Considering this, it will be appropriate that more emphasis is laid on the significance of setting in the TPACK framework, and the entire constructs of TPACK ought to be implanted in the teaching learning.

Keywords: Teachers' Professional competencies, Technology integration, Students' Achievement

I. INTRODUCTION

Academic achievement is when students learn and keep on creating aptitudes, knowledge, and love of learning all through their lifetime. "Research affirms that teacher and quality of teaching are the most impressive indicators of students' achievement. The more years that students work with viable teachers, the higher their deliberate accomplishment" (Kaplan and Owings, 2004). Students' achievement is generally reliant upon the teacher's capacity to train each students, team up with individually, and proceed to create and assemble their own capacities, abilities, and knowledge. Qualified and trained teacher have an immediate impact in upgrading student's learning. Long stretches of research on teacher quality help the way that captivating teachers not just cause students to feel great about school and learning, yet in addition their work really brings about expanded learner's accomplishment. Studies have validated that an entire scope of individual and expert characteristics are related with more elevated levels of student's accomplishment, included digital literacies, content information, and pedagogical skills. National Education Policies (1998-2010 and 2017) recommended that the teachers ought to be scholastically all around prepared in subjects he/she teaches and have had sound proficient preparing to show his/her subjects. A significant analysis of teacher's instruction is that it has not brought about progress in students learning results comparable to the volume of information sources which have been designated to in-administration trainings. Teachers' professional development, in any case, cannot be viewed as the sole logical variable for students' achievement. Despite the fact that there are arrangements in different approach records on

teachers training and preparing, there is a huge lack of an exhaustive vision and strategy on teachers' professional development to lift teaching quality into a patent proficient status.

In the modern age of digital natives it's very important to groom, upgrade and enhance teachers' proficiency for their effective teaching practices, so as to be produce quality learners. Furthermore, worldwide improvements are demanding a fast change in the perspectives and practices in the teaching learning process, so reshaping or rebuilding change is needed in the present teacher's education programs and system. Teacher's proficient advancement influences their learning and enhancing knowledge of subject matter, teaching skills and digital resources. In the previous three decades, continuous professional development of teachers has been utilized as one of the key components for the improvements of teachers teaching quality. The utilization of digital resources in teaching turns out to be increasingly significant right now, teachers additionally must have the option to stay aware of the use of digital technologies in their teaching practices. Technology incorporation in the classrooms has gotten a significant part of fruitful teaching.

In the present era we live a period whereby data develops rapidly (Yalçın and Çelikler, 2011), advancement accept a crucial activity in our regular day to day existences (Guerrero, 2010) and digital technologies contraptions have become a key bit of our step by step lives (Yalçın and Çelikler, 2011). Development has become a fundamental piece of the normal everyday presence of the occupants of this period to such a degree, that the current social demands rely enthusiastically upon development with technological advances changing how society and individuals act (Hixon and Buckenmeyer, 2009). Teachers are being empowered and may have no real option except to incorporate digital resources in their classrooms, for it as well as to encourage their training just as improve and boost their student learning. Instructors expected to change their methodologies, strategies and ways of thinking in light of the fact that their old techniques were not really captivating students who are carefully mindful and capable (Bolstad and Gilbert, 2006). In the present era, teacher's job demands new innovations, integration of digital resources, suitable teaching learning environment and proficiency in content and pedagogy. This job ought not to be done through the old techniques and methods alone yet rather teachers should know about the capability of innovations to assist them with encouraging viable teaching and learning. Instructing is a convoluted practice that requires an interlacing of numerous sorts of particular information.

There have been a concentration on the development of pedagogy and content knowledge as it concerns teacher development program (Aina, 2013). However, the emergency of instructional technologies has placed a demand on the need for technology knowledge. Abanobi and Abanobi (2017), emphasizes the need for pre-service teacher development so as to be adaptable to the various technological changes in teaching and learning. Jerotichl, Kurgat and Kimutai (2017) emphasized that teachers need regular in-service opportunities within the educational system to enhance their teaching methodology. Jerotichl, Kurgat and Kimutai (2017) further stressed that teachers needed to equip themselves with new forms of knowledge, Valtonen et al. (2017) explained that pedagogical knowledge is the generic form of teaching knowledge about the cognitive, social and developmental theories of learning and classroom management skills that every trained teacher must incorporate.

Statement of the Problem

The targets of education consistently stay to have prepared and very much proficient teachers to create quality students. It is broadly perceived that in general the majority teachers of both private and public sectors are incompetent and unqualified because of huge variety of components ultimately caused substandard and inadequate quality of education in Pakistan. The instructional methods do not urge students to take part in top to bottom psychological learning and utilize their own judgment and exercise their basic capacities in endeavors to comprehend what everything intends to realize what is introduced to them in the school (Pakistan U.S.A.I.D, 2006). So stake holders included educationists and other policymakers has accepted that the teaching quality is below standard and inadmissible. It is widely recognized that overall the quality of education provided by the public sector schools in Pakistan has been deprived due to poor teaching practices and huge lacking of composite teaching knowledge, level of competencies and technology integration. It is also observed that teachers are not well equipped with content, pedagogical and technological knowledge in this digital native era, which is high demand of the 21st century to meet the challenges of socio-economic and to produce productive human resources in education around the world (NEPF, 2018). The National Education Policy (2017) also describes that Pakistan has not been able to achieve its educational targets in terms of access and quality of student learning outcomes.

In both the public and private sectors there is a huge lacking of teachers professional development programs, lack of teachers capacity building programs, lack of technological knowledge and lack of awareness of digital resources in teaching learning, even the curriculum has been changed and new innovations has been introduced in education system. But teachers are unable to incorporate and deliver instruction according to the new and innovative curriculum because they are not prepared accordingly. Lack of trainings and professional development programs is an immense issue in our education system. In the same manner teachers herself/himself are not ready to enhance their capacities rather than they always give reasons of the shortage of resources and learning materials in the classrooms. But the real problem is that our teachers are not fully prepared with the fundamental factors of teachers' professional knowledge that effects on digital native's accomplishment that are knowledge of content, pedagogies, digital resources and its integration in education.

II. LITERATURE REVIEW

Theoretical Framework

The knowledge, which is required for teachers, has been changing since the commencement of teacher education. Shulman (1986) expressed that there was a sharp differentiation among teaching method and content in bygone eras. By the late 1800s, instructional method was missing, or by the mid-1980s, content was overlooked. Be that as it may, in 1986, Shulman proposed a build which was named as pedagogical content knowledge (PCK). In this develop, Shulman proposes a connection between teacher's pedagogical knowledge and content knowledge. He expresses that there is incorporation between the two sections and their convergence comprises teacher's pedagogical content knowledge. Mishra and Koehler (2006) expands Shulman's concept of Pedagogical Content Knowledge (PCK) as Technological Pedagogical Content Knowledge (TPACK), which endeavors to distinguish the idea of knowledge required by teachers for technology integration in their teaching. This fact has been widely confirmed by most scholars such as Zulu and Mulenga (2019) who mentioned that 'the pedagogical content knowledge (PCK) helps the teacher to guide learning in ways which are appropriate as prescribed by the curriculum in order to achieve the aspirations for education of a nation' even Shulman (1987) described PCK as a vital aspect of effective teaching.

The TPACK, is the intricate interchange of three essential types of knowledge: Content (CK), Pedagogy (PK), and Technology (TK). The TPACK approach goes past observing these three knowledge bases in confinement. The TPACK framework goes further by stressing the sorts of knowledge that lie at the crossing points between three essential structures: Pedagogical Content Knowledge (PCK), Technological Content Knowledge (TCK), Technological Pedagogical Knowledge (TPK), and Technological Pedagogical Content Knowledge (TPACK). Powerful innovation joining for instructional method around explicit topic requires creating affectability to the dynamic, value-based connection between these components of knowledge arranged in interesting settings. So in this scenario of digital age teachers have to ensure the combination of content, pedagogy and technology, in all aspects of teaching. So the present study focuses on the basic three teacher knowledge domains of TPACK i.e content, pedagogy and technological knowledge. These domains describes teachers professional competences of effective teaching with technology, ultimately it effects on students achievement.

Technology Integration and students achievement

Technology integration refers to the implementation of digital devices i.e. computers, applications, Internet, and other technologies (e.g., projectors, printers, and so on) for education within and beyond classrooms. Hertz, (2011) describe that the technology integration means that technology is not taught as a separate class, but integrated into the classroom; students use technology to learn content and demonstrate their understanding of content, not just their expertise with a tool. So a teacher can integrate technologies in various ways and motivate students to incorporate technologies in their learning process for the better understanding of any topic, content and other tasks. Teacher can also integrate technology with pedagogical and content knowledge to teach effectively for the better outcome of students learning. The most effective predictor of educational accomplishment and quality of instruction provider is the teacher (Kaplan & Owings, 2004). Students can learn through different activities in the classroom and outside the classrooms by using digital devices to learn content and complete their educational assignment. Teacher can also enhance his/her pedagogical skills by the use of digital devices and make their teaching effective. A teacher can develop different activities to integrate technology with content and pedagogy to create effective learning environment for students which can help students' better performance. With the use of technologies in content and pedagogy a teacher can develop students' interest towards learning. For a successful teacher he or she must have to prepare and equipped him/herself with technological pedagogical and content knowledge (TPACK).

TPACK has three fundamental sphere of knowledge areas in that it is the knowledge about how to utilize technology in a particular content by utilizing suitable teaching skills and methods with advance technologies (Schmidt, et al., 2009). At the end of the day, in TPACK, teachers realize how to utilize innovation for helping students to get familiar with a specific theme (Mishra and Koehler, 2008). According to Cox (2008), TPACK is a way of thinking about the dynamic relationships between technology, pedagogy, and specific subject matter in order to help students better understands a particular topic. Numerous different researcher are concur that through TPACK teachers can create and improve their own proficient information at last it consequences for student achievement.

Conceptual Framework

In the conceptual framework Variables and hypothesis are formulated from the theoretical Background of Shulman's (1986) Pedagogical Content Knowledge (PCK) and Mishra & Koehler's (2006) Technological, Pedagogical and Content Knowledge (TPACK) and previous empirical studies.

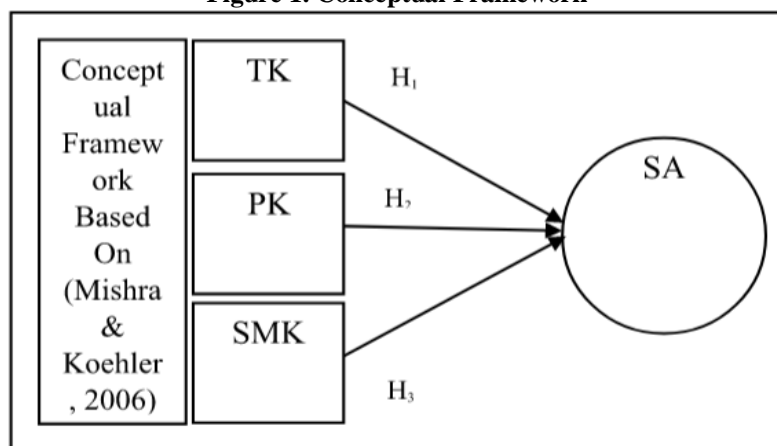
Hypothesis:

H₁: Teachers' technological knowledge has a positive significant impact on student's achievement.

H₂: Teachers' pedagogical knowledge has a positive significant impact on student's achievement.

H₃: Teachers' subject matter knowledge has a positive significant impact on student's achievement.

Figure 1. Conceptual Framework



III. METHODOLOGY

Research Design and instrument

The research was designed in quantitative paradigm and was based on survey questionnaire. The adapted surveys questionnaires of this study are deemed appropriate data collection tools, which are: "Survey of Pre-service Teachers' Knowledge of Teaching and Technology" (Schmidt et al.2009) and Self-assessment instrument for Teacher Evaluation (SITE) (Akram & Zepeda, 2015).The instrument consists of 24 items. The items include 4 subscales that measured the teachers' TK, PK, SMK, and students' achievement (SA). The scales were designed on a five point Likert scale format ranging from Strongly Disagree, Disagree, neither agree or disagree, Agree, and Strongly Agree. The reason for selecting these tools is both the instruments are used in most of the studies in the literature due to the high statistical results.

IV. DATA ANALYSIS AND FINDINGS

The quantitative results originated from a survey questionnaire, including Survey of Pre-service Teachers' Knowledge of Teaching and Technology (Schmidt et al., 2009) and Self-assessment instrument for Teacher Evaluation (SITE) (Akram & Zepeda, 2015). The data were analyzed by using Statistical Package for the Social Sciences (SPSS) version. 22.0, and Smart PLS version 3.2.9. Smart PLS (Ringle, Wende, & Becker, 2015) was used to confirm the validity and reliability of the outer model and to test the hypothesis of the study. The research model of this study was based on Higher-Order Model, containing two layers of constructs. Modeling TPACK and student achievement. Lower order components were technological knowledge (TK), pedagogical knowledge (PK) and subject matter knowledge (SMK) and higher order component was student achievement (SA). The researcher first cleaned data, analyzed missing values and measured demographic features of the participants through SPSS. Secondly, the measurement model and structural model were assessed through Smart PLS-SEM.

Demographic information of the participants

This section of the present study pinpoints the different demographic indicators like gender, age range, experience, academic qualification and professional qualification of the respondents. The study had a purposeful sample of ($n = 385$). All of the participants were given consent letters explaining the survey questionnaire and research purpose. The population sample was both male and female secondary school teachers from Karachi Pakistan. Detail of the demographic profile and analysis is given in the table 1

Table 1. Respondents Profile

Demographic variables (n= 385)		Frequency (f)	Percentage (%)
Gender	Male	211	54.8
	Female	174	45.2
	Total	385	100.0
Age Range	20-30 years	18	4.7
	31-40 years	157	40.8
	41-50 years	189	49.1
	above 50 years	21	5.5
	Total	385	100.0
Experience	1-5 years	21	5.5
	6-10 years	102	26.5
	11-15 years	170	44.2
	above 15 years	92	23.9
	Total	385	100.0
Academic	Graduation	178	46.2
Qualification	Masters	195	50.6
	MS/M.Phil.	9	2.3
	PhD	3	.8
	Total	385	100.0
Professional	B.Ed.	189	49.1
	M.Ed.	196	50.9
Qualification	Total	385	100.0

As table 1 shows that there are both male and female teachers have participated in the research the number of the male teachers was 211 with the percentage of 54.8 and female number was 174 with the percentage of 45.2 from the total ($n=385$). The age was collected in age-brackets of 10 years starting from 20 to 50 years. There were 18 respondents who were between the age range of 20-30 with the percentage of 4.7, 157 were between 30-40 with 40.8%, 189 were between 41-50 with 49.1%, and 21 participants were over 50 years of age with the percentage of 5.5 from the total number of 385. As for as teachers experience is concerned, 170 teachers experience is between 11-15 years with the percentage of 44.2. As can be seen in the table, 92 teachers experience is more than 15 years with the percentage of 23.9, it is the good proportion of the teachers had high experience of teaching at the secondary level. This meant that a large number of the experienced teachers with good skills participated in the study. The levels of academic qualifications of the respondents. As can be seen from the results, the highest proportion (50.6%) of the respondents were those who had a Master educational degree. Among 385 participants 46.2 % were graduate and very few had M.Phil./MS and less had Doctoral educational level. All the teachers were professional qualified and the highest proportion (50.9%) of those who had earned Master of Education degree. This made the study more mature in that most of the respondents were academically and professionally highly qualified.

The Measurement Model

The researcher began the assessment with the measurement model. The researcher selected the Path weighting scheme as PLS algorithm because it is applicable on all path models including a path model with a higher-order model. To affirm adequate construct validity and reliability of the measurement model of the research, content validity, convergent validity and discriminant validity were assessed. The content validity of the present research was valid as factor loadings shown in Table 2 is greater than 0.6, which is acceptable in social sciences research. According to Hair, Risher, Sarstedt and Ringle (2018), Cronbach's alpha is the lower bound whereas the composite reliability (CR) is the upper bound for the internal consistency reliability of the research model. Table 2 also indicates that the values of Cronbach's alpha are above the threshold value (minimum = 0.7) and the values of CR are above 0.7 but below 0.95. Thus where internal consistency is

established there indicator redundancy is not present. Two measures in the current study confirmed that the group of items converged to measure the same concept or construct (Hair et al., 2013). Initially, as indicated in Table 2, all factors loadings were above 0.6, and Table 2 also indicates that the average variance extracted (AVE) was greater than 0.05 (Hair et al., 2018). To authenticate that a set of items can extricate a variable from other variables, three results were analyzed. Firstly, as indicated in Table 3, all items strongly loaded against their respective construct when compared with cross loadings, secondly, as indicated in Table 4, all diagonal bold values of the constructs, which are square roots of their respective AVE values, are greater than the values present in their respective rows and columns (Fornell & Larcker, 1981), and thirdly, as highlighted in Table 5, all the values for Heterotrait-Monotrait (HTMT) ratios are < 0.85 which depicts that the constructs in the current research discriminate from each other (Hair et al., 2018).

Table 2 Convergent Validity

Constructs items	Outer loadings	Cronbach's Alpha	Composite Reliability(CR)	Average Variance Extracted (AVE)
PK1	0.694			
PK3	0.698			
PK5	0.819			
PK6	0.701			
PK7	0.756	0.793	0.854	0.540
SA1	0.744			
SA2	0.744			
SA3	0.811			
SA4	0.794			
SA5	0.859	0.851	0.893	0.627
SMK1	0.811			
SMK2	0.755			
SMK3	0.835			
SMK4	0.795			
SMK5	0.625			
SMK6	0.627	0.840	0.882	0.557
TK1	0.734			
TK2	0.712			
TK3	0.846			
TK4	0.829			
TK5	0.775			
TK6	0.734	0.865	0.899	0.598

Notes: TK= Technological Knowledge, PK=Pedagogical Knowledge, SMK= Subject Matter Knowledge & SA= Student Achievement.

Table 3 Loadings and Cross Loadings

Construct items	PK	SA	SMK	TK
PK1	0.694	0.225	0.229	0.124
PK3	0.698	0.239	0.187	0.057
PK5	0.819	0.391	0.154	0.256
PK6	0.701	0.261	0.192	0.070
PK7	0.756	0.303	0.217	0.146
SA1	0.270	0.744	0.297	0.475
SA2	0.391	0.744	0.206	0.156
SA3	0.266	0.811	0.314	0.201
SA4	0.303	0.794	0.308	0.201
SA5	0.356	0.859	0.334	0.347

SMK1	0.204	0.319	0.811	0.405
SMK2	0.129	0.231	0.755	0.241
SMK3	0.196	0.368	0.835	0.445
SMK4	0.142	0.237	0.795	0.272
SMK5	0.252	0.254	0.625	0.291
SMK6	0.227	0.191	0.627	0.246
TK1	0.185	0.369	0.290	0.734
TK2	0.203	0.229	0.377	0.712
TK3	0.220	0.343	0.394	0.846
TK4	0.082	0.261	0.327	0.829
TK5	0.176	0.242	0.327	0.775
TK6	0.024	0.223	0.337	0.734

Notes: TK= Technological Knowledge, PK=Pedagogical Knowledge, SMK= Subject Matter Knowledge & SA= Student Achievement.

Table 4 Correlation of Discriminant validity (Fornell-Larcker Criterion)

Constructs	PK	SA	SMK	TK
PK	0.735			
SA	0.401	0.792		
SMK	0.257	0.372	0.746	
TK	0.199	0.365	0.444	0.773

Notes: TK= Technological Knowledge, PK=Pedagogical Knowledge, SMK= Subject Matter Knowledge & SA= Student Achievement.

Table 5 Heterotrait-Monotrait Ratio (HTMT)

Constructs	PK	SA	SMK	TK
PK				
SA	0.467			
SMK	0.327	0.421		
TK	0.229	0.400	0.497	

Notes: TK= Technological Knowledge, PK=Pedagogical Knowledge, SMK= Subject Matter Knowledge & SA= Student Achievement.

The Structural Model

After confirming the results of measurement model, suggested hypotheses of the study were tested through Partial Least Squares- Structural Equation Modeling (PLS-SEM) in Smart PLS 3.2.9. The PLS-SEM method offers appropriate estimations over other covariance-based methods (Hair et al., 2013). Table 6 directs that all the three hypothesis (H₁: PK -> SA, H₂: SMK -> SA, H₃: TK -> SA) have been accepted. Therefore, the outcomes of the current research support all three hypotheses as shown in table 6.

Predictive Relevance of the Model

The different domain's predictive relevance in the structural model was analyzed through R square (Hair et al., 2013) and (Q-square) (Geisser, 1974). Table 7 specifies that 27 percent (R-Square = 0.27) of student achievement is explained by the three constructs, namely, TK, PK and SMK which is larger than the threshold value (R-square = 0.10) recommended by Falk and Miller (1992). Besides, during the blindfolding method in Smart PLS, the value of Q-square was 0.157 which is > 0 (Geisser, 1974) hence, it reveals that the predictive relevance, though small (Hair et al., 2018), of the PLS-path model was established.

Table 6. Hypothesis Testing and Results

Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Decision
H ₁ :PK -> SA	0.307	0.316	0.060	5.160	0.000	Supported
H ₂ :SMK -> SA	0.197	0.198	0.091	2.161	0.031	Supported
H ₃ :TK -> SA	0.217	0.213	0.074	2.916	0.004	Supported

Notes: TK= Technological Knowledge, PK=Pedagogical Knowledge, SMK= Subject Matter Knowledge & SA= Student Achievement.

The above table shows that all three basic components of TPACK (TK, PK and SMK) has a positive significant effect on student achievement.

Table 7 R Square

Constructs	R Square	Q Square
SA	0.275	0.157

Student achievement (SA)

V. FINDINGS

The analysis of the data uncovered that teachers' Professional capabilities and Technology Integration has a positive substantial effect on Students' Achievement. Also, by and large teachers had a high impression of their comprehension of their expert capabilities and utilization of technology in their teaching practices. Teachers in this research had high scores on all the develops of the study showing that they were able to perform, comprehend or know the greater part of the activities demonstrated in the components of the survey on a five-point Likert scale. This study also sought that teachers professional competencies in the different areas of professional knowledge i.e. technological knowledge, pedagogical knowledge and subject matter knowledge has a significant positive impact on students achievement as all the hypothesis of the current study were accepted.

The findings of this research study are consistent with the several past studies which had been done in the various context of the world. (Mishra and Koehler, 2006), Koehler and Mishra (2009), (Schmidt et al., 2009). (Carpenter, et al., 2016), Bruce & Chiu, 2015; Graham et al., 2009; Harris & Hofer, 2017), Kirikcilar and Yildiz (2018), Patria (2019) these all studies revealed that TPACK has a high impact teaching and students achievement. As the literature shows of this study, so many research studies had been done on teachers TPACK and its impact on their students achievement in various context around the world at all levels of education to assess the impact of TPACK on teacher's teaching/ learning. However, the impact of Teacher Technological Pedagogical and Content Knowledge on student achievement had not been explored in the context of Karachi Pakistan, so the current study has made an important contribution by filling this gap in the literature

VI. CONCLUSIONS

The study determined that teachers are well equipped and had a sufficient knowledge of the three fundamental constructs of TPACK. Results of the study also showed that there were positive significant impact of teachers' professional competencies and technology integration on students' achievement. It can be concluded and explored that the integration of technology, pedagogical and content knowledge in teaching learning has a significant results. It confirms the past studies results that TPACK improvement should have an all-inclusive, merged and assimilated nature rather than just considering each of the basic constructs in separately (Harris et al., 2009; Koehler & Mishra, 2005). This has been also noted by (Horzum, 2013; Pamuk et al., 2013).

VII. RECOMMENDATIONS

All the teachers of all levels should incorporate TPACK in their practices since it has the potential for concentrating on increasingly compelling teaching with technology and gives a system to teachers to ponder what perspectives they may require help with. The advancement of teachers' TPACK ought to be through an incorporated methodology where technology, teaching method and subject matter knowledge are dealt with together as opposed to in seclusion with accentuation on the crossing builds too. Teachers' professional development programs should thoroughly pursue the mixing of technology in the teachings, since most teachers felt that their capacity building programs did not set them up well for teaching with technology. Teachers also have to enhance their professional and digital resources knowledge with self-development efforts and must blend technology into their teaching to accomplish the requirements of the "digital natives" of 21st century.

VIII. SUGGESTIONS FOR FUTURE RESEARCH

There is by all accounts a conviction that TPACK is a teachers' professional knowledge framework that teachers possess and no any research found on the teachers' TPACK and its impact on students' achievement in the Pakistani setting, so the researcher of the present study tried to fill this research gap as the findings of the research revealed, all three TPACK constructs have positive significant impact on students' achievement. But there is need to be conducted an in-depth research because only quantitative research or assessing only perceptions of teachers are not enough to explore and investigate the phenomenon of substandard quality of education and ultimately caused students' low performance academically. So this is an area that should be researched deeply. Because teachers are well qualified and professionally trained as well as they also have been blending technology in their teaching but in the public sector schools quality of education is still inadequate, because the students' academic performance is not satisfactory. So this is another area to be researched deeply, if teachers are well equipped with knowledge of teaching and technology and transform skillfully than what is the major issue of substandard quality of education? So researchers must explore this phenomenon of substandard quality of education. Subsequently, improving student learning is the eventual goal of teaching. Further research is also required to conclude other appropriate issues that affect teachers' TPACK in preparation i.e. classroom learning environment and lack of digital resources as well as the way in which the contributing components or constructs affect TPACK and how this varies in practice. It is therefore appropriate that future researchers on stipulate the context must be focused on mixed methods designs so that researchers may be able to explore the phenomenon of low quality education sufficiently.

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