

Development and Validation of Head Teachers' Effectiveness Questionnaire

Muhammad Akram¹ & Muhammad Irfan Malik²

Abstract

The study focused on developing and validating a Head Teachers' Effectiveness Questionnaire (HTEQ) based on quality indicators. Head teachers' effectiveness is defined as the expected level of performance of head teacher on standards and it is considered a process of measuring effective qualities or performance standards required by the educational authorities demonstrated by the head teachers in schools. The researchers surveyed 1026 Secondary School Teachers in district Sahiwal by using a multistage sampling technique who perceived the level of effectiveness of their head teachers on the items of HTEQ. The overall reliability of the HTEQ was found to be high ($\alpha=0.88$) while reliabilities of the five actors ranged between 0.77 to 0.85. The correlations among factors were found significantly moderate ranged from .35 to .59. Further, exploratory factor analysis discovered high internal validity of HTEQ with five factors. Confirmatory factor analysis also revealed that HTEQ provided a good fit model with significant value of χ^2 , and values of RMSEA, CFI, and GFI also presented a good fit model. The findings of the model evidenced that the HTEQ is a valid, reliable, and useful questionnaire for measuring head teacher effectiveness. In the end, recommendations have also been suggested in the present study.

Key word: *Head teacher effectiveness; instructional leadership; teacher evaluation; school climate; communication and community relations*

¹ Associate Professor; Institute of Education and Research, University of the Punjab, Lahore, Pakistan; akram.ier@pu.edu.pk

² University of Education, Lahore (Okara Campus), malikirfan164@yahoo.com

Introduction

The significance of the role of the school principal, also known as head teacher, can never be falsified as they perform various leadership functions that lead to increase school performance (Karatas, 2016). The head teacher manages the teaching and learning process to raise high quality instruction (Ch., Ahmad, & Batool, 2018; Fullan, 2010), creates learning a culture conducive to student learning (Akram, Kiran, & Ilgan, 2017; Robinson, Lloyd, & Rowe, 2008), focuses on implementing curriculum successfully with utilizing maximum resources (Khan, Saeed, & Fatima, 2009) to maximize student achievement (Day & Sammons, 2013; Zheng, Chen, & Loeb, 2017). Since the effective head teacher is the most influential leader who focuses on school improvement, it becomes imperative to understand the qualities of effective head teachers that can be equally accepted globally. Various researchers have operationally defined this construct which leads to the idea that it is a very complex construct to measure depending upon the various contextual factors that play a significant role in each culture and society. Head teacher effectiveness can be defined as the expected or intended effect of the head teacher's work (Clifford, Behrstock-Sherrat, & Fetters, 2012). Various studies found that the qualities of effective head teachers are linked with various indicators of school success including student achievement (Grissom & Loeb, 2011; Jones, Gilman, & Kimball, 2018).

A plethora of research has been conducted in various countries of the world who used quality indicators to identify effective head teachers (Catano & Stronge, 2006; Day & Sammons, 2013; Grissom & Loeb, 2011; Karatas, 2016; McCullough, Lipscomb, Chiang, & Gill, 2016; Ontai-Machado, 2016; Robinson et al., 2008). Some of the Principal Effectiveness Models based on the quality performance standards have been found in the literature such as Colorado Department of Education Model (2014), Pennsylvania State approved Teacher and Principal Effectiveness (2015), Principal Effectiveness Model of Player (2018), Wisconsin Framework of Head Teacher Leadership (2018), and Stronge, Richard, & Catano Model (2008). All the models provided a framework to evaluate head teachers on quality indicators and link with and student achievement (Jones et al., 2018).

Historically, head teachers have been evaluated on their performance on quality indicators around the globe especially from the UK, USA, Canada, China, and Turkey (Bouchamma, 2012; Day & Sammons, 2013; Karatas, 2016; Shelton, 2013; Zheng et al., 2017) and same in the Pakistan. However, in Pakistan, head teachers are perhaps not evaluated on those indicators which have been identified and proven as quality indicators in various countries of the world. Head teachers' evaluation in Pakistan is based on the Performance Evaluation Report (PER) which is perhaps problematic measure in terms of validity and reliability. The PER involves some characteristics of head teacher only that

are not required for their effectiveness. On the basis of PER, authorities make decisions about the promotion of the employees rather than measuring the effectiveness of head teachers which might be problematic. To deal this issue, the researchers have used quality indicators to measure head teacher effectiveness. It will be another lens to identify the effective head teachers in Pakistan.

The researchers reviewed various valuable head teacher evaluation models based on the quality performance standards that are essential for school outcomes. The researchers revealed that Stronge et al. (2008) model is most suitable to measure the effectiveness of head teacher and develop a valid tool in Pakistan context. In this model, Stronge and his co-authors provided essential qualities or performance standards of head teacher such as instructional leadership, and organizational management. A valid and reliable tool, however, was required due to many reasons. Various studies conducted on measuring head teacher effectiveness failed to use quality standards for measuring effectiveness of head teacher. However, there are some studies that used quality indicators and developed the questionnaires such as instructional leadership (Akram et al., 2017; Ali, 2017; Ch et al., 2018), school climate (Akram, Shah, & Rauf, 2018; Ali & Siddiqui, 2016; Anwar & Anis-ul- Haq, 2014), teacher evaluation (Akram, 2018, 2019; Akram & Zepeda, 2015; Aziz, 2010; Siddiqui, 2010), and organizational management (Khan et al., 2009; Shah, 2016) to measure that quality performance standards separately. Mostly, these studies did cover effective practices on each standard partially and comparison was made to identify the effective head teachers among gender or school location based only. There was dire need to develop the instrument by taking and combining performance standards based on Stronge (2008) and his colleagues work that have not been tested before in Pakistan. This study used Stronge model to develop HTEQ and filled the gap.

Theoretical Framework

Effectiveness is considered to be an ability to produce the required results or capacity to produce output. When something is deemed effective, it means it has an expected or intended outcomes, or produced a deep and vivid impression (Clifford et al., 2012). The study is theorized on the following approaches that might lead us towards an effective approach to evaluate the effectiveness of head teacher. *First*, the goal-oriented approach has been used to assess the effectiveness based on whether the goals or targets are achieved by the school (Schermerhorn, Hunt, & Osborn, 2004). *Second*, an accurate and meaningful feedback improves the head teacher effectiveness which leads to more sustained and effective results (Stronge et al., 2013). Further, various studies found that teachers are in better position to evaluate head teachers on quality indicators of head teachers (McCullough et al., 2016; Karatas, 2016; Salem, 2016). Various studies show

teachers' perceptions are a valid measure of head teacher effectiveness (Grissom & Loeb, 2011; Ontai-Machado, 2016; Zheng et al., 2017). Based on the previous findings, the researchers framed the study that head teacher effectiveness can be measured by employing above mentioned quality performance standards through perceptions of teachers who are keen observer of the leadership practices of their head teachers and are capable of evaluating their performance on quality indicators.

Measuring Head Teacher Effectiveness

Through providing Instructional leadership, head teachers build a vision, involve other staff member through shared leadership, lead learning community (Brown, 2016; Fullan, 2010), use the data to make instructional decision, monitor curriculum and instruction, and provide resources to improve student performance (Akram et al., 2017; Akram et al., 2018; Ch. et al., 2018). By using the instructional leadership, leaders take responsibility to improve learning and instruction of their institutions that reflect in student achievement (Fullan, 2010). Without providing the instructional leadership that is most essential for head teacher effectiveness, the goals of the school including school outcomes and student achievements cannot be achieved (Ali, 2017; Brown, 2016; Khan et al., 2020).

School climate is defined as an environment of interaction among the teachers where they have ample space to perform better under the leadership practice of an effective head teacher (Duff, 2013; Nichols, 2019; Rapti, 2013). Head teacher makes school climate positive through fostering and maintaining school climate, dealing with dynamics, giving respect with great expectations, and involving all stakeholders (Akram et al., 2018; Anwar & Anis-ul-Haq, 2014; Kor & Opare, 2017; Stronge et al., 2008). If head teachers do not focus on school climate, they cannot run the institutions effectively and further, the goals of the school cannot be achieved and learning of the student and school performance cannot be maximized (Ali & Siddiqui, 2016; Dulay & Karadag, 2017; Maxwell et al., 2017; Ozgenel, 2020).

Teacher evaluation is a formal process of evaluating teacher performance in teacher quality indicators and findings are used to provide feedback to teachers that maximize their performance and professional development (Akram, 2018; Akram & Zepeda, 2015; Aziz, 2010; Darling-Hammond, 2015). Moreover, it is a process to assess the teachers' performance (Akram, 2018), and head teacher is required to understand the purpose, effective practices, documentation, and guidelines of teacher evaluation (Bichi, 2017; Ladd, 2016). Further, if head teachers do not evaluate their teachers through performance standards, they neither can provide feedback to improve their instruction, nor hold accountable their teachers for their performance (Akram, 2019; Darling-Hammond, 2015; Mathus, 2017).

Organizational management is about to run the institutions effectively, use the data for improvement, provision of fiscal resources and use of technology, and head teacher is required to implement these elements effectively (Khan et al., 2009; Paturusi, 2017). Effective organizational management is essential to improve the quality education (Jacobson, 2011). If head teachers are less involved, they cannot run their daily operations effectively and cannot enhance student performance and school outcomes (Olaleye, 2013; Sebastian et al., 2019).

Communication is about to exchange of information and transmission of meanings (Keyton, 2011), and through involving parents and community, head teacher establishes *relationship with community* (Watson, 2019). Head teacher has to communicate (Leithwood & Riehl, 2003) and build good relations with community to achieve the desired objectives (Waswa, 2017). Head teachers are central aspects who have targets for school success and effective communicating vision, process, and structure, and establish good relations with community (Wahed & El Sayed, 2012; Watson, 2019).

Further, the researchers reviewed different studies to see the similarities and differences with other instruments that developed and used to measure head teacher effectiveness in the world. Kasim (1995) developed instrument involving seven dimensions of performance standards: leadership, learning climate, relationship of teacher and staff, student relationship, school-community relations, and instructional supervision and development to measure the head teacher effectiveness. Catano and Stronge (2006) examined the congruence between head teacher evaluation tool and quality performance standards in the United States. The finding of the study revealed that authorities are focused on qualities or performance standards such as instructional leadership, community relations, and management of the organization to develop valid and reliable head teacher evaluation instrument to measure their effectiveness.

Robinson et al. (2008) used tool involving five effective practices or standards of head teachers such as developing goals and expectations, planning, resourcing, promoting and participating in teachers' professional development, coordination and evaluating instruction and curriculum, and ensuring supportive and orderly environment. Goldring et al. (2009) examined previous studies of effective leadership practices by focusing on different instruments, used to evaluate the leadership practices. Effective leadership practices: management, external environment, and personal traits were used to evaluate the head teachers with less concerned of curriculum and quality instruction in the past. The study revealed that to measure the effectiveness of head teachers, these practices do not provide true information, and instruments were also not valid and reliable. Grissom and Loeb (2011) developed instrument involving similar quality indicators to identify the effective head teacher in their study.

Clifford et al. (2012) developed instrument involving performance standards to measure the head teacher effectiveness such creating and sustaining the school mission, engaging deeply with data and teachers to examine the student performance and instructional quality, managing the resources efficiently, creating safe learning environment for staff and learners, developing good relationships with community, and professionalism. Salfi et al. (2014) also developed a tool involving qualities of effective leadership: knowledge about leadership, managerial skills, professional development, model personality, role modeling, communication skills, effective use of time, attitude towards profession, and high level of knowledge and understanding. Niqab et al. (2015) found effective leadership qualities as commitment, comfort, empathy, time management, influence, communication, self-management, and decision making.

Karatas (2016) used instrument by taking professional standards of head teachers: knowledge base, effective communication, organizational management, change leadership, technology leadership, educational leadership, and school environment. McCullough et al. (2016) developed a valid and reliable tool to evaluate the head teachers' effectiveness based on performance standards such as system leadership, strategic and cultural leadership, professional and community leadership, and instructional leadership. Ontai-Machado (2016) developed questionnaire with similar indicators as selected for this study by the researchers. Salem (2016) provided four dimensions of quality indicators in the instrument: developing and communicating vision, mission and goals, developing organizational structures, understanding and developing the staff, and focusing on the instructional program. Zheng et al. (2017) used instrument by taking five effective head teachers' practices such as organization of instruction, direct participation and visibility, planning and personnel, internal environment, and external relations. The reviewed literature evidenced that quality indicators of head teacher performance are required as they are vital for measuring their effectiveness.

Sample

This study used multistage sampling technique. At the first stage, one out of three districts of Sahiwal Division (Okara, Sahiwal, and Pakpattan), was randomly selected. At the second stage, using the cluster random sampling technique, all 1026 teachers in district Sahiwal were selected as the sample of the study. In overall, 570 (56%) teachers were male and 456 (44%) were females while 808 (79%) teachers were from rural high schools and 218 (21%) belonged to urban high schools. Table 1 shows the summary information of the sample.

Table 1*Demographic Characteristics of Respondents*

Respondents		N	Percentage
Gender	Male	570	56%
	Female	456	44%
	All	1026	100%
Location	Rural	808	79%
	Urban	218	21%
	All	1026	100%

Method

The study followed a standard process of instrument development that included reviewing the related literature, item development, ensuring measuring content validity, and calculating reliabilities of the factors and the overall construct. Further, it involved the Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) for determining the construct validity of Head Teacher Effectiveness Questionnaire (HTEQ) items.

Instrument Development

The model of Stronge et al. (2008) was followed for instrument development. Three steps have been suggested for the scale development process that includes operationalization of the construct, item development, and ensuring the content validity (Daigneault & Jacob, 2014; Sousa & Rojjanasrirat, 2011). By following above mentioned criteria, the researchers, initially, operationally defined the head teacher effectiveness construct with all five factors.

Further, 83 items were developed that demonstrated five factors of the Head Teacher Effectiveness Questionnaire (HTEQ). The scales of the HTEQ were consisted of Ineffective (1), Less Effective (2), Moderately Effective (3), Effective (4), and Very Effective (5). Kasim, 1995). The assumption behind these scales was that teachers would rate their head teachers *very effective* if they perceived that their head teachers demonstrated great performance on certain practices or they would rate them *ineffective* if they perceived their heads did not perform on quality standard. The overall reliability

of the HTEQ was quite high ($\alpha=.88$). The language of the items was very simple so help teachers understand them easily.

Lastly, the content validity of the HTEQ was confirmed by the researchers through experts' and practitioners' panels who had experience of test development and teaching. The expert panel focused on the useless items, domain relevancy of the items, and grammar mistakes. The second panel consisted of 50 secondary school teachers (SSTs) who taught 10th class during academic year (2017-2018). The practitioners' panel was asked to determine if the items were understandable and clear to them. Both panels provided precious feedback about the content validity of the HTEQ. In the light of feedback, the HTEQ was increased to 83 items. The data collected from 50 SSTs for pilot testing evidenced of high reliability ($\alpha=0.85$).

Table 2
Head Teacher Effectiveness Questionnaire (HTEQ)

I: Instructional Leadership

My Head teacher

1. Develops clear goals for the school.
2. Is confident to complete established goals.
3. Protects classroom instructional time from outside interruptions.
4. Focuses on school improvement.
5. Communicates the most important goal such as learning of the students to the staff effectively
6. Works to attain goals through collective efforts.
7. Uses expertise of teacher leaders in the school.
8. Creates opportunities for collaboration among teachers.
9. Distributes leadership roles and responsibilities to other staff members.
10. Makes students learn.
11. Promotes a learning community among all stakeholders (teachers, parents, students etc.).
12. Learns along with teachers for professional development.
13. Provides opportunities for staff development that focuses on improving teaching and learning.
14. Uses teacher experts to improve teaching and learning.
15. Gathers different types of data about school for school improvement.
16. Uses data to determine school effectiveness.
17. Motives teachers to use data to make instructional decisions.

18. Knows good instructional practices of teaching.
19. Makes sure curriculum standards are taught through monitoring of instruction.
20. Models behaviors that are expected of staff.
21. Discusses effective teaching practices with staff members.
22. Visits classrooms frequently to monitor teaching and learning.

II. School Climate

23. Involves all stakeholders in the school decisions for school improvements.
24. Creates a positive learning environment.
25. Models high expectations of staff.
26. Models high expectations of students.
27. Maintains a respectful relationship with staff members.
28. Maintains a respectful relationship with students.
29. Maintains a respectful relationship with parents.
30. Manages conflicts and crises effectively.
31. Establishes a climate of trust within the school.
32. Demonstrates honesty and credibility in every matter of school.
33. Monitors internal factors that can affect school.
34. Monitors external factor that can affect school.
35. Demonstrates caring, support, and respect for students.
36. Provides direction to staff members.
37. Provides direction to students.
38. Influences stakeholders' decisions.
39. Demonstrates concern for teachers' personal needs.
40. Establishes crises management plans actively.
41. Keeps parents and community informed of safety issues.
42. Shares with parents and community, how incidents are handled.
43. Distributes tasks within the staff members of school.
44. Develops multiple leaders through shared decision making to make school effective.
45. Empowers staff to make shared decisions for school improvement.
46. Reviews school programs through collaboration regularly.

III. Teacher Evaluation

47. Focuses on both improvement and accountability in evaluating teachers.
48. Communicates with teachers during the evaluation process.
49. Informs teachers about elements related to the evaluation process.
50. Follows to evaluation timeline.

51. Participates in programs designed to strengthen evaluation skills.
52. Conducts formal and informal conferences with teachers about teacher evaluation.
53. Makes documentation of teacher performance through teacher evaluation.
54. Uses multiple data sources to evaluate teachers.
55. Conducts formal classroom observation through lesson presentations of teachers.
56. Conducts informal classroom observations through class visits.
57. Considers student performance when evaluating teachers.
58. Provides feedback to teachers after observations.
59. Informs teachers of evaluation criteria before completing Performance Evaluation Report.
60. Follows official procedural process while evaluating teachers.
61. Evaluates teachers objectively.
62. Documents patterns and effects of observed behaviors.
63. Provides clear descriptions of deficiencies if they exist while evaluating teacher performance.
64. Provides clear remediable actions to the teachers in case of deficiencies.

IV. Organizational Management

65. Provides procedures and routines to create an orderly environment.
66. Provides clear rules and routines for staff.
67. Provides clear rules and routines for students.
68. Ensures a trained crises team is available.
69. Manages routine matters of school effectively.
70. Develops schedules for meeting official requirements.
71. Maintains school budgets appropriately.
72. Develops a budget for each financial year.
73. Plans and prioritizes expenses.
74. Creates procedures for compensation when required.
75. Follows district policy for selling and purchasing.
76. Provides opportunity to use technology (computer).
77. Provides technology resources for use in instruction.
78. Uses technology (computer) effectively for administrative tasks.

V. Communication and Community Relations

79. Listens to stakeholders' suggestions through meetings.
 80. Uses suggestions of stakeholders appropriately.
 81. Gathers input from parents and community for decision making through meetings.
 82. Increases parent involvement through involving in decision making.
 83. Makes connections with community members for school betterment.
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Data Collection

Data collection started after collecting list of SSTs from the office of District Education Officer (DEO) Sahiwal. One of the researchers visited personally to all public high schools in district Sahiwal, met the head teachers, obtained permission from them to distribute the HTEQ among their SSTs in the school. After that, consents were taken from each teacher. Then, the HTEQ were distributed among each teacher. In overall, the researcher visited 1026 SSTs, 570 were male and 456 were female teachers. Data were kept secured and confidential and no information was shared with anyone inside or outside of the schools.

Data Analysis

Table 3

Factor-wise Reliabilities

Factors	# of Items	M	SD	Alpha(α)
Instructional Leadership	22	3.802	0.652	.85
School Climate	24	3.883	0.636	.80
Teacher Evaluation	18	3.622	0.742	.78
Organizational Management	14	3.912	0.674	.80
Communication and community Relations	05	3.762	0.862	.77
Overall Reliability	83	3.796	0.634	.88

Table 3 shows that the factor *instructional leadership* showed highest reliability value (.85), with M=3.80, and SD=.652, followed by school climate (.80), with M=3.88, and SD=.636 and organizational management (.80), with M=3.91, and SD=.674. The factor *communication and community relations* showed least level of reliability (.77), with M=3.76, and SD=.862, even though it's very good value to be accepted. The detailed results are given in Table 3.

Table 4

Interrelationship of the Factors

Factors	1	2	3	4	5
Instructional Leadership					

School Climate	.59**			
Teacher Evaluation		.41**	.49**	
Organizational Management		.43**	.46**	.42**
Communication and Community Relations	.35**	.40**	.47**	.51**

**p<0.05 (2-tailed), *p<0.01(2-tailed)

Pearson r was calculated to measure the relationship between the factor. Table 4 shows that instructional leadership demonstrated the moderate positive correlation with school climate (r=.59), followed by organizational management (r=.43). School climate showed the moderate positive correlation with teacher evaluation (r=.49), followed by organizational management (r=.46). Teacher evaluation showed the moderate positive correlation with communication and community relations (r=.47), while the organizational management showed the highest correlation with communication and community relations (r=.51). In overall, moderate positive relationships were found between the factors.

Exploratory Factor Analysis (EFA)

Exploratory Factor Analysis begins with the Scree plot analysis. A Scree plot suggests that eigenvalue greater than 1 is associated with a factor in descending order against the number of factors and it is acceptable for factor analysis. Stevens (2002) stated that scree plot is a reliable criterion for factor selection. Retaining all factors with eigenvalue greater than 1 has been usually recommended (Kaiser, 1960). According to Figure 1, the eigenvalue of five factors accounted for variance more than 1 that showed that the construct of head teacher effectiveness includes 5 factors. The Scree plot has been presented in figure 1.

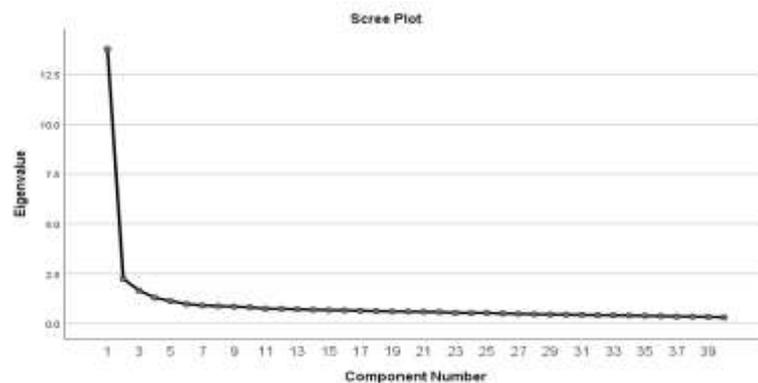


Figure 1: Scree Plot

After getting scree plot figure, exploratory factor analysis is a suitable approach used for construct validity. Initially, Bartlett's test of sphericity was computed to determine the fit of index through pair-wise combinations of items which found goodness of fit as $\chi=17237.674$, $df=780$, $p=.000$, and a $KMO=0.97$ that is acceptable level in social sciences. The KMO statistics varies between 0 and 1, and further categorized that KMO values between 0.5 and 0.7 are moderate, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great, and values above 0.9 are superb (Field, 2009).

Using a Varimax rotation method for factor extraction, a principal component analysis was run that uses eigenvalue greater than 1 for the proportion of variance accounted for by the factors of construct. The analysis revealed that five factors explained 50.18% variance in head teacher effectiveness which is considered good. Teacher evaluation 34.40 % with an eigenvalue of 13.67 and factor loading range between .48 and .69, instructional leadership 5.61 % with an eigenvalue of 2.24 and factor loading range between .43 and .65, school climate 4.14% with an eigenvalue and factor loading range .46 and .67, organizational management 3.23% with an eigenvalue 1.29 and factor loading range between .41 and .69, and communication and community relations 2.81% with an eigenvalue 1.12 and factor loading between .62 and .70 explained variances in head teacher effectiveness.

Table 5

Eigenvalue, % of variance, and Cumulative Value for Each Factor

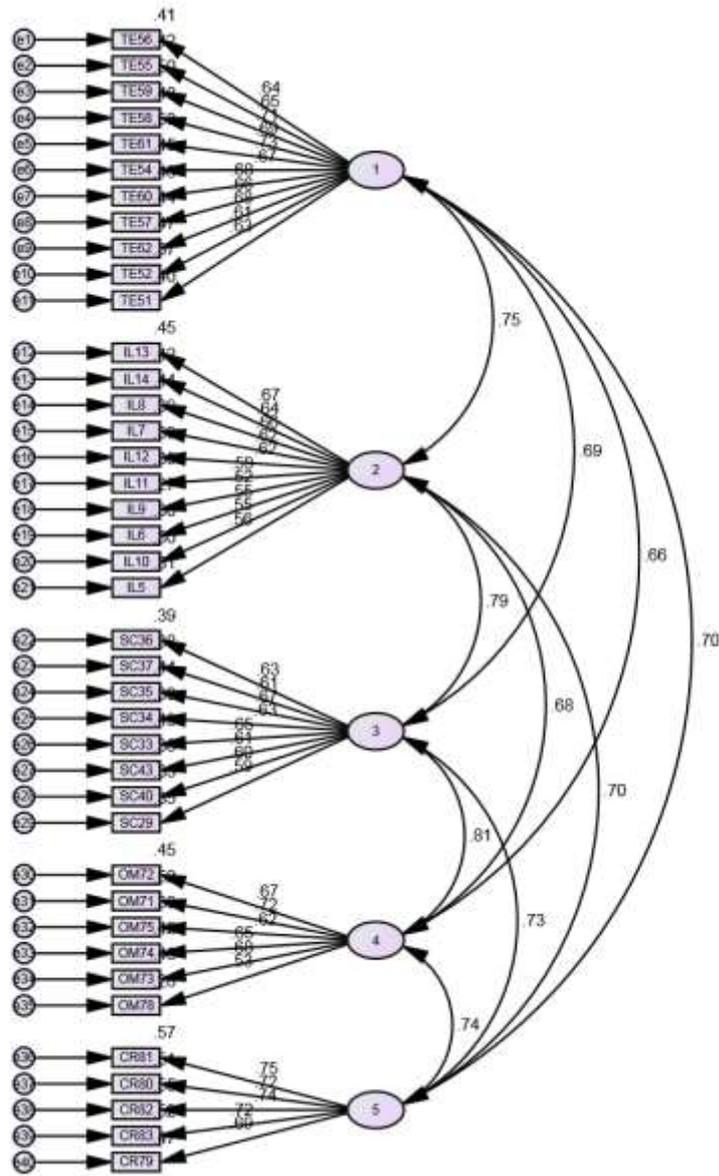
Factors	Name	Eigenvalue	% of Variance	Cumulative
Factor1	Teacher Evaluation	13.672	34.40	34.40
Factor 2	Instructional Leadership	02.243	05.61	40.0
Factor 3	School Climate	01.655	04.14	44
Factor 4	Organizational Management	01.291	03.23	47.38
Factor 5	Communication and Community Relations	01.122	02.81	50.18

Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) was performed by using LISREL program. Path diagrams determine the relations between items and factors, in this study, there were five factors of HTEQ (Akram et al., 2017). The factor loading in structural equation models provide a measure of strength of relationships between items and

factors (Edwards, Wirth, Houts, & Xi, 2012). All the factors loading were statistically significant, positive, and different from zero. The acceptable error variance range is between 0.30 and 0.78 while in this study it ranged from 0.41 to 0.70.

Further, the best model fit was demonstrated on 40 items. By using of analysis of a moment structures (Amos), Chi-square index reported good fit with $\chi^2=1972.67, df=730, p=0.000$. While one of the models fit indices was $\chi^2/df=2.70$ (between 1 and 3) which is the excellent level and χ^2 value responded to the sample as well (West, Taylor, & Wu, 2012). The other fit indices were examined and found that root mean square error of approximation (RMSEA) =.041 (less than .06) was excellent level fit (Marsh, Hau, & Wen, 2004), root mean square residual (RMR) =.039 (less than .08) was also excellent level fit (McDonald & Ho, 2002), goodness of fit index (GFI) =.91 and adjusted goodness of fit index (AGFI)=.90 indicated a good fit because it requires a number greater than .90 for GFI and AGFI indices (West et al., 2012), the normed fit index (NFI)=.89 , and the comparative fit index (CFI)=.93 that were also excellent fit for the model. It has been concluded on the basis of model fit summary results that these all values were the indicators of excellent fit model that provided valid evidence of the construct (Hu & Bentler, 1995). The details of standardized factor loading and correlations can be seen in path diagram (see Figure 2) and further, the details of fit indices related to model were provided in Table 6.



Chi-Square=1972.667, df=730, p-value=0.000, RMSEA=.041, GFI=.91

Figure 2: Confirmatory Factor Analysis, Standardized Factor Loading and Correlation, 1=Teacher Evaluation, 2= Instructional Leadership, 3= School Climate, 4= Organizational Management, 5= Communication and Community Relations

Table 6*Fit Indices of Head Teacher Effectiveness Questionnaire*

Fit Indices	Values
X ²	1972.667
Df	730
X ² /df	2.702
p-value	.000
Root Mean Square Error of Approximation (RMSEA)	.041
Normed Fit Index (NFI)	.887
Root Mean Square Residual (RMR)	.039
Goodness of Fit Index (GFI)	.908
Adjusted Goodness Fit Index (AGFI)	.897
Comparative Fit Index (CFI)	.926

At second stage, the relationship between head teacher effectiveness scores on HTEQ and student achievement scores was measured. The student achievement score was taken as school's overall results in the Sahiwal Board's results Annual 2018 Examination. Head teacher effectiveness scores on HTEQ significantly moderately positively correlated with student achievement (r ranged from .45 to .58). The significant positive correlation provided evidence about criterion-related validity. The detail of the relationships has been given in the Table 7.

Table 7*Relationship between Head Teacher Effectiveness Components and Student Achievement*

Factors	Student Achievement
Instructional Leadership	.58*
School Climate	.47*
Teacher Evaluation	.50*
Organizational Management	.45*
Communication & Community Relations	.51*
Overall	.53*

Result and Discussion

This scale development study involved five factors of Head Teacher Effectiveness Questionnaire. Exploratory factor analysis (EFA) was performed to get an

initial model of the instrument and found five components of the questionnaire explained 50.18% of the variance in head teacher effectiveness with their factor loading ranging from .41 to .70 that is considered as appropriate and satisfactory in social sciences. The confirmatory factor analysis (CFA) was performed and found that Chi-square value demonstrated overall model fit was highly acceptable; the Root Mean Square Residual (RMSR), the Goodness of Fit Index (GFI), comparative fit index (CFI), and the Root-Mean-Square Error Approximation (RMSEA) provided highly acceptable values. Further, the correlation coefficients were calculated between the five factors that significantly moderately correlated with each other ranged from .35 to .59. The five factors of HTEQ also exhibited high level of overall reliability ($\alpha=.88$) with factor-wise reliability range from .77 to .85. The finding of the present study are also consistent with various previous research that teachers rating of head teachers are reliable, and they correlated with student achievement (Clifford et al., 2012; Herrera, 2010; Grissom & Loeb, 2011; Ontai-Machado, 2016).

Different instruments have been previously developed to evaluate head teacher effectiveness. Goldring et al. (2009) developed a tool involving effective leadership practices: management, external environment, and personal traits to measure the head teacher effectiveness. McCullough et al. (2016) developed valid tool based on effective practices of head teacher: instructional leadership, strategic and cultural leadership, professional and the community leadership, and system leadership to measure head teacher effectiveness. Grissom and Loeb (2011) developed instrument involving same quality indicators. Kasim (1995) developed instrument by taking seven dimensions of quality performance standard such as leadership, learning climate, relationship of teacher and staff, student relationship, school-community relations, and instructional supervision and development.

Salfi et al. (2014) used instrument involving qualities or skills of effective leadership such as knowledge about leadership, managerial skills, professional development, model personality, role modeling, communication skills, effective use of time, attitude towards profession, high level of knowledge and understanding, and personal qualities. Karatas (2016) used instrument based on professional performance standards to measure head teacher effectiveness such as knowledge base, effective communication, organizational management, change leadership, technology leadership, educational leadership, and school environment. Niqab et al. (2015) used instrument based on effective qualities such as commitment, comfort, empathy, time management, influence, communication, self-management, and decision making. Salem (2016) also developed tool to measure head teacher effectiveness involving effective practices or qualities such as developing and communicating the vision, mission and goals, developing organizational structures, understanding and developing the staff, and

focusing on the instructional program. Previous studies provided evidence that instruments involving quality performance standards of head teacher are valid. Similarly, the present study also developed valid and reliable tool based on quality performance standards. Based on the results of Cronbach alpha, relationships between the factors, Scree plot, exploratory and confirmatory factor analysis, and findings of various researches that discussed above, the researchers suggest that HTEQ is valid and reliable that might be used to measure the effectiveness of head teachers through teachers' perceptions.

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