A Correlational Study of Teachers' Conceptions of Learning and Students' Academic Achievement at Secondary Level

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The study is designed to explore teachers' conceptions of learning and their impact on students' academic achievement at secondary level. Conceptions of learning scale was used to collect data from 298 public high school teachers working in the districts of Lahore division. Students' achievement scores in the subject of English announced by BISE were used as a data of students' achievement. Data is analyzed using descriptive and inferential statistics through SPSS and AMOS. Teachers' strong agreement towards all conceptions of learning was observed. The study found significant impact of teachers' conceptions on students' achievement. Moderate level of correlation was revealed among all conceptions of learning. Results of the study have implications for educational policy makers and teacher development programs.

Introduction

Knowledge regarding students' learning outcomes of a nation is important as it reflects the worth of learning expected by students in a society. The educational systems are evaluated on the basis of students' cognitive, behavioral or attitudinal development whereas economists have also described the quality of human resources in the form of assessment scores since these were found to be linked with increased individual earnings. Therefore, it has allowed policy makers to shift their attention from institutional inputs to the quality of outputs measured in terms of student learning outcomes (The World Bank Group, 2013).

Developing countries are host to majority of children in the world. Since 1960s, the third world countries have shown drastic increase in the enrollment of students which is still below the pre-set target. The dropout rate is still high in these countries and the impact of learning is not significant for majority of the school going children. The reason would be to focus learning rather than enrollment (Glewwe & Kremer, 2006). Therefore,researchers are concentrating to identify the factors influencing student learning.

A good deal of evidence has been reported which detects the effect of teacher related variables on students' learning that also acknowledges the worth of

a teacher. However, the results of such studies have not been consistent in relation to the discovery of strong relationship between the constructs (Goe, 2007). According to researchers,in addition to characteristics of teachers, their behavior was found to be significantly linked with students' learning outcome (Araujo, Carneiro, Cruz-Aguayo, & Schady, 2014) as behaviors are the reflections of hidden belief systems. Therefore, it may be concluded that teachers' believes would have an effect on students' learning.

Teachers' beliefs is one of the possible and valid causes of teachers' varied behaviors towards different components of teaching learning process that have an impact on students' learning outcomes. Scholars argue that teachers' perception and practice of excellent teaching depends on how he/she conceptualizes it (Biggs, 2012). Consequently, teaching behavior of teachers' encompassing perceptions and student evaluations are influenced by their belief system regarding teaching, learning, curriculum, assessment and self-efficacy (Brown, 2003). Literature also supports the conviction that two constructs as teachers' teaching and students' learning both are affected by these beliefs/conceptions (Thompson, 1992; (Reid &Petocz, 2002). That's why researchers have been working to find out links between teachers and students' perceptions and behavior, and their potential impact on other educational variables as research has found that teachers' different orientations to teaching lead towards different pattern of learning among students (Gow& Kember, 1993).

A teacher's thinking is important to provide creative opportunities of learning for the students whereas a good blend of thinking and practice used by teachers is fruitful to integrate with teacher-candidate characteristics (Villegas & Reimers, 1996). To a smaller extent, positive correlations between teachers and students' efficacy beliefs and their learning outcomes have been reported (Akbari & Allvar, 2010; Britner & Pajares, 2006; Pajares, 1996). In addition to this, students' conceptions regarding assessment were also found to be related to their learning outcomes (Brown & Hirschfeld, 2008). A smaller portion of literature describing the conceptions of teachers and its impact on students' achievement is available and therefore justifies its further investigations.

Teachers' believes/conceptions are categorized into five components including perceptions about a) learner and learning, b) curriculum, c) teaching, d) learning to teach and e) about one's own self. These conceptions lead one's behavior to the accomplishment of desired objectives. Researchers argued that teaching strategies and assessment practices have emerged as a result of their understanding for a particular subject(Brown, Kennedy, Fok, Chan and Yu, 2009).

Teachers' teaching approaches influence the students' learning approaches which ultimately affect their learning outcomes. Researchers discovered a direct link between learning approaches of students and teaching approaches of teachers (Beausaert, Segers, & Wiltink, 2013). It was found that a student centered approach of teaching leads towards better students' learning. It is evident in literature that in order to bring a positive change in students' learning outcomes; the educational practices of teachers should be transformed accordingly which is

possible via introducing a change in their instructional conceptions. In order to facilitate this change, researches are required to investigate the current nature of these conceptions and factors affecting these conceptions along with particular emphasis on students' learning outcomes (Martín, Pozo, Mateos, Martín, & Echeverría, 2014).

The nature of these conceptions is assumed to be context specific. These contexts may include differences in subject, educational level, curriculum, evaluative systems or socio-cultural background. These contexts actually assist to develop varied perceptions among teachers. There is a wide scope of discovering these conceptions across different contexts and teaching levels as most of the research on conceptions remained confined to western cultures especially at higher level (Gao & Watkins, 2002).

Purpose of the Study

The major objectives of the study are to:

1. Explorepublic sector high school teachers' conceptions of learning. These conceptions may be explored through identifying teachers' agreement or disagreement to the five conceptions of learning.
2. Identify the impact of teachers' conceptions of learning on students' academic achievement at secondary level. Regression analysis may discover the impact of teachers' conceptions on students' academic achievement.

Research Questions

In order to measure the objectives of study, following main and contributory research questions are posed:

Research question 1

1. What is nature of conceptions of learning possessed by teachers at secondary level?
2. Do teachers' conceptions of learning impact students' academic achievement at secondary level?

Methods

Sample of the study

A descriptive correlational survey explored teachers' conceptions of learning in the four districts of Lahore division (Lahore, Qasur, Sheikhupura&Nankana Sahib). A total of 298 teachers of English completed the survey forms. Proportionate stratified random sampling was used for the selection of sample, where gender was considered as a strata. Overall 296 schools were selected in which each district represented the desired proportion (50% male and 50% female) of teachers in the sample.

Data collection and analysis procedure

Data was collected after soliciting formal permissions from DPI schools and DEOs of the sampled districts. The survey forms were administered on the teachers of high schools with the help of concerned school principals. Help from research assistants was also taken to collect data from schools in remote areas of the selected districts. Data was analyzed using mean, standard deviation, correlation and regression analysis techniques.

Instrumentation

A survey instrument to measure teachers' conceptions of learning was developed due to the unavailability of a standardized instrument measuring secondary level teachers' conceptions of learning**.** In order to develop new instrument, some of the items were taken from previous studies carried out by Purdie and Hattie (2002), Brown (2008) and Brown (2009). In addition to these items, some of the items were constructed based on teachers' own quotes about learning reported in qualitative studies. Furthermore, content for some of the items was taken from Bloom's taxonomy representing the domain of learning under various levels such as understanding, application or analytics. A total of 31 items were constructed.

Validation of the instrument. Developed instrument was validated by three university teachers having experience of teacher education and educational research. Nature of qualification and experience was helpful in getting better feedback regarding item construction considering teachers working in public schools. Items were modified according to the suggestions given by experts. All the changes were finalized before administering the scale for pilot study.

Pilot testing of the instrument. Initially, a total of 40 teachers filled out the instrument. Data of respondents were entered into the SPSS for reliability analysis.Reliability values for the scale measuring conceptionsof learning with five dimensions ranged between 0.595-0.707. The reliability value of the scales were obtained as a) gaining information @ 0.658 with 4 items, b) remembering information @ 0.632 with 3 items, c) understanding @ 0.580 with 4 items, d) transformation @ 0.707 with 4 items and application @ 0.595 with 4 items. The values of Cronbach's alpha in this study indicates that the scales used in the instrument are adequate and suitable for the measurement of the construct.

Structure of the instrument

In the first part, demographic information including background of the respondent (gender, years of experience, grade level, teaching assignment and level of education) was inquired. In the second part, items scored on a scale from 1 to 6 (1 = strongly disagree and 6 = strongly agree) mainly addressing conceptions of learning were asked. The response format of the instruments used an agreement response scale as the items were not conducive to frequency measurement and

would require opinion or attitude response. It wascomprised of Likert type six response categories in which four were positive and two were negative. This format is preferred when it is obvious that the subjects would have a positive attitude towards the concept (as cited in Brown, 2011).A total of 31 items were included in the scale covering five conceptions of learning. These conceptions included learning as gaining information, memorizing or reproducing information, application, understanding and transformation.

Findings of the study

Conceptions of Learning

Results of the study revealed that teachers possess positive attitude towards different conceptions of learning that is visible from the consistent higher values for all of the conceptions. It is concluded that for teachers in order to have a wider exposure of learning require different levels of information processing abilities.

Results of descriptive analysis showed that teachers have strong agreement to all of the conceptions of learning ranging from gaining information to learning as application. The mean values for various conceptions were noted to be as, Gaining Information (M = 4.35, S.D =.82), Remembering & Reproducing (M = 4.52, S.D =.89), Understanding (M = 4.72, S.D =.84), Transformation (M = 4.58, S.D=.86) and Application (M = 4.59, S.D =.71). The results endorsed strong agreement of teachers towards all conceptions of learning. All the values against conceptions of learning are near to 5 showing strong agreement of the respondents.

Table 1

Descriptive analysis for the overall conceptions of learning

Names of the scales	**Mean**	**Standard deviation**
Gaining information	4.35	.82
Remembering information	4.52	.89
Understanding	4.72	.84
Transformation	4.58	.86
Application	4.59	.71

Conception of Learning: English

With the aim to investigate the effect of teachers' conceptions of learning on students' achievement for the subject of English, regression model based on structural equation modelling in the AMOS software was developed. Figure 1 as given below shows relationship of all dimensions of conceptions of learning with students' achievement scores for the subject of English. One side head arrows

shows linear dependencies. The value mentioned on the path from each dimension to dependent variable shows the beta (estimate) impact of that dimension on dependent variable. The value of error is enclosed on the dependent variable in circle because it is not directly observed. The value mentioned on dependent variable reflects the R^2 which shows the variation in the model due to all independent variables. Independent variables 1 to 5 (IV1 to 5) account for 12% of the variance of dependent variable (DV).

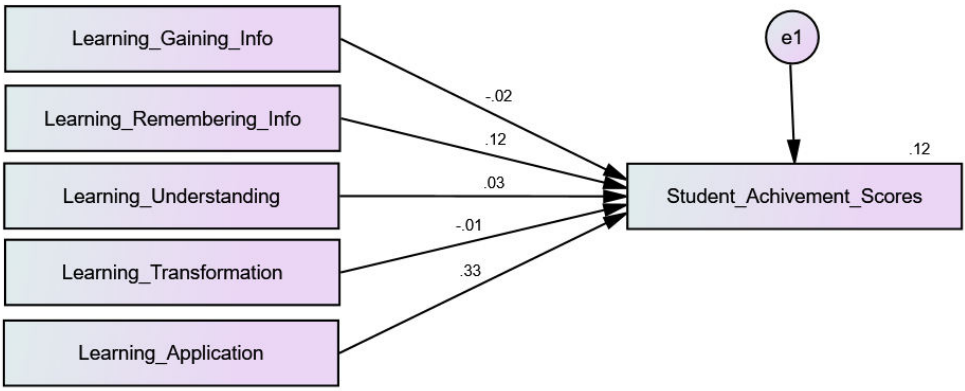

Figure 1.*Model of English teachers' conceptions of learning and student achievement*

Table 2 shows the results of regression analysis obtained by using maximum likelihood method in the AMOS software. The estimate value shows the impact of independent variables on the dependent variable. C.R. is the critical ratio, i.e. t-value in SPSS output, the value of CR of any IV to DV is, if > ±1.96 that path will be significant at 0.05 level. If the p-value is three asterisks (***), it indicates significance is smaller than 0.001. it is found that only two conceptions of learning such as learning remembering information (b = 0.116, p < 0.05) and learning application (b = 0.325, p < 0.05) have significant impact on students' achievement score for the subject of English whereas all other conceptions are found to be insignificant to have an impact on students achievement in English.

Table 2

Regression Weights based on teachers' conceptions of learning and students' achievement for the subject of English

			Estimate	C.R.	P
Student Achievement Scores	←	Learning Gaining Info	-.023	-.415	.678
	←	Learning Remembering Info	.116	2.124	.034
	←	Learning Understanding	.026	.473	.636

			Estimate	C.R.	P
	←	Learning Transformation	-.012	-.216	.829
	←	Learning Application	.325	5.977	***

On the basis of regression weights, it is concluded that in the subject of English, students' achievement scores are influenced by teachers' conceptions of learning as "remembering information" and learning as "application".

Results and Discussion

The first objective of the present study was to explore the nature of conceptions of learning as possessed by teachers in public high schools of Lahore division. The results of the present study found teachers mostly agreed to the five conceptions of learning. The results reported were found to be aligned to the literature showing teachers' and students'agreement towards conceptions of learning (Peterson, Brown & Irving, 2009). Study by Purdie and Hattie (2002) also revealed similar trend of agreement towards all of the conceptions of learning among students of different cultures. It was also found that teachers'have highest agreement towards learning as understanding,application and transformation which shows that teachers are well aware of the importance of higher order learning skills as mirrored in their agreement towards conceptions. This finding was also found to be aligned to the studieswhich shows that learning conceptions are influenced by the maturity level of the respondent. It is found that the conceptions of learning are developmental in nature and are influenced by age, level of experience and demands of the working environments (Saljo, (1979); Boulton-Lewis, Smith, McCrindle, Burnett and Campbell, 2001; Virtanen and LindblomYla¨nne, 2009; EKLUND-MYRSKOG, 1998;Brown, Lake and Matters, 2008).The results also confirmed the claim of scholars that people may have different conceptions about learning and utilize any of them according to the demands of situation and task (Trigwell and Ashwin, 2002).

The second objective of the study was to explore the impact of teachers' conceptions on students' achievement in the subject of English. Results of the study revealed that for the subject of English, students' achievement scores are influenced by teachers' conceptions of learning as "remembering information" and learning as "application". Careful analysis of the causal relationship between teachers' conceptions of learning and students' performance shows that teachers' conceptions have significant impact on students' achievement. This finding is up to the expectation as most of the preferred methods of teaching focus on surface level learning at secondary level in Pakistan. Students are trained to produce similar contents in the exams. The use of prepared notes, grammar books and prepared lesson plans, all make this notion clear that students have to remember and just apply the learned material in the exams.The mode of assessment at secondary level

is also based on the similar contents being taught in the public schools. All these facts motivate teachers to enact only those conceptions of learning which are significantly contributing for achieving better scores of the students. The findings of present study support the claim presented by researchers that conceptions are context specific and are affected by the examination system, school policies and social values of a society (Brown and Harris, 2009). Considering all these facts, it is revealed that the findings emerged in the present study were found to be in line with the present situation of learning and assessment in Pakistani school system. Iqbal and Ahmad, (2015) carried out research work in medical profession to compare the performance of students having extensive experience of rote memorization through Hifze Quran versus limited experience of rote memorization. Results revealed that students with Hifze Quran obtained higher scores in high stake exams when compared to other students in the subject of physiology. It is interesting to report here that the practice of rote memorization is preferred even at higher levels of education for various disciplines in Pakistan.

A similar trend was observed in the study reported by Muhammad, Masum, Ali and Baksh, (2017). They explored grammar translation method as the most practiced teaching strategy for the subject of English at secondary level. Almost similar findings were obtained by Awan and Hiraj, (2016). They found teachers giving preference to the use of GTM due to its ease of teaching to overcrowded classes and alignment to the pattern of examination (Fehmi, 2015; Awan and Shafi, 2016; Nawab, 2012). Results of the previous studies strengthen findings of the present work revealing the rationale for significant conceptions contributing to the students' performance. Results of the present study showing "application" as a significant predictor of students' achievement in English are validated by the stance of Vygotsky (1978). He argued that Individuals can be helped to learn a language using theme of Zone of Proximal Development (ZPD). ZPD is the gap between how much an individual has learnt and how much is required to reach a specific goal. Teachers working through ZPD use problem solving to know the present level of learning and areas requiring potential development. This exercise results in planning instruction to reach desired learning outcomes. To reach desired level, effective interaction of mature individual and learner is required which leads to success in learning. It confirms that language expertise requires social interaction. It cannot be mastered in isolation. This interaction becomes effective when working with mature ones having more experience of language like teachers and parents (Jhon-Steiner &Mahn, 1996; Ahmad and Rao, 2013). Results of present study reporting significance of memorizing and application conceptions are supported by the study of Rubin (1981) as cited in Lederman & O'Malley, 1990) that shows the importance of application for linguistic domains that are more easily developed through application in daily lives.

The results of the present study are found dissimilar to the findings reported by Yang and Tsai (2010), who explored relationship of students' conceptions, approaches to learning and students' achievement through online peer

assessment. They found that students focusing cohesive learning conceptions while utilizing deep approach to learning were found to be the most progressive students in the class. The rationale for this dissimilarity can be attributed to the influence of contextual factors as the study focused on college students' learning through online peer assessment. In Pakistani school system, students are taught and assessed while focusing on lower level learning domains.

Implications of the study

One of the contribution of present study is the development of conceptions of learning scale which targets the teachers working at secondary level. The procedures used for the validity and reliability of the instrument ensures its effectiveness for exploring secondary school teachers' conceptions of learning in Pakistan.Another contribution of the study is being one of the pioneer studies to provide a platform for the future researchers working on the reflection of teachers' conceptions on students' academic achievement at secondary level in Pakistan. It allowed to understand the existing conceptions of learning of teachers as well as the most operative and functional conceptions impacting student performance. The results have also mirrored the possible effects of examination pattern on the functioning of specific conceptions of learning and assessment.

Recommendations

The following recommendations are suggested keeping in view the findings of the present study.

Results of the study revealed the significant impact of remembering and application conceptions on students' achievement in linguistic subjects. It draws our attention to the focus of teachers at encouraging students to remember and apply the learnt concepts. Unfortunately, these conceptions have been reported as focusing on lower level domains of learning. Therefore, teachers at secondary level might be exposed to conceptions boosting higher order learning domains of students through in-service trainings and workshops etc.

Pre-service curriculum might include the topics of conceptions regarding learning and rationales behind these conceptions and possible consequences in terms of effects on teachers' teaching and students' learning.

In order to explore the alignment of teachers' conceptions to their actual teaching practices, mixed method studies can be planned.

Qualitative aspects such as observation, interviews, student essays and teachers' reflection on their own work can be a part of survey studies. It will help in validation of belief practice notion.

Student learning outcomes other than scores such as use of deep surface approach to learning can be explored to find out the link between teachers' conceptions and students' learning outcomes.

Notes and References

Ahmad, S., & Rao, C. (2013). Applying communicative approach in teaching English as a foreign language: A case study of Pakistan. *PortaLinguarum, 187–203.*

Akbari, R., &Allvar, N. K. (2010). L2 teacher characteristics as predictors of students' academic achievement. *The Electronic Journal for English as a Second Language, 13*(4), 1–22.

Araujo, M. C., Carneiro, P., Cruz-Aguayo, Y., &Schady, N. (2014). A helping hand? Teacher quality and learning outcomes in kindergarten. *Inter-American Development Bank*, 1–65,Washington*, DC*.

Awan, A. G., &Hiraj, A. A. (2016). Teaching English as a second language in Pakistan at secondary level. *Science International*, *28*(4).

Awan, A. G., &Shafi, M. (2016). Analysis of teaching methods of English language at government secondary school level in DG Khan city-Pakistan. *Global Journal of Human-Social Science Research*, 16(8).

Beausaert, S. A., Segers, M., &Wiltink, D. P. (2013). The influence of teachers' teaching approaches on students' learning approaches: The student perspective. *Educational Research, 55*(1), 1-15.

Biggs, J. (2012). What the student does: Teaching for enhanced learning. *Higher Education Research & Development*, *31*(1), 39-55.

Britner, S. L., &Pajares, F. (2006). Sources of science self-efficacy beliefs of middle school students. *Journal of Research in Science Teaching,43*(5), 485–499.

Brown, G. T. L., &Hirschfeld, G. F. (2008). Students' conceptions of assessment: Links to outcomes. *Principles, Policy & Practice*, *15*(1), 3-17. doi: 10.1080/09695940701876003

Brown, G. T. L., Kennedy, K. J., Fok, P. K., Chan, J. K. S., & Yu, W. M. (2009). Assessment for student improvement: Understanding Hong Kong teachers' conceptions and practices of assessment. *Assessment in Education: Principles, Policy & Practice*, *16*(3), 347-363.

Fehmi, A. (2015). *Exploring practices of English language teachers in teaching English at middle level in a public school of Hunza, Gilgit-Baltistan* (Unpublished masters dissertation). Agha Khan University, Karachi, Pakistan.

Gao, L., & Watkins, D. A. (2002). Conceptions of teaching held by school science teachers in PR China: Identification and cross-cultural comparisons. *International Journal of Science Education*, *24*(1), 61-79.

Glewwe, P., & Kremer, M. (2006). Schools, teachers and education outcomes in developing countries. *Handbook of the Economics of Education, 2*, 945-1017.

Goe, L. (2007). The link between teacher quality and student outcomes: A research synthesis. *National Comprehensive Center for Teacher Quality*. Retrieved from https://eric.ed.gov/?id=ED521219

Gow, L., &Kember, D. (1993). Conceptions of teaching and their relationship to student learning. *British Journal of Educational Psychology, 63*(1), 20-23.

Lederman, N. G., & O'Malley, M. (1990). Students' perceptions of tentativeness in science: Development, use, and sources of change. *Science Education*, *74*(2), 225-239.

Nawab, A. (2012). Is it the way to teach language the way we teach language? English language teaching in rural Pakistan. *Academic Research International*, *2*(2), 696.

Reid, A., &Petocz, P. (2002). Students' conceptions of statistics: A phenomenographic study. *Journal of Statistics Education*, *10*(2), 1-18.

Rubin, J. (1981). Study of cognitive processes in second language learning1. *Applied Linguistics*, *2*(2), 117-131.

The World Bank group (2013). *Learning Outcomes*. Retrieved from http://www.worldbank.org/

Thompson, A. G. (1992). Teachers' beliefs and conceptions: A synthesis of the research: In D. A. Grouws (Ed.), *Handbook of Research on Mathematics Teaching and Learning* (pp. 127-146). New York: Macmillan.

Trigwell, K., &Ashwin, P. (2002). S*ituated conceptions of learning and learning environments*. Paper presented at the improving student learning symposium (theory and practice, 10 years on), Brussels, Belgium.

Villegas, R. E., & Fernando Reimers, S. (1996). Where are 60 million teachers? The missing voice in education reforms in teacher reforms around the world. *Prospects*, *26*(3), 469-492.

Yang, Y. F., & Tsai, C. C. (2010). Conceptions of and approaches to learning through online peer assessment. *Learning and Instruction*, *20*(1), 72-83.