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An Investigation of Learning Environment in Teacher Training Institutes of Pakistan

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ABSTRACT

This study was conducted to investigate the learning environment through the perception of prospective science teachers (PSTs) and science teacher educators (STEs) in teacher training institutions of Pakistan. Instrument used was extracted from a valid and reliable scale entitled "what is happening in the class" for both samples and it covered three aspects of learning environment: Cooperation, Instructor's Support and Investigation. For data collection, two samples consisting of 410 Prospective Science Teachers (PSTs) and 38 Science Teacher Educators (STEs) were randomly selected from eight training institutions located in three states of Pakistan. Findings of study revealed that in some aspects of the learning environment, the teacher training institutions were rated poor while in various aspects these were perceived average and in a few aspects these were rated as good. The perception of PSTs and STEs was different about some characteristics of institutional learning environment while it was almost same about some other fact regarding learning environment.

Keywords: learning Environment, aspects of learning environment, Teacher Training Institutions, Prospective Science Teachers, and Prospective Science Teachers.

INTRODUCTION

The achievement of desired educational goals is related to learning environment available for the students. Literature suggests that when students are engaged in learner centered environment it enhances science learning (Bransford, Brown, & Cocking, 2000). So the

provision of positive learning environment is essential for high level of achievement (Fraser & Walberg, 1991). Educators must focus on a learning environment that must engage students to construct knowledge on the basis of experiential understanding and active exploration of scientific concepts (Turkmen &Pedersen, 2003). According to Cookson (2005), the classroom environment has everlasting effect on students' intellectual and emotional growth. Therefore, challenging but non-threatening learning environment is essential for purposeful learning of science students(Staver, 2007), where learners are exposed variety of learning activities such as problem solving, science projects, critical thinking, and complex activities like scientific inquiry(Staver, 2007;Oblinger, 2006). Science subjects usually involve complex learning processes and learners need scaffolding for deep understanding. An efficient learning environment caters for scaffolding ((Puntambekar & Hu¨bscher, 2005) that facilitates learners without structuring specific teaching model or design (Zitter, Bruijn, Simons & Cate, 2010)**.**

The provision for involvement and engagement of learners in learning process is the net output of a an efficient learning environment of an institution. VanDeWeghe (2006) has mentioned three types of engagement i.e. behavioral, cognitive, and emotional. An environment that accommodates all these types of engagement is indispensable for holistic learning and development of the learner. In classroom learning environment and psycho social relationship is directly related to students understanding and achievement. Similarly along with learning environment physical environment such as air, space lighting and safelty also have great influence students achievement (McRobbie, Roth & Lucus, 1997) . Psychological environment relates to awareness and feelings related to share interaction among students and teachers. Individual distinctiveness of must be cater by psychosocial environment (Moos, 2002). Awareness about learning environment when presented to students, they have more opportunities for adjustment in the class environment which ultimately enhance their potential for social adjustment in class. Literature proved that learning environment has significance on student result and show improvement in science learning at all stages (Margianti, Fraser & Aldridge, 2001).

In the arena of learning environment in higher education institutions, Nerland, Jensen and Bekele (2010) have asserted on epistemic culture of learning that works as constitutive agent in learning process. In such learning environment, the students of higher education institutions share knowledge, resources and work in cooperative groups on scientific projects followed by scientific investigation. Baines et al (2008) have advocacy of cooperation in science classroom as it is useful for classroom management as well as scientific investigation, and Sawyer (2006) added that cooperation and collaboration accelerate learning. Theory, practice and research in the science classroom reflect numerous measures to articulate learning environment. Staver (2007) has suggested practical steps that may foster behavioral, cognitive and emotional engagement of learner in science. Science teacher plays the vital role in this regard and his/her training as well as learning environment of training accounts for his/her capacity and capability. Hence in the study problems associated with training of prospective science teachers, learning environment act as an indicator for success of pedagogical perspectives for educators in teaching learning process (Chen, Taylor, & Aldridge, 1998; Duschl & Waxman, 1991).

There is scarce research on the learning environment of teacher training institutions in Pakistan. On the basis of extensive review literature, Nerland, Jensen and Bekele (2010) have also claimed scarce research to explore learning environment at higher education setting. Apart from teacher training practice in teacher training institutions, Aslam (2011) investigated the professional development practices for teachers in public universities of Pakistan. The findings of this study clearly depict a poor learning environment with missing mentoring culture and cooperation among faculty members. Because science education is vital for the development of country, the science teachers and educators are the important segment of human resources. Pakistan has been deficient in properly trained science teachers from very beginning to cope with emerging scientific trends and needs of 21st century (Government of Pakistan, 1991). Although developments have been made in teacher education, science education still needs much improvement in quality (Sheikh, 2000). In Pakistan, different agencies manage teacher training. There are Colleges of educations that offer B.Ed, M.Ed programs controlled by federal administration while IERs, Departments of Educations, and colleges of education affiliated with universities prepare science teachers which are inducted in Government schools as well as private institutions. Since teacher training institutions train science teacher in a dogmatic way as a result they could not perform as a professional science teacher in actual classroom environment. To improve science education there is need to introduce new approaches in science teacher education, which can improve not only science education but also science teacher education in Pakistan (Abell, 2000). For effective reforms in teacher training, research based situation analysis is required. Due to the importance of learning environment in learning process, a study was conducted to investigate learning environment in teacher training institutions of Pakistan. This study mainly addressed the following research questions:

i) What is the difference between PSTs and STEs perception about the learning environment of teacher training institutions?

ii) What is the reflection of cooperation, instructor's support, and scientific investigation as factors of learning environment in teacher training institutions as perceived by PSTs and STEs?

METHODOLOGY:

Survey research design was used to carry out this study because of the greater scope of generalization. The population of this study comprises of all prospective science teachers enrolled in teacher training institutions of Pakistan and science teacher educators working in these institutions. At first stage, eight teacher training institutions (IERs, College of Education and University of Education) having B. Ed Science program , were selected from the whole population using purposive sampling technique. Then from selected institutions, all prospective science teachers and 5 randomly selected science teacher educators were taken as respondents. The sample of this study comprises of 450 male and female prospective science teachers, enrolled in eight teacher training institutes (IERs, College of Education and University of Education) and 40 Science teacher Educators working in these institutions. For having reliable research instrument for data collection, the scale for assessing Learning Environment was extracted from a valid and reliable instrument, *What Is Happening In Class* (WIHIC), initially developed by Fraser, Fisher, and McRobbie (1996). For present study, three aspects of learning environment i.e. Cooperation, Instructor's Support and Investigation were selected on the basis

of pilot study. The Cronbach alpha coefficient for this sample was found to be 0.771. The research instrument was administered among STEs and PTEs which was received back from 38 PSTs and 410 PTEs with a high turnout. For data analysis, the perception of STEs and PTEs were compared using mean scores and t-test and learning environment was judged from mean value of the response score for both STEs and PTEs. Mean values greater than `3' indicate that PSTs and STEs perceived practices related to each variable are in the direction of Often or Almost Always. Scores of less than "3" indicate that these practices are perceived as experience less than sometimes and are in the direction of Seldom or Almost Never. Average mean value (AM=2.27) reflects that practices are in direction of Seldom and Almost Never.

RESULTS

Three categories for Learning Environment i.e. Cooperation, Instructor's Support and Investigation as factors of Learning Environment were investigated. Five statements were given for each sub scale of learning environment (LES). The analysis and interpretation has given in the underlying tables.

Table No 1: Mean Scores for Cooperation (Learning Environment)

LES_CPN	Group	N	M	S.D	t	p
LT_CPN-1: Sharing resources with other students						
	PST	410	2.24	1.08		
	STE	38	2.92	1.40	3.62	0.00*
LT_CPN-2: working in groups in science activities						
	PST	410	2.29	1.27		
	STE	38	2.66	1.36	1.71	0.09
$p > 0.05*$	Working as team on science projects					
	PST	410	2.18	1.32		
	STE	38	3.00	1.36	3.66	0.00*
LT_CPN-4: Learning from other students						
	PST	410	2.35	1.32		
	STE	38	2.89	1.35	2.43	0.02*
LT_CPN-5: Cooperation with other students in activities.						
	PST	410	2.00	1.33		
	STE	38	3.11	1.23	4.94	0.00*

Table 1 shows that PSTs and STEs have the same stance about the practice of students to work as team on science activities (P>0.05). The respondents of both types opined that it is seldom that they work in teams on science activities. PSTs and STEs have significantly different opinion (p<0.05) about the other entities of cooperation in the learning environment i.e. sharing resources with other students, working as team on science projects, learning from other students, and cooperation with other students in activities. The values of mean scores for all these four entities of cooperation are almost 2 and 3 according to the perception of   PSTs and STEs respectively. Hence, sharing resources with other students, working as team on

science projects, learning from other students, and cooperation with other students in activities are seldom practiced according to PSTs and sometimes practiced according to the perception of PSTs. The over all picture of cooperation in teacher training institutions is clear from Figure 1.

Mean Scores for LT_Cooperation

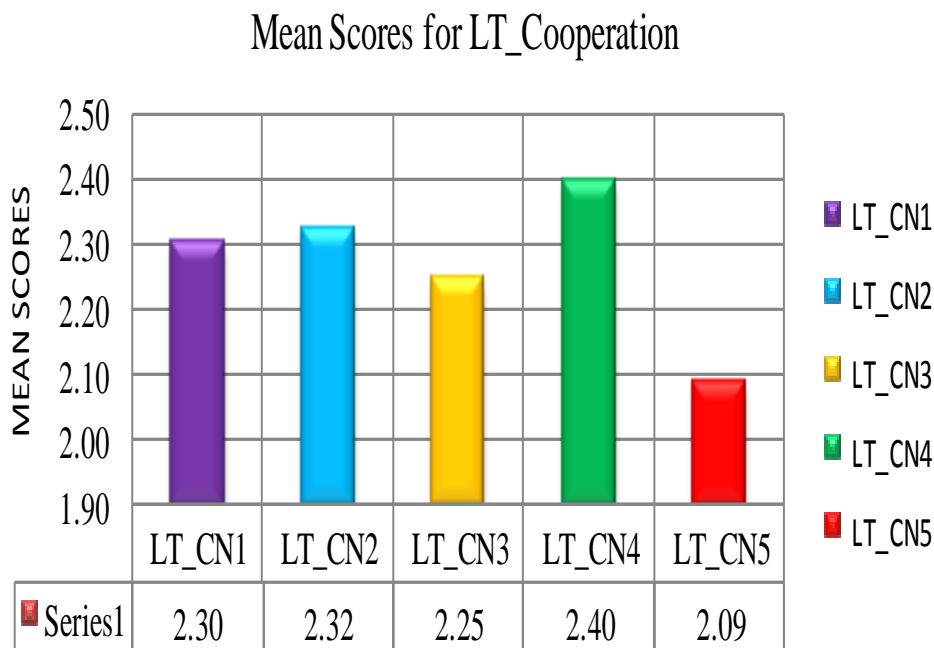|	LT_CN1	LT_CN2	LT_CN3	LT_CN4	LT_CN5
Series1	2.30	2.32	2.25	2.40	2.09

Fig No 1. Mean Scores for Cooperation (Learning Environment)

Figure 1 shows that on the whole sharing resources with other students, working in groups in science activities, working as team on science projects, learning from other students, and cooperation with other students in activities are seldom practiced.

Table No 2: Comparison of mean scores responses for Instructor's Support (Learning Environment)

LES_ IS	Group	N	M	SD	t	p
6. Instructor's personal interest						
	PST	410	3.75	1.280	.793	.428
	STE	38	3.58	1.287		
7. Out of way help by instructor						
9. Instructor 's interest in academic problems						
	PST	410	2.58	1.330		
	STE	38	3.11	1.391	2.307	.022*
10. Instructor's questions helped to understand						
$p > 0.05*$	PST	410	2.38	1.388		
	STE	38	3.68	1.378	5.552	.000[*]

Table 2 indicates that PSTs and STEs have no significant difference in mean response score for instructor's personal interest (t=0.793, p>0.05) and out of way help by instructor (t=1.578, p>0.05) and these both are often occurring practices in science teachers training classrooms (mean Scores > 3). The mean scores of responses by PSTs and STEs significantly differ (p<0.05) for the entities 'instructor's help during science work', ' instructor's interest in academic problems', and ' instructor's question help to understand science problems'. According to PSTs perception (mean score=3.60), it is often that instructors help in trouble during science work while this practice is sometime according to STEs (mean score=3.08). According to the perceptions of both PSTs (mean score=2.58) and STEs (mean score=3.11), instructor's interest in academic problems is practiced sometimes. It is seldom that instructor's question help to understand science problems according to the perception of PSTs (mean score=2.38) while this practice is often as perceived by STEs (mean score=3.68). The overall instructor's support is illustrated in Fig.2.

Mean Scores for LT_Instructor's Support

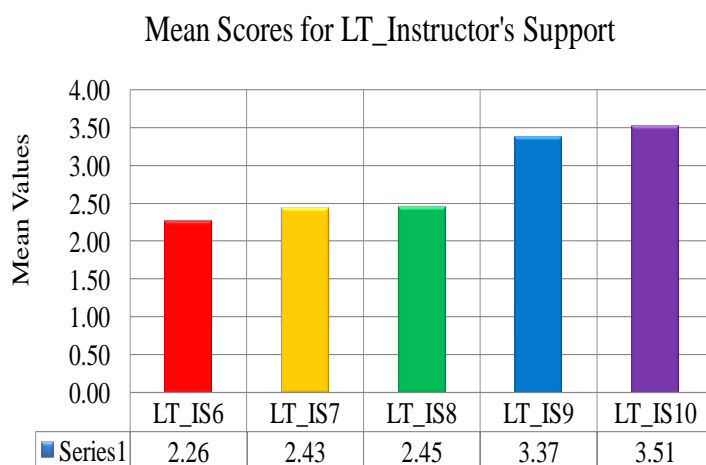|	LT_IS6	LT_IS7	LT_IS8	LT_IS9	LT_IS10
Series1	2.26	2.43	2.45	3.37	3.51

Figure No 2: Mean Scores for Learning Environment (Instructor' Support)

Figure 2 indicates that instructor's personal interest, out of way help by instructor and instructor's help during science work' are seldom practiced entities of instructor's support while instructor's interest in academic problems and instructor's question leading to understand science problems are some practiced in teacher training institutions.

Table No 3: Comparison of mean scores for scientific investigation (Learning Environment)

LES_IN	Group	N	M	SD	t	p
11. Investigations for testing ideas						
	PST	410	3.75	1.280	.793	.428
	STE	38	3.58	1.287		
$p > 0.05*$ g the meaning of science through statements, diagrams and graphs						
	PST	410	3.60	1.242	1.578	.115
	STE	38	3.26	1.223		
13.Investigations to answer the instructor's questions						
	PST	410	3.60	1.242	2.445	.015*
	STE	38	3.08	1.282		
14.Answering questions by doing investigations						
	PST	410	2.58	1.330	-2.307	.022*
	STE	38	3.11	1.391		
15. Solving problems by using information obtained from investigation						
	PST	410	2.38	1.388	-5.552	.000*
	STE	38	3.68	1.378		

Table 3 shows that responses of PSTs and STEs have no significant difference (p>0.05) in mean scores in entities 'investigations for testing ideas' and 'explaining the meaning of science through statements, diagrams and graphs' while there is a significant difference in mean scores regarding the featu**res** 'investigations to answer the instructor's questions', .answering questions by doing investigations', and 'solving problems by using information obtained from investigation' (p<0.05). The values of mean scores for PSTs (3.75) and STEs (3.58) indicate that investigations for testing ideas are often practiced in science teachers institutions while explaining the meaning of science through statements, diagrams and graphs is often occurring practice according to PSTs response (3.60) and sometimes occurring practice according to STEs opinion(3.26). Similarly investigations to answer the instructor's questions' are often (mean score=3.60) and, .answering questions by doing investigations' are sometimes (mean score=2.58) in science teachers training institution as perceived by PSTs while these practices are sometimes (mean score= 3.08, 3.11 respectively) according to STEs opinion. Solving problems by using information obtained from investigation is seldom practiced according to

PSTs (2.38) and often practiced according to STEs (3.68). Overall scientific investigation in teacher education institutions is evident from Fig.3.

Fig. 3 shows that investigations for testing scientific ideas, answering questions by doing investigations, and solving problems by using information obtained from investigation are the sometimes practiced entity of scientific investigation in teacher training institutions while explaining the meaning of science through statements, diagrams and graphs' and conducting investigations to answer the instructor's questions are seldom practiced entities of learning environment.

CONCLUSIONS

The findings of this study show that science teacher educators rate the learning environment of their institutions slightly better than prospective science teachers do.

Overall, the indicators of learning environment are perceived to be evident either sometimes or seldom. This shows that the learning environment of training institutions for science teacher is of poor quality.

DISCUSSION

Regarding the research question: What is the difference between PSTs and STEs perception about the learning environment of teacher training institutions?, it was found that STEs rated the learning environment slightly superior as compared to rating by PSTs. For some indicators, this difference was statistically significant. Despite this difference, both types of respondents tended to rate the same quality of learning environment. This slight difference in rating is due to the fact that research respondent want to be possibly smart in the case of self-perception or opinion. Therefore, there is possibility of response biasness (Ensher., Grant-Vallone& Donaldson, 2001; Mersman & Donaldson, 2000).

In response to research question: What is the reflection of cooperation, instructor's support, and scientific investigation as factors of learning environment in teacher training institutions as perceived by PSTs and STEs?, it was found that some indicators of learning environment were rated as sometime practiced while the other indicators were rated as seldom practiced. None of the indicators was perceived to be practiced frequently or always. These findings are coherent with the situation described by Aslam (2011) and hence the chronic deficiency of properly trained science teachers as described by Govt. of Pakistan(1991) may continue without serious measures.

In the light of this study, it is suggested to introduce reforms for improving learning environment and learning culture in the teacher training institutions. The Quality Enhancement Cell of the concerned university be made responsible for implementation and monitoring. In order to make improvement plan, further research be conducted to explore root causes of prevailing situation of learning environment in the teacher training institutions.

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