



**RESEARCH PAPER**

**Prospective Teachers' Critical Thinking Disposition, Problem Solving Skills and Self-Efficacy: A Relationship Study in Pakistan**

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**ABSTRACT**

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The researcher undertook this study to find out the relationship between prospective teachers' critical thinking disposition, problem solving skills and self-efficacy. 712 participants from two public universities of Lahore were selected as a sample. Data was gathered through questionnaire and qualitative research was done. Analysis was done through different statistical analysis techniques. The results showed that there exist a significant moderate and positive relationship between critical thinking disposition, problem solving skills and self-efficacy. It is encouraged that programs and workshops aiming to impart critical thinking disposition, problem solving skills and self-efficacy awareness in teachers of the future may be added into the teacher training curriculum. Additionally, it is suggested that instructors should make a conscious effort to create class environments that may prove helpful in nurturing and promoting critical thinking disposition, problem solving skills and self-efficacy in prospective teachers as it may prove vital for their careers as a prominent and successful teacher.

**Introduction**

The major goal of the 21<sup>st</sup> Century education is to develop those prospective teachers who can meet up with the requirements of the present age, adjust themselves with the ways of living, conform to the new technological standards, think rationally to resolve troubles, are prolific, have the ability to conversate and who appreciate collaborative work. Among these expertise's critical thinking is the most dominant (Colwill, 2012).

Education is the foundation to transmit knowledge to the human beings, who want to keep up with the present time. Similarly, people are groomed up for lifelong

experiences and their intellectual skills are enhanced. Prospective teachers play a compelling role in the awareness of these thoughts. The more competent, highly talented and trained the pre-service teachers are, the more successful the students will be, and the desired level of education will go a step further. Teachers are the only authority to guide and mentor in acquiring the objectives of the education system, to enforce the curriculum in a proper way and to modify the teaching learning process (Demirtas,2011). With the remarkable scientific and technological discoveries, the changing needs of societies make it fundamental to educate the prospective teachers who can modify themselves according to these up grading (Oztemel, 2018).

Critical thinking disposition starts with investigation, continues with clarifications, deductions and interpretations followed by evaluation (Craft,2007). Prospective teachers, who are critical thinkers, appreciate new ideas, are always inquisitive in knowing the origin of a problem, reach trustworthy sources, try to resolve the main points without being captivated with details, appreciate other's point of views, and prove their own views on scientific basis are acknowledged with great esteem (Senlik, Balkan, & Aycan, 2011).

The concept of problem-solving skills is a self-initiated mental-attitude through which an individual, a couple or a group seeks to find out the solutions of everyday problems(Chang, 2004).Problem solving skills in general is considered as a mental process of directing to the solutions of a problem when no other solutions are available (Mayer& Wittrock, 2006). Problem-solving skills needs specific qualities of encountering a problem, resolving the problematic situations, assessing the cognitive processes, resolving situations that are problematic in judging the intellectual mindset of a prospective teacher, comprehending and resolving a problem completely. A good problem-solving skill requires defining a problem, presenting a formula for its solution, explaining rational goals and explaining its root cause and how badly it will affect an educational scenario.

Every prospective teacher should have the ability of problem solving, in this way he can enhance this ability in his/her students. Problem-solving is a complex process to overcome all the difficulties to get the required goal. In daily life, everyone encounters problems those needs to be resolved. This concept of problem solving was first introduced in education by John Dewey he accented the vital role of school and teachers in problem solving (Bingham, 2004).

In the development of self-efficacy, it is necessary that prospective teachers can use their own mental abilities and manage themselves accordingly. One of the basic skills of self-efficacy is to operate cognitive strategies to predict problems and decide how to deal with them. Cognitive processes can lead to an increase in the level of self-efficacy by learning how to behave in difficult, complex and unexpected situations to deal with them using critical thinking (Irani, 2007).

Critical thinking disposition problem solving skills and self-efficacy are those variables which are of great importance for prospective teachers as they enhance their better understanding of the teaching and learning environment these skills enable them to tackle the most difficult situations during their teaching experiences. These variables are interrelated to each other. This research found out that the critical thinking disposition, problem solving skills are connected to self-efficacy.

### **Literature Review**

Critical thinking disposition is rational intellectual thinking concentrates on deciding what to consider or do. It needs skills that help us resolve problems, understand concepts and form authentic opinions and become a highly educated person in any profession. It is conceived as the use of mental abilities and intellectual plan of actions that increase the chance of a favorable outcomes related to a subject, content, or a problem. It is prospective teachers' engagement in deciding the responsibility of actions they take in their academic environment (Mason, 2008).

John Dewey, who is a philosopher, a psychologist, and an educator, is thought to be founder of critical thinking in educational scenario. Critical thinking disposition is rational intellectual thinking concentrates on deciding what to consider or do. It needs skills that help us resolve problems, understand concepts and form authentic opinions and become a highly educated person in any profession. It is conceived as the use of mental abilities and intellectual plan of actions that increase the chance of a favorable outcomes related to a subject, content, or a problem. It is prospective teachers' engagement in deciding the responsibility of actions they take in their academic environment (Pierce, 2004).

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Problem solving skills is to know what specific actions should be taken to resolve a problem. It also means to overcome a hurdle in the way of education and teaching learning process (Seferoglu & Aybiyik, 2006). The process of overcoming a problem includes cognitive aspect and also motivational and emotional aspect as well. The achievement of problem-solving related goals is complex and commonly focused on the gain of conceptual and procedural knowledge, is likely to have considerable impact (Silver, 2005).

The tasks of teachers are becoming complex with ever changing social and political scenarios in the world. They have to face many problems like the advancement in technological standards, motivation of his/her pupils, management within the class, evaluation and building a healthy relation with the parents. In every class they have to face many students with issues like aggression, learning problems, eye side issues, language barriers and so on. So, they must be expert in solving all these issues and problems and presenting a rational solution. It can only be possible

if his/her problem-solving skills are well developed (Organization for Economic Co-operation and Development, 2012).

Prospective teacher's efficacy is when they believe in their own capabilities and are ready to escort their pupils to success. There are some qualities those prove the high self-efficacy in the prospective teachers those are that they are good planners, never fear from failures and are always welcoming to their students in academic difficulties. Those of them who possess low self-efficacy do not allow questioning, never get feedback from their students, are reluctant to try out new ways of solving academic problems and gets stressed in the academic difficulties (Van, Jones & Thoration 2005).

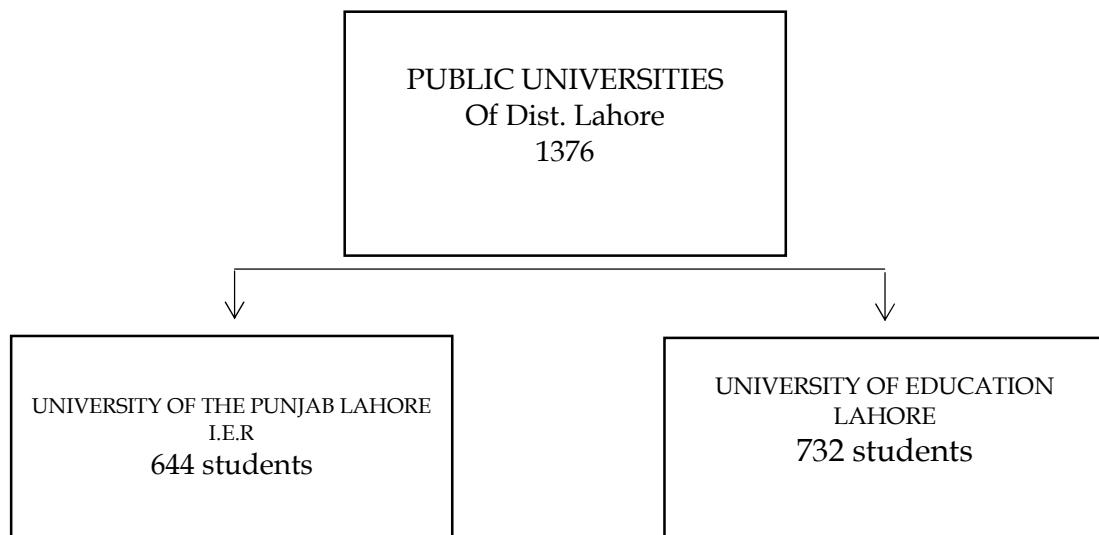
## **Material and Methods**

### **Research Design**

The researcher adopted the quantitative approach with the co-relational design.

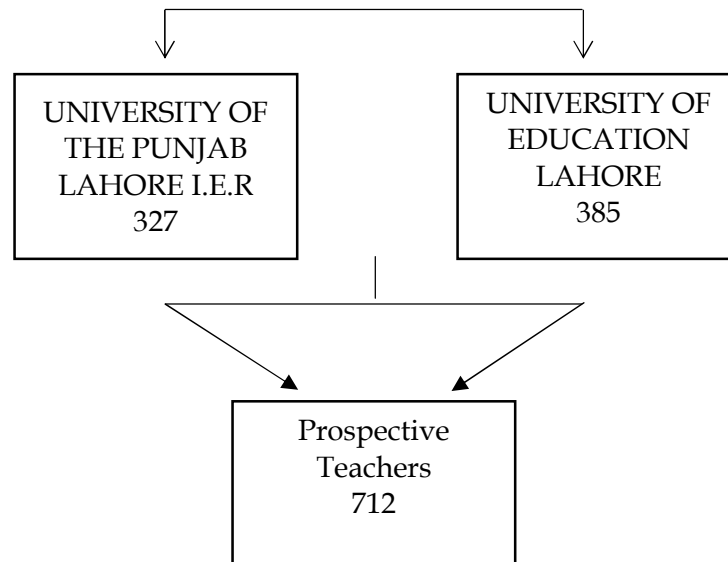
### **Population and Sample**

The population was consisted of all the prospective teachers who were studying in Master's program session (2018-2019) in the two public sector universities i.e. (University X and University Y). According to Higher Education Commission (2018), there were approximately 1376 students enrolled in the discipline of education at master's level in these universities.



### Sample of the Study

The sample was picked out by using proportionate stratified random sampling technique. Sample of 712 students were selected out of 1376.



### Instrument of Research

A questionnaire was adapted on the basis of California Critical Thinking Disposition Inventory, and the Self-Efficacy Scale by the researcher which was divided into three sections critical thinking disposition, problem solving skills and self-efficacy. These three factors were further divided into further ten sub sections. Four to five items per section. 1. Critical thinking disposition {decision making (4), logical thinking (4), Relevance (6), creativeness} 2. self-efficacy {performance outcome (11), self-interest (6)}.

The instrument was first checked by Pilot testing for this reason 15 students were selected randomly from the population of both government universities and then the reliability of the instrument was ensured by Cronbach's Alpha  $\alpha$ . The instrument was validated through the opinions of four field experts of educational research and assessment.

Hertzog, (2008) proposed for sample size rely upon the aim of pilot study in her latest article. For a feasible research study, her propositions were used, the sample size as small as 10-15 participants are enough to conduct pilot testing.

### Data Collection

The researcher collected data by personal visitations to administer the survey questionnaire. Statistical Package for Social Sciences (SPSS) version 20 was used to

store, organize, and analyze the data. Descriptive and inferential statistical methods have been applied to answer the research questions posed above.

## Results and Discussion

The findings of inferential statistics i.e., independent sample t-test to differentiate the critical thinking disposition, problem solving skills and self-efficacy of prospective teachers on the basis of demographical variable i.e., gender and public universities is discussed in this section. Also, inferential statistics i.e., correlation was applied to find out the relationship among critical thinking disposition, problem solving skills and teacher self-efficacy of prospective teachers.

**Table 1**  
**Correlation among prospective teachers' critical thinking disposition, problem-solving skills and self-efficacy**

Variables	Critical thinking disposition	Problem-solving skills	Self-efficacy
Critical thinking disposition	1		
Problem-solving skills	.547**	1	
Self-efficacy	.535**	.615**	1

Table 1 shows the relationship among prospective teachers' critical thinking disposition, problem-solving skills and self-efficacy on the basis of Pearson product-moment correlation coefficient. Results showed that there was a statistically significant positive and moderate relationship between prospective teachers' critical thinking disposition and self-efficacy as ( $r = .535$ ,  $n = 712$ ,  $p < 0.00$ ). There was a statistically significant positive and moderate relationship between problem-solving skills and self-efficacy as ( $r = .547$ ,  $n = 712$ ,  $p < 0.00$ ). There was a statistically significant positive and strong relationship between critical thinking disposition and problem-solving skills as ( $r = .615$ ,  $n = 712$ ,  $p < 0.00$ ).

**Table 2**  
**Prospective teachers Critical thinking disposition Problem solving skills and Self efficacy on the basis of universities**

Variables	University X (177)		University Y (535)		t	df	p
	M	SD	M	SD			
Critical thinking disposition	72	7.513	66.2	9.42	8.4	710	.000
Problem solving Skills	43	5	39.3	7	7.7	710	.000
Self-efficacy	61.4	6.4	54.01	8.2	13.3	710	.000

An independent sample t-test was applied to examine the critical thinking disposition, problem solving skills and self- efficacy of the prospective teachers on the basis of university. Results of the t-test describes that there was considerable difference in critical thinking disposition, problem-solving skills and self-efficacy of prospective teachers on the grounds of gender as  $p$  value is less than 0.05 and  $t(710) = 8.4, p (.000)$ ;  $t(710) = -7.7, p (.000)$ ;  $t(710) = 13.3, p (.000)$ .

**Table 3**  
**Prospective teachers Critical thinking disposition Problem solving skills and Self efficacy on the grounds of gender**

Variables	Male (177)		Female (535)		t	df	p
	M	SD	M	SD			
Critical thinking disposition	65.23	10.4	70	8.2	-6.009	710	.000
Problem solving Skills	38.5	5.8	42	6	-6.078	710	.000
Self-efficacy	56	9.25	58	8	-2.397	264.53	.017

To examine the prospective teachers' critical thinking disposition, problem solving skills and self- efficacy on the basis of gender an independent sample t-test was applied. Results of the t-test describes that there were not variations in prospective teachers' critical thinking disposition and problem-solving skills on the basis of gender and females think more critically than males as  $p$  value is less than 0.05 and  $t(710) = -6.009, p (.000)$ ;  $t(710) = -6.078, p (.000)$  respectively. While there was a significant difference in prospective female teachers' problem-solving skills as well as their self-efficacy as  $p$  value is more than 0.05 and  $t(264.53) = -2.397, p (.017)$ .

## Discussions

This study was designed to determine the relationship among prospective teachers' critical thinking disposition and self-efficacy on the basis of demographic variables. It has been clear from research findings that prospective teachers should have a knowledge about critical thinking disposition, and self-efficacy so to improve their teaching and learning styles in the near future of their teaching profession. The results of the study revealed that Critical thinking disposition and self-efficacy are those variables which are of great importance for prospective teachers as they enhance their better understanding of the teaching and learning environment these skills enable them to tackle the most difficult situations during their teaching experiences. These variables are correlated to each other.

## **Conclusion**

The conclusion was made based on findings and statistical analysis. There exists a strong positive relationship between prospective teachers' critical thinking disposition, problem solving skills and self-efficacy therefore they have strong impact on prospective teachers' decision making, logical thinking, creativeness, uniqueness, identifying problems, organization of thoughts, performance and their interests. Based on results, it has been concluded that critical thinking disposition, problem solving skills and self-efficacy are those variables which a prospective teacher should have a prior knowledge of so to achieve his professional goals of a good teacher in future. Critical thinking disposition, problem solving skills and self-efficacy are related to each other therefore correlation was found out. There was a positive and moderate correlation among the variables critical thinking disposition, problem solving skills and self-efficacy. There was a positive significant relationship among prospective teachers' critical thinking disposition, problem solving skills and self-efficacy on the basis of two public universities. There was significant relationship among prospective teachers' critical thinking disposition, problem solving skills and self-efficacy on the basis of gender.

## **Recommendations**

1. Teachers or educators can perform an enactment in promoting self-efficacy belief of the prospective teachers and can motivate them towards teaching profession by allowing them to give lectures in the classes.
2. Administration and teacher educators may organize workshops, group meetings, and teacher training conferences to help prospective teachers to understand the relationship between critical thinking disposition, problem solving skills and teacher self-efficacy.
3. Educators may generate possibilities (i.e., presentations and group activities) for prospective teachers to cooperate in performing these activities and duties to improve their critical thinking disposition, problem solving skills and self-efficacy beliefs.
4. Different methods, techniques should be taught to prospective teachers how to control and manage the class room environment.



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