# ANALYZING PRE-SERVICE ELEMENTARY TEACHERS' PEDAGOGICAL BELIEFS

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## ABSTRACT

The major aim of the study was to reveal prospective elementary teachers' pedagogical beliefs. The following research questions were addressed in the study: "What are prospective elementary teachers' teaching beliefs?" and "Do their teaching beliefs differ based on their gender?. Data were gathered by using the adopted version of Teacher Beliefs Survey developed by Benjamin (2003). The instrument assessed traditional and constructivist view of teaching with a number of 18 items.  It was distributed to 234 fourth-grade Prospective Elementary Classroom Teachers. The participants were categorized by using cluster analyze based on their pedagogical beliefs. The analysis results showed that majority of the participants hold constructivist teaching belief whereas remaining presented traditional and pragmatic views. Non parametric statistic test was conducted whether the participants' teaching beliefs differed based on gender. Chi square analysis showed significant difference between gender and teaching beliefs of the participants.

**Keywords:** pedagogical beliefs, cluster analysis, gender, pre-service teachers.

## INTRODUCTION

Educational system is the most important organization for preparing the future generations. This system is evolving gradually to meet the needs of the era. Especially throughout the last two decades, reconstructed education systems focused on developing pupils' own understanding with an emphasis on learner centered teaching practices. Within this flow, in our country, both the education faculties and k-12 curriculums were redesigned to fulfill the desired outcomes for about a decade. The curriculum of education faculties are now focusing on the learner centered teaching strategies and practices. The Turkish National Education Curriculum introduced in 2004 stresses the learner centered strategies and activities.  The teachers are urged to implement the curriculum in favor of students' personal developments with an emphasis on their involvements.

Although, this pedagogical practice shift is urged, it should be taken into consideration that the teachers' practices are related with their belief systems. Personal belief system is a messy construct as described by Pajares (1992). Belief is defined as "any simple proposition, conscious or unconscious, inferred from what a person says or does" by Rokeach (1968, p: 113). As belief itself has a wide definition, teachers' belief can be examined in different ways, self-awareness, attitude, or perspectives (Pajares, 1992). Teachers' belief on teaching and learning is another dimension that includes their views of pedagogical side of the teaching. As a construct, teaching belief contains many facets, and defining those dimensions is not easy. In the literature,

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there are many studies focusing on the teaching and its components. Studies focusing on the characteristics of effective teachers also present the participants' educational beliefs.

Witcher and Onwuegbuzie (1999) focused on pre-service teachers' perceptions of the characteristics of effective teachers. The participants were asked to present and rank the characteristics of effective teachers. The statistics used for the analysis revealed the emphasis of the importance of student centeredness to describe characteristics of effective teachers by females. In addition, females presented the importance of the ethical issues and teaching methods whereas males advocated the importance of subject knowledge and classroom management.

Minor, Onwuegbuzie, Witcher and James (2002) studied pre-service teachers' perceptions of characteristics of effective teachers and their educational beliefs of pre-service teachers. The quantitative data analysis results showed that 28.4 % of participants presented traditional view of education and only 12.7% of participants were advocating progressive educational view. However, a majority of the participants, 59% presented eclectic view. A low percentage of participants revealed progressive view of education whereas from qualitative data analysis, the student centeredness description of effective teacher characteristics emerged. The result did not present any gender differences on the educational belief and different indicator for characteristics of effective teachers.

There are also studies that focused on pedagogical views of teachers. Parker and Brindley (2008) examined 21 graduate pre-service elementary teachers' initial teaching beliefs. The themes emerged from this qualitative study revealed that participants presented a progressive view of teaching by advocating active learners and student-centered learning.

In their study Hermans, Tondeur, van Braak, and Valcke (2008) examined the primary school teachers' pedagogical beliefs and some other characteristics. They use the teaching belief survey developed by Woolley, Benjamin, and Woolley (2004) with the dimensions of constructivist and traditional educational beliefs. The overall participants' scores on both scales presented that the primary teachers have a tendency towards constructivist educational beliefs. Also, participants' pedagogical views showed no significant differences based on the gender variable.

Sang, Valcke, van Braak, and Tondeur (2009) studied educational beliefs of primary teachers in Chinese educational settings. 'Teacher Educational Beliefs' scale (TEB) was administrated to 820 primary school teachers on their traditional and constructivist beliefs on teaching and learning. Result of the analysis presented that the participants scored higher on constructivist beliefs. ANOVA results showed no difference on constructivist belief based on gender. On the other hand, adoption of traditional view was high among males. Cluster analysis was conducted to present a general profile of the participants. Result depicted four groups. Although the constructivist scores presented higher mean scores, 29.5 % participants formed constructivist group whereas 31.7% participants were grouped under traditional profile. Remaining 29.5% formed mixed constructivist and traditional and 10.1% formed mixed low constructivist and traditional profile.

The researchers tried to answer following research question: "Are there any structures of teachers' pedagogical beliefs to develop taxonomy?" and "Are there any significant differences between genders based on teachers' pedagogical beliefs".

**METHODOLOGY**

In this research, it was aimed to present the pre-service elementary teachers' pedagogical beliefs. For this reason, to present the target populations views on the research topic, a survey research was selected as the

design of the study. During the 2008- 2009 school year, an adopted version of Teacher Beliefs Survey (Benjamin, 2003) was used to assess the senior pre-service elementary teachers' pedagogical views.

## Sampling

The fourth grade pre-service teachers were selected as the sample of the study, since after their graduation they are to become in-service elementary teacher nominees. The survey was administrated in a course hour and all participants were asked to fill out whole statements in the instrument. A total number of 234 participants handed in the survey. Three out of 234 participants did not give gender information but remaining presented an equal distribution; there were 115 male and 116 female participants.

## Instrumentation

The survey instrument was prepared to get information on some demographic characteristics and pedagogical beliefs of participants. In addition to these, data on another topic were gathered and its results were also presented. To assess pre-service elementary teachers' pedagogical beliefs, 19 items were selected from Teacher Beliefs Survey developed by Benjamin (2003) representing the constructivist and behaviorist educational beliefs. Eleven out of 19 items were defined as the constructivist items and remaining eight were defined as the behaviorist ones. The instrument was translated by two area experts both fluent in English and had masters degree in education.

The teaching belief survey was developed on five point-Likert type scale where 1: "strongly disagree" to 5: "strongly agree". The items were worded as positively and none of the item presents negative statement.

## Analysis

Quantitative data from the study were analyzed by using parametric (descriptive and inferential statistics) and non parametric statistics (chi-square). In order to find whether the latent variables fall under the presented categories, explanatory factor analysis was conducted and for each factor, reliability analysis was run. K-Means Cluster analysis was also conducted to find out the general characteristics of participants. After determining the clusters, chi-square non parametric analysis was run to present the relation between participants' gender and pedagogical views. During the data analysis, SPSS 15 package statistics program was used.

## RESULTS

An explanatory factor analysis (EFA) was conducted to identify the latent variables. The assumptions of EFA were checked (Tabachnick, & Fidell, 2001) and met. Principle axis factoring extraction method with oblimin rotation was used to form the item groups of teaching belief survey. The result of the factor analysis was fit to the two factor solutions with a loading range .2 to .7. Two items loaded below .3 were discarded from the analysis (Tabachnick, & Fidell). Eleven items were loaded to constructivist factor with minimum 29 and maximum 55 point (M= 47.50 ; SD= 5.23). Remaining six items loaded to behaviorist one with a minimum 6 and maximum 30 points (M= 14.56; SD= 4.81). Items 1, 2, 5, 7, 8, 12, 13, 14, 16, 18, and 19 were loaded to the first factor with a Cronbach alpha .77. The items of 6, 9, 10, 11, 15, and 17 were loaded to second factor with a Cronbach alpha .71.

Although the test was designed to assess the pedagogical views of teachers, there was no criterion set to label the participants as either constructivist or behaviorist. The cluster analysis technique was used to form meaningful subgroups that have similar characteristics on the chosen variable (Fraley & Raftery, 1998). For this study, K-means cluster analysis approach was selected and as the cases are grouped based on the distances, the scores were transformed to standardized scores in order to make the impact of variables equal (Garson, 2010).

The analysis was first run with 2, 3, and 4 cluster options. Although the instrument presented two different scores on teaching belief, a three-cluster solution presented better result. The ANOVA analysis presented that the formed groups are different from one another with a significant result.

Table 1 shows the result of cluster analysis. The first cluster showed constructivist oriented participants (70%) with high scores on constructivist items (*M*=49.12; *SD*= 3.54) and low scores on behaviorist part (*M*= 12.24; *SD*= 2.88). The second cluster presented a group of participants (15%) with behaviorist orientation where they present high scores on behaviorist items (*M*=38.54; *SD*=4.15) and low scores on constructivist part (*M*= 18.31; *SD*=3.32). The last cluster showed positive orientation on both pedagogical views with a number (15%), high scores on constructivist items (*M*= 48.94; *SD*= 3.61) and high scores on behaviorist items (*M*=22.01; *SD*= 3.47). Based on the group means, the first cluster was named as constructivist pre-service-teachers, the second cluster named as behaviorist pre-service-teachers. The last cluster presented positive views on both scale, based on this, the last cluster was named as pragmatic pre-service teachers.

Table 1 : Between-Groups Differences for Constructivist and Behaviorist Measures

| Measures | Group 1 (Constructivists) n=165 | | Group 2 (Behaviorists) n=35 | | Group 3 (Pragmatics) n=34 | | |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | M | SD | F(2,231) |
| Constructivist | 49,12 | 3,54 | 38,54 | 4,15 | 48,94 | 3,61 | 124,259* |
| Behaviorist | 12,24 | 2,88 | 18,31 | 3,32 | 22,01 | 3,47 | 177,283* |

*p<.001

The Pearson Chi-square indicates that a significant relationship between gender and three clusters ( $\chi^2(2)$ = 9.30, *p*=0.01, eta= 0.20). Based on this significant result, there were three possible 2x2 relationships. The first 2x2 relationship was between gender and whether teachers were constructivist or behaviorist. This chi-square test result showed a significant relationship between gender and being constructivist and behaviorist oriented participant ($\chi2 (1)$ = 9.29, *p* = 0.001, eta=0.22). Females were more likely to be constructivist oriented teachers than males. The second chi-square result revealed a significant relationship between gender and being behaviorist and pragmatic oriented participant ($\chi^2 (1)$ = 3.99, p = .048, eta=0.24). Females were significantly more likely to be pragmatic oriented than males. However, relationship between gender and being constructivist and pragmatic oriented showed no significance ($\chi^2(1)$ = 0.31, p = .58).

**CONCLUSION**

Research on the teachers' understanding of teaching, learning and attitudes towards related issues are stemmed from the belief that those views of teachers affect their classroom practices. Pajares (1992) mainly focused on the influence of personal belief systems on the teachers' perceptions and judgments where these mainly influence their classroom behaviors.

The focal point of this study was to determine the overall profile of senior pre-service elementary teachers. Their pedagogical views (constructivist and behaviorist) were revealed by a survey study. The result of the current study has parallel characteristics with previous ones. As presented such as Sang, Valcke, van Braak, and

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Tondeur (2009), and Hermans, Tondeur, van Braak, and Valcke (2008), and Parker and Brindley (2008), the result of this study showed higher rating of constructivist items than the traditional one by participants. However, high rating of constructivist items do not present that the participants in the study hold constructivist orientation rather than traditional one. Clustering the participants who have similar characteristics is a way to draw a picture of pre service teachers' pedagogical views. By using the scores on both pedagogical views, three meaningful groups emerged. The majority of the participants get higher scores on constructivist items and low scores on traditional one. So, they formed the constructivist cluster. Those with high scores on traditional one and low scores on constructivist one formed the traditional cluster. The remaining scored high on both dimensions formed the pragmatic cluster.

Although the tendency of the participants' view in this study have similar characteristics with the previous studies, the result of this cluster analysis conflicts with the study of Sang, Valcke, van Braak, and Tondeur (2009). In their study they found that the proportion of traditionally oriented participants is similar with constructivist ones. This discrepancy may due to the cultural as well as the educational policy differences between two different countries, Turkey and China.

The clusters formed based on the pedagogical views were analyzed according to participants' gender. Females are more constructivistly oriented than males when we investigate the relationship between gender and their constructivist and behaviorist orientation. Also, females are more likely to be pragmatically oriented than behavioristicly oriented. However, no significant relationship was observed between gender and being pragmatically and constructivistly oriented. When considering the overall results, the prospective elementary teachers are more likely to be constructivistly oriented. This can be related to the emphasis on constructivist view of teaching and learning in teacher preparation institutions. Although all study members participated in the same teacher education program, gender difference was observed. Girls are dominant in teaching profession and this makes them open to new developments in teaching profession. This can be explained as girls are more open to trying new things than boys.

It is widely believed that, beliefs on teaching are developed throughout the personal observations and experiences that the students encountered during their time spent in schools (Pajares, 1992). Additionally, in this process, Richardson (1996) emphasize the effect of the way how knowledge and content presented by their teachers. As this is the grounded theme of the belief studies, pre-service teachers' pedagogical views gain an important attention. New national curriculum which was developed parallel with the needs of the current era, emphasis the students' own development with the guidance of the teacher that is called students centeredness, or from a wider perspective constructivist educational practice. As the implementer of the curriculum today, teachers have to be guides in the classroom. But, before this, their underlying belief of teaching and learning needs to be analyzed. The investigation of pre-service teachers' teaching beliefs can be used to shape the teacher preparation (Hart, 2004) programs. Moreover, ignoring the pre-service teachers' views of teaching can constrain their professional development and acquisition of new knowledge and strategies on teaching practice (Morton, Williams & Brindley, 2006). This study will contribute to make modifications on both pre-service and in-service teacher's professional developments. Their belief on teaching can be used to rearrange the undergraduate programs. The courses can be redesigned with constructivist approach and strategies. For introducing the new and different teaching strategies related with student-centered educational approach, seminars and in-service training program can be designed.

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