



# A Modeling Study about the Factors Affecting Assessment Preferences of Pre-service Teachers

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## Abstract

This is a correlation study which aims to assess the theoretical model about the factors affecting assessment preferences of pre-service teachers. In the model the relations among the "alternative assessment methods", "critical thinking learning strategy", "Elaboration learning strategy", "self-efficacy about learning" variables were defined. The study was conducted on 719 pre-service teachers at 5 state universities in Ankara/Turkey. Path analysis has been calculated to analyze the collected data. The results showed that critical thinking learning strategy variable affected the alternative assessment methods variable directly. On the other hand, self-efficacy about learning and elaboration learning strategy variables affect alternative assessment methods variable indirectly. The goodness of fit values about the model are  $\chi^2/sd:2.59$ , NNFI: 0.93, CFI: 0.98 GFI: 0.93, AGFI: 0.90, RMSEA:0.048 RMR: 0.048.

## Key Words

Alternative Assessment Methods, Learning Strategies, Self-efficacy, Structural Equation Models, Path Analysis.

Modern education systems require considering individual differences while planning learning environment. In this process focus has always been on learning styles, approaches, strategies etc. So far assessment preferences of students have been ignored. Hence, while planning learning environment students' assessment preference should be taken into consideration. The concept of "assessment preferences" refers to students' opinions, attitudes, and preferences of assessment methods and its properties (Birenbaum, 1997).

The level of benefit that the students get from the instructing and assessment activities varies according to the individual differences they have. So many individual differences such as students' learning styles, motivations, the strategies they use while learning, personalities etc. affect the students' success and the level of the benefit they get from instructing process. On the other hand, besides the individual differences related to learning, students'

perception about the assessment process has great importance on the quality of the education (Doğan, 2011; Kuzgun & Deryakulu, 2004).

In modern educational systems, instruction and assessment processes should be thought as a whole but not separate. This situation reveals the relations between the characteristics related to learning and assessment. The research shows that there is a relation between students' assessment preferences and individual differences related to learning such as learning styles, approaches etc. (Birenbaum & Gutvirzt, 1995; Birenbaum & Rosenau, 2006; Cohen, 1995; Doğan, Atmaca, & Aslan, 2012; Doğan & Kutlu, 2010; Gijbels & Dochy, 2006). Therefore, in order to increase the quality of the education, there should be a harmony between students' perceptions about learning-assessment and the learning-assessment activities that the teacher applies in the classroom.

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In this study, it is aimed to find out the direct and indirect relations among “preference level of alternative assessment methods”, “adoption level of critical thinking learning strategy”, “adoption level of elaboration learning strategy”, and “level of self-efficacy about learning”. These concepts are briefly explained below.

Alternative assessment refers to assessment methods which aim to assess student behaviors in situations similar to real life settings. The focus of alternative assessment methods is on higher order thinking skills rather than lower order thinking skills, whereas traditional assessment refers to measurement of lower order thinking skills which are mostly focusing on memorization of in-class learning. Short answer tests, matching tests or essay tests which focus on memorization of in-class learning are the examples of traditional assessment methods. Performance tasks and portfolios are the examples of alternative assessment methods (Bird, 1990; Chase, 1999; Linn & Gronlund, 1995; Kulm, 1994; Popham, 2005; Tierney, Carter, & Desai, 1991; Varsus, 1990; Wehlage, Newmann, & Secada, 1996).

In literature, there are different classifications about learning strategies (Babadoğan, 1996; Somuncuoğlu & Yıldırım, 1998; Weinstein & Mayer, 1986). In this study, the classification of learning strategy which is developed by Pintrich, Smith, Garcia, and McKeachie (1991) is taken into consideration. Pintrich et al. mentioned 9 different dimensions in learning strategy. In this study, among those dimensions “critical thinking learning strategy” and “elaboration learning strategy” were used as variables. Critical thinking is that mode of thinking -about any subject, content, or problem- in which the thinker improves the quality of his or her thinking by skillfully taking charge of the structures inherent in thinking and imposing intellectual standards upon them (Paul & Elder, 2008). Critical thinking requires both the skill to think critically and the “disposition to think productively and critically” (Norris, 1985). The person who adopts critical thinking learning strategy uses their previous and current knowledge to solve a problem and give decisions according to defined criteria. Elaboration learning strategy helps learners to relate the previous and new information. Thus, the students who adopt elaboration learning strategy compare and interrelate the information that they learned in different courses (Pintrich et al., 1991).

Self-efficacy is “the belief in one’s capabilities to organize and execute the courses of action required to manage prospective situations.” In other words, self-efficacy is a person’s belief in his or her ability to suc-

ceed in a particular situation (Bandura, 1986). Bandura (1997) describes these beliefs as determinants of how people think, behave, and feel. Lee (2005) emphasizes that people can improve their self-efficacy by watching other people’s action, listening to other person’s views or having individual experience. According to Schunk (1990) if people believe in that they have required ability, they may become more eager and motivated about doing that task.

In literature, some studies focused on only defining assessment preferences of learners. Those studies shows that female students prefer alternative assessment methods more than male students’ do; students mostly prefer conventional assessment methods because they can get higher scores; in universities, international students prefer alternative assessment methods more than other students’ do (Bal, 2012; Bartram & Bailey, 2010; Kahraman & Aydoğdu, 2012; Sambell, Mcdowell, & Brown, 1997; Semerci Yeşilyurt, 2010). On the other hand Karaduman and Yanpar-Yelken (2011) state that preservice teachers prefer alternative assessment methods more than they prefer conventional assessment methods.

On the other hand, in literature some studies focus on the relationship between assessment preferences and other individual differences about learning. Those studies show that there are relations between assessment preferences and self-efficacy for learning, critical thinking, metacognitive learning strategies, test anxiety, learning approaches, learning modalities (Atmaca, Aslan, & Doğan, 2009; Birenbaum, 1997, 2007; Brienbaum & Feldman, 1998; Birenbaum & Gutvirtz, 1995; Birenbaum & Rosenau, 2006; Cohen, 1995; Doğan, 2011; Doğan et al., 2012; Doğan & Kutlu, 2010; Gijbels & Dochy, 2006; Phillips, 1999; Wilson & Fowler, 2005).

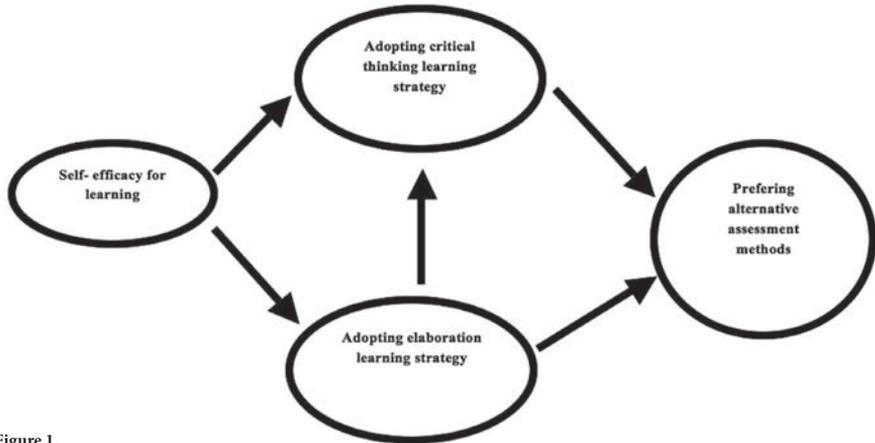
In this study, it is aimed to find out direct and indirect relations among pre-service teachers’

- Level of preferring alternative assessment methods
- Level of self-efficacy
- Level of adopting elaboration learning strategy
- Level of adopting critical thinking learning strategy. Figure 1 shows the model that was tested in this study

## Method

### Research Design

This is a correlation research. This type of research aims to find out the relation between two or more variables without any intervention. Correlational



**Figure 1.**  
*The Theoretical Model Which Was Tested*

studies are very useful to reveal the relations between variables. Besides, they provide clues for researchers to make further more complex studies (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2009).

### Working Group

Working group of the study included 719 pre-service teachers who receive education on preschool education, primary school education, computer education and instructional technology, elementary science education, elementary mathematics education, secondary science education, and secondary mathematics education departments of five universities (including one private and four state) located in Ankara, Turkey

### Instruments

In order to collect data, relevant sub-factors of “Assessment Preference Inventory (API)” and Motivated Strategies for Learning Questionnaire were used.

**Assessment Preference Inventory (API):** API was originally developed by Birenbaum (1994; 1997; 2007) and adopted to Turkish culture by Gülbahar and Büyüköztürk (2008). API has 72 items and various subscales which aim to assess different aspects of assessment preference. In this study, alternative assessment subscale was used. Factor loadings of this subscale varied between .45 and .78 values. Cronbach alpha inter reliability coefficient of this factor was .86.

**Motivated Strategies for Learning Questionnaire (MLSQ):** MLSQ was originally developed by Pintrich et al. (1991) and adopted to Turkish

culture by Büyüköztürk et al. (2004). In this study, “Self- efficacy for learning”, “critical thinking learning strategy” and “elaboration learning strategy” subscales were used. Factor loadings of this subscale varied between .46 and .79 values. Cronbach alpha inter reliability coefficient of those factors varied between .74 and .86 values.

### Data Analysis

In order to analyze the collected data, path analysis and confirmatory factor analysis were calculated. Structural equation modeling and recursive path models play a key role in causal analysis of a sequence of outcome variables. Structural equation modeling is a multivariate statistical analysis technique that is used to analyze structural relationships. This technique is the combination of factor analysis and multiple regression analysis, and it is used to analyze the structural relationship between measured variables and latent constructs (Çokluk, Şekercioğlu, & Büyüköztürk 2010; Maruyama, 1998). Confirmatory factor analysis is a technique that is used to assess if the hypothesized organization of a set of identified factors fits the data or not (Sümer, 2000; Tabachnick & Fidell, 2001).

### Results

In this section, measurement model for each variable was tested. Table 1 shows the fit indices about the measurement models for the variables included in the theoretical model.

Results given in table 1 show that only  $X^2/df$  values for self-efficacy and alternative assessment methods are higher than expected ( $X^2/df < 5 =$  weak fit). But, because other indices show perfect or good fit, it can be said that measurement models of the variables are confirmed (Hooper, Caughan, & Mullen, 2008; Schumacker & Lomax, 1996; Tabachnick & Fidell, 2001).

The abbreviations used in the model are; AC for “elaboration learning strategy”, ALT for “alternative assessment methods” EL for “critical thinking learning strategy” and OZ for “self- efficacy”.

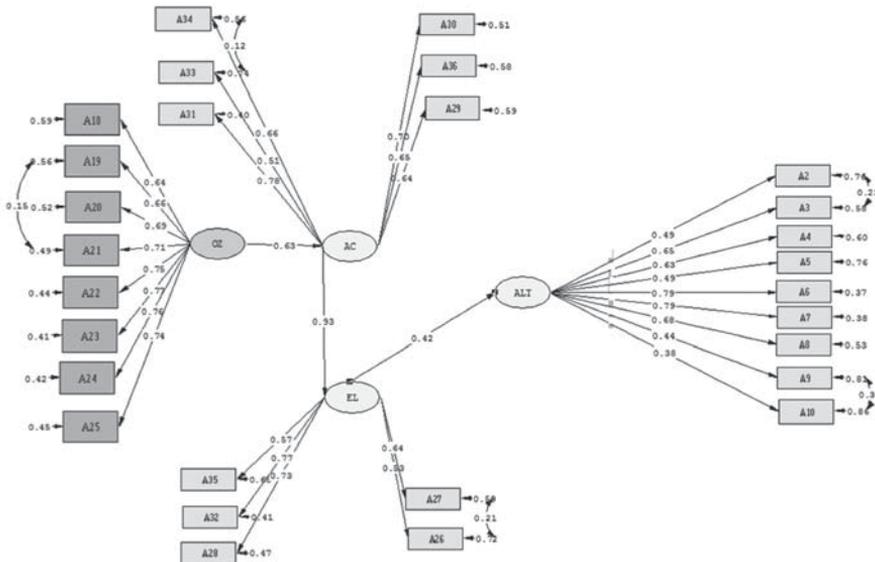
Path analysis results show that t-values about one way relations from OZ latent variable to EL latent variable and from AC latent variable to ALT variable are found insignificant. This is why those relations are omitted from the model and path analyses are recalculated. Figure 2 shows the standardized coefficient for structural equation model.

As it is seen in figure 2, critical thinking learning strategy (EL) affects alternative assessment methods (ALT) directly. On the other hand elaboration learning strategy (AC) affects critical thinking learning strategy directly but alternative assessment methods indirectly. Self-Efficacy (OZ) affects AC variable directly while affecting EL and ALT variables indi-

rectly. The fit indices about the model are  $X^2/df = 2.59$  NNFI: 0.93, CFI: 0.98, GFI: 0.93, AGFI: 0.90, RMSEA: 0.048 Standardized RMR: 0.048. Those results show that the model shown in figure 2 is confirmed (Brown, 2006; Tabachnick & Fidell, 2001).

### Discussion

The results show that pre-service teachers’ level of adopting critical thinking learning strategy affects their level of preferring alternative assessment methods. In other words, the more pre-service teachers adopt critical thinking learning strategy, the more they prefer alternative assessment methods. Pintrich et al. (1991) mentions that students who adopt critical thinking learning strategy create their own views about the learned subjects and try to find alternative solutions. On the other hand, alternative assessment methods require students to construct their own ideas and create alternative solutions to given problem. Thus, it is not surprising for the pre-service teachers who adopt critical learning strategy preferring alternative assessment methods. Some studies have also similar results (Bireanbaum, 1997; Cohen, 1995).



Chi-Square=888.02, df=342, P-value=0.00000, RMSEA=0.048

Figure 2. Standardized Coefficient for Structural Equation Model

**Table 1.**  
*Fit Indices about the Measurement Models Tested*

Measurement Models	Fit Indices						
	X <sup>2</sup> /df	NNFI	CFI	GFI	AGFI	RMSEA	RMR
Critical thinking	3.11	0.98	0.99	0.99	0.97	0.05	0.02
Elaboration	4.47	0.98	0.99	0.98	0.96	0.07	0.03
Self- efficacy	5.9	0.97	0.98	0.98	0.93	0,07	0.03
Alternative assessment methods	6.01	0.92	0.94	0.96	0.93	0.08	0.04

Moreover, results show that pre-service teachers' level of adopting elaboration learning strategy affects their level of adopting critical thinking learning strategy. In other words, the more pre-service teachers adopt elaboration learning strategy the more they adopt critical thinking learning strategy. Students adopting elaboration learning strategy combine their previous and current knowledge to solve a problem. This may be thought as a precondition for creating alternative solutions and views. Hence, adopting elaboration learning strategy may be thought as an important pre-condition for adopting critical thinking learning strategy which affects preferring alternative assessment methods directly. Bireanbaum (1997) and Doğan (2011) find middle strong positive correlations between elaboration learning strategy and critical thinking learning strategy.

On the other hand, path analysis results reveal that pre-service teachers' level of self-efficacy about learning affects their level of adopting elaboration learning strategy directly and level of adopting critical thinking learning strategy and preferring alternative assessment methods indirectly. Self-efficacy is a person's belief in his or her ability to succeed in a particular situation. Bandura (1997) describes these beliefs as determinants of how people think, behave, and feel. Self-efficacy is one of the basic factors affecting students' success (Klausmeier & Allen, 1978). Studies show that self- efficacy affects students' motivation and success (Byrne, 1984; Kauchak & Eggen 1998; Kurbanoglu, 2004; Multon, Brown, & Lent, 1991; Pajares, Miller, & Johnson, 1999).

Results emphasize that self-efficacy is an important factor to make pre-service teachers adopt elaboration and critical thinking learning strategy. In other words, it is a pre-condition to make pre-service teachers combine different information and create alternative solutions. Pre-service teachers who use those skills while learning prefer alternative assessment methods.

In educational faculties, it is very important to create a learning atmosphere to improve students' self-efficacy. This will lead them to use elaboration and critical thinking learning strategy and indirectly prefer alternative assessment methods. Alternative

assessment methods aim to assess and improve students' higher order thinking skills such as creativity, critical thinking, problem solving etc. (Haladyna, 1997). It is very important to make pre-service teachers use elaboration and critical thinking learning strategy while learning and prefer alternative assessment methods. Competent teachers should think critically and find alternative solutions to the problems. Self-Efficacy plays crucial role to make students adopt elaboration and critical thinking learning strategies. Those learning strategies require relating the previous and new information, thinking critically, and finding alternative solution to the problems faced. Those three variables are important pre-conditions to make pre-service teachers prefer alternative assessment methods which require usage of higher order thinking skills. In order to improve the quality of the education and meet preservice teachers' instructional needs, their self-efficacy about learning should be increased and there should be a harmony between the assessment methods used in the course and their learning strategies.

Those results reveal that assessment is an important component of the instructional process because it has strong connection with the components related to learning. Assessment should not only be thought as a way to measure and evaluate students' success but also a component of instruction and facilitator of students' learning. This is why it is related to learning strategies of pre-service teachers. It is advisable for researchers wishing to study similar subjects to form alternative structural models which include variables such as learning styles or learning approaches.

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