Determining the Learning Styles of Elementary School (1st-8th Grade) Teachers[1]

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Abstract

Nowadays, individual differences are seen as important components in learning. They also affect teaching and learning processes in term of teachers and students. Learning styles is another accentuated element in point of individual differences. In this study, the learning styles of the teachers are surveyed by branches. The teachers are the most important elements in the education. Their role of creating learning environments for students appears with constructivism. The learning styles of the teachers are also important in managing learning process. In this study, learning styles of 223 primary school teachers in different branches in Turkey were determined. Learning styles were defined by Kolb's learning style inventory and distributed based on branch. The correlation between teacher branches and learning styles was measured by Chi-Square test. The correlation with learning styles was also researched based on gender. Consequently while 48% of teachers have converger learning style, 24% of them have assimilator, 18% have accommodator, and 10% have diverger learning styles. If branches are examined, a similar distribution will be observed. The correlation between learning styles and branches was measured by Chi-square test, and no correlation was seen (Pearson Chi-Square=0.332, p>0.01). In the same way, no correlation between genders and learning styles was seen (Pearson Chi-Square=0.052, p>0.01).

Key Words: Learning styles, constructivism, teacher

INTRODUCTION

Every individual can learn but rate of learning varies from person to person. According to Özden (1999), studies have shown that individual's learning rates, their capacities and styles are different from each other (Şirin and Güzel, 2006). As a result, there are several researchers started to deal with individual differences. For example; cognitive styles (Witkin and Goodenough, 1981; Riding, 1991), problem solving styles (Kirton, 1987), thinking styles (Sternberg, 1997; Cana-Garcia and Hewitt, 2000), and motivational styles (Adar, 1969; Hofstein ve Kempa, 1985) are some of the areas of researches about individual differences. One of the most important point of individual differences is learning styles.

There are several studies about determination of learning styles. Kolb, Dunn&Dunn, Gregorc, McCarthy, Felder&Solomon, Felder&Silverman and Grasha are some of the people who improved learning styles inventories. Kolb's learning styles inventory is used in Turkey most commonly among other inventories (Koçakoğlu et al, 2006).
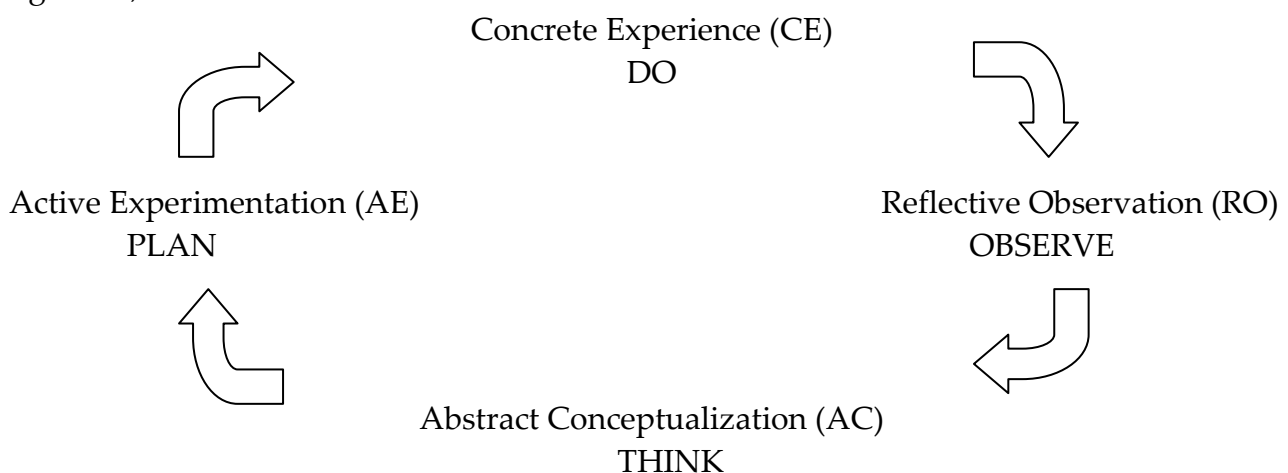
The purpose of this study is to draw a general framework of Kolb's learning styles, to determine learning styles of teachers who work in Turkey, and to determine the correlation between their branches, genders and learning styles.

Kolb's Learning Styles

Kolb's experiental learning theory (1984), is based on four basic stages of learning cycle with four different learning styles or preferences (Şirin and Güzel, 2006). Sadler-Smith (2001), explain Kolb's four-stage learning cycle as follows;

> Kolb (1984) described learning as a four-stage process consisting of concrete experience, observation and reflection, formation of abstract concepts and generalisations and the testing of the implications of these concepts in new situations. Kolb suggested that pairs of these activities may be represented as polarities with a dialectical tension between concrete experience and abstract conceptualisation (a comprehension dimension) and between reflective observation and active experimentation (a transformation dimension). Kolb suggested that individual learners have particular strengths which form the basis of their preferred 'learning style' and that an individual's style may be identified by assessing her or his position on each of these two bipolar dimensions using a self-report inventory (the Learning Styles Inventory; Kolb, 1985).

Healey and Jenkins (2000), demonstrate Kolb's experiential learning cycle in the following figure as;

Concrete Experience (CE)
DO

Active Experimentation (AE)
PLAN

Reflective Observation (RO)
OBSERVE

Abstract Conceptualization (AC)
THINK

Concrete Experience: Where the learner is actively experiencing an activity (e.g., a laboratory session, field class)

Reflective Observation: Where the learner is consciously reflecting back on that experience

Abstract Conceptualization: Where the learner is being presented with/or trying to conceptualise a theory or model of what is (to be) observed

Active Experimentation: Where the learner is trying to plan how to test a model or theory or plan for a forthcoming experience

Figure 1. Kolb's experiential learning cycle (based on Jenkins, 1998)

Kolb's learning styles are determined with four dimensions stated in the cycle. The component of Concrete Experience and Reflective Observation (CE/RO) is diverger; the component of Abstract Conceptualisation and Reflective Observation (AC/RO) is assimilator; the component of Abstract Conceptualisation and Active Experimentation (AC/AE) is converger; the component of Concrete Experience and Active Experimentation (CE/AE) is accommodator that defines the learning style. Figure 2 shows Kolb's learning styles in a diagram;
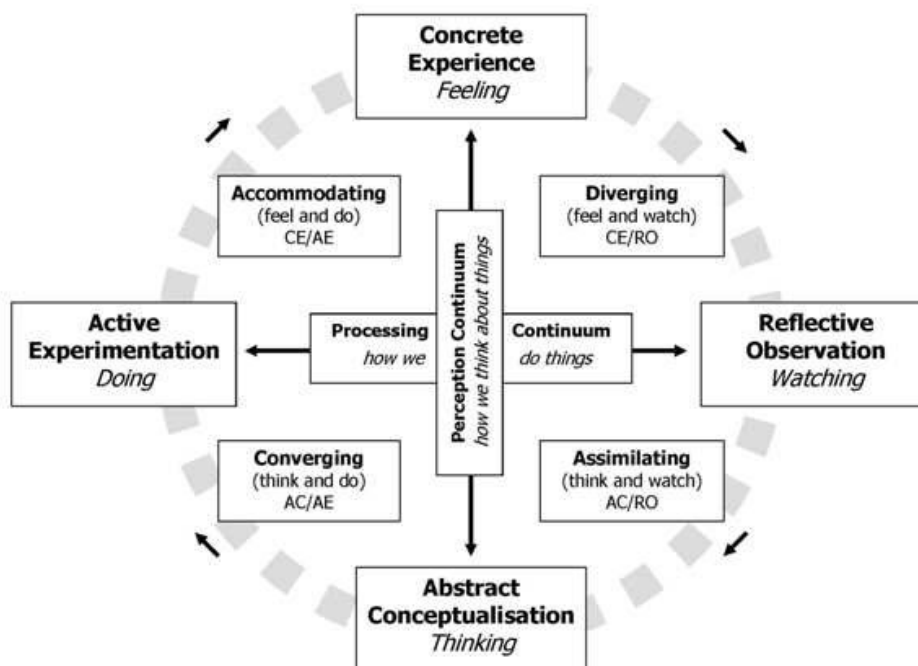

Figure 2. Kolb's learning styles (retrieved from http://www.businessballs.com)

Characteristics of Kolb's learning styles that Kolb associates with problem solving abilities to describe are explained by Healey and Jenkins (2000) as;

- **Divergers** view situations from many perspectives and rely heavily upon brainstorming and generation of ideas.
- **Assimilators** use inductive reasoning and have the ability to create theoretical models.
- **Convergers** rely heavily on hypothetical-deductive reasoning.
- **Accommodators** carry out plans and experiments and adapt to immediate circumstances.

It is normal for the individuals, who have these learning styles defined by Kolb, to have optimum learning in the different learning environments. Healey and Jenkins (2000) specify that; the diverger, in observing and wide range information gathering environments; the assimilator, in the environments where the recognized logical theories are presented; the converger, in the environments where practical applications of concepts and theories are provided; the accommodator, in the environments which give hands-on experience, learn optimum.

METHODS

Research Model

In this study correlative survey model that is one of the types of single survey is used. Correlative survey model is used for determining the change between two or more variables with respect to their existence and degree (Karasar, 1998). By using this survey method 223 primary school teachers' learning styles were determined. The participants work in different cities in Turkey. The research group consists of the teachers who joined in-service training which is organized by Ministry of National Education. During this training, in addition to teaching methods and techniques, learning styles had been mentioned as a subject. Learning styles of the research group was evaluated during the learning styles lessons. The answers of the questionnaire which has 12 items was collected and classified by the researcher. Ultimately the individual's concrete experience (CE),

reflective observation (RO), abstract conceptualization (AC) and active experience (AE) points had been calculated. According to total points of (AC)-(CE) and (AE)-(RO) calculations had been accomplished. The results were ticked off on the chart and the learning style of an individual was determined.

Data Collection Instruments

In this study Kolb's Learning Style Inventory improved in 1984 by Kolb is used for determining learning styles of teachers. Aşkar and Akkoyunlu (1993) had adapted learning styles inventory in Turkish and had applied for reliability 103 adults (62 women, 41 men). According to four learning styles scoring and unified scoring Cronbach's alfa reliability coefficients had calculated as CE= .58, RO= .70, AC= .71, AE=.65, AC-CE= .70 and AE-RO= .76. Aşkar and Akkoyunlu (1993) had decided that the reliability results were satisfied and had indicated that they were qualified enough for using in Turkey.

Kolb's Learning Style Inventory consists of 12 items and each item has four options related to relevant item. The participants range those four options according to their learning preferences. The inventory is graded with its own points. After grading, the participant's learning style is determined as diverger, assimilator, converger or accommodator.

Data Analysis

After determining the learning styles of teachers, data was transferred into Excel format and it was analyzed by SPSS statistic program. In this study, the correlation between learning styles of teachers and their branches, and the correlation between learning styles and gender were examined. In order to analyze and interpret data, Pearson Chi-Square test was used.

FINDINGS

Findings about Teacher's Learning Styles

Findings about 223 teacher's learning styles are shown in Table 1:

Table 1. Frequency of teacher's learning styles

Learning Styles	Participants	
	Frequency	Percentage
Assimilator	54	24.2
Converger	107	48
Accommodator	39	17.5
Diverger	23	10.3
Total	223	100

When Table 1 is examined, it is seen that about half of the teachers within population is found as converger (48 %). The total number of teachers who are assimilator and accommodator together reaches the total number of teachers who are converger. The lowest number of teachers learning style is diverger.

Correlation between teachers' learning styles and their branches is tested by Pearson Chi-Square. The teachers who participate in the study have 5 branches. Those branches are; classroom teachers, social-science, Turkish, math and science & technology. Table 2 shows the results of Pearson Chi-Square test about correlation between teachers' learning styles and their branches.

Table 2. Pearson Chi-Square test results about correlation between learning styles and branches of teachers

Branch	Learning Styles				Total
	As.	C.	Ac.	D.	
Classroom teacher	10	24	13	5	52
Social Sciences	9	28	7	9	53
Turkish	9	21	8	4	42
Math	17	26	6	3	52
Science & Tech.	9	8	5	2	24
Total	54	107	39	23	223

Pearson Chi-Square$_{(12)}$=13,519, p=0,332, p>.01

According the Chi-Square test there is no significant correlation between branches and learning styles of teachers. This finding indicates that different branches have no effect on determining learning styles of teachers.

Table 3 shows the findings of correlation between dominant learning styles of teachers and their gender.

Table 3. Pearson Chi-Square test results about correlation between learning styles and gender of teachers

Gender		Learning Styles				Total
		As.	C.	Ac.	D.	
Female	N	19	24	13	2	58
	%	32,8	41,4	22,4	3,4	100
Male	N	35	83	26	21	165
	%	21,2	50,3	15,8	12,7	100
Total		54	107	39	23	223

Pearson Chi-Square$_{(3)}$=7,745, p=0,52, p>.01

When table 3 is examined, it is seen that teacher's gender and their learning styles are homogenously distributed. According to the results of Chi-Square test, there is no significant correlation between gender and learning styles of teachers. The numbers of female who have assimilator and accommodator learning styles are higher than the numbers of male. On the other hand, the numbers of converger and diverger learning styles are higher in male than female. The number of male who have diverger learning style is four times higher than the number of female having diverger learning style. It is seen that genders of teachers have no effect on determining the learning styles.

DISCUSSION AND CONCLUSIONS

Teachers' dominant learning style is found as converger. This outcome is different from some researchers' findings. The researchers like Aşkar and Akkoyunlu (1993), Ergür (1998), Kılıç (2002), Gencel (2006), Demir (2006), Hasırcı (2006), Çaycı and Ünal (2007) denote the dominant learning style in Turkey as mostly assimilator. On the other hand

Ateş and Altun (2008), show that majority of the students (%63.8) have converger learning style. Research of Ateş and Altun was conducted on Computer and Teaching Technologies Department students. For this reason the students who attend to this analytic settlement requiring department have converger learning style. As found in this research, the fact that the majority of the teachers have converger learning style can be grounded by their deductive analysis necessities.

Research findings demonstrate that there is not a significant correlation between teachers' learning styles and their both branches and genders. Entwistle (1981), claim that teachers' teaching styles are the reflection of their learning styles (Evans, 2004). Because of this, it is expected that there is a significant correlation between teachers' branches and their learning styles. The fact that in research conclusion no such a relation can be found, gives the thought that even if they have different branches and different learning styles, teachers apply a similar teaching method. This teaching method can be said the traditional teaching method in which the teachers are active information transmitters and the students are passive information recipients. Therefore, the teachers are required to be informed about learning styles and specify their learning styles. This way, it will be possible for the teachers to determine the teaching approaches proper to learning styles of students and organize teaching of lesson according to this. Thus, teaching lessons with a monotype method will be prevented.

A significant correlation between learning styles and genders of teachers could not be found. Although there are researches pointing that learning styles are related with the genders (Ergür, 1998), there are more researches pointing that there is no relation between learning styles and genders (Gencel, 2006; Demir, 2006; Arslan and Babadoğan, 2005; Ateş and Altun, 2008). Therefore it can be said that the learning styles, which Kolb specified based on the experimental learning theory, are related with especially the experiences of individuals gathered through their social life rather than their genders.

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