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Full Length Research Paper

Separation-ınıdividuation of late adolescents : A longitudinal study

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The aim of this study was to demonstrate the change in separation-individuation between late adolescents in the first, second, third and fourth year of higher education. The study sample used for this longitudinal study consisted of 148 students attending class studies, computer education and science education departments of Kırıkkale University. The Separation-Individuation Test of Adolescence (SITA) Scale was used. The study was performed using data collected annually over a period of four years, and the analysis of variance (ANOVA) test was used to compare the results. Based on the study results, significant differences were identified between the yearly mean scores of the late adolescents' attachment to a caregiver, attachment to teachers, and separation anxiety dimensions.

Key words: Separation-individuation, late adolescent, longitudinal study.

INTRODUCTION

Separation-individuation is redefining the relationship between an individual and their caregivers such as mother and father by means of moving away from this dependency on parents on their way to independence and autonomy. It is expected that adolescents separate from their parents with the help of physical, mental, interpersonal and emotional developments during separation-individuation process. According to Blos (1989), the idea of the self is experienced in a subjective manner during separation-individuation period when an adolescent becomes aware of himself/herself by getting rid of the dependencies on their parents. During this process mental structuring is materialized again by the ego of an adolescent whose personality is in a process of embodiment. Thus, the nature of an adolescent is changeable during this process. It is significant for adolescents to control the anxiety that they experience and manage self-esteem during the process of getting away from their infancy and childhood ties in separation-individuation period.

Bowlby argues that the relationship between child and mother-father, especially the relationship between child and mother is double-sided (Cited in Brandell and Ringel, 2007). Problems are observed in separation-individuation of all individuals who have human-human and human-object relationship based on unhealthy attachment style (Göka and Göka, 2009). The disturbances that arise in mirroring, internalization and separation processes might

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result in self pathologies during early childhood and adolescence (Çetin, 2001). According to Koepke and Denissen (2012), the separation-individuation process leads individuals to distinguish and identify the structures involved in this process. As a developmental process, separation is conceptualized as a change not only in personal dependences, but also in mental and internal cognitive representations. This process is accompanied by psycho-logical maturation, a sense of personal independence, and positive emotional attachment to parents.

On the other hand, according to Pionnie et al. (2001), the separation of parents and adolescents during separation-individuation is a difficult process. Adolescence is viewed as a period where adolescents are required to persue and continue certain cultural rituals, even though this becomes gradually more difficult for them over time. Families feel increasingly obliged to find and define themselves on their own, developing their own rituals in the process out of a compelling and narcissistic force. As parent and adolescent relations become more complex, adolescents discover the advantages of structures that enable separation-individuation in different areas. Koepke and Denissan (2012) demonstrated that parents influence the development of children through responses to their to the children's need for individuation and sense of belonging; this consequently provides them with sufficient means to influence and manage personality in children. Thus, parents and children conceptualize a system of identity based on the experimental use of notions such as separation, independence and difference.

When separation-individuation literature is reviewed; for example, in his study on late adolescents, Hoffman (1984) found that while conflictual independence is in harmony with personal adaptation it is not related with problems in romantic relationships. On the other hand, it was determined that, the increase in emotional independence is related with academic adaptation. In their study on separation-individuation in late adolescents, Quintana and Kerr (1993) found that participation in relationships bolsters separation, mirroring and symbiosis. It was found that for healthy separation of both genders there is a positive correlation between and the scales of self-centralizing and symbiosis. The symbiosis, separation anxiety, rejection expectancy, depression and anxiety scores of females were found to be higher than those of males. McClanahan and Holmbeck (1992) found in a study on adolescents that there is a consistent correlation between the separation anxiety, healthy separation, need denial and nurturance seeking subscales of Separation-Individuation Test and the tools measuring family functions and positive-negative psychological adaptation. In their first study, Ryan and Lynch (1989) conducted a study on 148 early adolescents. As a result of the first study, it was found that there is a negative correlation between emotional autonomy and qualitative attachment to parents and a positive correlation between emotional autonomy and qualitative attachment to friends. Willemsen et al. (1987) revealed that independence from mother predicts secure attachment.

In their study, Kroger and Haslet (1988) determined the relationship between the attachment styles of university students and separation anxiety. Schultheiss and Blustein (1994) found that female university students have more attitudinal loyalty and attachment to their parents. It was found that male university students with disintegrated and moratorium identity status show attitudinal loyalty to parents. When separation-individuation literature is reviewed some studies can be found like (Perosa et al. 1996) which focused on individuation of female university students in Minuchin structural family model.

When separation-individuation literature is reviewed, Levpuscek (2006) found that girls achieve individuation from parents more successfully than boys. Boys, on the other hand, make a greater effort to become independent during individuation period. In their study on freshman college students, Holmbeck and Wandrei (1993) found that self-esteem predicts adjustment rather than separation-individuation, family relationships, cognitive indicators of personality variations and status of home leaving. When it comes to the findings regarding gender, it was found that girls who achieve less adjustment have higher separation anxiety and seek attachment whereas boys who achieve less adjustment separate more from important others (mother, father, siblings, etc.). In their study on university students, Beyers and Goossens (2003) found that there is a negative correlation between psychological separation and independence from parents and emotions of separation. In their study on kindergarten-age children, Stadelmann et al. (2010) observed that children's behavioral/emotional problems were associated with separation, family conflicts and negative representations of the family. In addition, children separated from their parents at the age of five had significantly more negative experiences regarding their parents than children still living with their parents at the age of five and six. Holmbeck and McClanahan (1994) previously evaluated the correlation, cluster analyses and item-level analyses of the SITA scale. In their study, performed on individuals between the ages of 17 and 70 taking courses at a university, Blazina et al. (2007) identified a positive correlation in males between ideology, solitude and separation-individuation. In their study on Belgian adults, Kins et al. (2012) observed nonfunctional dependence and nonfunctional in-dependence – which are symptoms of problem separation-individuation – as a form of psychological control. A study by Arseth et al., (2009) on female Norwegian university students between the ages of 18 and 29 demonstrated a higher level of separation individuation difficulties among insincere and dependent women than among sincere women. Dependent women showed higher separation anxiety scores than sincere women, while insincere women had significantly higher scores expectation of rejection, denial of intimacy and

separation anxiety scores. In a study investigating African-Americans and European-Americans, Lindsey (2014) found that separation-individual has a significantly positive correlation with approval seeking schema and anxiety. However, among African-Americans, separation-individuation is not a significant predictor of anxiety. Kins et al. (2012) identified a relationship between depressive symptoms and pathological separation-individuation, and also demonstrated that separation-individuation is related to wellness, nonfunctional dependence, nonfunctional independence, and the four groups of personality associated with a combination of these.

In another study in the literature of separation-individuation, Delhaye et al. (2012)'s study on Belgium college students between the ages of 18 and 26 regarding their perceived parenthood, separation-individuation and emotional adaptation showed that a low perceived parenthood is a predictor of higher levels of independence and insufficient emotional adaptation. Eliezer et al. (2012) investigated the relationship between the internal father object, the separation-individuation process, anxiety levels and depression levels. The results of this study demonstrated that in separation-individuation processes, the development of a weak father object showed similarities as well as differences with the development of depression and anxiety. Coonerty's (1986) study showed that schizophrenics showed greater separation-individuation themes, while the border group exhibited even higher separation-individuation themes than schizophrenics. These results were considered to be a validation of Mahler's theory. Blazina et al. (2008) previously performed a study on the role of gender role conflicts and separation-individuation difficulties on solitude/loneliness among college males, where they determined that higher levels of solitude among parents rendered successful separation more difficult. In addition, they also determined that gender role conflict scores were associated with an increase in the frequency of solitude/loneliness.

In Turkey, Göral (2002) carried out some research into the second separation-individuation of Turkish university students. Göral found that the perception of parents' over-protective, over-disciplined and democratic attitudes have a slight effect on the separation-individuation and experiences in romantic relationships of young adults. In his study, Yaman (2005) found that high school students with a low level of psychological adaptation experience more problems in many dimensions of separation-individuation process. Furthermore, it was observed that females experience more problems when compared with males in terms of both separation-individuation process and psychological adaptation. In their study, Aslan and Güven (2010) found that there is a mediation of separation-individuation in the relationship between secure attachment to parents and personal adaptation in late adolescents.

While adolescents experience the separation-individuation process, they also begin to assume responsibility for themselves as individuals and for their own behavior. During the separation-individuation process, individuals reduce their dependency – especially their dependency on their parents – and begin to form their own personality through individuation; they therefore take steps towards becoming independent individuals. It is important to determine whether the process of separating from parents to become an individual, and to develop an identity as adult, is managed effectively. In this context, this study aims to investigate in Turkish late adolescents the separation-individuation process – a process that plays an important role in the shaping of personality in adolescents – by using a longitudinal study model.

METHODS

The single screening model is used not only to assess certain situations and cases, but also to evaluate temporal changes and developments. Studies using screening models to determine temporal changes and developments are referred to as development studies. In contrast to "instant" screening methods, which evaluate static characteristics, the screening of temporal changes and developments evaluate dynamism and motion. Temporal screening can be performed using one of two basic approaches that are the monitoring and the cross-sectional approaches (Dalen, 1962; as cited by Karasar, 2003: 79, 80). In the monitoring approach, there are generally a limited number of variables (of the same element or unit) whose temporal change or development is being evaluated, which are followed continuously or in certain time intervals, starting at a certain point in time. In this study, we have used the monitoring approach – or in other words the longitudinal study design – to determine the change experienced over time by late adolescents during the separation-individuation process.

Participants

The study group consisted of 148 fourth-years students attending the class studies, science education and computer education departments of Kırıkkale University. The study was conducted from the spring semester of the 2010-2011 academic year to the spring semester of the 2013-2014 academic year. The age range of the students within the study group was between 17 and 28, while 105 (70.9%) of these students were females (mean age =20.30, SD=1.25) and 43 (29.1%) were males (mean age=20.95, SD=1.76).

Instruments

The Scale of Adolescent Separation-Individuation (SITA), developed by Levine et al. (1986) and adapted by Aslan and Güven (2008) for Turkish university students SITA, is a five-point Likert-type scale consisting of 9 subscales and 103 items. The SITA subscales are as follows (Levine and Saintonge, 1993):

1. Separation Anxiety: Significant others experienced as abandoning.
2. Engulfment Anxiety: Intimacy experienced as envelopment.
3. Nurturance Seeking: Strong caretaker attachment.
4. Peer Enmeshment: Strivings for intense peer intimacy.
5. Teacher Enmeshment: Strivings for intense, intimate attachments to teachers.
6. Practising-Mirroring: Narcissistic strivings.

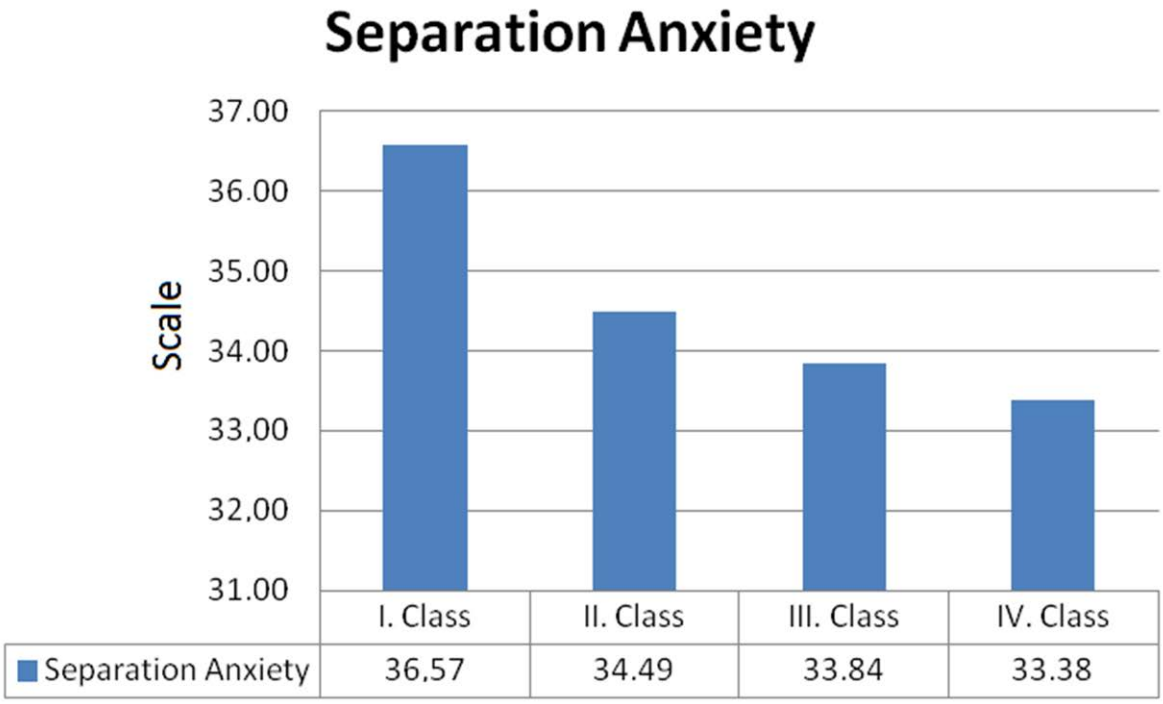

Figure 1. Mean scores obtained with repeated measurements of separation anxiety subscale.

7. Need Denial: Attachment needs denied.
8. Rejection Expectancy: Significant others experienced as callous and hostile.
9. Healthy Separation: Flexible balance of dependence and independence strivings.

Regarding the scale, a study done in Turkey (Aslan and Güven, 2008) revealed that the factor loadings for the subscales of SITA are .36 - .71 for separation anxiety, .48-.84 for engulfment anxiety, .46-.70 for rejection expectancy, .29-.80 for practising mirroring, .20-.58 for peer enmeshment, .22-.63 for need denial, .28-.59 for teacher enmeshment, .40-.68 for nurturance seeking and .30-.66 for healthy separation, respectively. Cronbach's alpha coefficients were .79 for engulfment anxiety, .75 for separation anxiety, .82 for rejection expectancy, .91 for practising mirroring, .71 for peer enmeshment, .72 for need denial, .63 for teacher enmeshment, .65 for nurturance seeking and .39 for healthy separation, respectively.

Procedure

Before administration of the scales, appointments were arranged with the class instructors at the Faculty of Education at Kırıkkale University. The purpose of the study was explained to them, and their permission was sought to apply the instruments during their classes. After obtaining their approval, the researchers applied the instruments on the participants who had volunteered. Before administration, informed consent and permission to report the findings were obtained from the volunteer participants. During the administration, the participants were also informed about the purpose and completion of the study, and were assured about the anonymity and confidentiality of their responses. The duration of implementation was approximately 40 min. All of the participants completed the scales. The points which were obtained from the three scales were analyzed through SPSS 11.5 and the total points of scales were found in data analyses.

Data analysis

In this study, data collected annually during the four-year study period were used to evaluate the change in separation-individuation experienced by the students over the course of four years. In this context, we have used means and the analysis of variance (ANOVA) to analyze these changes.

FINDINGS

The study results were evaluated based on mean values for the study variables and ANOVA. In the sections below, the study results are first provided as descriptive statistics of the four year means for the SITA's subscales, according to the different student classes/years. The results are then provided as descriptive statistics of the four-year means of the SITA's subscales, according to gender.

The four-year means of adolescent separation-individuation scale's subscales according to students' class/years

As shown in Figure 1, the mean score for SITA's separation anxiety subscale was 36.57 for first-year students, 34.49 for second-year students, 33.84 for third-year students, and 33.84 for fourth-year students. In this subscale, first-year students had the highest mean score, while fourth-year students had the lowest mean score.

As shown in Figure 2, the mean score for SITA's engulfment anxiety subscale was 15.66 for first-year

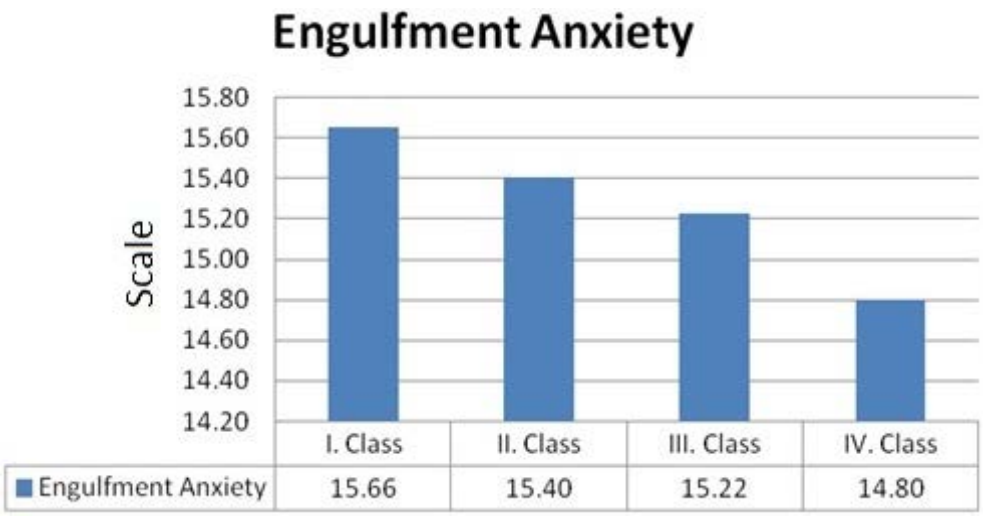

Figure 2. Mean scores obtained with repeated measurements of engulfment anxiety subscale.

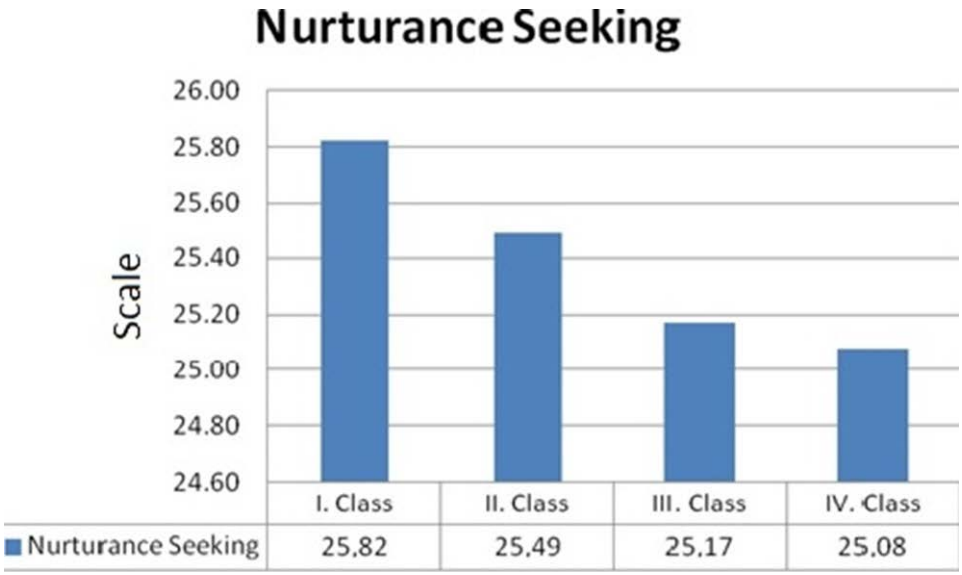

Figure 3. Mean scores obtained with repeated measurements of nurturance seeking subscale.

students, 15.40 for second-year students, 15.22 for third-year students, and 14.80 for fourth-year students. In this subscale, first-year students had the highest mean score, while fourth-year students had the lowest mean score.

As shown in Figure 3, the mean score for SITA's nurturance seeking subscale was 25.82 for first-year students, 25.49 for second-year students, 25.17 for third-year students, and 25.08 for fourth-year students. In this subscale, first-year students had the highest mean score, while fourth-year students had the lowest mean score.

As shown in Figure 4, the mean score for SITA's peer enmeshment subscale was 39.18 for first-year students, 39.93 for second-year students, 39.92 for third-year students, and 38.54 for fourth-year students. In this subscale, first-year students had the highest mean score, while fourth-year students had the lowest mean score.

As shown in Figure 5, the mean score for SITA's teacher enmeshment subscale was 11.11 for first-year students, 11.13 for second-year students, 10.53 for third-year students, and 11.33 for fourth-year students. In this subscale, fourth-year students had the highest mean score, while first-year students had the lowest mean score.

As shown in Figure 6, the mean score for SITA's practising mirroring subscale was 44.66 for first-year students, 48.10 for second-year students, 47.71 for third-

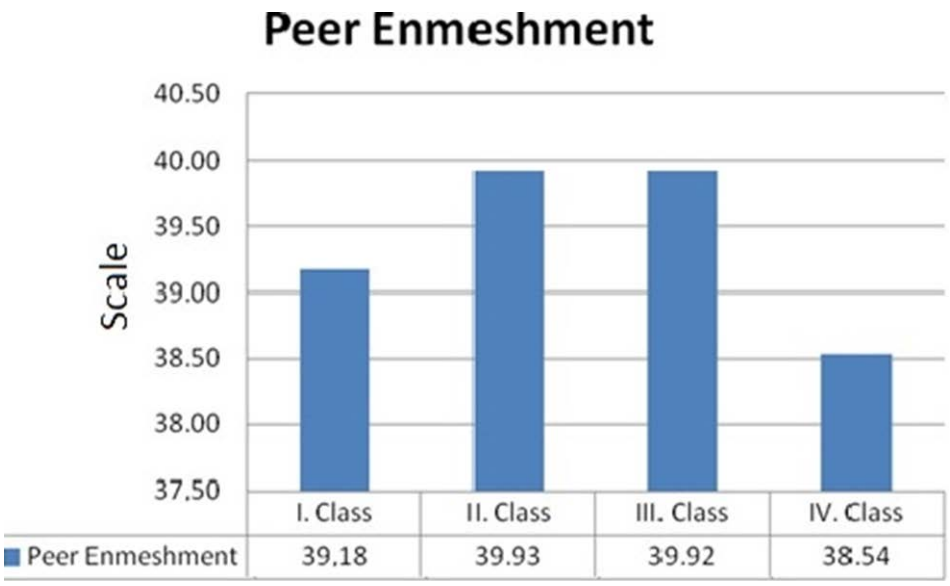

Figure 4. Mean scores obtained with repeated measurements of peer enmeshment subscale.

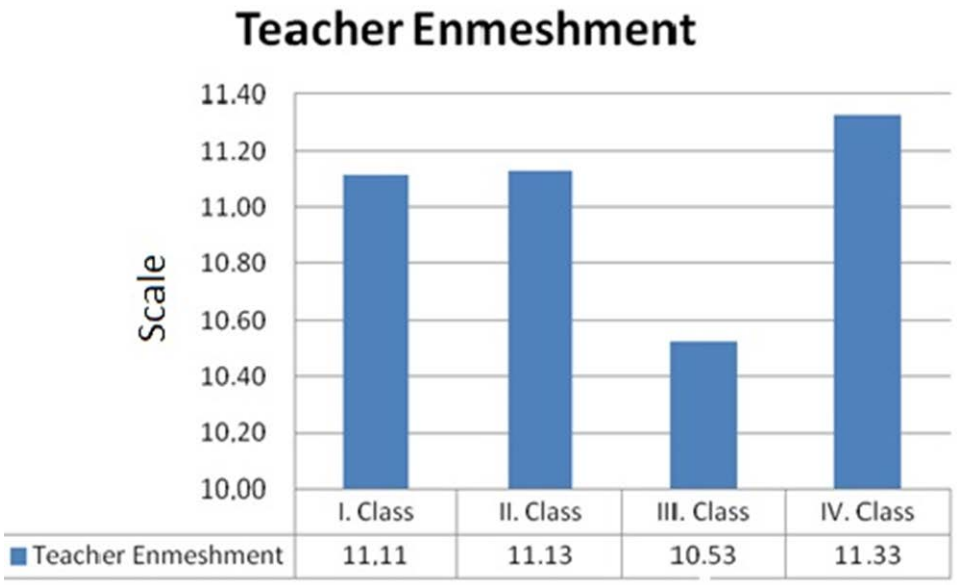

Figure 5. Mean scores obtained with repeated measurements of teacher enmeshment subscale.

year students, and 49.01 for fourth-year students. In this subscale, fourth-year students had the highest mean score, while first-year students had the lowest mean score.

As shown in Figure 7, the mean score for SITA's need denial subscale was 26.89 for first-year students, 26.20 for second-year students, 25.81 for third-year students, and 27.35 for fourth-year students. In this subscale, fourth-year students had the highest mean score, while third-year students had the lowest mean score.

As shown in Figure 8, the mean score for SITA's rejection expectancy subscale was 23.41 for first-year students, 24.67 for second-year students, 25.00 for third-year students, and 25.08 for fourth-year students. In this subscale, fourth-year students had the highest mean score, while second-year students had the lowest mean score.

As shown in Figure 9, the mean score for SITA's healthy separation subscale was 8.75 for first-year students, 9.37 for second-year students, 8.88 for third-year students, and 9.04 for fourth-year students. In this subscale, second-year students had the highest mean

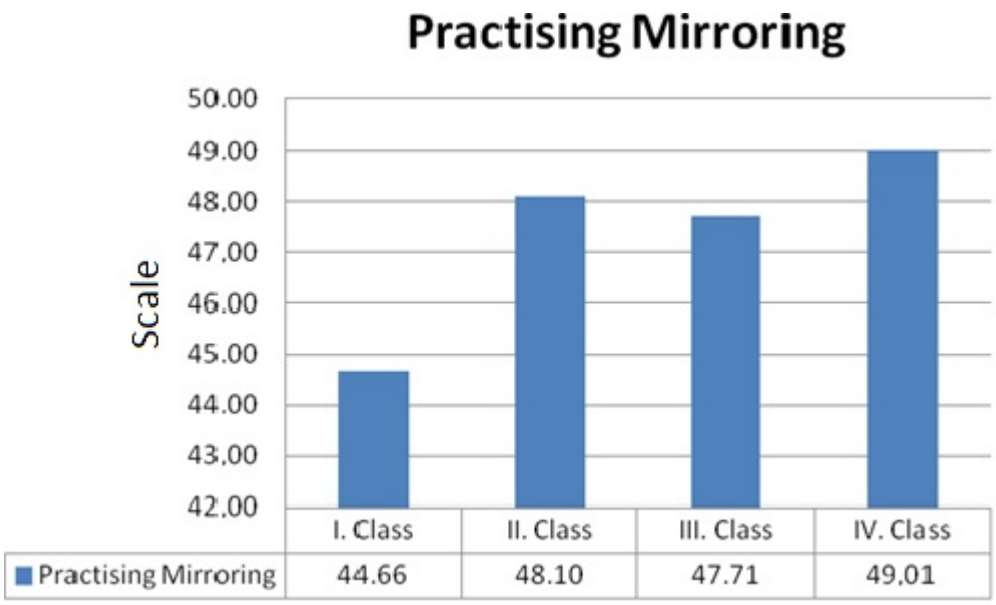

Figure 6. Mean scores obtained with repeated measurements of practising mirroring subscale

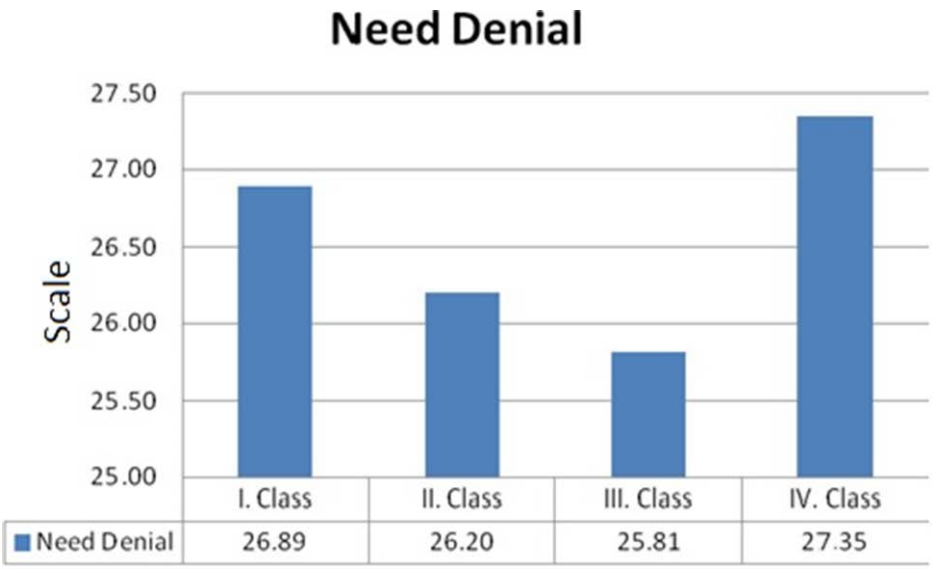

Figure 7. Mean scores obtained with repeated measurements of need denial subscale.

score, while first-year students had the lowest mean score.

Four-Year Mean Scores of Adolescent Separation-Individuation Scale's Subscales According to Gender

As shown in Figure 10, the four-year mean score for SITA's separation anxiety subscale varied significantly according to gender for third-year students. In this subscale, third-year female students had a significantly higher mean score than third-year male students.

As shown in Figure 11, the four-year mean score for SITA's engulfment anxiety subscale did not vary significantly according to gender for any of the classes/ years.

As shown in Figure 12, the four-year mean score for SITA's nurturance seeking subscale varied significantly according to gender for first-year, second-year, third-year and fourth-year students. In this subscale, first-year, second-year, third-year and fourth-year female students had significantly higher mean scores than male students of the same class/year.

As shown in Figure 13, the four-year mean score for

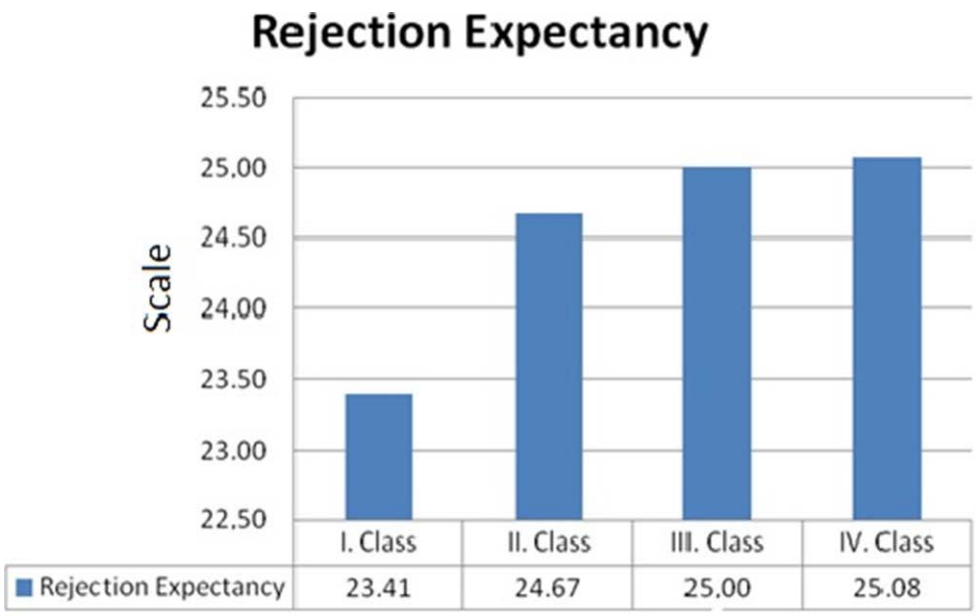

Figure 8. Mean scores obtained with repeated measurements of rejection expectancy subscale.

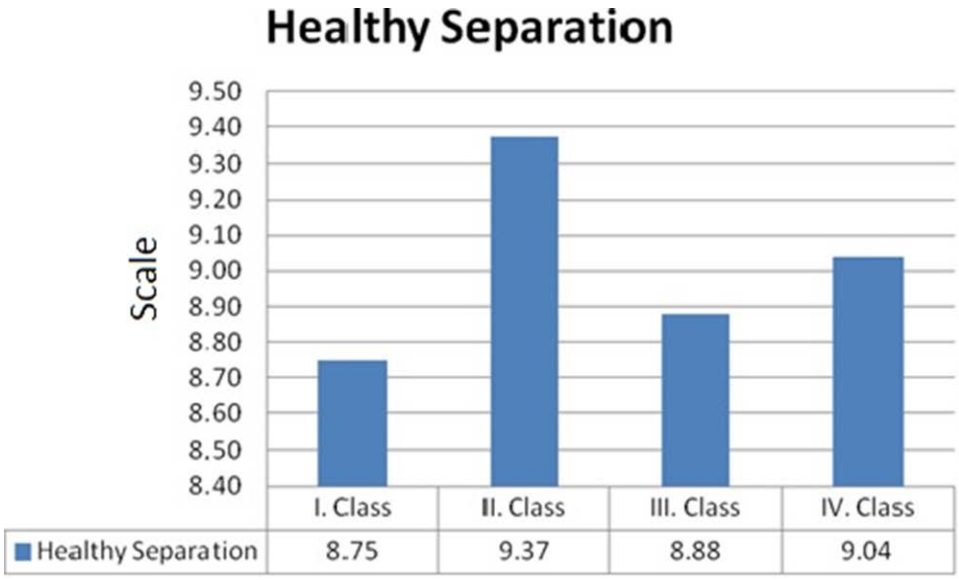

Figure 9. Mean scores obtained with repeated measurements of healthy separation subscale.

SITA's peer enmeshment subscale did not vary significantly according to gender for any of the classes/ years.

As shown in Figure 14, the four-year mean score for SITA's teacher enmeshment subscale varied significantly according to gender for first-year, second-year, third-year and fourth-year students. In this subscale, first-year, second-year, third-year and fourth-year male students had significantly higher mean scores than female students of the same corresponding class/year.

As shown in Figure 15, the four-year mean score for SITA's practising mirroring subscale did not vary significantly according to gender for any of the classes/years.

As shown in Figure 16, the four-year mean score for SITA's need denial subscale did not vary significantly according to gender for any of the classes/years.

As shown in Figure 17, the four-year mean score for SITA's rejection expectancy subscale did not vary significantly according to gender for any of the

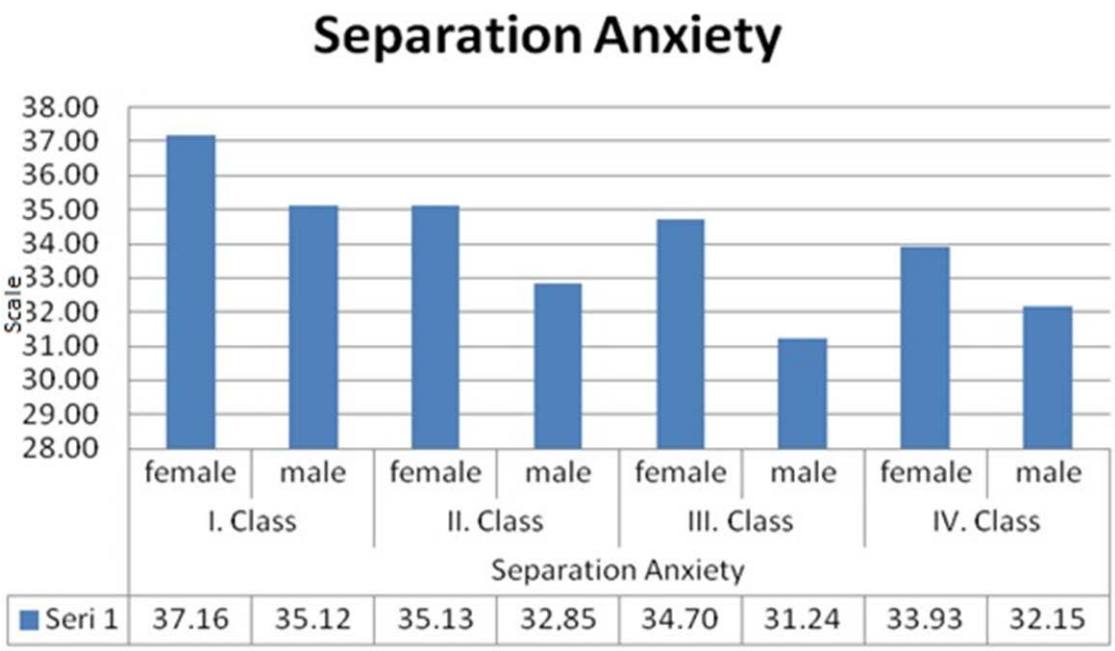

Figure 10. t Test results obtained according to gender with repeated measurements of separation anxiety subscale. t(first-year)=1.455; t(second-year)= 1.310; t(third-year)=1.994*;t(fourth-year)=1.148. *P(t)<0.05 (0.05 level of difference according to gender);

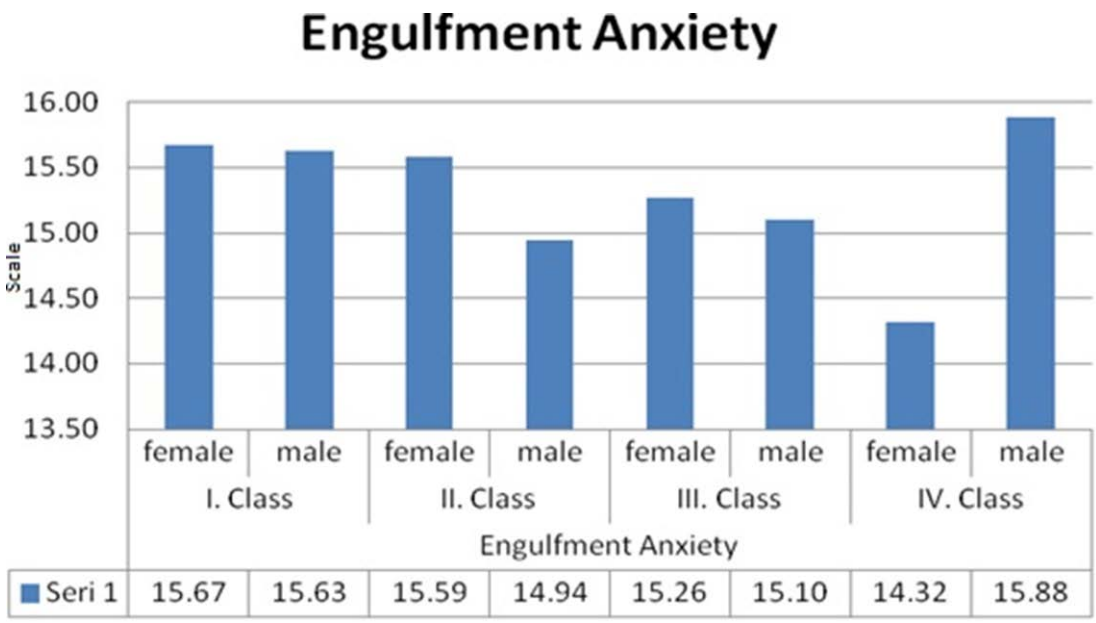

Figure 11. t Test results obtained according to gender with repeated measurements of engulfment anxiety subscale. t(first-year)= 0.055;t(second-year)= 0.739; t(third-year)= .162t(fourth-year)= -1.912; P(t)<0.05 (no significant differences according to gender in any of the classes/years)

classes/years.

As shown in Figure 18, the four-year mean score for SITA's healthy separation subscale did not vary significantly according to gender for any of the classes/years.

DISCUSSION AND CONCLUSION

In this study, we observed that among the late adolescents, first-year university students had the highest

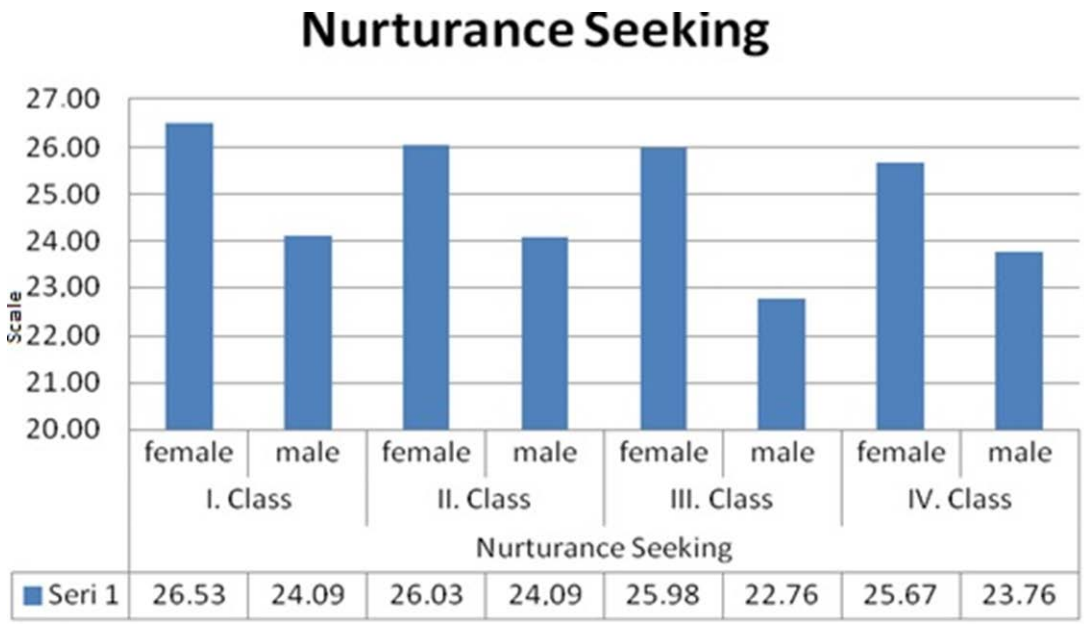

Figure 12. t Test results obtained according to gender with repeated measurements of nurturance seeking subscale. t(first-year)= 3.076**; t(second-year)=2.419*;t(third-year)=3.565**t(fourth-year)= 2.304*.*P(t)<0.05 (0.05 level of difference according to gender).**P(t)<0.01 (0.01 level of difference according to gender).

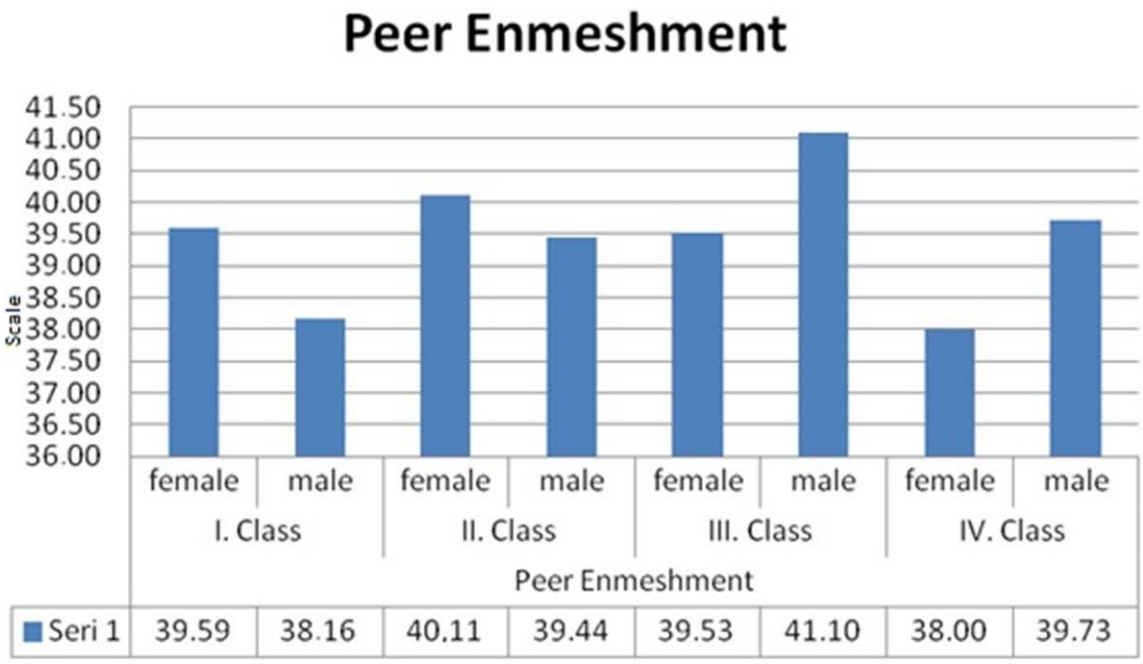

Figure 13. t Test results obtained according to gender with repeated measurements of peer enmeshment subscale. t(first-year)= -1.293; t(second-year)= 0.634;t(third-year)= -1.469;t(fourth-year)= -1.512. P(t)<0.05 (no significant differences according to gender in any of the classes/years).

four-year mean scores in the highest separation anxiety, engulfment anxiety, and the caregiver anxiety subscales of separation-individuation. The separation anxiety sub-dimension of separation-individuation represents the late adolescents concern about separation from mother, father, siblings, etc. before individuation. Engulfment anxiety represents the control and restriction of the child's life by the parents during separation-individuation process.

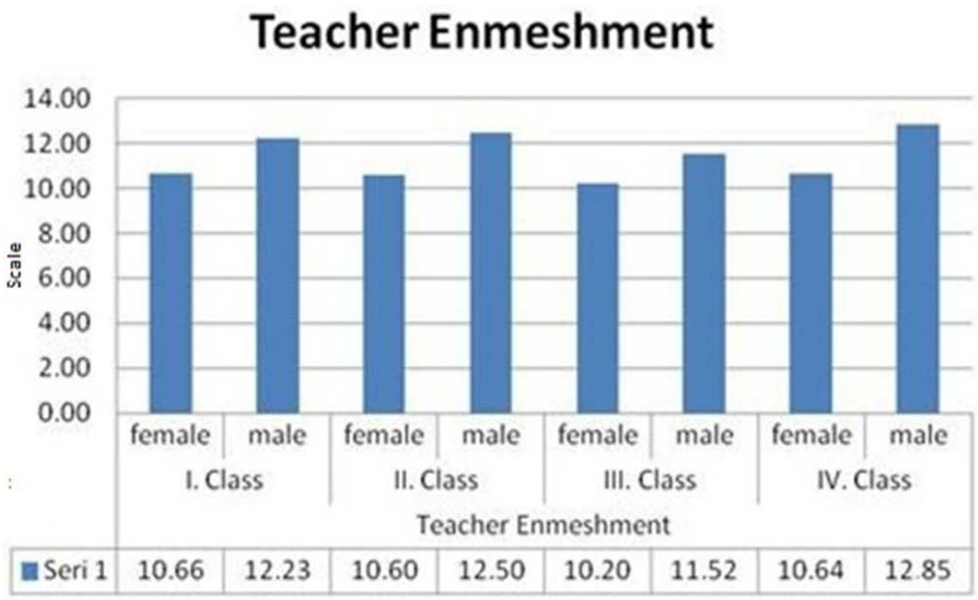

Figure 14. t Test results obtained according to gender with repeated measurements of teacher enmeshment subscale. t(first-year)= -2.366* t(second-year)= -3.064** t(third-year)= 2.004*; t(fourth-year)= -3.611**.*P(t)<0.05 (0.05 level of difference according to gender). **P(t)<0.01 (0.01 level of difference according to gender).

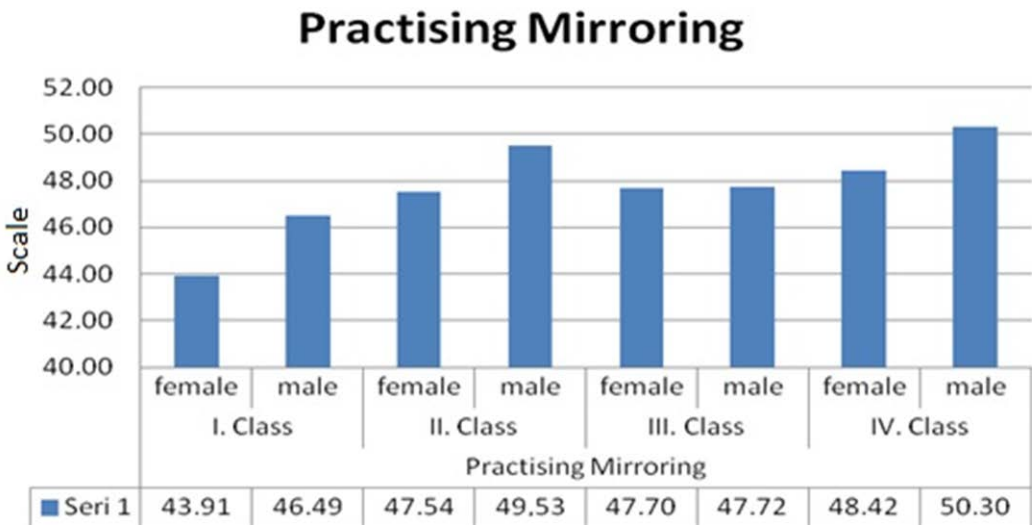

Figure 15. t Test results obtained according to gender with repeated measurements of practising mirroring subscale. t(first-year)= -1.338 t(second-year)= -1.048;t(third-year)= -0.011; t(fourth-year)= -0.997. P(t)<0.05 (no significant differences according to gender in any of the classes/years).

In this respect, it is possible to say that the high separation anxiety and engulfment anxiety observed among late adolescents who separate from their parents to receive high education, who have to adapt to a new environment, and who are therefore away from their parent's control for the first time, is compatible with the existing literature. Nurturance seeking refers to the late adolescent's attachment to a caregiver such as their mother, father, grandmother, grandfather, or any other rearing person. On the other hand, since late adolescents have only recently separated from their caregiver (such as their mother or other rearing person) at the time they are first-year students, it is likely that their attachment still persists. This explains why nurturance seeking continued

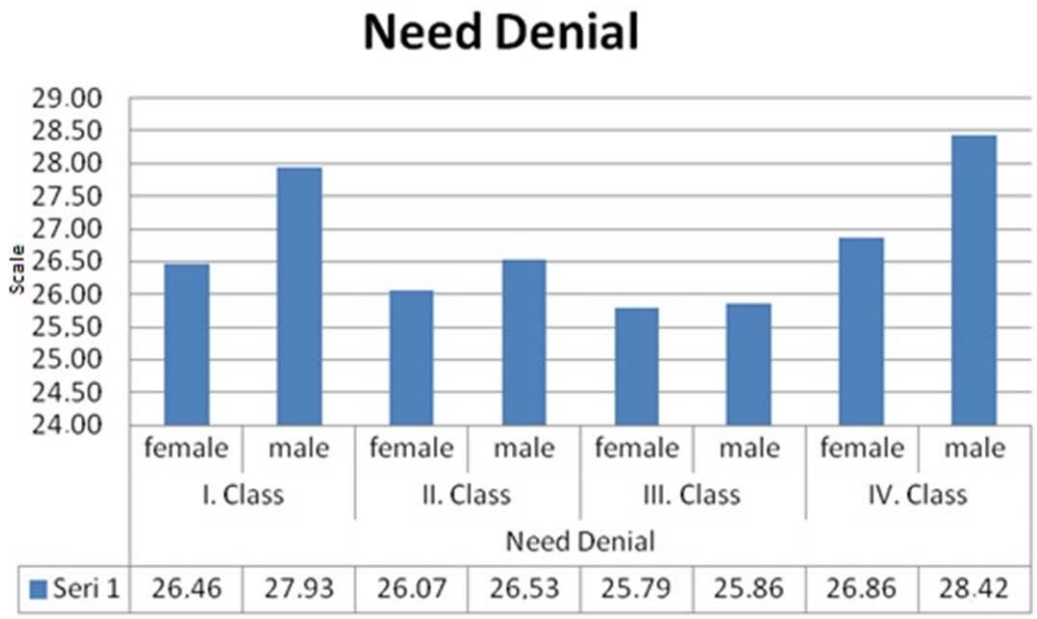

Figure 16. t Test results obtained according to gender with repeated measurements of need denial subscale.t(first-year)= -1.213 ;t(second-year)= -0.385;t(third-year)= -0.057; t(fourth-year)= -1.207; P(t)<0.05 (no significant differences according to gender in any of the classes/years).

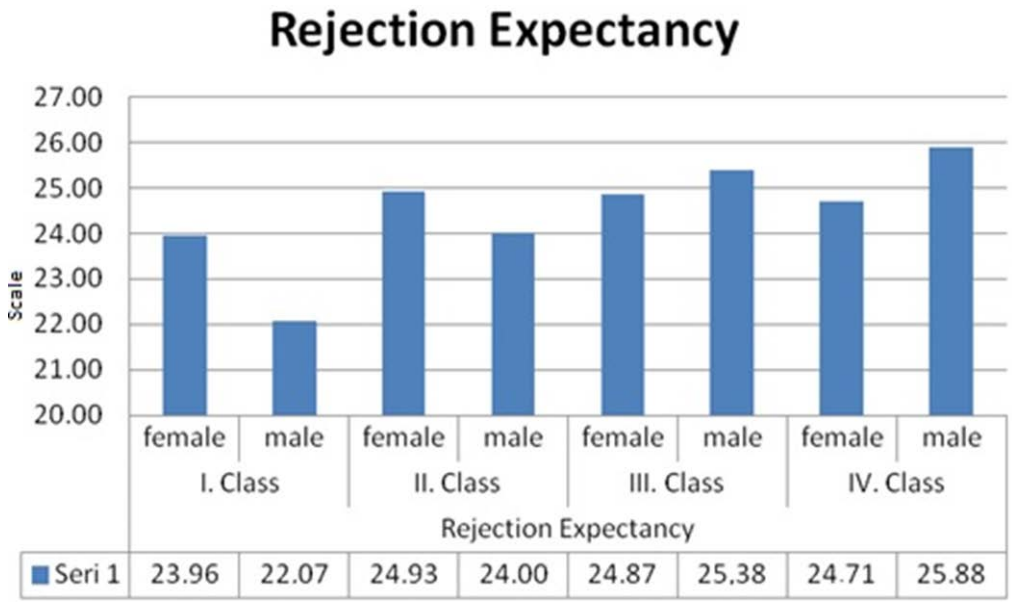

Figure 17. t Test results obtained according to gender with repeated measurements of rejection expectancy subscale. t(first-year)= 1.456;t(second-year)= 0.623;t(third-year)= -0.300t(fourth-year)= - 0.795. P(t)<0.05 (no significant differences according to gender in any of the classes/years).

to be high among first-year university students.

Mean scores for the peer enmeshment and healthy separation subscales were found to be highest among second-year students. According to Horrocks (1962), relations with peers and finding a place among them become more important for adolescents than their relations with parents. At the same time, while the Turkish culture harbors both individualist and communitarian characteristics, the tendency for integration associated with communitarian culture is stronger than the tendency for separation associated with individualist culture (İmamoğlu, 1998). For this reason, it is possible to say

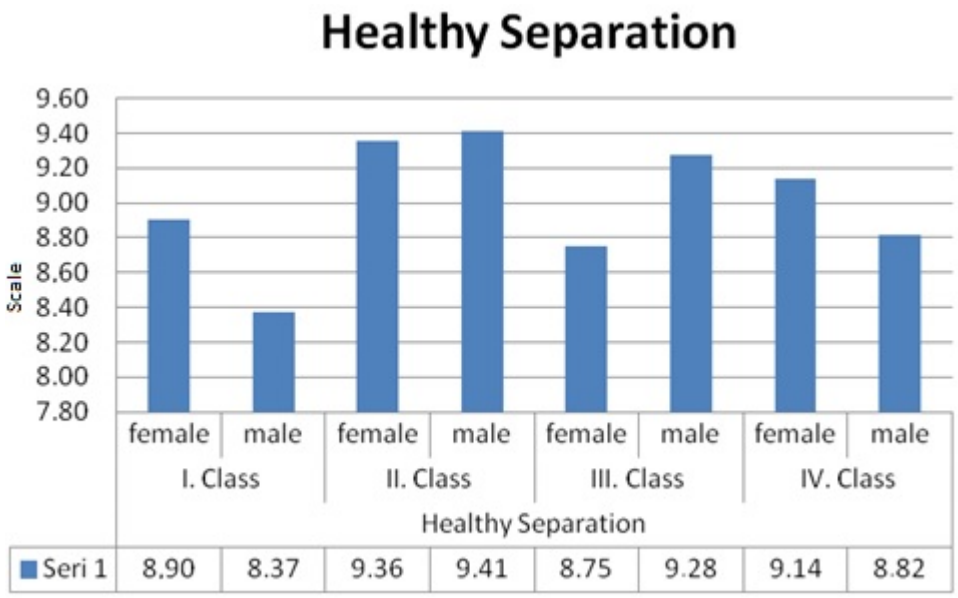

Figure 18. t Test results obtained according to gender with repeated measurements of healthy separation subscale. t(first-year)= -1,239;t(second-year)= -0.121 t(third-year)= -1.005; t(fourth-year)= 0.623. P(t)<0.05 (no significant differences according to gender in any of the classes/years).

The Turkish culture places more importance on the demands of the group or society than on the demands of the individual. For this reason, we can say that after coping with the adaptation stage in the first-year of higher education, late adolescents begin to find a place among their peers, and their peers' demands become more important than their own. However, during this period, late adolescents are also expected to balance their parental dependence with their parental independence, and to thereby experience a healthy separation. Therefore, as late adolescents gradually find a place among their peers, with whom relations become more important than parental relations, this might have assisted them in striking a balance between parental dependence and parental independence. This might account for the higherpeer enmeshment and healthy separation scores observed among second-year students.

In this study, the highest scores in the teacher enmeshment, practising practising practising mirroring, need denial and rejection expectancydimensions were observed among fourth-year students. The rejection expectancy refers to the feeling of being rejected/ unwanted by parents and siblings. Need denial, on the other hand, is the rejection of need for attachment with parents, siblings and friends. According to Levine and Saintonge (1993), the rejection expectancy and need denial, reflect negative expectations. These two dimensions render late adolescents' adaptation to the separation-individuation process more difficult. In other words, while finding a place between peers, the late adolescents' continued separation from their parents due to higher education has an increasingly negative effect on their expectations associated with separation-individuation. This can be interpreted as peers acquiring a more important place than parents for late adolescents during the separation-individuation process in Turkish culture. While the negative expectations of late adolescents continue to increase by the time they are in their fourth-year of university education, they also continue to exhibit higher practising practising practising mirroring, which is a reflection of their growing sense of being liked, respected, valuable or admired, and also of their sense of being liked and positively evaluated in their personal relations (Quintana and Kerr, 1993). According to Koepke and Denissen (2012), separation-individuation can, as a developmental process, be conceptualized in terms of changes in interpersonal dependencies and mental cognitive representations.

In this respect, it is possible to state that, during their separation-individuation process, late adolescents have a more positive perception of themselves towards the end of their higher education. Another result observed regarding fourth-year students was their high level of attachment to teachers. Rigid, passive and simple cultures tend to have more communitarian culture characteristics (Triandis, 1996). In communitarian cultures, the demands of the group – such as the school – come before the demands of the individual. For this reason, the higher level of teacher enmeshment observed among fourth-year students is somewhat expected in Turkish culture, since it bears communitarian characteristics. Another observation in this study was that teacher enmeshment was higher among male students than female students in all of the classes/years, from first-year students to fourth-

year students. Since teachers are also perceived as authority figures in Turkish culture, teachers and students also tend to display a relationship based on authority. It appears that during their separation-individuation process, male students have a greater preference/tendency for this authority-based relationship with an authority figure, than female students.

Mean scores for the separation anxiety dimension were found to be higher among third-year female students than third-year male students. In addition, female students of all classes/year, from first-year to fourth-year, had higher scores for nurturance seeking dimension (which is a reflection of stronger attachment to a caregiver figure) than male students. Separation anxiety refers to the anxiety late adolescents experience as they separate from parents and siblings and undergo individuation. Separation from parents and siblings and individuation follows different patterns depending on culture. As previously stated, Turkish culture possesses communitarian characteristics. In communitarian cultures, independence from parents is not viewed as a desirable situation, nor is it supported (Takano and Osaka, 1999). In China, another communitarian culture, mothers tend to place greater value on their sons, which ultimately causes males to be more dependent than females; however, since mothers and daughters usually share the same fate and conditions, they are also close and share an emphatic understanding. In other words, in China, a communitarian culture, females are less dependent than males, while also being closer to their mothers. In Indian society – another culture displaying communitarian characteristics – the separation of the male child from the mother (and therefore the id from the ego) takes place less pronouncedly and at a chronologically later stage than is the case in Western culture (Kakar, 2001; as cited in: Kumar, 2005). Adolescents experience caregiver relations primarily with their mothers, and the separation of male children takes place to a lesser extent than the separation of female children. Thus, in communitarian cultures, independence is not viewed as a desirable situation or trait; female children tend to be more independent, while also being closer to their mothers; and males experience separation to a lesser extent than females. These general observations might explain the higher separation anxiety observed among third-year female students, as well as the higher nurturance seeking seen in female students in all classes/years, from first-year to fourth-year.

Engulfment anxiety, expectation of rejection,peer enmeshment, practising practising practising mirroring, need denial and heathy separation dimensions did not differ significantly according to gender among first, second, third and fourth-year students. This study can be repeated with another group to test and validate the results of the present study.

Further studies conducted, based on the current study's results, can investigate separation-individuation through longitudinal studies encompassing the childhood, adolescence and late adolescence periods. The effect of cultural factors on separation-individuation can be investigated as well by performing longitudinal studies on these cultures. In addition, it might also be possible to develop an assessment tool including variables associated with the identity, dependence, separation and independence of late adolescents.

Conflict of Interests

The authors have not declared any conflicts of interest.

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Full Length Research Paper

Metaphorical Perceptions of Prospective Music Teachers towards "Traditional Turkish Classical Music Course" Concept

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The purpose of this study is to determine the perceptions of prospective music teachers towards Traditional Turkish Art Music course by means of metaphors. Phenomenological design, one of qualitative study methods, was used in the study. The study group of our research consists of juniors and seniors studying in the Music Education Division, Department of Fine Arts Education, Faculty of Education, Çanakkale Onsekiz Mart University in the spring term of the academic year 2014–2015. Fifty five students participated in the study, and study data were obtained after the students filled in the expression "Traditional Turkish Art Music course is like/similar to …... because ……" Obtained data were analyzed by using the content analysis technique, and the metaphors produced, their frequencies and percentages were determined and categorized. Within the scope of the study, it was observed that students produced 74 metaphors for Traditional Turkish Art Music. Metaphors produced by the participants were arranged under 7 categories in the light of the statements made and their perception towards the course was assessed.

Key words: Music teaching, traditional Turkish Art Music course, perspective, metaphor, content analysis.

INTRODUCTION

Traditional Turkish art music, with its composed and cumulative artistic production and positions, techniques, forms and instruments, has for centuries been the most important part of Turkish culture. This type of music has a radical convention of education and from the perspective of implementation; it has a special method of education. This special method of teaching music, which was improved by the music experts and was called ''meşk method'', has helped to reach the important parts of Traditional Turkish art music's original modus operandi and its works to the present.

It can be said that the traditional Turkish art music, which has a radical convention of education, was incrementally devoid of government's assistance in the perspective of both performance and education with the beginning of the declaration of imperial edict of Gülhane and during the establishment of the Republic. Since the policies of Music Education of the Republic were based

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on western music, the traditional education of Turkish art music was devoid of this change and transformation. When the programs of music education existing in different positions of education are examined, this situation can clearly be seen. During the Republic period, in the music education programs, sometimes Turkish music was never included or simple melodies of folk songs, which were suitable for tonal learning system, were included. Only after 1986, was Traditional Turkish art music included in the music lessons curriculums in junior high school and high school. After this curriculum change; the extent of the traditional music went on extensionally (Akkaş, 1997).

The above mentioned situation was put into practice in the junior high school and high school; moreover, the practices were not different in the institutions where music teachers and artists were trained. If we continue to evaluate the subject considering the aspect of music teacher training institutions, which also constitutes of the sample of this study, it can be said that none of the institutions that train music teachers did not include traditional Turkish art music as a course until Gazi University's music teaching department put the course into their curriculum in 1978. Since the teaching of traditional Turkish art music was excluded for a long time in music teachers training institutions, the candidates of music teachers trained in these institutions had nonreactive, uninterested, negative attitudes and perceptions towards traditional music. This was a result of being trained in this framework. The negative effects of this situation towards teaching professionals are also among the topics which should be emphasized. The first one of these negative effects, the difficulties, which resulted from the lack of the teacher training certificate, are faced the teaching of the traditional Turkish art music topics and because of this, the topics cannot be taught.

In 1986, the first time in the curriculum of music lesson of the junior high school and high school, the topics belonging to traditional Turkish art music are included. When looked from the present, the situation is better compared to past. However, while establishing the school culture in the first terms of the mentioned institutions above, the negative effects occurring by leaving out the traditional music are still clearly seen even if the effects decreased. Remaining aloof and anxiety states of students towards traditional music or the perception of music is less important among the other lessons are the reflections of these mentioned negative effects. This complex period and this kind of perceptions occurring in students affect the music lesson in many ways.

It is needed to make a plan in order to give a quality teaching of traditional Turkish art music in schools by examining thoroughly the previous complex period of education. In this planning, in addition to the studies which are for the quality of education, special studies can be given place to be known affective characteristics related to students' interest, attitude, academic self-concept, (an organized, consistent and depleted perception). Affective characteristics such as interests, attitudes, academic self-concepts, (an organized, consistent and depleted perception) towards the education of traditional Turkish art music considering the perspective of making a qualified learning are as important as at least the existence of a well-planned curriculum. This situation was revealed with the different kinds of research conducted and still has been carrying on revealing (Başaran, 2000; Pehlivan and Köseoğlu, 2011; Umuzdaş and Umuzdaş, 2013; Kalyoncu, 2013; Babacan, 2014; Yalçınkaya et al., 2014; Özsoy, 2014).

The perceptions and attitudes, which are based upon the experiences resulting from the communications and interactions and the previous period and the while-periods of the bachelor degree of the candidates of the teachers during the informal observations, have enormously affected the ideas of the candidate of teachers about learning, teaching and schools (Saban et al., 2006) Perception can be clearly explained as the process of comprehension and interpretation of the sensory knowledge. This comprehension has been carried out based on both partially objective realities and partially existing individual knowledge. Different kinds of factors can affect perception. Some of these factors can be counted as individual's set-up mentality, existing experiences, prior knowledge and motivation (Senemoğlu, 2005). The lack and negative of these factors affecting perception affects learning and accordingly, academic success in a negative way. Therefore, it can be said that it is very important for education and educators to understand and evaluate correctly the perceptions of the students related to lesson. Metaphors are very popular among the used tools in the recent years.

Overall, metaphors can be defined as the interpretations of a concept with different characteristics of a concept (Gedikli, 2014). Arslan and Bayrakçı (2006) interpreted metaphor as a modeling mechanism and a strong mental map that helps individuals to understand their own world. "The concise of a metaphor is to understand and experience something as if it is something else'' (Lakoff and Johnson, 2010). Metaphors give a chance to educator to make a comparison between two things and draw attention to similarities or explain something as if it is something else (Afacan, 2011). It is very important to research metaphors which are the most important tools of perception in order to reveal the concepts of the students lying under the assumptions and beliefs related to education and the roles of the teachers in the classroom (Ben-Peretz et al., 2003, as cited in Güveli at al., 2011).

To examine and evaluate by revealing the perceptions of the students related to traditional Turkish art music with the help of the metaphors will provide a chance to understand clearly the expectations of the students towards the education of the traditional Turkish art music.

This study was carried out in the light of all these ideas

and opinions and it was tried to specify and analyze the metaphoric perceptions of the students from 3rd and 4th music teaching department towards traditional Turkish art music.

METHOD

Study design

This study was carried out by using phenomenological design, one of qualitative study methods. Phenomenological study is an inductive, descriptive study model that focuses on human phenomenon (Baş and Akturan, 2008). The events, phenomena, experiences, concepts or attitudes that we encounter frequently in our daily life but which we cannot explain completely or on which we do not have adequate knowledge can be counted among the subjects of phenomenology (Köse, 2010). Phenomenology is a rather suitable study design for the studies aiming to examine the phenomena to which we are not strangers, however, which we cannot comprehend completely (Yıldırım and Şimşek, 2011).

Participants

Study was carried out with a group of 55 students studying in the undergraduate program of Music Education Department, Faculty of Education, Çanakkale Onsekiz Mart University in the spring term of the academic year 2014–2015. This student group consists of junior (26) and senior (29) students. In phenomenology studies, data sources are the individuals or groups that experience the phenomenon focused by the study and that are able to express or reflect that phenomenon.

Data collection

Study data were collected by means of a form containing the expression "Traditional Turkish Classical Music course is like/similar to ..... because ....." which was prepared specially for this study. Firstly, the forms which were prepared to learn students' perceptions towards traditional Turkish classical music course by means of metaphors were delivered to the students to be filled in. Before filling in the delivered forms, students were informed about the study subject and purpose, and several explanations were made about how to fill in the forms by telling the metaphor concept according to the definitions in the literature. Moreover, students who participated in the study were asked to explain the metaphor that they wrote in the relevant blanks after the comma by giving a reason. The forms filled in by the students in light of those explanations were recollected and data collection procedure ended.

Data analysis

The data analysis process created by Saban (2009) was followed while analyzing the data obtained in accordance with the opinions put forth by the students. This process consists of five phases. These phases are as follows: 1- Coding and sorting, 2- Forming sample metaphor lists, 3- Determining categories, 4- Ensuring validity and reliability, and 5. Transforming metaphors into quantitative data.

1. Coding and sorting: In this part, firstly the metaphors produced by the students and the reasons written for such metaphors were examined and classified. At the end of the examination, 11 forms filled in by the students were excluded from the assessment as either a reason for the metaphor was not written or the metaphor and its reason were inconsistent with each other.

2. Forming sample metaphor lists: After the examination, the metaphors that were thought to be valid were sorted alphabetically and then sample metaphor expressions representing each metaphor were determined. In this way, a list consisting of 74 metaphors were made up.

3. Determining categories: This phase of the study can be expressed as an important phase requiring attention. In this phase, metaphors expressed by the students were examined in terms of common expression properties; they were grouped under 7 topics and categorized accordingly.

4. Validity and reliability: Two specialists working in educational sciences field were consulted for the reliability of the data obtained in this phase. Said specialists examined and assessed the determined categories and the metaphors under those categories separately. Some metaphors were transferred from current category to another category in accordance with specialists' opinions. During the assessments, it was observed that the researcher and the specialists had parallel thoughts in terms of classification and categorization.

5. Transforming metaphors into quantitative data and interpretation: In this part, frequency and percentage tables indicating how many metaphor images are contained in each category and how many students expressed those images were made and obtained data were interpreted.

RESULTS

There are tables and comments related to the metaphors developed for the "Traditional Turkish Classical Music course" concept by 55 junior and senior students who participated in the study.

In Table 1, metaphors developed for the "Traditional Turkish Classical Music course" concept by participant junior and senior students were classified alphabetically and frequency (f) and percentage (%) values were given.

As shown in Table 1, junior and senior students in the department of music education produced 74 metaphors in total for the "Traditional Turkish Classical Music Course" concept. Among those metaphors produced, the metaphor love is in the first place by 5.40%. The metaphors following that metaphor in terms of production frequency are ocean, teacher and our essence by 4.05%.

In Table 2, the frequency (f) and percentage (%) values of the concepts determined according to the common properties of the metaphors produced for the "Traditional Turkish Classical Music Course" concept by participant junior and senior students were given.

As shown in Table 2, the metaphors produced for the "Traditional Turkish Classical Music Course" concept by the junior and senior students participated in the study were categorized by grouping under 7 topics in terms of the common properties expressed by them. These topics can be sorted as follows: vital (12.16%), informative (14.90%), transmitter (19%), content (17.60%), chaos (14.90%), discipline (6.80%) and relaxing (14.90%).

Category 1: Vital

As shown in Table 2, the category Vital contains 9

Table 1. Metaphors developed for traditional Turkish classical music course concept.

No.	Metaphor	f	%	No.	Metaphor	f	%
1	Tree	1	1.35	29	Butterfly	2	2.71
2	River	2	2.71	30	Book	1	1.35
3	Mind	2	2.71	31	Cultural Value	1	1.35
4	Mother	2	2.71	32	Labyrinth	1	1.35
5	Soldier	1	1.35	33	Mathematics	2	2.71
6	Astral Projection	1	1.35	34	Homeland	1	1.35
7	Love	4	5.40	35	Ocean	3	4.05
8	Artery	1	1.35	36	Organ	1	1.35
9	Mirror	1	1.35	37	Forest	1	1.35
10	Meal with Ample Sauce	1	1.35	38	Teacher	3	4.05
11	Puzzle	1	1.35	39	Custom	1	1.35
12	Ice	1	1.35	40	Our Essence	3	4.05
13	Flower	2	2.71	41	Raki	1	1.35
14	Sea	2	2.71	42	Colored Pencils	1	1.35
15	Emotion	1	1.35	43	Affection	2	2.71
16	Instrument	2	2.71	44	Water	1	1.35
17	Universe	1	1.35	45	Process	1	1.35
18	Travel from Past to Present	1	1.35	46	Turnip	1	1.35
19	Gene	1	1.35	47	Painting	1	1.35
20	Rainbow	2	2.71	48	Traffic	1	1.35
21	Sky	1	1.35	49	Tribune	1	1.35
22	Sun	1	1.35	50	Relative living away	1	1.35
23	Mortar	1	1.35	51	Hand Fan	1	1.35
24	Drink	1	1.35	52	Green Plum	1	1.35
25	Medicine	1	1.35	53	Green Color	1	1.35
26	Woman	1	1.35	54	Jewel	1	1.35
27	Velvet	1	1.35	55	Chain	1	1.35
28	Heart	1	1.35			74	100

Table 2. Conceptual categories of Traditional Turkish classical music course concept.

Categories	Metaphor	f	%
1. Vital	Mirror(1), Turnip(1), Tribune(1), Flower(2), Sun(1), Drink(1), Love(1), Jewel(1)	9	12.16
2. Informative	Book(1), Mathematics(2), Tree(1), Custom(1), Mother(2), Mind(1), Sky(1), Puzzle(1), Universe(1)	11	14.90
3. Transmitter	Gene(1), Astral Projection(1), Teacher(2), Homeland(1), Our Essence(3), Cultural Value(1), Process(1), Mind(1), Raki(1), Travel from Past to Present(1), Chain(1)	14	19
4. Content	Painting(1), Affection(2), Rainbow(2), River(2), Ocean(2), Artery(1), Mortar(1), Forest(1), Sea(1)	13	17.60
5. Chaos	Relative(1), Meal with Ample Sauce(1), Love(3), Labyrinth(1), Ocean(1), Emotion(1), Woman(1), Green Plum(1)	11	14.90
6. Discipline	Instrument(2), Soldier(1), Teacher(1), Organ(1)	5	6.80
7. Relaxing	Water(1), Heart(1), Ice(1), Medicine(1), Butterfly(2), Green Color(1), Hand Fan(1), Velvet(1), Sea(1), Colored Pencils(1)	11	14.90

metaphors (12.16%). Metaphors contained in this category can be sorted as follows: Mirror(1), Turnip(1), Tribune(1), Flower(2), Sun(1), Drink(1), Love(1), Jewel(1).

Some of the metaphors that were produced by the students who participated in the study are as follows.

1. Traditional Turkish Classical Music course is like/similar to mirror because it reflects our inner world.
2. Traditional Turkish Classical Music course is like/similar to tribune because we shout out our love with songs.
3. Traditional Turkish Classical Music course is like/similar to love because you attach yourself to this music type as you familiarize with it.
4. Traditional Turkish Classical Music course is like/similar to flower because it makes one happy as it is listened to.
5. Traditional Turkish Classical Music course is like/similar to jewel because it is the ornament of Turkish arts.

Category 2: Informative

As shown in Table 2, the category Informative contains 11 metaphors (14.90%). Metaphors contained in this category can be sorted as follows: Book(1), Mathematics(2), Tree(1), Custom(1), Mother(2), Mind(1), Sky(1), Puzzle(1), Universe(1).

Some of the metaphors that were produced by the students who participated in the study were given below as examples.

1. Traditional Turkish Classical Music course is like/similar to book because it broadens your musical perspective, opens up your horizon.
2. Traditional Turkish Classical Music course is like/similar to mind because it makes you to reflect upon it.
3. Traditional Turkish Classical Music course is like/similar to sky because it has a very wide area.
4. Traditional Turkish Classical Music course is like/similar to puzzle because each subject, each work is different from another.
5. Traditional Turkish Classical Music course is like/similar to universe because it has a vast knowledge wealth.

Category 3: Transmitter

As shown in Table 2, the category Transmitter contains 14 metaphors (19%). Metaphors contained in this category can be sorted as follows: Gene(1), Astral Projection(1), Teacher(2), Homeland(1), Our Essence(3), Cultural Value(1), Process(1), Mind(1), Raki(1), Travel from Past to Present(1), Chain(1).

Some of the metaphors that were produced by the students who participated in the study were given below.

1. Traditional Turkish Classical Music course is like/similar to gene because it is a cultural element transferred from one generation to other.
2. Traditional Turkish Classical Music course is like/similar to homeland because it contains our essence.
3. Traditional Turkish Classical Music course is like/similar to our essence because it constitutes our music's foundation.
4. Traditional Turkish Classical Music course is like/similar to travel from past to present because it conveys our past musical values to present.
5. Traditional Turkish Classical Music course is like/similar to chain because it links the past to the present.

Category 4: Content

As shown in Table 2, the category content contains 13 metaphors (17,60%). Metaphors contained in this category can be sorted as follows: Painting(1), Affection(2), Rainbow(2), River(2), Ocean(2), Artery(1), Mortar(1), Forest(1), Sea(1)

Some of the metaphors that were produced by the students who participated in the study are given below.

1. Traditional Turkish Classical Music course is like/similar to sky because you encounter with a new color every time as you enter into it.
2. Traditional Turkish Classical Music course is like/similar to painting because its content is almost like a color spectrum.
3. Traditional Turkish Classical Music course is like/similar to river because you are taken with its tunes and styles.
4. Traditional Turkish Classical Music course is like/similar to ocean because it has such a wide area that you can't get enough of exploration.
5. Traditional Turkish Classical Music course is like/similar to mortar because it reinforces musical knowledge.

Category 5: Chaos

As shown in Table 2, the category chaos contains 11 metaphors (14,90%). Metaphors contained in this category can be sorted as follows: Close relative living away(1), Meal with ample sauce(1), Love(3), Labyrinth(1), Ocean(1), Emotion(1), Woman(1), Green Plum(1).

Some of the metaphors that were produced by the students participated in the study are given below.

1. Traditional Turkish Classical Music course is like/similar to traffic because it always becomes complicated and presses you by nature.
2. Traditional Turkish Classical Music course is like/similar to close relative living away because we do not feel out of it, we knit up with it at once although it does not play a significant part in our daily life.
3. Traditional Turkish Classical Music course is like/similar to love because it can make you happy at a time and sad at another time.

4. Traditional Turkish Classical Music course is like/similar to woman because it is difficult to cipher out, full of details but naive, sensitive, delicate and fine.
5. Traditional Turkish Classical Music course is like/similar to green plum because it is sour but you cannot help eating it.

Category 6: Discipline

As shown in Table 2, the category Discipline contains 5 metaphors (6,80%). Metaphors contained in this category can be sorted as follows: Instrument(2), Soldier(1), Teacher(1), Organ(1).

Some of the metaphors that were produced by the students who participated in the study are given below.

1. Traditional Turkish Classical Music course is like/similar to soldier because it is a well-ordered, well-disciplined and regular music.
2. Traditional Turkish Classical Music course is like/similar to instrument because it requires much more work as you study it.
3. Traditional Turkish Classical Music course is like/similar to instrument because if you abandon studying, it abandons you, too.
4. Traditional Turkish Classical Music course is like/similar to teacher because it requires a well-disciplined study.
5. Traditional Turkish Classical Music course is like/similar to organ because it makes you sick if you don't care for it properly and regularly.

Category 7: Relaxing

As shown in Table 2, the category Relaxing contains 11 metaphors (14,90%). Metaphors contained in this category can be sorted as follows: Water(1), Heart(1), Ice(1), Medicine(1), Butterfly(2), Green color(1), Hand fan(1), Velvet(1), Sea(1), Colored pencils(1).

Some of the metaphors that were produced by the students participated in the study are given below.

1. Traditional Turkish Classical Music course is like/similar to ice because it refreshes you.
2. Traditional Turkish Classical Music course is like/similar to water because its melodies flow into the depths inside you.
3. Traditional Turkish Classical Music course is like/similar to medicine because heals our soul.
4. Traditional Turkish Classical Music course is like/similar to velvet because its melodies activates your feelings.
5. Traditional Turkish Classical Music course is like/similar to sea because it refreshes you and eliminates mental fatigue.

CONCLUSION AND RECOMMENDATIONS

The following conclusions can be pointed out in light of the findings obtained from this study:

The students who participated in the study produced 74 metaphors for the traditional Turkish classical music course. Those 74 metaphors were organized in 7 themes according to the reasons stated after the expression because by the students.

It can be said that the metaphors produced for the traditional Turkish classical music course are intensive in the theme "transmitter" by 19% and the theme "content" by 17,60. This can be interpreted as that the students consider the said course as a course which brings our musical culture values from past to present and find it colorful in terms of content.

Following the themes "transmitter" and "content", the themes for which the students produced metaphors at most, were "informative", "chaos" and "relaxing". The proportional value of the metaphors contained in those themes is 14.90%.

Although the themes "chaos" and "relaxing" seem to give two opposite perceptions for the same course, it is not like that in fact. The metaphors under the topic "chaos" reflect the student perceptions towards the theoretical part of the course. Taking the metaphors under this topic into account, it can be said that students have difficulty in learning technical terms, concepts and definitions and they find the subjects complicated. When the metaphors under the topic "relaxing" are considered, it is observed that it contains students' perceptions not towards the theoretical but towards musical part of the course. Metaphors under this topic mainly express the relaxing and soothing nature of music. This finding and the finding that "the participants perceive the traditional Turkish classical music mostly as an element giving peace, happiness and health" obtained in the work "The Examining of Teacher Candidates' Perception of Turkish Folk and Traditional Turkish Art Music through Metaphors" by Aydıner (2015) have a characteristic supporting each other.

Another theme covering a part 12.16% is the theme "Vital". Metaphors under the theme vital put forth that the traditional Turkish classical music has an aspect addressing to the daily lives of students. This can be interpreted as that the traditional Turkish classical music is not disconnected from the life.

The theme in which the least metaphors are produced by 6.80% by the students is the theme "discipline". It can be assumed from the metaphors under this theme that students have a perception that the course requires a well-disciplined and regular study.

It can be seen that similar conclusions were obtained in many studies conducted on the students' perceptions towards several courses (Soysal and Afacan, 2012; Kalyoncu and Liman, 2013; Kalyoncu, 2013; Şahin, 2013; Akça et al., 2015; Aydıner, 2015). The fact that students express their perceptions towards the courses and different concepts by utilizing several aspects of the same objects constitutes the matching points of such

studies (Yaşar and Bayır, 2010).

As it can be understood from the conclusions obtained, by means of the metaphors produced from different perspectives, participant students put forth their opinions and perceptions towards the traditional Turkish classical music course in a manner which is clear and also provides their reasons. It can be said that the conclusions achieved through such studies are quite important for planning the courses, being able to orientate the students correctly according to their perceptions towards the course, and making sense of their behaviors towards the course and their academic success.

Conflict of Interests

The author has not declared any conflicts of interest.

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Educational Research and Reviews

Full Length Research Paper

Analysıs of socıal scıences hıgh school students' remarks on underground resources – Kütahya sample[i]

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The purpose of this study is to explain secondary school students' perceptions of underground resources through metaphors. 154 students studying at Social Sciences High School of Kütahya during 2014-2015 educational year are included in this study. Questions asked in this study are 1-Which metaphors did the secondary school students use in order to express their perceptions of the underground resources? 2- Under which categories these metaphors are grouped by their common features? Data are compiled through students' answers to the sentence "Underground resources are like…, because…". Data are analyzed using content analysis method on phenomenology design. Findings show that the secondary school students produced 74 valid metaphors on the concept of underground resources. These metaphors are allocated to four different sections by their common features. As a result of this study, it is seen that Social Sciences High School students perceive the concept of underground resources as Source of Economic Value and Wealth (47%), Future Guarantee (22%), Life Source (19%) and Expression of Love (12%). Metaphors created in relation with the concept of underground resources may be used as a strong research element to explain how secondary school students perceive and comprehend the concept of underground resources.

Key words: Social sciences, metaphor, geography education.

INTRODUCTION

Having been considered as a figure of speech, metaphors are our way of seeing and comprehending the world (Morgan, 1998). A metaphor may be explained as identifying something as being the same as some unrelated thing (Lakoff and Johnson 1980), and as mental models that help people understand one phenomenon through another (Saban, 2008). Metaphor has three elements such as ground, figure and figure's features (Saban, 2004). In a metaphorical expression, words should be used literally, analogy has to be meant and there has to be a situation that also works with the literal meaning of the word (Yıldırım and Şimşek, 2013). Metaphors help us relate an object or a phenomenon that we want to understand to some concepts of another semantic field, recognize our re-conceptualization from different perspectives and clarify things that we overlooked (Taylor, 1984, 103). There have been many studies conducted on metaphors in recent years due to

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Table 1. Allocation of Students by Gender (f- %).

Gender	Frequency (f)	Percentage
F	85	55.2
M	69	44.8
T	154	100

their significant influences on social sciences (Bredeson, 1988).

Metaphors are considered to provide new perspectives for educators to reveal their secondary school students' perceptions on the concept of underground resources that they developed on their backgrounds. Purpose of this study is to explain Social Sciences High School students' perceptions of the concept underground resources through metaphors. In accordance with this purpose, answers to the following questions are sought:

1-Which metaphors do explain Social Sciences High School students' perceptions of the concept of underground resources?
2- Under which categories these metaphors are grouped by their common features?

METHOD

Phenomenological method is employed in this qualitative study. "Phenomenology focuses on phenomena that we recognize but cannot comprehend in a detailed and profound way. Phenomena emerge in our daily lives as various forms like perceptions, experiences, concepts, tendencies and situations. We may not fully understand phenomena that emerge before us in our daily lives. Phenomena that we are completely unfamiliar with or we do not fully comprehend may make a useful field for a phenomenological research (Yıldırım and Şimşek, 2013).

330 students studying at Social Sciences High School of Kütahya during 2014-2015 educational year constitute the environment of this study. The reasons why the author applied this research at Social Sciences High School of Kütahya is explained below. The first reason is Kütahya has several underground resources such as lignite, boron, and magnesium. Also, social science high schools focus on geography as well as history, philosophy, literature etc. In addition, high school geography curriculum includes topics of underground resources. The author chose Kütahya Social Sciences High School because he works at Kütahya. Having this school provides an opportunity to apply the research in a convenient way. Study sample is selected using simple random sampling. Each member of the study group has equal chance to be selected. The advantage of simple random sampling is that it is very likely to produce a representative sample (Fraenkel and Wallen, 2003). A sample to be studied is randomly selected from a list. All listed members should have identical features (Çepni, 2010). Study sample is formed of 154 students from the Social Sciences High School of Kütahya. Allocation of Students by gender is given in Table 1.

Data are collected from the former studies in literature that aim to reveal individuals' perceptions (Töremen and Döş, 2009; Inbar, 1996; Pishghadam and Navari , 2010; Guerrero and Villamil, 2002; Saban et al., 2006; Saban, 2004, 2008, 2009; Aydoğdu, 2008; Kalyoncu, 2013; Shaw et al., 2008; Pishghadam et al., 2009; Cerit, 2008; Öztürk, 2007; Semerci, 2007; Alger, 2009;). In those studies, participants were mostly asked to complete open ended sentences. In order to reveal Social Sciences High School students' perceptions on the concept of underground resources, we asked students to complete the open ended sentence "Underground resources are like..., because...". Students were asked to write their metaphors on the concept of underground resources in 25 min, which is the database of the study.

Data were evaluated using content analysis technique. The essential aim of using this technique is to reach concepts and connections that might formulate the collected data. In content analysis, a more detailed process is applied on the data interpreted and summarized through descriptive analysis. Motifs and concepts that are not noticed through the descriptive approach may be found out thanks to the content analysis. Similar data are gathered within a similar context and are organized in a readable way, which is the purpose of the content analysis (Yıldırım and Şimşek, 2013). Metaphors created by the students were analyzed and interpreted in five steps, which are (Saban, 2008, 2009; Yıldırım and Şimşek, 2013): Naming, Classification, Category Development, Validity and Reliability, and Data Processing, respectively.

In the naming step, the metaphors created by the participants were listed in alphabetical order. All of the metaphors students wrote on the papers were checked to see if they served the intended metaphorical study. Metaphors on the collected papers were classified under specific groups such as diamond, fuel, coal, water, wealth, treasure, raw material etc, and were temporarily listed in a alphabetical order. Papers without metaphors were not evaluated.

In the classification step, metaphors were split into pieces by their similarities/common features, and were analyzed separately again. Metaphors given by the students were analyzed considering their themes, sources and the relationship between their themes and sources. 74 out of 154 students provided valid metaphors. These metaphors were listed again in alphabetical order, raw data were revised, exemplary metaphors representing the list were picked, and a new representative list was compiled. This list was formed for two fundamental purposes, which are: 1-using them as a reference while classifying metaphors, and 2-validating the data analysis step and interpretations of this study .

In the Category Development step; the metaphors were evaluated considering their common features in terms of the underground resources concept. The "list" of 74 valid metaphors were assessed, and were classified under 4 different categories of motifs. For example, all of the metaphors classified under the "Underground Resources as an Economic Value and Source of Wealth" category took underground resources as wealth and economic value. "Underground resources occupy an important position in human life and amount of mines determine the level of development. They are effective on a country's economic condition. Raw materials mean wealth, because countries trade for their precious underground resources."

In the Validity and Reliability step, conclusiveness of the science studies is a really important measure. These two significant values are widely implemented in the studies. In general meaning, validity means the results of the study are correct, and reliability means the study is reproducible (Yıldırım and Şimşek, 2013: 289). In order to determine if the classified metaphors validated the categories where they belong to, opinions of two experts were taken. The metaphors list was arranged into categories to reflect common features of the metaphors. Experts arranged the categories, compared them, and employed a joint study for the categorization. Experts' metaphor allocation was compared with the researchers', amounts of the similarities and contrasts were found, and reliability of the study was calculated on the "Reliability = ((Similarities)) : (Similarities + Contrasts)) x 100" equation (Miles and Huberman, 1994: 64). In qualitative studies, the level of reliability is satisfying when evaluations of experts and the researchers conform 90% and

above (Saban, 2009: 288). The expert, opinion of whom was taken for the reliability study, allocated 6 metaphors to different categories, and matched them. According to this, the equation is Reliabiliy = ((74) / (74+6) x 100 = 0.92,5 (0.93%)), which is enough level of reliability.

In the Data Processing step, data provided by the students were analyzed and classified. 74 metaphors were selected, and 4 conceptual categories were developed using these metaphors, and then these data were entered into a computer. Following this step, frequency and percentage value representing 74 metaphors and 4 categories were calculated.

FINDINGS

Findings acquired in relation with the Social Sciences High School students' metaphors on the concept of the underground resources were tabulated, classified, analyzed and interpreted. In Table 2, the metaphors created by the students are listed in alphabetical order, and the amount of students and respective metaphors are given. Students have provided 74 valid metaphors on the concept of underground resources. 14 students created invalid metaphors that do not serve the intended purpose. 68.9% of these 74 metaphors are represented by one person. 2-9 students represent the remaining 31.1% (23 metaphors).

Findings acquired in relation with the Social Sciences High School students' metaphors on the concept of underground resources

As tabulated in Table 2, metaphors created by more than one student on the underground resources are: Capital (9 students, 12.16%), Gifts of the Nature (7 students, 9.45%), Treasure (6 students, 8.10%), Money-National Wealth-Raw Material (5 students 6.75%), Diamond-Power-Water-Fundamental Need-Wealth (4 students, 5.40%), Gold-Natural Gas-Coal-Potential Development-Expendable Source (3 students, 4.05%), and Basis of a Country-Level of Development-Endangered Animal-Fuel-Measure of a Country's Prestige-Escape of a Country (2 students, 2.70%).

Underground resource-related metaphors of students studying in Social Sciences High Schools are classified under four categories, which are: Underground Resources as an Economic Value and Source of Wealth, Underground Resources as an Expression of Love, Underground Resources as a Source of Life, and Underground Resources as a Future Guarantee. These categories are demonstrated in Table 3.

Underground resources as economic value and Source of Wealth

All metaphors in this category take underground resources as an economic value and source of wealth. In this category, 78 students created 35 metaphors, which are mainly Capital-9, Treasure-6, Developed country-5, Raw material-5, Money-5, Wealth-4, Diamond-4, Expendable resource-3, Gold-3, Natural gas-3, Coal-3, Level of development-2, Measure of a country's prestige-2, Fuel-2, Escape of a country-2, Antique, Prey, Bank, Boron mine, Heaven, Football, Dream world, Gift or Disaster, Mitochondria in a cell, Heat source, Thermal springs, fresh water, Grown up tree, Miracle, Dowry prepared with care, Secret heaven, , Soil, Biggest reason the countries' fight for, Source of income for a country, Economy of the countries, Overground resources, Examples for metaphors in this category are given below.

"Underground resources are like capital. Because they are a country's monetary power. "
"Underground resources are like treasure. Because as soon as they are discovered, they get more valuable. Very valuable things are under the ground. "
"Underground resources are like raw material. Because if they are appraised well and processed, foreign dependency will reduce. "
"Underground resources are like a developed country. Because when underground resources increase, levels of development and income increase. "

Underground resources as an expression of love

All metaphors in this category take underground resources as an economic value and source of wealth. Metaphors are Mom's hand, Is love, Father, Spring flower, Gifts for us, Friend, Son, Spiritual beauty, Love. Examples for metaphors in this category are given below.

"Underground resources are like love. Because invisible part of the soil is clear and pure."
"Underground resources are like father. Because they look tough, but are really precious."
"Underground resources are like gifts to us. Because when we dig the ground, we find surprising beautiful materials."
"Underground resources are like mom's hand. Because we inherit mom's hand, just like underground resources."

Underground Resources as a Source of Life

All metaphors in this category take underground resources as an economic value and source of wealth. Metaphors are Gifts from nature-7, Water-4, Fundamental needs-4, Fundamental of a country-2, Endangered animals-2,Columns of a house, Lifelines of a country, Source of life, Human brain, Blood circulating in the veins, Main trigger of human life, Human organs, Beloved ones, Heart of the countries. Examples for metaphors in this category are given below.

"Underground resources are like gifts from nature. Because underground resources provide us with energy."

Table 2. Amount of students and percentages representing the Social Sciences High School students' metaphors on "underground resources" (by frequency).

Order	Name of the valid metaphor	Frequency (f)	Percentage (%)
1	Capital	9	12.16
2	Gifts from nature	7	9.45
3	Treasure	6	8.10
4	Developed country	5	6.75
5	Raw material	5	6.75
6	National treasure	5	6.75
7	Money	5	6.75
8	Wealth	4	5.40
9	Diamond	4	5.40
10	Power	4	5.40
11	Water	4	5.40
12	Fundamental needs	4	5.40
13	Potential development	3	4.05
14	Gold	3	4.05
15	Natural gas	3	4.05
16	Coal	3	4.05
17	Expendable source	3	4.05
18	Fundamental of a country	2	2.70
19	Development level	2	2.70
20	Endangered animal	2	2.70
21	Fuel	2	2.70
22	Measure of a country's prestige	2	2.70
23	Escape of a country	2	2.70
24	Mom's hand	1	1.35
25	Antique	1	1.35
26	Is love	1	1.35
27	Prey	1	1.35
28	Father	1	1.35
29	Spring flower	1	1.35
30	Bank	1	1.35
31	Columns of a house	1	1.35
32	Lifelines of a country	1	1.35
33	Gifts for us	1	1.35
34	Boron mine	1	1.35
35	Heaven	1	1.35
36	Resource not extracted	1	1.35
37	Is a means of continuity	1	1.35
38	A country's roots	1	1.35
39	Friend	1	1.35
40	Heart of the economy	1	1.35
41	Son	1	1.35
42	Football	1	1.35
43	Future life source	1	1.35
44	Secret treasure	1	1.35
45	Dream world	1	1.35
46	Life source	1	1.35
47	Gift or disaster	1	1.35
48	Mitochondria in a cell	1	1.35
49	Heat source	1	1.35
50	Human brain	1	1.35

Table 2. Cont'd

51	Blood circulating in the veins	1	1.35
52	Main trigger of human life	1	1.35
53	Human organs	1	1.35
54	Thermal springs, fresh water	1	1.35
55	The Central bank	1	1.35
56	Grown up tree	1	1.35
57	Heritage	1	1.35
58	Miracle	1	1.35
59	Dowry prepared with care	1	1.35
60	Spiritual beauty	1	1.35
61	Secret heaven	1	1.35
62	Beloved ones	1	1.35
63	Love	1	1.35
64	Soil	1	1.35
65	Is Turkey's eternal richness	1	1.35
66	Fundamental of a country's development	1	1.35
67	Biggest reason countries' fight for	1	1.35
68	Source of income for a country	1	1.35
69	Economy of the countries	1	1.35
70	Heart of the countries	1	1.35
71	Value of a country	1	1.35
72	The country itself	1	1.35
73	Dress on the showcase	1	1.35
74	Over-ground resources	1	1.35
TOTAL		100(f)[1]*	100(%)

Table 3. Categories of metaphors by the Social Sciences High School students on the concept of "underground resources".

Category	Metaphor	Frequency # of students	# of students
1. Underground Resources as Economic Value and Source of Wealth	Capital-9, Treasure-6, Developed country-5, Raw material-5, Money-5, Wealth-4, Diamond-4, Expendable resource-3, Gold-3, Natural gas-3, Coal-3, Level of development-2, Measure of a country's prestige-2, Fuel-2, Escape of a country-2, Antique, Prey, Bank, Boron mine, Heaven, Football, Dream world, Gift or Disaster, Mitochondria in a cell, Heat source, Thermal springs, fresh water, Grown up tree, Miracle, Dowry prepared with care, Secret heaven, , Soil, Biggest reason the countries' fight for, Source of income for a country, Economy of the countries, Over-ground resources,	78	35
2. Underground Resources as an Expression of Love	Mom's hand, Is love, Father, Spring flower, Gifts for us, Friend, Son, Spiritual beauty, Love.	9	9
3. Underground Resources as a Source of Life	Gifts from nature-7, Water-4, Fundamental needs-4, Fundamental of a country-2, Endangered animals-2,Columns of a house, Lifelines of a country, Source of life, Human brain, Blood circulating in the veins, Main trigger of human life, Human organs, Beloved ones, Heart of the countries	28	14
4. Underground Resources as a Future Guarantee	National treasure-5, Power-4, Potential development-3, Resource not extracted, Is a means of continuity, Roots of a country, Heart of economy, Future source of life, Secret treasure, the Central bank, Heritage, Is Turkey's eternal wealth, Fundamental of a country's development, Value of a country, the Country itself, Dress on the showcase	25	16
Excluded	-	14	0
Total		154	74

"Underground resources are like water. Because they are sources of life, they are mighty."
"Underground resources are like fundamental needs. Because underground resources are essential."
"Underground resources are like endangered animals. Because unconscious behaviors may cause them extinct."

Underground Resources as a Future Guarantee

All metaphors in this category take underground resources as an economic value and source of wealth. Metaphors are National treasure-5, Power-4, Potential development-3, Resource not extracted, Is a means of continuity, Roots of a country, Heart of economy, Future source of life, Secret treasure, the Central bank, Heritage, Is Turkey's eternal wealth, Fundamental of a country's development, Value of a country, the Country itself, Dress on the showcase. Examples for metaphors in this category are given below.

"Underground resources are like power. Because we are a strong nation as long as we have and take advantage of them."
"Underground resources are like potential development. Because they might be useful for our country, only if we employ them."
"Underground resources are like national treasure. Because they improve economy and trade relationships."
"Underground resources are like a source of life. Because they will get more valuable in time, and development depends on them."

DISCUSSION

In this study, 74 metaphors created by Social Sciences High School students are classified under 4 categories. The Social Sciences High School students' remarks on the underground resources are analyzed thanks to these metaphors. Range of metaphors (such as the Central bank, National treasure, Heritage, Potential development, Beloved ones, Water, Fundamental needs, Friend, Son, Spiritual beauty, Football, Level of Development-2, Dream world, Gift) points out that that underground resources may not be explained by just one metaphor.

Students of the Social Sciences High School take geography courses that provide knowledge on physical, human and economic geography, from 1st grade to 4th. Students were asked to complete "Underground resources are like..., because..." sentences, and it may be said that they all exhibited what they had before the metaphor study and what they learned during their high school years.

It is understood that Social Sciences High School students (154) perceive the concept of underground resources as Source of Economic Value and Wealth (47%), Future Guarantee (22%), Life Source (19%) and Expression of Love (12%). It may be seen that 66% of the participants took underground resources as a material value, in compliance with definition of underground resources.

We have shown that metaphors may be used for the education process in quite range of ways. It is showed that metaphors are useful for materializing abstract concepts. Moreover, it is seen that students may more easily recall what they have been taught before, and metaphors facilitate the recalling process. However, one has to remember that metaphors may be misunderstood if they are used under different categories.

As understood from the metaphors provided by the participants, the concept of underground resources may be explained through more than one metaphor. This study is in parallel with Öztürk (2007), Geçit and Gençer (2010), Aydın (2010), Kaya (2013), Tuna and Budak (2013).

Study results given above provide significant findings that include levels of knowledge on the underground resources within the scope of the geography course taught to the Social Sciences High School students. Based on this approach, additional studies may be conducted about the changes of Social Sciences High School students' geography perceptions, in compliance with the objectives of geography education.

Conflict of Interests

The author has not declared any conflicts of interest.

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The philosophical dispositions of pre-servıce teachers and teacher educators*

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The purpose of this study was to examine and compare the educational philosophical dispositions of preservice teachers and teacher educators. Voluntary participants were 206 preservice teachers and 32 teacher educators from a faculty of education at a public university in central Turkey. The mean age was 20.2 ± 1.6 for pre-service teachers and it was 33.7 ± 5.9 for teacher educators. Data were gathered during the fall semester of 2014–2015. After permissions were attained from the university institutional review board, each participants completed "The Educational Belief Scale". The scale consists of 40 items with the following five dimensions: Perennialism, Essentialism, Progressivism, Existentionalism, Reconstructionalism. Cronbach's Alpha coefficients ranged between. 68 and .90 for each subscale in this study. Descriptive statistics and Mann–Whitney U test were used for data analysis. The results showed that the most internalized educational philosophical dispositions were progressivism and existentialism, while the least one was essentialism for both groups. When comparing the mean scores of philosophical dispositions it was found that teacher educators received higher scores on progressivism and existentialism, while preservice teachers scored higher on essentialism (p<.05). As regarding gender, males were significantly more essentialist in both group, while females were more progressivist for preservice teachers (p<.05).

Key words: Educational philosophy, teacher education, philosophical disposition.

INTRODUCTION

The quality of the education depends directly upon the quality of the educators. It is no longer acceptable for educators to possess only skills and knowledge necessary to teach. It is also a need to have the dispositions to become effective teachers during teaching practices (Da Ros-Voseles and Moss, 2007). It is a fact today that the goal of teacher education programs is to train future educators in such a way to produce highly qualified individuals so that they have the knowledge, skills and dispositions to become effective teachers to fostering growth and learning for their students (Dottin, 2009; Notar et al., 2009).

Dispositions can be defined as values, commitments, and professional ethics that influence a teacher's behavior toward his/her students, families, colleagues, and communities. The dispositions affect students' learning,

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students' motivation, and students' development. They also impact an educator's own professional growth (NCATE, 2006). Eberly et al. (2007) view dispositions as behaviors based on a meaning-making system that results in attitudes, values and beliefs. According to Bandura (1977) and Dewey (1961), dispositions are guided beliefs and attitudes which affect people's manners and behaviors and so, people live according to their beliefs. As Hart (2002) states teachers' beliefs or dispositions should be taken into consideration in order to change and improve their teaching practices. Because, teacher dispositions drive their instructional pedagogy (Pajares, 1992). Because of that, determining teachers' and prospective teachers' educational dispositions is quite necessary and important for understanding their behaviors (Enochs and Riggs, 1990).

According to Rideout (2006), the basic determinant of individuals' educational dispositions is their educational philosophies. Because, educational dispositions are formed based on educational philosophy. A personal educational philosophy is an essential and active element of a teacher. Acquiring a philosophy is powerful, in that it directs and guides a teacher's teaching practices in the classroom as well as how they perceive teaching and learning and the students around them (Soccorsi, 2013). A philosophical view of education involves asking and answering questions about the role and the purpose of education in a society, the role of the student, the role of the teacher, the function of curriculum, best delivery methods. Educational philosophy is a discipline or thinking method that provides a point of view for educators. Indeed, an educator's philosophy impacts perceptions, beliefs, understanding and values to the point where all decisions can be traced back to their educational philosophy. Hence, becoming aware of and making sense of a philosophical stance is important in teacher education. Educational philosophy is arranged into branches of philosophy which can be viewed and recognized as orientations to teaching and education (Ryan, 2008).

In the context of this study, the main five educational philosophies were taken into account. To be brief, *perennialism* refers to the philosophy that education should begin with teaching things that are relevant to all people beginning with personal development (Howick, 1980). It emphasizes rational thought and democracy with priority. *Essentialism* refers to the philosophy that education is a progressive process in which children should be well-founded in basic subjects (Howick, 1980). Essentialism focusses on core subjects instead of students' behavior. *Progressivism* refers to the philosophy that education should be based in interactions with other people in real-life activities (Winch and Gingell, 1999; Howick, 1980). It focuses on the development of the whole child both academically and socially. *Reconstructionism* refers to the philosophy that social injustices should be erased via analysis of world events and service in the real world and emphases social justice and equity. *Existentialism* refers to the philosophy that education is student- centered and focuses on student choice; teachers provide an environment that is consequential in nature (Winch and Gingell, 1999; Howick, 1980).

The construction of a teaching philosophy within a teacher training program does affect the teaching-learning process (Minor et al., 2002). Because it is generally believed that understanding one's philosophical approach would foster evaluation of teaching decisions (Pryor et al., 2007). If a teacher attempts to teach with no purpose or aim other than to impart information, the lessons are not cohesive and ultimately impart no functional meaning to the students. A clear understanding of philosophy can help a teacher grow professionally and create a purposeful direction for teaching in the classroom (Ryan, 2008).

Once dispositions become aligned with professional literature and the education program's conceptual framework, the effectiveness of education and student learning can be improved. Hence, determining educational philosophical dispositions is quite necessary and important for understanding preservice teachers' and teacher educators' behavior to create alignment between their philosophical dispositions for the quality of teaching-learning process.

However, researches on philosophical dispositions, beliefs or orientations in education are considerably few (Edlin, 2013; Ryan, 2008; Soccorsi, 2013). Although there are some conducted with teachers (Doganay and Sari, 2003; Silvernail, 1996), preservice teachers (Alkin-Sahin et al., 2014; Duman, 2008; Duman and Ulubey, 2008; Edlin, 2013; Ilgaz et al., 2013; Minor et al., 2002; Ryan, 2008; Tekin and Ustun, 2008), and administrators (Karadag et al., 2009), there is a lack of study with teacher educators. Especially, knowing dispositions of teacher educators and preservice teachers at the same time will enable to make some adjustments on teaching process. As a result of alignment between educational philosophies of preservice teachers and teacher educators quality of teacher education faculties will be strengthed.

The purpose of this study was to examine and compare the educational philosophical dispositions of preservice teachers and teacher educators. Specifically, it was aimed to answer these three research questions:

1. What is the most prominent educational philosophical dispositions of pre-service teachers and teacher educators?
2. Is there any differences between educational philosophical dispositions of preservice teachers and teacher educators?
3. Is there any differences on educational philosophical dispositions of preservice teachers and teacher educators with regard to gender?

This research study represents a starting point for

engaging preservice teachers and teacher educators in self reflection for purposes of examining and confronting their beliefs and values they hold regarding various aspects of the practice of teaching in education.

MATERIALS AND METHOD

This quantitative study was designed with the survey model (Bryman & Cramer, 1990) in aiming to determine preservice teachers' and teacher educators' philosophical dispositions on education. One way to determine dispositions is to conduct a survey to the stakeholders such as faculty members,preservice teachers and cooperating teachers.

Participants

The study was conducted during the fall semester of 2014–2015 in the Faculty of Education at a young public university which was founded eight years ago in central Turkey. Voluntary participants were 206 preservice teachers and 32 teacher educators from a faculty of education at a public university founded eight years ago in central Turkey. The mean age was 20.2 ± 1.6 for pre-service teachers and it was 33.7 ± 5.9 for teacher educators. The majority of the sample was female (58,7%) for pre-service teachers, while it was male (53,1%) for teacher educators. Because of the lack of seniors at faculty of education yet, preservice teachers were either freshman, sophomore or juniors who had completed educational foundations course during their first year in different majors (Science Education n=18, Turkish Language Teaching n=17, Physical Education and Sports Education n=65, English Language Teaching n=11, Social Studies Education=50, Primary Education n=45).

Measurement and analysis

After permissions were attained from the university institutional review board each participants completed "The Educational Belief Scale" (Yilmaz et al., 2011) to reflect their philosophical orientation. The scale consists of 40 items and configured as 5 Point Likert Type ranging from strong disagreement to strong agreement with the following five dimensions:"Perennialism, Essentialism, Progressivism, Reconstructionalism, and Existentionalism". Each item was connected to one of five educational philosophical dispositions based on the role of the student, the role of the teacher, the function of curriculum, best delivery methods, and the purpose of education. Essentialism-focussing on core subjects instead of student behavior; Perennialism-emphasizing rational thought and democracy; Progressivism-focussing on the development of the whole child (both academic and social development); Reconstructionism-focussing on social justice and equity, Existentialism-focussing on student choice. As the scale consists of independent five subscales, total score cannot be reached. As there are different numbers of items in each factor, it is essential to divide each person's factor score into the related factor's item number and convert the result into a range of 1-5 for comparison. Thus, the individual's prominant philosophy or philosophies are found and the individual can be appointed to the related philosophy. A high score from a factor shows that the participants believe and internalize the educational philosophy in the factor, whereas a low score shows that they have a weak disposition to the related philosophy.

Findings of the exploratory and confirmatory factor analysis showed valid scores for teachers and pre-service teachers. KMO was found as 0.93 and Barlett's Test of Sphericity was found [χ^2=7521. 998, df = 780, P<.01] to conduct exploratory factor analysis. Item factor loadings ranged from 0.42 to 0.74, corrected item-total correlations from 0.22 to 0.90, and reliability coefficients from 0.69 to 0.86 for sub-scales. Total variance explained by the five factors was about 50%. As a result of confirmatory factor analysis, χ^2/df ratio was 2.23 (χ^2/df=1621.67/728), GFI was 0.85, AGFI was 0.83, RMSEA was 0.046, RMR and SRMR were found as 0.065, CFI was 0.97, NFI was 0.95 and NNFI was 0.97, PGFI was 0.75.

As the findings of the validity and reliability of the data were sufficient for preservice teachers and teachers, it was used in this study. For the current study, Cronbach's Alpha coefficients were .68 for perennialism; .69 for essentialism; .90 for progressivism; .81 for reconstructionalism; .79 for existentionalism. Descriptive statistics and Mann–Whitney U test were used for data analysis.

RESULTS

The results showed that the most internalized philosophical dispositions of preservice teachers were progressivism (M=4.11, SD=.76), existentialism, reconstructionalism, perennialism, and essentialism (M=3.06, SD=.61), respectively. While existentialism (M=4.64, SD=.32), progressivism, reconstructionalism, perennialism, and essentialism (M=2.39, SD=.61) for teacher educators (Table 1).

As compared the mean scores of philosophical dispositions, there were significant differences among essentialism (U=1776.0, Z=-4.206, p=.00*), progressivism (U=2441.0, Z=-2.363, p=.02*) and existentialism (U=1465.0, Z=-5.077, p=.00*). Teacher educators' mean scores were higher than preservice teachers' on progressivism and existentialism. However, preservice teachers' mean scores were higher than teacher educators' on essentialism (p<.05*) (Table 2).

As the mean scores of preservice teachers' philosophical dispositions compared according to gender it was seen that males got higher scores on perennialism and essentialism, while females got higher scores on progressivism, reconstructionalism, and existentionalism. But the differences on mean scores were significant (p<.05*) only for essentialism (U=3085.0, Z=-4.897, p=.00*) and progressivism (U=4028.0, Z=-2.650, p=.01*) (Table 3).

As the mean scores of teacher educators' philosophical dispositions compared according to gender it was seen that males got higher scores on perennialism, essentialism, and reconstructionalism; while females got higher scores on progressivism, and existentionalism. But the difference on mean scores was significant (p<.05*) for only essentialism (U=71.00, Z=-2.148, p=.03*) (Table 4).

DISCUSSION

The results showed that the most internalized educational philosophical dispositions were progressivism and existentialism, while the least one was essentialism for

Table 1. Educational philosophical dispositions of pre-service teachers and teacher educators

The Educational Philosophy	Group	N	Mean	SD
Perennialism	PT	206	3.86	.67
	TE	32	3.87	.45
Essentialism	PT	206	3.06	.83
	TE	32	2.39	.61
Progressivism	PT	206	4.11	.76
	TE	32	4.43	.39
Reconstructionalism	PT	206	3.96	.75
	TE	32	3.96	.52
Existentialism	PT	206	4.08	.75
	TE	32	4.64	.32

PT: Pre-service Teacher, TE: Teacher Educator.

Table 2. Comparison of educational philosophical dispositions of pre-service teachers and teacher educators

The Educational Philosophy	Group	n	Mean rank	Sum of ranks	U	Z	P
Perennialism	PT	206	120.52	24827.0	3086.00	-.581	.56
	TE	32	112.94	3614.0			
Essentialism	PT	206	**126.88**	26137.0	1776.00	-4.206	**.00***
	TE	32	72.00	2304.0			
Progressivism	PT	206	115.35	23762.0	2441.00	-2.363	**.02***
	TE	32	**146.22**	4679.0			
Reconstructionalism	PT	206	120.87	24898.5	3014.50	-.780	.44
	TE	32	110.70	3542.5			
Existentialism	PT	206	110.61	22786.0	1465.00	-5.077	**.00***
	TE	32	**176.72**	5655.0			

*p<.05.

Table 3. Comparison of educational philosophical dispositions of pre-service teachers with regard to gender.

The Educational Philosophy	Gender	N	Mean rank	Sum of ranks	U	Z	P
Perennialism	Male	85	107.56	9142.5	4797.5	-.821	.41
	Female	121	100.65	12178.5			
Essentialism	Male	85	127.71	10855.0	3085.0	-4.897	.00*
	Female	121	86.50	10466.0			
Progressivism	Male	85	90.39	7683.0	4028.0	-2.650	.01*
	Female	121	112.71	13638.0			
Reconstructionalism	Male	85	98.71	8390.5	4735.5	-.970	.33
	Female	121	106.86	12930.5			
Existentialism	Male	85	96.73	8222.0	4567.0	-1.373	.17
	Female	121	108.26	13099.0			

* p<.05.

Table 4. Comparison of educational philosophical dispositions of teacher educators with regard to gender.

The Educational Philosophy	Gender	N	Mean Rank	Sum of Ranks	U	Z	P
Perennialism	Male	17	17.56	298.5	109.50	-.682	.50
	Female	15	15.30	229.5			
Essentialism	Male	17	19.82	337.0	71.00	-2.148	.03*
	Female	15	12.73	191.0			
Progressivism	Male	17	14.68	249.5	96.50	-1.179	.24
	Female	15	18.57	278.5			
Reconstructionalism	Male	17	16.53	281.0	127.00	-.019	.99
	Female	15	16.47	247.0			
Existentialism	Male	17	13.71	233.0	80.00	-1.826	.07
	Female	15	19.67	295.0			

* p<.05.

both group. As compared to the mean scores of philosophical dispositions it was found that teacher educators got higher scores on progressivism and existentialism, while preservice teachers got higher scores on essentialism. As compared regarding to gender, males were significantly more essentialist in both group, while females were more progressivist for preservice teachers.

Although educational philosophical dispositions were examined and discussed under different dimensions depending on the scales or designs used in researches, findings are usually similar to each other regarding the precedence of dispositions toward educational philosophies. The results conducted with preservice teachers (Alkin-Sahin et al., 2014; Duman, 2008; Duman and Ulubey, 2008; Ilgaz et al., 2013; Tekin and Ustun, 2008), teachers (Altinkurt et al., 2012; Doganay and Sari, 2003; Silvernail, 1992) and administrators (Karadag et al., 2009) revealed that the most internalized were contemporary educational philosophies like progressivism, reconstructionism and existentialism, while the least were essentialism and perennialism.

When Ryan (2008) examined philosophical orientation of Canadian pre-service teachers, it was revealed that 96% of his respondents had results indicating that they were progressivists. Similarly, Edlin (2013) determined the philosophical orientation of pre-service teachers at Middle Tennessee State University with a causal-comparative study. Her study results showed that slightly more than three fourth of the preservice teachers selected the progressivist philosophy as identified by their responses to the survey instrument, while less than one fourth identified with the essentialist philosophy.

Progressivism, in direct contrast to essentialism and perennialism, advocates a student-centered education. It is based on John Dewey (1961)'s theory of education, which explores the relationship between democracy and education. Dewey believed that democracy is a way of life. In a democratic society, people should work cooperatively to solve the problems and schools are responsible for equipping students with the problem-solving ability. Progressivists argue that schools are miniature societies and should focus on real-life problems students face in school or will face in the future. Therefore education should revolve around authentic activity in a social setting and cater to student needs. According to Witcher and Travers (1999), progressive educators tend to view school as a social institution and seek to align school programming with contemporary needs in order to make education meaningful and relevant to the knowledge, abilities, and interests of their students. That is, these individuals tend to base curricula on their students' personal, familial, and social experiences, with a goal of providing a continuous link between students' school-based learning and their lives outside the school context. As such, progressive teachers tend to view themselves as facilitators, guides, or motivators. Moreover, these teachers tend to present curricula holistically and in an open-ended manner to help students develop problem solving skills. Using more student-centered teaching techniques, students of progressive educators tend to engage in active learning, both independently and cooperatively, which focuses on solving learner-generated problems. Examples of progressive philosophies, theories, and tenets include constructivism, experimentalism, and naturalism. In this context, it can be said that there is an alignment between educational philosophical dispositions of preservice teachers and teacher educators and the curricula in schools and teacher education programs which are based on constuctivist approach for the last decade in Turkey.

However, teacher educators' mean scores were higher than preservice teachers' on progressivism and existentialism; while preservice teachers were higher

than teacher educators on essentialism. Advocates of essentialism believe that schools should equip students with the basic academic skills to survive in society. Teachers are supposed to transmit knowledge to students who usually play a passive role in the process of learning. Standardized testing is seen by essentialists as an ideal benchmark for assessing students and holding teachers accountable for student achievement (Bagley, 1938). Compatible with the results of Minor et al. (2002), slightly more than one fourth of the preservice teachers considered themselves as transmissive, while only a minority of were progressive. As noted by Witcher and Travers (1999), transmissive philosophies include idealism, realism, perennialism, and essentialism. According to Witcher and Travers (1999), transmissive educators are often referred to as being traditional or conservative. They believe that the purpose of school is to develop the intellect. Thus, they view their role as one of dispensing important knowledge to students, and they prefer lecture, demonstration, and recitation as teaching methods. Teachers who represent this paradigm tend to advocate curricula that are subject centered, organized and sequenced, and focused on mastery of specific skills and content. Consequently, their classrooms tend to have a business-like atmosphere in which students are passive learners who generally work independently.

In this contect, preservice teachers' personal philosophy of education can be formed during their years in a teacher education program by understanding of their dispositions before graduation. As preservice teachers move through their degree and interact with different teachers and students, it is expected that their philo-sophical dispositions will be developed and changed. As noted by Soccorsi (2013), a personal teaching philosophy is developed throughout a pre-service teacher's studies, career and teaching experiences and is best evident in pedagogical practice. Doyle (1997) investigated the influence of education programs on preservice teachers' beliefs, and found that pre service teachers' beliefs changed from viewing teaching and learning as passive acts of teachers giving the information to students to a belief that teaching and learning are active processes in which teachers should act as facilitators. Two important influences on the changes in preservice teachers' beliefs were experiences gained while teaching in the field and the preservice teachers' abilities to reflect on and analyze their experiences. As Dewey (1961) and Bandura (1977) stated all people act and behave according to their beliefs and that a person's thinking should not be separated too greatly from their experiences. Therefore, the influence of observation and practical teaching experiences is inextricably linked to the development of a teaching philosophy. A pre-service teacher's personal teaching philosophy, which they have actively defined, shapes how they will orchestrate their classroom in the future. Teacher educators also should monitor the evolution of these dispositions to determine the extent to which they are becoming more aligned with the teacher education standards, as well as other pedagogical and curricular tenets and frameworks.

Even though there was not revealed significant gender differences in many studies conducted with preservice teachers (Tekin and Ustun, 2008; Bicer et al., 2013; Ilgaz et al., 2013; Alkin-Sahin et al., 2014), teachers (Doganay and Sari, 2003; Altinkurt et al., 2012) and administrators (Karadag et al., 2009) it was highlighted that mean scores of males were higher on traditional educational philosophy like essentialism and perennialism, however, mean scores of females were higher on contemporary educational philosophy like progressivism, reconstructionalism, and existentialism. As noted by Minor et al. (2002), by demonstrating that preservice teachers' dispositions may have a gender and cultural context, findings from this study suggest that teacher educators should develop and use activities that deal specifically with gender issues and multicultural education. Such activities include encouraging preservice teachers to identify their beliefs, as was undertaken in this study, and to link these beliefs to curricula and pedagogy in their respective disciplines while considering gen der and cultural issues.

CONCLUSION AND LIMITATIONS

The findings revealed that the most internalized educational philosophies were progressivism and existentialism, while the least one was essentialism for both preservice teachers and teacher educators, even though teacher educators got significantly higher scores on progressivism and existentialism, while preservice teachers on essentialism. Although males were significantly more essentialist in both group, females were more progressivist for preservice teachers.

These results might be useful to strengthen the quality of teacher education faculties by making an alignment between educational philosophies of preservice teachers and teacher educators. Once dispositions become aligned with professional literature and the education program's conceptual framework, the effectiveness of student learning can be improved. For this, preservice teachers should be placed in situations to observe and work with model teachers who exhibit positive dispositions as much as possible during their time in the teacher education program in order to improve their decisions about students, the classroom, teaching and the school. Because, the development of a personal educational philosophy has important implications for teaching practices of both preservice teachers and teacher educators. Regarding the results of this study, pre-service and in-service training programs can be arranged towards improving the personal educational philosophies of preservice teachers, teachers and teacher educators.

This study was limited to the teacher education program

at Nevsehir Haci Bektas Veli University in central part of Turkey. The educational philosophies identified by the survey were limited to perennialism, essentialism, progressivism, reconstructionism, and existentialism. It can be examined deeply and supported by qualitavive studies the reason why gender is an effective factor in philosophical dispositions in education.

Sample size might be larger for the future studies and also educational philosophies can be expanded.

Conflict of Interests

The author has not declared any conflicts of interest.

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Examination of pre-service science teachers' activities using problem based learning method

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In this study, both the activities prepared by pre-service science teachers regarding the Problem Based Learning method and the pre-service science teachers' views regarding the method were examined before and after applying their activities in a real class environment. 69 pre-service science teachers studying in the 4th grade of the science education participated in the study. This study was designed as a case study. In the result of analysis, it was determined that the pre-service science teachers could develop activities using the features of the problem based learning method. However, it was concluded that pre-service science teachers faced difficulties in some phases during the activity development process such as generating scenarios related to daily life and finding problems to direct the students to inquiry. In the result of semi-structured interviews conducted with pre-service science teachers, it was determined that they had positive and negative views regarding the PBL method before and after the implementation in a real class setting.

Key words: Problem based learning, pre-service science teachers, view.

INTRODUCTION

Teachers, who are active from the beginning of the learning process up to its evaluation, are deemed to be individuals who provide good education of future generations in terms of their knowledge and skills. The teachers, whose behaviours are imitated and who are perceived as a role model by the students according to Alam and Farid (2011), play an important role in the learning of and acquisition of different skills by the students. Presently, different from the past, teachers are expected to apply active learning approaches in their classroom and educate their students as individuals who are capable of learning throughout their whole life. Therefore, one of the basic tasks of teachers is to plan and carry out the lesson as to include the active learning methods (Tanni, 2012). From this point of view, teacher training programs should not only aim to prepare the teachers of future to raise new generations, but also to ensure them to plan and use different methods in order to reveal the potentials of the students (Causton-Theoharis et al., 2008). On the contrary, in teacher training, approaches based on the theoretical education are used in order to prepare the teachers for their professional life and these approaches are frequently criticized (Mason, 2013). Furthermore, teachers are required to be productive individuals. They need to be able to change the program according to the students' needs instead of

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fully adhering to the educational programs. Therefore, it is very important that the teacher training programs to involve applied courses where the pre-service science teachers can learn active learning approaches, where they prepare course plans related to these approaches and where they can use the plans they have prepared in small student groups. Besides this, the assessment of the activities prepared by the pre-service science teachers can help in the determination and elimination of the difficulties they face and this can positively influence the teacher educational process. For this reason, current study makes some suggestions by taking into consideration both the activities prepared by the pre-service science teachers and their views regarding the problem based learning method, that is one of the active learning methods.

Problem based learning (PBL)

PBL is one of the student based learning methods where the students use their own experiences in problem solving process (Shimic and Jevremovic, 2010). PBL was used for the first time by the end of the 1960s in Canada for teaching the clinical situations at a faculty for medicine (Chen, 2008; McLinden et al., 2010; Williams and Pace, 2009). Furthermore, currently PBL is frequently used at higher education institutions including nursing, law, engineering (Awang and Ramly, 2008) and other education levels including elementary, secondary and high school (Barrows, 1996). The primary aim of the PBL, which is a method that encourages learning by students (Lee and Bae, 2008), is to establish a learning environment where active learning is being increased (Lam, 2008). Besides this, PBL aims students to develop lifelong learning skills and to prepare them for meaningful learning (Schmidt et al., 2009).

In PBL, real life events are used in the learning process frequently in order to provide meaningful learning and retention (Searight and Searight, 2009). It is advised to use efficient problems related to daily life to cause conflict in students' brains (Wang et al., 2008). The problems in question should be presented to the students as interest attracting scenarios. In PBL process, students are first requested to determine the problem or problems in the scenarios they come across. This triggers the PBL process as a result of the need for students to solve a problem they face in their daily life (Shamir et al., 2008; Spronken-Smith and Harland, 2009). Contrary to the traditional learning approach, the problems are not used for the purpose of evaluating knowledge in PBL process, but for initiating learning. After the determination of the problems in the scenarios, the students try to understand the nature of each problem, to recall their previous knowledge, to ask questions with regard to the issues they could not understand, to design a plan in order to solve the problem and to determine the sources they need (Uden and Beaumont, 2005). Therefore, the students use the PBL environments for their skills like solving daily life problems, critical thinking, communication, decision making (Chaves et al., 2006; Savin-Baden and Major, 2004). Besides, PBL requires group work since it is frequently applied in small student groups (Abou-Elhamd et al., 2011). This type of work develops communication and other skills among students and also the ability to think in different perspectives related to a problem (Wilkinson, 2009).

In addition, the role of the teacher differentiates in the PBL process compared with the other methods (Sockalingam et al., 2010). In general, the tutors assist the students during the analysis process of the problem and its reporting process (Yew and Schmidt, 2009). The tutors provide PBL environments for the interaction among the students by directing the group and assisting the students to determine the information they need to solve the problem (Gijselaers, 1996). Additionally, the tutors are required to make preliminary preparations before the teaching process in order to ensure that he/she shows a better performance during the learning process (Leung and Wang, 2008). In PBL, teachers have to deal with problems during the planning, application and assessment of the instruction; in other words through the whole learning process (Ertmer et al., 2009). That is why it is very important that the teachers have sufficient knowledge on the theoretical basis and applications of the PBL method. It is thought that training provided before the service related to the PBL will positively influence the utilization of this method by the pre-service science teachers in their professional career.

Problems and purpose of the study

Today, students are expected to gain and develop different skills including problem solving, communicating, creative and critical thinking (Tarmizi, et al., 2010). Students' lifelong learning skills such as critical thinking can be developed by utilizing active and student-centered learning approaches (Carder et al., 2001). It is therefore suggested that the instructors should use the PBL method during the learning process (Murphy et al., 2010). For this reason, it is very important that the teachers have to be trained enough about the philosophy and theoretical basis of PBL before undertaking the guide role in PBL environments (Lekalakala-Mokgele, 2010). Therefore, the aim of this study is to evaluate the activities prepared by the pre-service science teachers after the training provided related to Problem Based Learning. Besides, in the study, nine of pre-service science teachers among the participants were randomly selected and their views regarding PBL method have been determined before and after the implementation of Problem Based Learning activities prepared by them. Research questions regarding the purpose of the study are expressed as

follows.

1. How do pre-service science teachers in PBL method develop the activities?
2. What are the views of pre-service science teachers regarding the influence of preparing activities and applying the prepared activities on themselves?
3. What are the general views of the pre-service science teachers regarding the PBL method before and after applying the activities they prepare?

RELATED STUDIES

The literature related to this study can be evaluated under two groups. A part of studies consists of qualitative studies where interviews or open-ended questions related to the PBL method are used. Within the scope of these studies, some courses were conducted at the school of communication, pharmacy, medicine and nursing. The studies utilized PBL and obtained the views of the students regarding the method (Brzovic and Matz, 2009; Ellis et al., 2008; Rowan et al., 2008; Turan, Elcin et al., 2009). The students had generally expressed positive views regarding the PBL method in these studies. The PBL method was applied in junior high and high school levels and the views of the students obtained and evaluated after the application of the studies. Lou et al. (2010) examined general views of the students regarding the method after the PBL method implementations they involved with high school students. Sockalingam et al. (2010) determined the views of high school students about the role and importance of the problems at problem based learning environment. Part of the studies regarding the PBL method was conducted at the school of education at universities. In some of these studies, PBL method was used in the teachers training programs and the views of the pre-service science teachers regarding the PBL method were evaluated. Dahlgren et al. (1998) collected the views of the pre-service science teachers regarding the PBL method. Similarly, Akpınar and Ergin (2005) determined the views of the pre-service science teachers in their study by conducting the semi-structured interviews after an experimental application that used problem based learning method.

Besides, studies that examined the activities prepared by teachers or pre-service science teachers regarding different learning methods and their views are included in the literature. Ruys et al. (2012) evaluated the activities prepared by pre-service science teachers based on collaborative learning by utilizing rubrics and determining the strong and weak aspects of the pre-service science teachers during the activity preparation process. Spronken-Smith and Harland (2009) conducted another similar study with geography teachers. The teachers implemented PBL to their lessons in the study. Both experiences and the group processes of the teachers were evaluated during the study. Observation documents, course documents and voice records were used as the data collection tools by the researchers. Results showed that the majority of the teachers were pleased to perform activities related to problem based learning method. As a result, it was thought that more studies on the use of problem based learning method by pre-service science teachers will contribute to related literature.

THE RESEARCH METHOD AND APPLICATION PROCESS

The study was designed as a case study. The implementation phase of the study was conducted in the course “New Approaches in Science Education”, a selective course at school of education in Turkey. The pre-service science teachers were primarily provided training for two weeks (four course hours) on the theoretical basics and applications of the PBL method during the implementation process of the study. The philosophy, historical background and features of the PBL were explained during the training in question. Besides this, the pre-service science teachers were provided activity samples developed by specialists related to the PBL method. Later, the pre-service science teachers were requested to prepare a PBL activity regarding the goals in a science subject they chose. The pre-service science teachers presented the activities which they prepared (two course hours) and shared those with their peers. The pre-service science teachers had made positive and negative assessments related to the activities, and a discussion environment was created during this process. 9 pre-service science teachers were randomly selected among the pre-service science teachers who participated in the implementation, and were requested to apply the activities at the schools where they were doing their internship. Researchers evaluated the activities prepared by the pre-service science teachers and then pre-service science teachers edited their activities before their implementation. Besides, semi-structured interviews were conducted with the pre-service science teachers before the implementation of the activities. Later, the pre-service science teachers applied parts of the prepared activities during the two course hours at the schools where they were doing their internship. Again, a semi-structured interview was conducted with the pre-service science teachers after the implementation and their views after the implementation were assessed. The implementation process of the study is presented in Table 1.

FINDINGS

Assessment of the activities prepared by the pre-service science teachers related to the PBL method

During the activity preparation process in the study, the pre-service science teachers were first requested to select a science subject in the science education program of the junior high schools. Later, they prepared a PBL activity related to the achievements of the subject they selected. The pre-service science teachers were asked to pay attention to issues such as the consistency with the goals, considering the class time, consistency with the student level, providing prepared activities connected with the subject. Distribution of the subjects of the activities prepared by the pre-service science teachers is presented in Table 2.

As seen in Table 2, the pre-service science teachers

Table 1. Research design.

Introduction of theoretical base	Activity preparation	Before implementation/ after training	Implementation process	After the implementation
Introduction of theoretical base and applications regarding PBL method (4 h / 2 weeks)	Preparation and presentation of individual PBL activities (2 h / 1 week)	Semi-structured interview with 9 randomly selected pre-service science teachers	Implementation of PBL activities those developed by pre-service science teachers with junior high school students (2 h)	Semi-structured interview with nine pre-service science teachers

Table 2. Frequencies and percentages of subjects in PBL activities.

Subject	f	%	Subject	f	%
Systems in our body	12	17	Electricity	4	6
Power and Movement	10	14	Acid and base	3	4
Matter and Heat	9	13	Pressure and Levitation force	2	3
Human and Environment	7	10	Growth and Development	2	3
Particle structure of matter	7	10	Space and Universe	1	2
Light and Sound	5	7	Work - Energy - Power	1	2
Living creatures and Life	5	7	Energy sources	1	2

Table 3. Frequency and percentage values of evaluation results of PBL activities prepared by pre-service science teachers.

Evaluation criteria	Adequate		Partially adequate		Inadequate	
	f	%	f	%	f	%
Scenarios being written clearly in a proper language	23	33.3	37	53.6	9	13
Scenarios include the daily life events	45	65.2	20	29	4	5.8
A problem that will lead students to inquire	37	53.6	26	37.7	6	8.7
Scenarios do not contain phrases directly present information	48	69.6	11	15.9	10	14.5
Scenario is appropriate for related subject's achievements	53	76.8	14	20.3	2	2.9
Activities complying with students' grade level	59	85.5	8	11.6	2	2.9
Sessions include questions that will guide students	60	87	5	7.2	4	5.8
Activity's name that is intriguing and related to the subject	43	62.3	12	17.4	14	20.3
Scenarios in the activities that have a relationship with each other	23	33.3	7	10.1	39	56.5

prepared activities including different subjects in the fields of physics, chemistry and biology. It is thought that the individual activities prepared by the pre-service science teachers relating to different subjects are due to their individual differences. Two specialists using an assessment form that includes definite criterions also examined the activities related to the PBL method prepared by the pre-service science teachers. The percentage and frequency values of evaluation results are presented in Table 3.

Majority of the pre-service science teachers were able to prepare appropriate activities regarding the method after the theoretical information and education provided to them. The majority of pre-service science teachers have used questions that direct students to active learning by taking into account educational goals of the subject matter, relevance to the target audience when preparing PBL activities. For example, one pre-service teacher prepared a scenario that included statements like "*Zeynep has begun to play with her sibling after she came from the school. Zeynep and her sibling have first played in a cool room with a balloon and later went over to the room with an oven. The balloon burst after they played a while. Zeynep was very surprised that this balloon, which didn't burst in the cool room, burst in the room with the oven*." related to the achievement "performing experiments and discussions on those materials will expand and shrink from the influence of heat". Another pre-service teacher used the expressions "*Competition of Light and Sound*" in the title of her activity that would attract attention of students.

The majority of the pre-service science teachers used

daily life related science events in the scenarios they prepared. For example, one pre-service teacher chose "*putting chains on tyres in snowy weather*" event, and another pre-service teacher chose the "*moulding of bread*" event for scenarios they prepared for the activities and both topics capable of attracting the attention of the students. The pre-service science teachers have used questions in order to direct the students in the phase where they might face difficulties depending on their levels. The questions *"What are your solution suggestions for environmental pollution and please provide a solution project?", "How can environmental pollution be prevented?", "What do you think could be other samples regarding the transmission of heat by radiation?", "What might be the reasons for that organ donation is not widespread?"* may be samples for the questions used by the pre-service science teachers during the activities. At the same time, the data show that some pre-service science teachers experienced difficulties in some phases during the activity preparation process. As seen in Table 3, some pre-service science teachers reported that they experienced difficulties with regard to writing clear and understandable scenarios, inclusion of events from daily life into the scenarios, determination of a problem which would constitute the base of the scenarios and directing the students to inquiry. Besides, the expressions that contained direct information were included in the activities prepared by some of pre-service science teachers. As a result, it was determined that the majority of the pre-service science teachers faced difficulties in making connections between the scenarios.

The evaluation of the views of the pre-service science teachers

Randomly selected 9 pre-service science teachers applied the activities they prepared in their field of experience (teaching practice) after theoretical and applied education regarding PBL method. Semi-structured interviews were conducted with pre-service science teachers before and after the implementation. The pre-service science teachers were asked similar questions in both interviews. The interviews were evaluated under 7 categories and sample statements of the pre-service teachers were presented.

Problems and issues in implementation process of the activities regarding the PBL method

The pre-service science teachers were asked before the implementation "Which problems do you think you might face during the implementation process of the activities regarding the PBL method?" and after the implementation "What problems did you face during the implementation process of the activities regarding the PBL method?" Before the implementation, pre-service science teachers expressed that they might experience problems due to poor classroom management, different questions asked by the students, difficulties in determination of the problems by students, difficulties in understanding scenarios properly by students, and being novice of the method for students. After the implementation, pre-service science teachers emphasized similar problems. Besides, they stated that they did not have enough time for students to direct well and the problems they faced in creating student groups. As a result, the views of the pre-service science teachers are similar before and after their experiences.

Statements of some pre-service science teachers before the implementation:

"Maybe, I won't receive the answers I expected for the questions I asked. Maybe they are not able to find the problem when I ask for it… We might face different ideas during class where we will perform the application. We might also face non-related questions too. It might be that the students go off topic. (P1)"
"I think that I won't be able to control the class and that undesirable behaviours may arise. Because I do not fully know how to apply it. I am not sure whether I will be able to provide meaningful feedback to students. I might experience difficulties in terms of directing… (P2)"

Statements of some pre-service science teachers after the implementation:

"…The students were interested. Therefore, there was not much of a problem. But they misunderstood the question "What do we know?"… I had asked them what they knew about the subject the story was related to… (P1)""
"I experienced some difficulties in terms of class management. They could not answer some questions when I let them speak. I experienced some difficulties in guiding the students. There were three learning goals of the subject, but I was always going off the subject by directing them… (P2)"

The effects of preparing and applying activities related to the PBL method on the pre-service science teachers

The pre-service science teachers were asked before the implementation, "What were the effects of preparing activities regarding the PBL method for you?" and after the implementation "What were the effects of applying the activities regarding the PBL method?" Before the implementation, the pre-service science teachers stated that they learned how to apply the method in general as a result of the problem based activity preparation process. Besides, some pre-service science teachers stated that they learned how to prepare scenarios consistent with

students' level and that they will be able to prepare activities regarding this method in the future, too. After the implementation, the pre-service science teachers stated that they gained experience regarding the implementation of the method, had the opportunity to see their failures, and learned permanently how to apply the method. As a result, during the interviews the pre-service science teachers expressed the positive effects of preparing activities and applying those in a real class setting. It can be stated that the implementation of the theoretical knowledge of the pre-service science teachers in a real class setting contributed to their knowledge and experience.

Statements of some pre-service science teachers before the implementation:

"We learned how to apply the PBL method. We learned the knowledge we need to conduct group work. We wrote scenarios to the student level. We faced some difficulties by writing the scenarios, but we overcame these. (P3)"

Statements of some pre-service science teachers after the implementation:

"I learned to perform an activity by conducting group work in a class environment. I learned how to communicate with the students. I now have an idea about how this method can be applied. (P3)"
"I was inadequate with regards to the implementation. But with this implementation I gained experience. Applying an activity I prepared was more effective for me. (P4)"

The positive and negative effects of the PBL method on the students according to the pre-service science teachers

The pre-service science teachers were asked before the implementation, "What do you think about the positive and negative effects of the PBL method on the students?" and after the implementation "What were the positive and negative effects of the PBL method on the students?" The pre-service science teachers expressed only views on the positive effects of the PBL method on the students before the implementation. They stated that PBL method supported active participation, learning with fun, the development of thinking skills like problem solving, correlating science subjects with daily life, collaborative and permanent learning. After the implementation, the pre-service science teachers emphasized both the positive and the negative effects of the PBL method on the students. They stated that the method provided active participation, collaborative learning, the development of students' problem solving skills and creativity. They also stated that, it helped students drive their attention to the course and correlate daily life and science subjects. With regard to the negative effects, the pre-service science teachers stated that the method caused the students to face difficulties when answering some questions and correlating sciences with daily life; besides the students felt themselves insufficient due to the non-provision of direct knowledge.

Statements of some pre-service science teachers before the implementation:

"I don't think that it will affect the students negatively. The positive effect is that it promotes active participation. This will decrease the boringness when lecturing the theoretical courses. The lesson will be more joyful and attractive for the students. They will be able to apply those they learned in daily life... (P5)"

Statements of some pre-service science teachers after the implementation:

"The students felt insufficient because they did not know anything at the beginning since I did not provide direct information on the subject. They thought that they did not know it. This impeded the learning of the students. (P4)
"They are not able to correlate science with daily life even if they find the problem. This is because there are many terms in science and we are always providing education towards memorizing. The students cannot transfer what they learn (P6)".

Techniques used together with the PBL method

The pre-service science teachers were asked before and after the implementation "Which learning methods and techniques do you think might be used together with the PBL method? And why?" The pre-service science teachers stated before and after the implementation that the PBL method might be supported by the question-answer, direct instruction, experiment, brain storming and discussion techniques. After the implementation, the pre-service science teachers stated their views with details with providing reasons based on their experiences. Besides, they noted that visual materials such as concept cartoons and brain maps could be used together with the PBL method.

Statements of some pre-service science teachers before the implementation:

"….There is no doubt that direct instruction needs to be used in order to explain the sample event. Later the question-answer and discussion methods can be used. (P2)"
"The experiment method can be used. Case based learning can be used. The question-answer and direct instruction method can also. (P3)"

Statements of some pre-service science teachers after the implementation:

"I think that the students can perform brain storming by techniques such as mind maps in the PBL method. The PBL method can be used faster and more efficient by allowing students to express their views verbally or draw them.. (P2)"
"Experiments can be used together with this method. For example, the students may be requested to perform experiments in a group collaboratively. (P3)"

The desire regarding the utilization of the PBL method in the professional life as a teacher

The pre-service science teachers were asked before and after the implementation "Would you like to use the PBL method in your professional life and why?" The pre-service science teachers stated before and after the implementation that they would like to use the PBL method in their professional life. When they were asked for the reasons of their answers, they commonly justified this with the positive effects of the method on the students. They also stated that the PBL method is a joyful, engaging, daily life related method and supports retention of learning.

Statements of some pre-service science teachers before the implementation:

"We will always need to provide examples from daily life during the instruction when we get teachers. This is a suitable method that we can use. This would improve learning retention and grab their attention. (P6)"
"Yes, I would. That is because it provides retention of learning. It may attract the interest and attention of the students. That is because we provide them a different and interesting scenario. They think on it. (P9)"

Statements of some pre-service science teachers after the implementation:

"Yes, I would like to use this method in my professional life. It was good to divide the class into groups because it was more efficient than the other way. I was able to learn what the students knew thanks to this method before instruction. (P3)"

Limitations of the PBL method

The pre-service science teachers were asked before and after the implementation "What do you think are the limitations of the use of the PBL method during the learning process?" The pre-service science teachers stated before and after the implementation similar views regarding limitations of the method. They stated that the PBL method is not compatible with every science subject and that it is difficult to prepare activities in accordance with learning goals. Besides, they stated that the classroom management might constitute a problem during the implementation of the method, particularly in crowded classes, that the students might face difficulties on conducting group work. According to the pre-service science teachers, poor time management, failure to ensure active participation of all students, inability of the students to transfer what they learn to daily life are the limitations of the method.

Statements of some pre-service science teachers before the implementation:

"It might be difficult to prepare an activity according to the learning goals. Not every method is suitable for every learning goal. (P7)"

Statements of some pre-service science teachers after the implementation:

"I think that it will not be applicable to many subjects. We might face difficulties when finding events from daily life for every subject. These might be the limitations. (P7)"
"In my opinion, the limitation of this method is generating stories based on the given time and the learning goal. (P8)"

Difficult stages for the students in the PBL environment

The pre-service science teachers were asked before the implementation "At which stages of the PBL method do you think students might face difficulties? Why?" and after the implementation "At which stages of the PBL method did the students face difficulties? Why?" Before and after the implementation the pre-service science teachers stated that the junior high school students might face difficulties at revealing their knowledge, determining the problem, researching and solving the problem. They provided different answers to the related questions since they have different experiences and qualifications. They stated that retention of the students, who faced difficulties when remembering their existing knowledge, was not sufficient or that they did not have sufficient pre-knowledge. In addition, they noted that some students faced difficulties when solving the problem since they had encountered such a method for the first time.

Statements of some pre-service science teachers before the implementation:

"I think that they will face difficulties at solving problems. They need to understand the case very well. Everyone has a different perspective on the events... In addition, everyone interprets the events from his own perspective. That is why students might face problems. (P1)"
"I think that they will face difficulties at solving problems. They need to think creative at this stage. They might face difficulties at using the knowledge they gain for the

Table 4. Positive and negative views of the pre-service science teachers related to the Problem Based Learning method before and after the implementation.

	Before the implementation	After the implementation
Positive Views	Active participation, faster learning, learning by experience, joyful learning, correlating with daily life, developing thinking skills, attracting attention, increasing motivation, facilitating learning, retention of learning (f=10)	Attracting attention, learning collaborative working, ability to share views, ability to state views, development of the problem solving skills, better learning, ability to access information, faster learning, correlating with daily life, ability to determine the problem, development of the creative thinking skills (f=11)
Negative Views	Pre-knowledge deficits, failure to transfer what was learned to daily life, not being suitable for every subject, difficulty to prepare activities, classroom management deficiencies, inefficiency in crowded classes, failure to ensure the participation of all students (f=7)	Inability to correlate with daily life, difficulty at determining the problem, unwillingness of students, inefficiency in crowded classes, not being suitable for every subject, time management deficiencies, class management difficulty, difficulty at grabbing the attention of the students, failure to control the group work (f=10)

solution of the problem. Besides this, the students may get stuck on the process and not think creatively enough since they are having all the courses in the same manner.(P5)"

Statements of some pre-service science teachers after the implementation:

"They only faced difficulties when the question 'What do we know?' was asked. Actually, I expected that they would face difficulties when determining the problems. Contrary, they did not face any difficulties. They even correlated the story in the sample event with the subject very easily, and were able to say what the subjects were. (P1)"

As a result, it was determined that the pre-service science teachers had both positive and negative views related to the PBL method before and after the implementation of the activities that they had prepared. In order to make the results understandable, the before and after the implementation positive and negative views of the pre-service science teachers related to the PBL method during the interviews are presented and summarized in Table 4.

DISCUSSION

The PBL method that presents a problem from daily life in interesting scenarios is one of the active learning methods that can be used in science education. There are many factors influencing utilization of the PBL method in learning environments (Chan, 2009a). The course planning and application are main competencies of the teachers regarding the PBL method. In this study, pre-service science teachers have prepared PBL activities regarding the different science subjects they chose. The majority of the activities prepared by the pre-service science teachers were consistent with the learning goals of the subject they chose and included events from daily life. It can be stated that pre-service science teachers used what they learned theoretically in course planning activities they participated in. Therefore, course planning by using different learning methods and techniques deem to be an important issue in teacher education (Tanni, 2012). Discussion on course plans developed by the pre-service science teachers themselves provides them an opportunity to think about the validity of their educational decisions (Ruys et al., 2012). Lee and Bae (2008) noted that teacher education programmes are required to give more importance to practical knowledge related to design and application of course plan rather than only the knowledge related to method.

In this study, after the theoretical and practical training on the PBL method, randomly selected pre-service teachers were requested to use activities prepared in their field experience. Semi-structured interviews were conducted with the pre-service science teachers before and after the implementation. There are some studies referring to more positive views of students after an education was performed related to PBL method (Akpınar and Ergin, 2005; Brzovic and Matz, 2009; Dahlgren et al., 1998; Lou et al., 2010; Rowan et al., 2008). In this study, pre-service science teachers presented both positive and negative views regarding the method before and after the implementation. Therefore, it is thought that the planning of activity and implementation process contributed to the pre-service science teachers in assessing of the method from different perspectives. Ruys et al. (2012) have noted in their study that the pre-service science teachers are able to make assessments about the relations and differences between the course plans and the class applications. Some findings draw attention when the

views of the pre-service science teachers before and after the implementation are examined in detail. The pre-service science teachers stated before and after the implementation that they may encounter problems due to poor classroom management, off topic questions forwarded by the students, students' failure to determine the problem, students' failure to understand scenarios sufficiently, students' novelty of the method. Differently, the pre-service science teachers have mentioned after the implementation the insufficiency of time, failure to lead the students well and the problems they encountered when creating student groups. Park and Ertmer (2008) determined in their study that lack of knowledge and skill constitutes an important limitation for the implementation of the PBL method by the teachers. Therefore, it is thought that the problems in question are because the pre-service science teachers do not have sufficient experience. But student teachers engage field experiences in limited time and definite periods in the teacher training. Kablan (2012) noted that the theoretical and applied activities for the pre-service science teachers on course plan preparing need to be increased in courses conducted in schools of education. Besides, studies conducted in order to create a program in school-university collaborations for the purpose of bridging theory and application at the teacher educational programs can contribute to the solution of this problem (Allen et al., 2010).

Problem Based Learning requires the tutor to make preparation and study before the education process in order to provide better learning (Leung and Wang, 2008). In this study, the pre-service science teachers stated before the implementation that they learned how to write appropriate scenarios according to the student level by the end of the problem based activity preparation training and that they will be able to prepare activities related to this method in future, too. In addition, after the application, they stated that they had enough experience related to utilization of method, that they realized their mistakes and they learned how to utilize the method permanently. In a similar study, Sağ (2010) found that the perception of self-efficacy beliefs of the pre-service science teachers in the experiment group which have developed activities and conducted applications were higher than control group by the end of the application. It can be said that the application of the theoretical knowledge learned by the pre-service science teachers in a real learning setting contributes to the increasing of their experience and self-efficacy.

The pre-service science teachers have mentioned in the interviews the effects of the PBL method on the students. The pre-service science teachers stated prior to the implementation that the PBL can provide active participation, learning with fun, development of thinking skills such as problem solving, correlation of science issues with daily life, collaborative learning and retention. In addition, PBL method can be used to develop critical thinking, creativity and self-managed learning (Chan, 2009b). Similar to the views of the pre-service science teachers, in their study, Herron and Major (2004) analysed the student views on PBL and they found that, PBL method provides active participation of the students, develops their skills such as problem solving, researching and collaborating. The pre-service science teachers, who emphasized only the positive aspects of the method before the implementation, mentioned both positive and negative effects of the method on the students after the implementation. The pre-service science teachers noted that the method caused the students to face difficulties when answering questions and correlating sciences with daily life. Furthermore they realized that the students felt insufficient due to the non-provision of direct information. Learning process starts based on their existing knowledge since the students are not given the opportunity to prepare themselves for the problem in the PBL environment (Yew and Schmidt, 2009). The tutors both assist the discussion of the students, and even if rarely, explain the terms they are not able to explain during the Problem Based Learning process (Charlin et al., 1998).

The main purpose of the PBL method is to support the students for acquiring information related to the problem and using the acquired information at the solution of the problem (Williams et al., 2008). The pre-service science teachers think that the students will not be able to learn when they are not provided direct information and face difficulties. For this reason, it can be stated that pre-service science teachers have some misconceptions regarding the application process of the active learning methods. Furthermore, Cheng et al. (2014) have determined in their study that the primary science teachers have misconceptions regarding inquiry based learning and that they faced problems by implementing the method in the class.

The pre-service science teachers noted before and after the implementation that the PBL method could be supported with the question-answer, direct instruction, experiment, brain storming, concept cartoons, mind maps and discussion techniques. In addition, there are many studies aiming to support PBL method with different methods, techniques and environments in order to use PBL method in higher education more effectively and make the method more functional for the students at younger ages. In these studies, problem based learning supported with computer (Belland, 2010; Chang, 2001; Ertmer et al., 2009; Lehti and Lehtinen, 2005); concept maps (Hsu, 2004; Johnstone and Otis, 2006); simulations (Ioannou et al., 2009) and their effects were investigated on students from different educational levels. It is thought that the preparation and application of course plans by the pre-service science teachers contribute to their skills with regard to use of the different instructional methods together and enrich the learning environment.

Conclusion

Most of the pre-service science teachers who participated

in the study prepared the activities regarding problem based learning method consistent with the learning goals of the subject they chose and most of the activities included events from daily life. The pre-service science teachers stated before and after the implementation that they want to use the PBL method in their professional life. When the pre-service science teachers were asked for the reasons of their answers, they commonly justified this with the positive effects of the method on the students. However, the pre-service science teachers stated that the PBL method is not suitable for all science subjects and that it is difficult to prepare an appropriate activity related to learning goals. Besides, the pre-service science teachers expressed that the classroom management might constitute a problem during the application of the method, particularly in crowded classes, that the students might face difficulties at conducting group work. The pre-service science teachers expressed that poor time management, failure to ensure participation of all students to the course, students' failure to transfer the newly learned information to daily life as the limitations of the method. In addition, Lekalakala-Mokgele (2010) noted that the tutor might face difficulties when controlling the class and be afraid of losing the control in Problem Based Learning environments. According to Spronken-Smith and Harland (2009) there are two main discussions in PBL environments; a) power to control of the teachers on the learning activities and b) when and how to make interventions. It was noted in the same study that teachers mentioned the difficulties of learning activities in their views. In addition, Ertmer et al. (2009) pointed out the problems that might be encountered during the planning, implementation and evaluation process in PBL applications and offered solutions to those problems. Therefore, when taken into consideration the studies in question it is possible to say that the respective views of the pre-service science teachers are an expected result of the study. Besides, the pre-service science teachers have expressed in the study before and after the application that the junior high school students might experience difficulties when revealing their existing knowledge, determining the problem, conducting research and solving the problem during the PBL process. Individual differences and life experiences of each learner influence the PBL method, since it is a real life based learning method (Wang et al., 2008). It is thought that the pre-service science teachers have provided different answers to the related questions since their personal experiences and competencies showed different features and the students had individual differences

Suggestions

The suggestions are presented based on the results obtained in the study in order to increase the utilization of the PBL method in science learning:

1. The PBL method is one of the active learning methods. Theoretical courses on how the active learning methods could be applied are frequently provided in the teacher training programs. In addition to theoretical courses these programs may contain applied courses including activities regarding the preparation of course plans and application of these plans in small student groups.
2. Field experiences may be performed at different grade levels during the teacher's education in order to ensure that the pre-service science teachers gain more experience.
3. It can be stated that the pre-service science teachers have some misconceptions regarding the application process of the PBL method even after the education provided to them. These misconceptions are commonly related to the implementation of the active learning methods. Therefore, future studies may focus on determination and elimination of the delusions of the pre-service science teachers related to the implementation of the active learning methods.
4. Pre-service science teachers should be trained on the techniques using together with the PBL method in order to use the method more efficiently in their professional life as a teacher.
5. The pre-service science teachers have mentioned some limitations of the PBL method. Therefore, future studies may focus on investigation of possible issues in utilization of the PBL method with students at different grades and suggestions on solving these issues.

Conflict of Interests

The author has not declared any conflicts of interest.

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