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Full Length Research Paper

Problems encountered by future teachers in community service practices course and solution offers

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The course titled "Community Service Practices" has been taught since 2006 to 2007 academic year in all of the faculties of education in Turkey. At Marmara University, future teachers of the French Language Teaching Section of the Department of Foreign Language Teaching at the Atatürk Faculty of Education take this course in the first semester of their 3rd year. This study was conducted on 47 future teachers enrolled in the French Language Teaching Section and that have visited various institutions. In this study, qualitative research method was used and an interview form composed of 2 open-ended questions prepared specifically for future teachers was administered. The research data were collected with the technique of interview form in 2012 to 2013 academic year and the data collected were evaluated with coding method. The aim of our study is to identify the problems that future teachers encounter in the institutions that they visit, to classify these problems and to offer solutions, while determining the benefits that this practical course provides to future teachers. One of the most significant problems encountered is that the institutions do not want to host future teachers due to various reasons. Another problem is that these institutions do not sufficiently or effectively derive benefits from the competence of the volunteering future teachers. On the other hand, one of the most important acquisitions at the end of this practical course is that awareness of future teachers towards social problems is raised and the professional experience they gained is another benefit.

Key words: Community service practices, future teachers of French, problems encountered, suggestions.

INTRODUCTION

The undergraduate course titled "Community Service Practices" has been taught since 2006 to 2007 academic year in all of the faculties of education in Turkey. Each university has its own syllabus and framework including framework for the objectives, principles, rules and the code of practice. This subject was taught within its associate and undergraduate degree programs. Some

studies have concentrated on measuring the effect of service-learning on future teachers' personal, cognitive and civic development (Waldstein and Reiher, 2001; Eyler, 2000; Steinke and Buresh, 2002). The others have focused on service-learning and its improvement (Kiely, 2005; McCarthy and Tucke, 1999).

The aims of this course are, *inter alia*, "to raise the

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consciousness of the future teachers in terms of social responsibility, to render them active in the solution of social problems, to raise their awareness about social realities, to ensure that they are in cooperation, solidarity and contact with the society, and to improve their self-assessment skill" (Marmara University, 2013: 1). The foremost objective of this practice is to contribute to prospective teachers, who will teach in different fields, to raise the awareness on social responsibility in society. Moreover, the aims towards raising awareness of the future teachers towards those in need like the blind, the orphan, the elderly, animals in sanctuaries, etc. and helping non-governmental organizations by contributing to their activities are also significant (YÖK, 2007).

Community Service Practices is a three-hour course, consisting of one hour of theory and two hours of practice. Some of the institutions and organizations, in which the activities within the framework of Community Service Practices course may be performed are listed in the related directive as follows (Marmara University, 2013: 2):

1. Public or private educational institutions attached to the Ministry of National Education, universities, libraries, public education centers, schools for the mentally disabled, schools for the visually impaired, schools for the hearing impaired, parent-teacher associations,
2. Health care institutions,
3. Directorates for social services; the centers attached to the Social Services and Child Protection Agency, orphan asylums; and other places where social service is performed, such as food kitchens or nursing homes,
4. Penitentiaries and juvenile correctional facilities,
5. Special provincial administrations,
6. Non-profit organizations, associations and foundations (Turkish Red Crescent Society, Turkish Green Crescent Society, Anti-tuberculosis Association, etc.),
7. Civil Defense and Provincial Emergency Management, fire departments,
8. International, national and local non-governmental organizations,
9. Museums, directorates of culture and tourism, historic sites and ruins, provincial directorates of environment and urban planning, provincial directorates of agriculture,
10. Animal shelters,
11. Municipalities, headman's offices,
12. Directorate General of State Hydraulic Works, water and sewerage authorities,
13. Regional Directorate of Highways, State Railways of the Republic of Turkey,
14. State Meteorological Service,
15. Organized industrial zones, other industrial sites, chambers of trade and industry,
16. Professional chambers,
17. Provincial directorates of youth and sports, sports clubs.

Community Service Practices course is taught in the first

Table 1. Distribution of the participants in terms of gender and age.

Variables	Participants	f	%
Gender	Female	41	87.23
	Male	6	12.77
Age	18 to 20 years old	2	4.26
	21 to 23 years old	24	51.06
	24 to 26 years old	20	42.55
	27 years old and over	1	2.13

semester of the 3rd year, which corresponds to the fifth semester program of the French Language Teaching Section of the Department of Foreign Language Teaching at the Atatürk Faculty of Education at Marmara University. Within the scope of this course, 47 future teachers in 2012 to 2013 academic year were referred to 7 institutions to perform the required activities. The institutions concerned are listed as follows:

1. Animal Shelter of Ataşehir
2. Library of Eyüp for the Visually Impaired
3. *Fransız Fakirhanesi* (Bomonti Nursing Home]
4. Educational Volunteers Foundation of Turkey
5. Maltepe Nursing Home
6. Kayışdağı *Darülaceze* (Kayışdağı Hospice)
7. Dolmabahçe Palace

The aims of our study are to identify the problems that future teachers encounter in the institutions that they visit within the scope of the Community Service Practices course, to classify these problems and to offer solutions, while determining the benefits that this practical course provides to future teachers.

Sampling of the study

This study was conducted in the French Language Teaching Section of the Department of Foreign Language Teaching at the Atatürk Faculty of Education at Marmara University. The sample of the group was composed of the 3rd year students of the French Language Teaching Section in the 2012 to 2013, who had visited various institutions within the scope of Community Service Practices course. Since it is an effective data collection method, face to face interview with the future teachers was preferred. The interview form was administered to 47 future teachers taking Community Service Practices course in the French Language Teaching Section.

According to Table 1, 87.23% of the participants of this study are female, only 12.77% of the participants are male. Table 1 shows also the distribution of the partici-pants in terms of age.

Table 2. Distribution of future teachers taking CSP according to the institutions visited.

Institution	Number of Future Teachers	%
Kayışdağı Darülaceze (Kayışdağı Hospice)	9	19.15
Library of Eyüp for the Visually Impaired	9	19.15
Fransız Fakirhanesi (Bomonti Nursing Home)	8	17.02
Animal Shelter of Ataşehir	8	17.02
Maltepe Nursing Home	8	17.02
Educational Volunteers Foundation of Turkey	4	8.51
Dolmabahçe Palace	1	2.13

METHODOLOGY

Data collection and analysis

In this study, qualitative research method was used. Qualitative research may be defined as a type of research, in which qualitative data collection methods like observation, interview and document analysis are used, and which follows a qualitative process aimed at presenting perceptions and events in their natural environment with a realistic, as well as holistic perspective. In this context, the findings reached through qualitative research were assessed by internal categorization. The data were gathered through the interview form including 2 open-ended questions which were produced for future teachers:

1- What were the problems you faced in the institutions you visited within the framework of the Community Service Practices course?
2- What benefits did you derive from the said course?

47 future teachers took part in our study. The first question of the interview form was aimed at identifying the problems encountered by the future teachers hosted by the institutions selected by the French Language Teaching Section within the framework of Community Service Practices course. The second or the last question was, on the other hand, formulated to detect the benefits that the said course provides to future teachers.

The principles identified by Patton (2002) so as to make the interview more effective were taken into consideration. In this context, questions inquired to the future teachers during the interview were revised and the required amendments were made in accordance with the answers they had given. Questions were directed to the interviewees in a colloquial way so that they could feel at ease and could answer in a more natural environment. The objectives were reminded once again to the future teachers when the given replies digress from the scope of the interview questions. Apart from this, the interviewees were not manipulated while responding to the directed questions.

The questions were answered by 47 future teachers of French Language. By informing them about the fact that their names would not be stated, receiving realistic responses from the students was aimed at. The data collected by means of an interview form was evaluated with coding method (Strauss and Corbin, 1990). The coding method employed in this study had been determined with respect to the concepts inferred from the data which are one of the three coding methods referred to by Strauss and Corbin. Answers of the future teachers were coded with letter T and numbers like T1, T2, T3, etc.

FINDINGS

Before analyzing the obtained findings of our study, the distribution of the future teachers with regard to the institutions they visited is given in Table 2.

In Table 2, the numbers and percentages of the future teachers hosted by each institution within the framework of Community Service Practices course were provided. The institutions hosting the highest numbers of future teachers (nine students each) are Kayışdağı Hospice and Library of Eyüp for the Visually Impaired, while Dolmabahçe Palace at the bottom of the list hosted only 1 future teacher. Taking the percentages into consideration, it is observed that the numbers of future teachers visiting these institutions are not distributed evenly. Among the reasons underlying this finding are the fact that future teachers' opinions were taken into account in the selection of the institutions and that they had the opportunity to choose the institutions they preferred subsequent to the approval of the administration of the Section concerned. In fact, future teachers are offered the opportunity to choose the institution that they prefer to visit together with the course coordinator, seeing that participation of the future teacher in Community Service Practices in a field, which he/she is interested in, will increase his/her success. Future teachers learn through active participation in this course (Ohn and Wade, 2009).

Problems encountered

The problems that the future teachers encountered in the institutions that they visited within the framework of Community Service Practices course may be classified under five major titles. One of the most significant problems encountered in Community Service Practices is that the institutions do not want to host future teachers due to various reasons. Another problem is that these institutions do not sufficiently or effectively derive benefits from the competence of the volunteering future teachers. Since certain institutions are located far from the city center, the problem of transportation arises. Moreover, due to the fact that future teachers follow other courses in the faculty while visiting institutions for Community Service Practices course, difficulties are experienced while setting visiting hours suitable for both the institution and the future teachers. As a result of the insufficiency of the devices in some of the above mentioned institutions,

technical problems are experienced.

A vast majority of the future teachers having participated in this study (33 participants) stated that the institution they visited did not prefer hosting them since they were considered to cause extra work load. Some of the future teachers complained as follows:

"The institution did not want to host us" T12. "They considered future teachers as extra work" T23.

Besides, more than half of the voluntarily participants of this study (30 participants) stated that they were not given sufficient work in the institutions they visited, for example they were not allowed to take care of the elderly in a sufficient manner in some nursing homes, because these institutions did not believe these future teachers were competent. Some of the future teachers stated:

"Most of the institutions did not effectively derive benefits from our competences" T34. "We went to the institution and we did nothing" T41.

Nearly half of the participants (22 participants) complained about the location of the institution they visited, which was far from the city center, and stated that they experienced a transportation problem.

"It takes 2 hours to go to the institution" T5. "The institution was far from the city center" T8. "I had always transportation problem, because the institution was so far from my house" T22.

Some of the participants (12 participants) pointed out that they had difficulties in reaching a mutually agreed timetable.

"Setting visiting hours suitable for us was problematic" T6.

In addition, a few participants (6 participants) stated that they encountered technical problems in certain situations in the institution they visited, as in the case of Library for the Visually Impaired, since they were recording audio-books.

"I had technical problems frequently in my institution" T3.

Benefits that future teachers derive from community service practices

Some of the important benefits of this practical course are that it creates awareness of social problems, they acquired the habit of volunteering, and that their sensitivity towards human suffering has increased.

"There is a positive correlation between the acquisition of

social responsibility of the prospective teachers and the Community Service Practices Course" T24.

All of the participants of this study stated that the course Community Service Practices had been a considerably useful and important experience for both personal and professional perspectives. What is more, they underlined the fact that they found the opportunity to see different aspects of life and pointed out the importance of the happiness and serenity that it gives for being able to help others.

"This course is purposeful in terms of establishing relationships and solidarity with the individuals who constitute the society" T45.

Besides, nearly all of the participants of the study stated that these activities should integrate into one's lifestyle, and that they would continue volunteering in non-governmental organization in the future. A great majority of the participants (34 participants) underscored several times the joy that resulted from better understanding problems of the people with disabilities and the elderly and being able to help them even in a limited fashion. According to T17,

"There is a meaningful relationship between the afore-mentioned course and the problem solving skills of the teacher candidates for the problems they encounter in society".

DISCUSSION AND SUGGESTIONS

Community Service Practices course is a considerably important activity for both personal and professional development of future teachers. Interestingly, similar results were obtained in the study conducted by Kaya (2013). However, problems have been identified as a result of this current study. In this study, we endeavored to find out the most significant problems and classified them under five major titles. On the basis of the findings solutions have been suggested to overcome these problems. One of the problems is that the institutions do not prefer hosting future teachers for various reasons. Frequent communication with the responsible person in the related institution or meeting him/her before referring future teachers to the institution may minimize   the reluctance to engage.

Another problem is that these institutions do not suffi-ciently or effectively benefit from the competence of the volunteering future teachers. In order to solve this problem, first a needs analysis should be conducted, and the qualifications of the related future teacher should be considered with a view to match their competence to the job. We are of the opinion that, in this manner, both the institution and the future teacher may   work   more

effectively. The problem of transportation was raised in connection with commuting to certain institutions. In order to solve this problem, when matching with future teacher, location of the institution should be taken into account. Institutions with easier transportation should be considered first.

It is acknowledged that future teachers while visiting institutions for Community Service Practices, they also have other subjects to content with. For this reason, setting suitable visiting hours was raised as a problem. In order to overcome this problem, it might be possible to design a weekly schedule for the 3rd year students in conjunction with the institutions to suit both parties. In certain institutions, the insufficiency devices resulted in technical problems. For example, since audiobooks are recorded in the Library for the Visually-Impaired, technical equipment is needed. For this reason, before referring future teachers to such institutions, it is necessary to establish available equipment that will match the number of referrals. In this manner, excessive number of future teachers could be diverted to other institutions. Provided that these problems are taken into consideration and solved accordingly, Community Service Practices course is thought to be more beneficial for future teachers.

CONCLUSION

In this study, we have endeavored to identify the problems that future teachers enrolled in the French Language Teaching Section of the Department of Foreign Language Teaching of Atatürk Faculty of Education at Marmara University encounter in the institutions that they visit within the scope of the Community Service Practices course, and to offer solutions to these problems. Future studies conducted with a higher number of participants and with a wider scope would contribute significantly to the solution of these problems in a more illuminating manner. In conclusion, it is thought that, despite the present problems, Community Service Practices course is considered important in terms of the personal and professional development for future teachers and that such educational activities should be supported.

Conflict of Interests

The author have not declared any conflict of interests.

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Full Length Research Paper

Relationship between the short-term visual memory and IQ in the right- and left-handed subjects trained in different educational programs: I- general assessment

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The relationship between mean intelligence quotient (IQ), hand preferences and visual memory (VM) were investigated on (N=612) males and females students trained in different educational programs in viewpoint of laterality. IQ was assessed by cattle's culture Fair intelligence test-A (CCFIT-A). The laterality of the one side of the body was assessed by a questionnaire with 20 items. For VM, word lists with 15 items derived from the root of the Turkish word "to run" were projected on a screen. Subjects were allowed to see the words for 30 sec., and write down the remembered-words in 40 sec. There was any relationship between the hand preferences and IQ levels in right-and left-hander for first ten items (Q1, p>0.05), and also there was no relationship between the hand preferences and remembered words (RW) in left-hander (p>0.05). There was, however, a negative relationship between the hand preferences and RW in right-handers (p<0.05). For second ten items (Q2), there was no relationship between the hand preferences and IQ of left-handed subjects (P<0.05), but there was a positive relationship between the hand preferences and IQ in right hander (p<0.05). However, there was no relationship between hand preferences and non remembered words (NRW) (p>0.05). It was concluded that there was a relationship between the laterality, NRW and IQ in right hander.

Key words: Intelligence, laterality, education, remembering, students.

INTRODUCTION

Bilateral symmetry is a definition, which denotes the arrangement of the body in a particular order, according to the line dividing it into two similar parts in respect to dimension, shape and position on both sides (Adams et al. 1997; Tan, 1993a; Yakovlev and Rakic 1966; Yetkin, 1993). Symmetry is a physical quantity maintaining energy and balance of the body in the biologic systems (Yetkin, 1993). Symmetry may also be seen in a particular

period or be lost in a phylogenetic and ontogenetic process of evolutionary development (Bakan, 1975; Tattersall, 1998; Tubiana, 1981; Tubiana 1981; Vogan and Tabin, 1999). The findings of a study by Yetkin (2002) have been supporting this hypothesis on the presence of symmetry as phylogenetic direct to morpho-logical and functional asymmetry ontogenetically. During the course of evolution, the cerebral hemispheres

have undertaken different functions called asymmetry (Geshwind and Galaburda, 1984; Geshwind and Galaburda, 1987). The researches show that the asymmetry can see in different manners (Cohn, 2002; Coren, 1992; Yetkin, 1993).

In biologic systems, the asymmetry is seen in four different manners. They are functional, morphologic, cognitive and anatomic asymmetries. Hand, eye, foot and ear preferences are the best samples of the functional asymmetries (Annett, 1970; Annett, 1985; Annett, 1976; Napier, 1956; Oldfield, 1971; Tan, 1988; Yetkin, 1993; Yetkin, 1995; Yetkin, 2001). The differences between right-hand and left-hand, and right-left foot sizes are good samples of morphologic asymmetries (Yetkin, 1995; Yetkin, 2002). Planumtemporale in the brain (Wada et al., 1975; Westbury et al., 1999) and temporal speech regions (Geshwind and Levitsky, 1968) in left and right hemisphere are the samples of the anatomical asymmetries, and learning and memory and management of the left and right hemisphere are the samples of the cognitive asymmetries (Yetkin, 2005). Functional asymmetry is very important for humans to perform the daily activities controlled by brain asymmetry and dominancy (Knecht et al., 2000; Porac et al. 1980; Purves et al., 2001; Sperry, 1974). Since the first evidence of functional asymmetry in the human brain was put forward by Paul Broca's observations (1861), the researchers have been searching on the brain asymmetry, hand preferences (Tan, 1988; Wernicke, 1874; Wilson 1998), hemispheric dominance (McCurdy and Langford, 2005) and laterality from Broca to contemporary researchers (Geshwind, 1965, 67; Mohr, 1976; Yetkin, 1993, 2002b).

The left hemisphere in most conduction is more intimately linked to voluntary motor functions (Kilbreath and Gandavia, 1994; Long, 1981) than the other has been known for many years. However, the management of the left-right hemispheres is not evident as well as motor functions (Alder, 1999; Hammond, 1990). On the other hand, Annett (1985) studied the relationship between the left-right hand and brain, and developed his right-shift theory (Annett, 1981; Annett, 1996; Steenhuis and Bryden, 1989; Tan, 1993b). In this way, the reason of hand preferences could be expressed easier.

Humans have at least two qualitative systems of information storage referred to as declarative and procedural memory (Dudai, 2002; Hilst, 1995; Kuppferman). In addition to this qualitative classification, there is also episodic retrieval, semantic and working memories (Filley, 2001; Lisberger, 1988; Zimmer et al., 2001).

There is in fact good evidence that there are really two distinct memory stores in the brain: a long-term memory (LTM) and short-term visual memory (STVM). There is also evidence that the STVM has a lot of separate components, which retain information temporarily to cover the period during which consolidation takes place. Probably STVM involves the time from second to minutes or so (Baddely, 1983). STVM is one of three broad memory systems including iconic memory and LTM (Cherry, 2014.

Iconic memory involves the memory of visual stimuli. Iconic memory is also part of the visual memory system in addition to long-term memory and visual short-term memory.Iconic memoryis the visual sensory memory (SM) register pertaining to the visual domain and a fast-decaying store of visual information. It is a component of the visual memory system which also includes visual short term memory (VSTM) and long term memory (LTM) (Dick, 1974; Coltheart, 1980). A new view point related to the basics of learning and memory was performed by psychological studies more before on the animals. This scientific area was also called as neuro-cognitive science by neuroscientists (Anderson, 1997; Penfield, 1967; Rourke, 1995).

In this study the brain asymmetry (Davidson and Hugdahl, 1995) has been investigated for the view point of functional asymmetry; for example hand preferences (Kilshaw and Annett, 1983; Kimura, 1996; Tan and Kutlu, 1992) and the laterality of the one side of the human body (Yetkin, 1993), and also has been studied cognitive processes; such as the short-term visual memory (Engelkamp and Zimmer, 1994; Engelkamp, 1995; Fuster, 1995) and nonverbal IQ (Engelkamp et al., 2001; Tan, 1991). In this study, the age, different education programs, sexuality and laterality were used as research parameters. The main aim of the present study was to evaluate the relationship between laterality, nonverbal intelligence and visual short- term memory. In addition, another objective of this work was to determine the effects of training programs on the laterality, IQ and short-term visual memory, and their contributions to individuals. According to the Tan (1989a) the cognitive and motor functions are interrelated systems; the efficiency of the spatial reasoning would depend on the degree and developmental level of cerebral lateralization.

In conclusions, the studies related to the motor, behavioral and cognitive functions in different populations are still going to lose the mystery of the brain as a contemporary research area. A numerous studies have been carried out, especially with patients and normal populations, on motor control, lateralization, behavior, dominant hemisphere, hemispheric management (Alder, 1999; Kıylık and Yetkin, 2005), and cognitive and mental functions. The present study was performed for these purposes. Thus, the relations between the parameters from hand preferences to short-term visual memory and nonverbal IQ were compared one by one. An understanding of the differences between them may be crucial for better understanding the genetic and neurobiological mechanisms underlying handedness (Snyder and Harris, 1993).

METHODOLOGY

Subjects

The study is part of the master thesis written by Yılmaz (Yılmaz and Yetkin, 1998), and was carried out in the department of biology, science faculty, Atatürk university, Erzurum, Turkey, on the ethical

rules. The subjects comprised 511 male (*M*) and 101 female (*F*) (*n* = 612) volunteers, between 13 - 45 years old. Most of them were students' in a high school having classical (CEP) or religious (REP) educational program. Some of them, however, were out of school that they had completed their high school education in a university who has been designated as out of school (OOS). They were also in the period of adolescence, young adult and late adults. They were no anatomical or physiological defects in their hands, fingers, feet and eyes. They were healthy and devoid of sign and symptoms of any illness. Before the beginning of the study, written permission was taken from the directorate of defense. All experiments were performed in compliance with the institutional guidelines. An informed consent was also obtained from the subjects. The following methods were applied to all subjects:

Lateralization and hand preferences

The hand preferences were assessed by using Edinburgh handedness questionnaire (EHQ; Oldfield, 1971) with first ten questions (Q1) modified by Geshwind and Behan (1984), and Yetkin Laterality Questionnaire (YLQ: Yetkin 1993) with second ten questions (Q2) was on the hand preferences. YLQ was to assess whole lateralization of the one side of the body from eye to hand, including finger and foot asymmetries (Yetkin 1993; Yetkin, 1995; Yetkin, 1996; Yetkin, 2001; 02 Yetkin, 2002). The survey comprised first ten items designed to represent a range of uni-manual and bimanual activities with minimal redundancy. Respondents were asked to indicate which hand they would use in (i) writing, (ii) drawing, (iii) throwing, or (iv) using scissors, (v) toothbrush, (vi) knife and (vii) spoon, (viii) broom (upper hand), (ix) striking a match (hand holding the match), or (x) removing a lid (hand holding the lid) in daily activities (Yetkin, 2001).

The second group of ten questions was added by Yetkin (1993) to assess the whole lateralizes on degree of one side from eye to foot and complemented the Oldfield questionnaire (1971). The survey also comprised second ten questions designed to represent a range of uni-manual and bimanual, and uni- and bipedal and left right eye activities. Respondents were also asked to indicate which hand, foot and eye they would use in (i) looking a microscope, (ii) passing a thread through a needle, (iii) kicking a ball, (iv) aiming (hand, finger, eye), (v) shaking hands and saluting, (vi) sewing (the hand holding the needle), (vii) holding a saw, (viii) throwing a hammer, (ix) carrying a suitcase, and (x) playing hop-scotch (Yetkin, 1993; Yetkin, 2001). After the assessment of laterality and performing the preferences, Geshwind scores were used for laterality (Tan 1988). Two different scores were obtained from data. One of them was from Q1 and other was from Q2 (Yetkin 1992, 1993, 2001, 2002).

For the groups, the columns were scored as +10 (always right hand), +5 (usually right hand), zero (either or mixed hand), -5 (usually left hand), and -10 (always left hand). The degree of laterality was taken as the sum of all scores. The laterality degrees obtained from Q1 and Q2 scores were taken as main values for the assessing of the hand preferences. The male and female subjects were classified as being right-handed, left-handed and mixed hand (ambidexterity) according to their laterality degrees. To this view point, the subjects who have +25 and over degrees of the lateralization (from +25 to +100) were accepted as right handed (RH), the subjects who have between -25 and + 25 degrees of laterality were accepted as mixed hand (MH), and the subjects who have -25 and under degrees (from -25 to -100) of laterality were accepted as left-hand (LH).

Nonverbal intelligence (IQ)

For this purpose, cattle's culture fair intelligence test-a form (CCFIT-A) was used. Subjects were realized the process in the time of 3 minute for test-1, of 4 minute for test -2, of 3 minute for test 3, and of 4 minute for test 4, respectively. The CCFIT-A contains 50 questions totally. After the application of the IQ test, the number of positive answers was assessed on the answer sheet firstly. The corresponding points of IQ of subjects were assessed and recorded after the ages were determined. To determine the IQ levels a scale which was accepted internationally was used.

Number of remembering words (NRW)

As psychological, memory is an organism's ability to store, retain, and subsequently recall information. Visual memory is part of memory preserving some characteristics of senses pertaining to visual experience. The first person to give serious consideration to visual imagery was Francis Galton (1822-1911) in the field of individual differences (Magnussen, 2000; Todd and Marois, 2004). The subjects were informed about the aim of the study and writing the successful word process; they were informed on the subject as related to that what would they perform for short-term memory. For this purpose, fifteen words derivate from a Turkish verb were projected on a screen for 30 second, and after the projection was switched off, the time of 40 seconds were given for writing words that they remembered. Turkish word "to run" was translated from Turkish language to English. The word corresponds "run", "race", "parallel", "running", "can run", "harness", "don't run", "runner", "condition", "conditional", "running about", "by running", "harnesser", "hurry", and "without running" were projected on the screen. The words were derived from the root well known in Turkish language. These words were in 3, 4, 5, 6, 7 and 8, respectively. Eight of them describe action, and others were not. The subjects were divided into two groups with 12 and 40 people. The subjects were informed about the questions, which may be formed in their mind before projection of the word. Incorrect words written by subjects were not taken to attention for the assessment.

Statistical analysis

The Student- t-test and the test of the calculation of the correlation coefficient were used for statistical analysis. The following processes, including the arrangement of different parameters; such as age, sexuality, education programs, hand, eye and foot preferences, the assessment of the needed mean values (arithmetically and statistically), drawing of the frequency tables and the graphics and assessment of the tendency lines on the graphics and making of plausibility tests of correlation coefficient, were performed by excel programs.

The correlation coefficient is a criterion, which is shown the changing together between any two parameters. If the correlation coefficient takes positive values, it means that the parameters move together; that is mean, when one of the parameters increases, the others also increases or when one of them decreases, the other also decreases. However, if the correlation coefficient takes negative values, it means that the parameters move against; that is also mean, when one of the parameters increases, the others also decrease or when one of them decreases, the other increases as well. If the greatness of the correlation coefficient gets to come close towards 1, although it means that the correlation is important or significant, the calculation value (r) should be presented for consideration with a hypothesis test not only chance or probability but also coming from a real existing correlation. To assess the importance of the correlation coefficient, the t-test was used.

The t-statistical calculating was compared with the table t-value. If the p-value corresponding t-value above mentioned was less than 0.05 (p<0.05), it was thought that r-the efficient was significant. The other purpose was to investigate whether the difference between
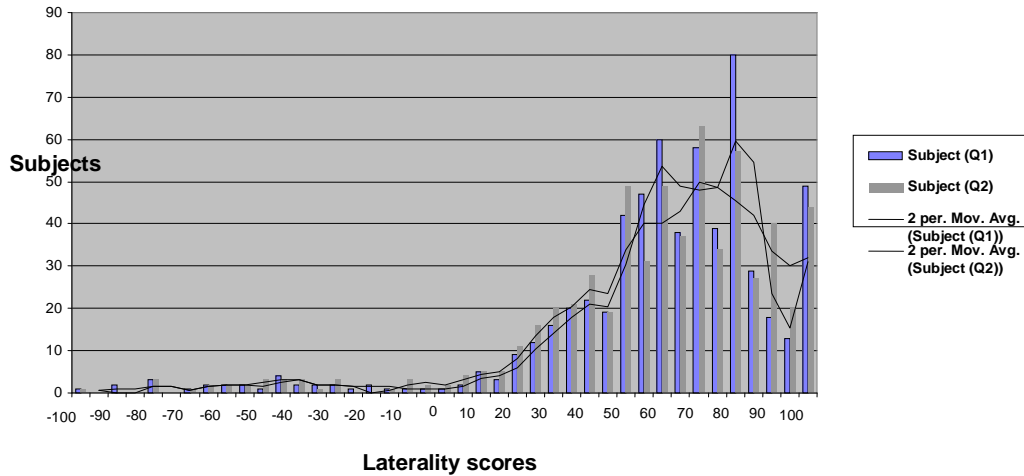
s	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	10	15	20	25	30	35	40	45	50
ct (Q1)	1	0	2	0	3	0	1	2	2	2	1	4	2	2	2	1	2	1	1	1	1	2	5	3	9	12	16	20	22
ct (Q2)	1	0	0	0	3	0	1	2	2	2	3	3	3	1	3	0	0	1	3	2	2	4	5	5	11	16	20	21	28

Figure 1. General distribution of ages of subjects.

arithmetical means was significant or not. The t-test was used for significance of the difference between the means. In the realization, it was hypothesized that the variance of population and double tail was different. This program for related series gives p-values (ratio of the error) corresponding t-test. The difference was found significant when p-value was $p<0.05$, and on the other hands the difference was found insignificant when p-value was $p>0.05$.

RESULTS

After the information obtained from subjects (**n**=612) and the application of the questionnaires on the subjects, the mean age was 16 years (Figure 1). According to different education programs which were used on the students with classical program (CEP) and with religion program (REP) in Erzurum (Turkey) and in the out-off school (OOS), the distributions of the hand preferences about three groups were assessed statistically. Table 1 and Table 2 show the distribution of the hand preferences from Q1 and Q2, respectively. In the same manner, the mean values of the age, IQ and number of successful words assessed as related to the different education programs was shown in Table 3. The t-test was used for that whether the difference between the means in the Table 3 was significant or not (Table 4).

The difference between mean ages of educational groups

There was not any important difference between mean ages of CEP and REP ($p>0.05$). However, there was a significant difference between the mean ages of the CEP and OOS ($p<0.05$), and of REP and OOS ($p<0.05$).

The difference between mean IQs of educational groups

In the assessment between the mean IQ points; the difference between IQ points of the CEP and REP was not found significant ($p>0.05$). In the same manner the difference between IQ points of the CEP and OSS ($p>0.05$), and the difference between IQ points of the REP and OSS was not found significant ($p>0.05$; Table 4).

The difference between the numbers of the remembered words of educational groups

In assessing the number of the words remembered by subjects (NRWs), the difference between mean NRWs of the CEP and REP was found to be significant ($p<0.05$). In the same manner, the difference between mean NRWs of the OOS and REP was also significant ($p<0.05$), but the difference between mean NRWs of the OOS and CEP was insignificant ($p>0.05$).

The distribution of the hand preferences and laterality

The distribution of the laterality obtained from Q1 and Q2
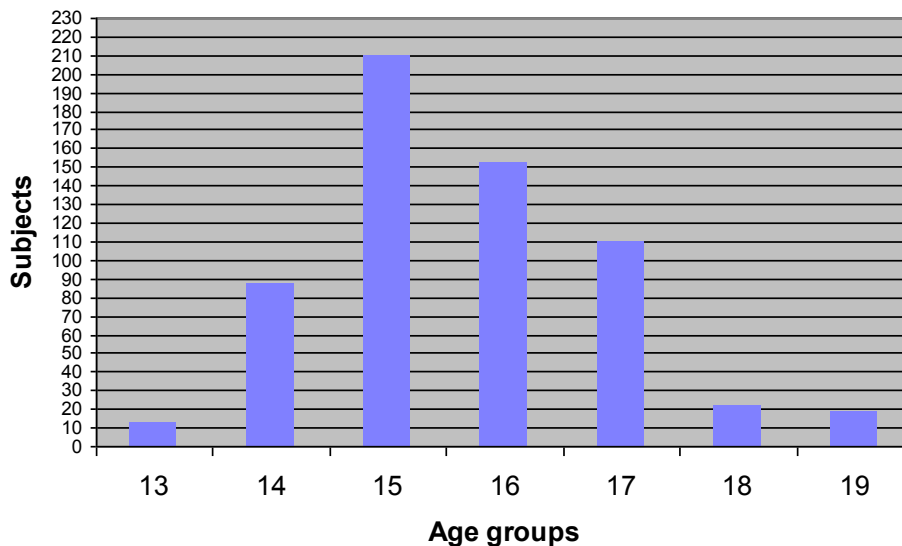
Age groups	13	14	15	16	17	18	18<
Subjects	13	87	210	152	110	22	18

Figure 2. The distribution of the laterality obtained from Q1 and Q2 scores.

Table 1. Percentage of the left-hand, mixed-hand and right-hand preferences obtained from Q1 scores of the subjects trained in different education programs.

Education programs	N	Hand preferences (%)		
		LH	MH	RH
The students trained in classical education program (CEP)	366	4.09	4.37	91.54
The students trained in religious education program (REP)	232	4.374	3.89	91.74
The subjects, out of school or education (OOS)	14	-	7.14	92.86

LH; Left hand, MH; Mixed hand, RH; Right hand

Table 2. Percentage of the hand preferences obtained from Q2 scores of the subjects trained in different education programs

Educational programs	N	Hand preferences (%)		
		LH	MH	RH
The students trained in classical education program (CEP)	366	3.27	6.55	90.18
The students trained in religious education program (REP)	232	4.74	3.87	91.39
The subjects, out of school or education (OOS)	14	7.14	-	92.86

LH; Left hand, MH; Mixed hand, RH; Right hand

was shown by a histogram containing the total sample. The frequencies of the Geshwind scores from Q1 and Q2 (Figure 2) was shown together in one histogram. The correlation coefficient between laterality scores assessed by Q1 and Q2 was found (r=0.795). For this coefficient the significance test was made (t= 32.3). A positive linear significant relation (p<0.0001) was assessed between two parameters (Table 5). This relation between Q1 and

Q2 means also a factor analysis for Q2; that is mean, the questions in the Q2 are significant for laterality as well as Q1 (Figure 2).

A comparison in the laterality of sexual differences

In the same way, the correlation coefficient between the

Table 3. General means of the parameters (age, IQ and RW) of subjects trained in different educational programs.

Education programs	Parameters (Mean)		
	Age	IQ	Remembered-words (RWs)
The students in classical education program (CEP)	15.61	77.67	8.53
The students in religious education program (REP)	15.50	76.27	6.33
The subjects, out of school or education (OOS)	34.42	90.42	7.92

Table 4. The relationship between the parameters (age, IQ and mean RW) of subject groups trained in different educational programs according to the t-test results.

Parameter	Subjects group I	n_1	Subjects group II	n_2	p-value	Significance*
Educational programs						
	CEP	366	REP	228	0.268	-
Mean age	CEP	366	OOS	18	7.00E-09	+
	REP	228	OOS	18	6.30E-09	+
	CEP	366	REP	228	0.263	-
Mean IQ	CEP	366	OOS	18	0.141	-
	REP	228	OOS	18	0.103	-
	CEP	366	REP	228	1.00E-32	+
Mean NRW	CEP	366	OOS	18	0.132	-
	REP	228	OOS	18	0.0006	+
Age groups						
	13 to 15	310	16 to 18	284	0.001	+
Mean IQ	15 to 15	310	18<	18	0.363	-
	16 to 18	284	18<	18	0.139	-
	13 to 15	310	16-18	284	0.986	-
Mean NRW	15 to 15	310	18<	18	0.544	-
	16 to 18	284	18<	18	0.551	-

* (+) significance and (-) insignificance; CEP, classical education program; REP, religious education program; RW, remembered words; OOS, out of school

scores from Q1 and Q2 for female (r=0.794) and for male (r=0.796) were found respectively. This means that there was a positive linear important relation (p<0.0001) between the data from Q1 and Q2 for female and male. The ratios of the relation for female and male were seemed to be approximating similar.

A comparison in the laterality of different age groups

A hard linear relation between the scores from Q1 and Q2 was also seemed to be same ratios approximately in all importance degrees of comparison performed for age groups (13-15, 16-18, 18<) and different education levels (CEP, REP and OOS) (Table 5).

A comparison in hand preferences of the Q1 and Q1 groups

According to the scores obtained from the first group

questions (Q1), an important positive linear relations (p<0.0001) were assessed between the scores from the Q1 and Q2 of left-handed (r=0.859), mixed hand (r=0.579) and right-handed (r=0.514) subjects. Similarly, according to the scores obtained from the second group questions (Q2) an important positive linear relations (p<0.0001) were also assessed between the scores from the Q1 and Q2 of left- (r=0.559), mixed (r=0.561) and right-handed (r=0.508) subjects. In every dual assessing above mentioned, the relation ratios between Q1 and Q2 was found the lowest in right-handed subjects, while it was seemed the highest in left-handed subjects. The relation ratio for mixed hands was found between those of left-and right handed subjects (Table 5).

The distribution of the short-term visual memory and IQ

For all population, the number of mean success word was assessed as 7.685. The histogram in Figure 3 shows

Table 5. The correlations between Q_1 and Q_2 scores in general population.

N	df	Q1	Q2	r	t-value	Significance
612	610	**General population**		0.795	32.3	p<0.05
100	98	F	F	0.794	12.9	+
512	510	M	M	0.796	29.6	+
Age groups						
310	308	13-15	13-15	0.767	20.97	+
264	262	16-18	16-18	0.812	23.00	+
18	16	18<	18<	0.760	4.67	+
Education programs						
366	364	CEP	CEP	0.784	24.00	+
232	230	REP	REP	0.815	21.30	+
14	12	OOS	OOS	0.767	4.14	+
Laterality: according to the scores taken from Q1						
25	23	LH	LH	0.859	8.04	+
25	23	MH	MH	0.579	3.40	+
562	560	RH	RH	0.514	14.20	+
Laterality: according to the scores taken from Q2						
24	22	LH	LH	0.559	3.10	+
33	31	MH	MH	0.516	3.30	+
555	553	RH	RH	0.508	13.80	+

N= the number of subjects; df= degree of freedom, r= Correlation coefficient; (+) = the data is moving significantly together at important degree and (-) = the data is moving free from one another in the correlations. *(+) significance and (-) insignificance; CEP, classical education program; REP, religion education program; NRW, number of remembered words; OOS, out of school; RH, right hand; LH, left hand ; MH, mixed hand.

Words	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Subject	1	12	35	63	87	106	104	68	54	37	29	11	4	1
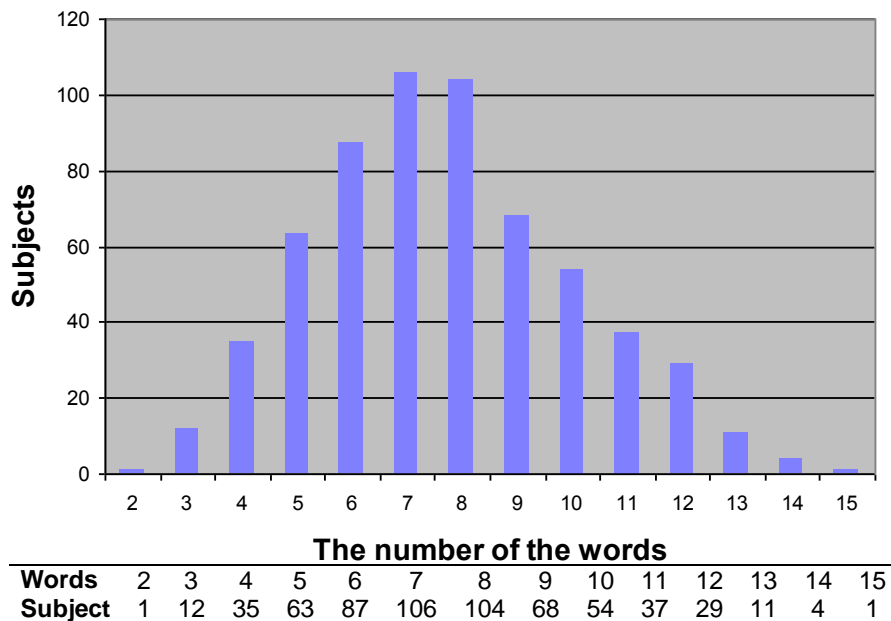
Figure 3. The distribution of remembered-word numbers in general population

Table 6. The correlation between age and IQ, Age and RW.

N	df	Age	IQ/RW	r	t-value	Significance*
General population						
612	610	Age	IQ	-0.019	0.46	-
612	610	Age	RW	0.003	0.07	-
Laterality: according to the scores observed from Q1						
25	23	LH-age	LH-IQ	0.249	1.23	-
25	23	LH-age	LH-RW	0.030	0.14	-
25	23	MH-age	MH-IQ	0.198	0.96	-
25	23	MH-age	MH-RW	0.156	0.75	-
562	560	RH-age	RH-IQ	0.015	0.35	-
562	560	RH-age	RH-RW	0.001	0.023	-
Laterality: Assessment according to the scores observed from Q2						
22	22	LH-age	LH-IQ	0.179	0.85	-
25	23	LH-age	LH-RW	0.104	0.49	-
25	23	MH-age	MH-IQ	-0.086	0.48	-
25	23	MH-age	MH-RW	-0.001	0.005	-
562	560	RH-age	RH-IQ	0.014	0.32	-
562	560	RH-age	RH-RW	-0.001	0.023	-

N= the number of subjects; df= degree of freedom, r= Correlation coefficient; (+) = the data is moving significantly together at important degree, and (-) = the data is moving free from one another in the correlations. *(+) significance and (-) insignificance; RH, right hand; LH, left hand; MH, mixed hand; RW, remembered words.

the distribution of the different NRW of the subjects in total sample

Correlation between age groups and NRWs

In the separation into groups formed by scores from the first group questions (Q1), the correlation coefficients have shown that there was significant relations (p>0.05) calculated between the ages and NRW of left-handed (r=0.03), mixed hand (r=0.156) and right-handed (r=0.001) subjects (Table 6). In the same way, in the separation into groups formed by scores from the second group questions (Q2), the correlation coefficients have shown that there was any significant relations (p>0.05) calculated between the ages and NRW of left-handed (r=0.104), mixed hand (r=0.001) and right-handed (r=0.001) subjects (Table 6).

Correlation between IQ and NRWs

The correlation coefficient between IQ and NRW was calculated as r=0.241, and as a result of coefficient tested (t=6.13), a positive relations (p<0.0001) was assessed between them.

Relation between sexual differences

The subjects were separated into two groups as female

(F) and male (M) according to sexuality. It was assessed that there was a significant positive relation between IQ and NRW (r=0.219; p<0.01) of females. There was also a positive relation between IQ and NRW (r=0.219; p<0.0001) of males (Table 7).

Relation between educational differences

The subjects were separated into three groups according to different education programs (CEP, REP and OOS). The correlation coefficients between IQ and NSW were assessed for CEP (r=0.347), REP (0.075) and OOS (r=0.410), respectively. However, as results of these coefficients tested, it was shown that the coefficients for CEP was found significant (p<0.0001) only (Table 7). It was assessed that the relation between IQ and NRWs of the students with CEP was seen to be much stronger than those total samples.

Relation between the laterality groups

The subjects were grouped to their scores taken from Q1. According to the result of the correlation coefficients, the relation between IQ and NSWs of the left handed (r=-0.05) and mixed hand (r=-0.04) subjects was found insignificant (p>0.05), whereas, a positive important linear relation was found between IQ and NRWs of the right

Table 7. The correlations between IQ and RWs of general population, age groups, education programs and laterality.

N	Df	IQ	RW	r	t-value	Significance*
612	610	-	-	0.241	6.13	+
100	98	F	F	0.219	2.22	+
512	510	M	M	0.225	5.20	+
Age groups						
310	308	13-15	13-15	0.192	3.43	+
284	282	16-18	16-18	0.290	5.08	+
18	16	18<	18<	0.527	2.48	+
Education programs						
366	364	CEP	CEP	0.347	7.05	+
232	230	REP	REP	0.075	1.14	-
14	12	OOS	OOS	0.410	1.55	-
Laterality: Assessment according to the scores observed from Q1						
25	23	LH	LH	-0.05	0.240	-
25	23	MH	MH	0.04	0.191	-
562	560	RH	RH	0.261	6.39	+
Laterality: Assessment according to the scores observed from Q2						
24	22	LH	LH	0.012	0.05	-
33	31	MH	MH	0.005	0.02	-
555	553	RH	RH	0.262	6.38	+

N= the number of subjects; df= degree of freedom, r= Correlation coefficient; (+) = the data is moving significantly together at important degree and (-) = the data is moving free from one another in the correlations. CEP, classical education program; REP, religious education program; RW, number of remembered words; OOS, out

handed (r=-0.261) subjects. It was assessed that relationship between IQ and NRWs of the right-handers was seen to be much stronger than those total samples (Table 8). The subjects were grouped to their scores taken from Q2. According to the result of the correlation coefficients was found for left handed (r=-0.012), mixed hand (r=-0.005) and right handed (r=-0.262) subjects. According to the result of the correlation coefficients, there was a positive significant relation between IQ and NRWs of the right-handers (p<0.0001), whereas, there was not any significantly relationship between IQ and NRWs of the left- and mixed handed subjects (p>0.05; Table 7). The distribution of the NRW in total sample shows in Figure 3.

Distribution of IQ between Q1 and Q2

The IQ points related to the total population were recorded as 77.436. The histogram formed by IQ shows the general distribution of the different IQ points in total samples (Figure 4).

Relationship between age and IQ

In this study, the correlation coefficient between age and IQ levels was found as r=-0.019), and there was not any significantly relationship between age and IQ levels (p>0.05; Table 6).

Relationship according to laterality groups

The subjects were separated into left-, mixed and right handed according to their scores taken from Q1. The correlation coefficient assessed between IQ point and age were found and tested for left- (r=0.249), mixed ((r=0.198) and right handed (r=0.015) subjects. A significantly relationship between age and IQ levels was not assessed in each group (Table 6). The subjects were separated into left-, mixed and right handed according to their scores taken from Q2. The correlation coefficient assessed between IQ point and age were found and tested for left- (r=0.179), mixed ((r=0.086) and right handed (r=0.014) subjects. A significant relationship

Table 8. The correlations between laterality scores observed from Q1 and Q2 and RWs

N	df	Q1	NRW	r	t-value	Significance*
General population						
612	610			-0.037	0.91	-
100	98	F	F	-0.106	1.05	-
512	510	M	M	-0.017	0.38	-
Age groups						
310	308	13-15	13-15	-0.036	0.63	-
284	282	16-18	16-18	-0.242	0.70	-
18	16	18<	18<	0.057	0.22	-
Education programs						
366	364	CEP	CEP	-0.036	0.68	-
232	230	REP	LREP	0.045	0.68	-
14	12	OOS	OOS	0.009	0.03	-
Laterality						
25	23	LH	LH	-0.05	1.26	-
25	23	MH	MH	0.04	1.18	-
562	560	RH	RH	0.261	2.40	+
General population						
612	610	Q2	NRW	0.027	0.66	-
Age groups						
310	308	13-15	13-15	0.048	0.84	-
284	282	16-18	16-18	-7E-04	0.01	-
18	16	18<	18<	0.194	0.79	-
Education programs						
366	364	CEP	CEP	0.011	0.20	-
232	230	REP	REP	0.085	1.29	-
14	12	OOS	OOS	0.070	0.24	-
Laterality						
25	23	LH	LH	-0.199	0.97	-
25	23	MH	MH	0.040	0.36	-
562	560	RH	RH	0.261	0.28	-

N= the number of subjects; df= degree of freedom, r= Correlation coefficient; (+) = the data is moving significantly together at important degree and (-) = the data is moving free from one another in the correlations. CEP, classical education program; REP, religious education program; RW, number of remembered words; OOS, out of school; LH, left hand; MH, mixed hand; RH, right hand; *Q1* and *Q2,* two group questions with ten items.

between age and IQ levels was not also assessed in each group (p>0.05; Table 6).

Findings obtained from the age groups

In different age groups (13 to15, 16 to 18, over 18), the distribution of the laterality was assessed by scores provided from Q1 and Q2 (Figure 5, 6 and 7). General arithmetical means and the results of the assessment were performed by using the sexual difference of the groups like in table 9. According to the data in table 9, the difference between mean IQ levels and NRW was found less important. Uprightness degrees of these results were
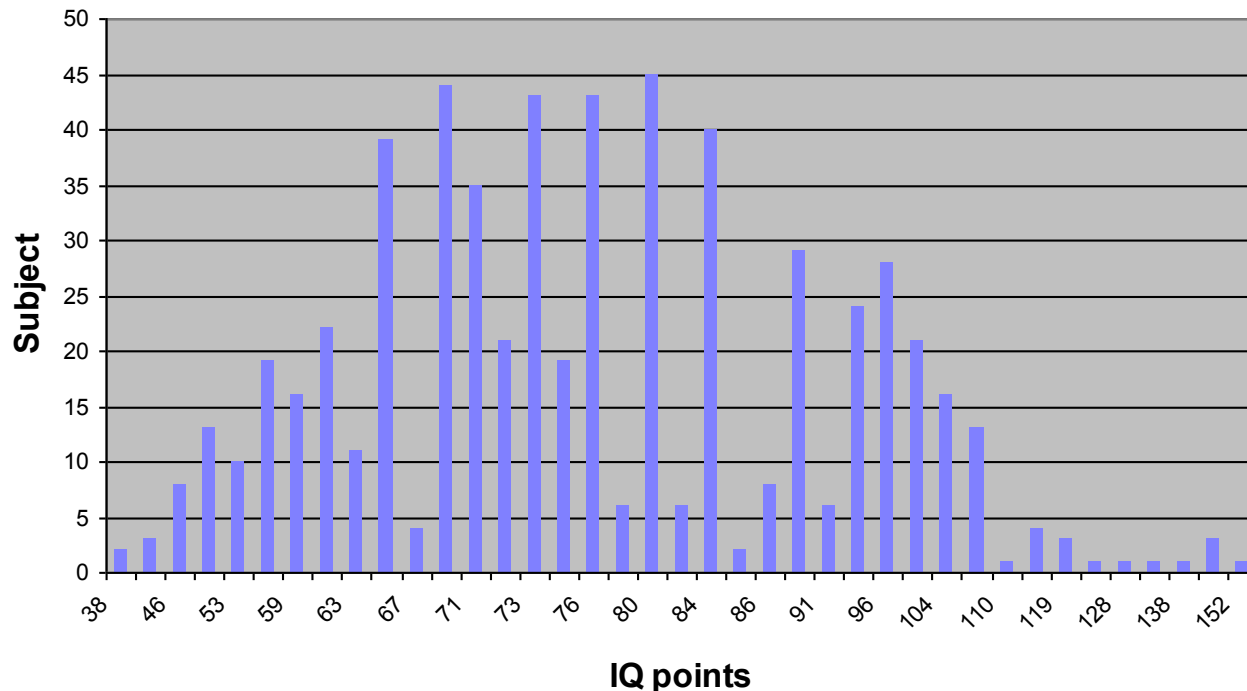
38	42	46	50	53	56	59	61	63	65	67	68	71	72	73	75	76	79	80	81	84
2	3	8	13	10	19	16	22	11	39	4	44	35	21	43	19	43	6	45	6	40
85	86	88	91	92	96	100	104	109	110	114	119	124	128	133	138	141	152	-	-	-
2	8	29	6	24	28	21	16	13	1	4	3	1	1	1	1	3	1	-	-	-

Figure 4. The distribution of the IQ points according to the results of the CCFIT-A.

controlled by t-test (Table 10). According to the results of t-test, the relationship between IQ and NRW were as follows:

In the general assessment, the difference between IQ points of the age ranging from 13 to 15 and of age in ranging from 16 to 18 was found significant (p<0.05). However, it was understood that there was any significant between the differences of the NRW of three age groups (p>0.05; table 11).

Sexual differences in age groups

In the assessing performed by using sexual difference in age groups, the differences between mean IQ points from females ranging from 13 to 15 and from males ranging from 16 to 18 was found significantly (p<0.05). In the same way, the differences between mean IQ points from males ranging from 13 to 15 and from males ranging from 16 to 18 was found significant (p<0.05). The

differences between NRW of females ranging from 13 to 15 and of males in other three age groups (13-15, 15-18, 18<) was found significant (p<0.05), and the differences between the mean NSW of females ranging from 16 to 18 and of males in other three age groups (13 to 15, 15 to 18, 18<) was also found significant (p<0.05).

After the separation into the left-, mixed and right handed of the subjects in age groups, the mean values taken from assessment of the
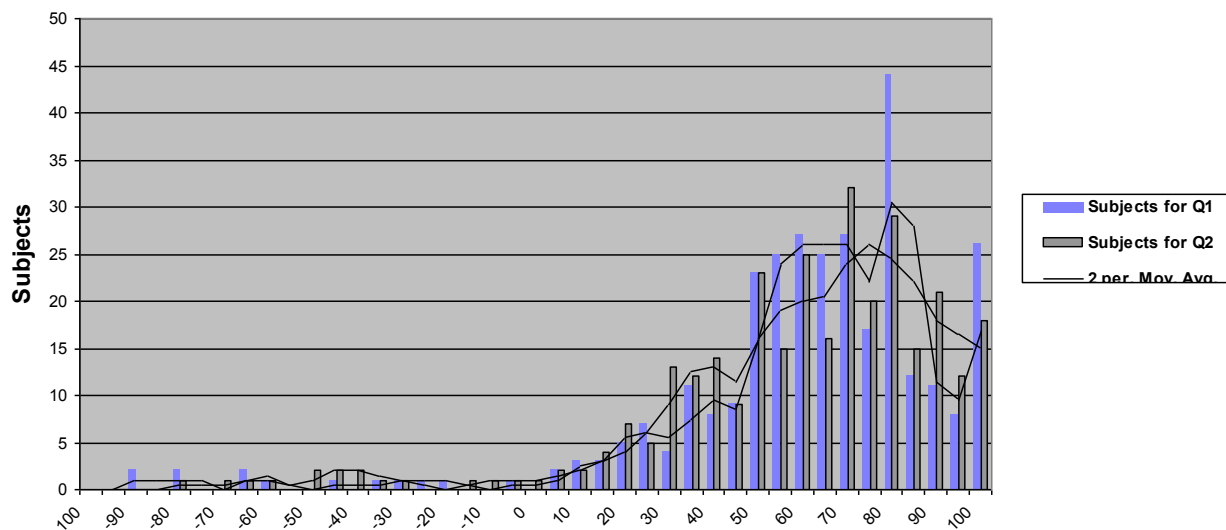
G Scores	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-	-	-
Subjects for Q1	0	0	2	0	2	0	0	2	1	0	0	1	0	1	1	1	1	0	0	-	-	-
Subjects for Q2	0	0	0	0	1	0	1	1	1	0	2	2	2	1	1	0	0	1	1	-	-	-
G Scores	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Subjects for Q1	1	0	2	3	3	5	7	4	11	8	9	23	25	27	25	27	17	44	12	11	8	26
Subjects for Q2	1	1	2	2	4	7	5	13	12	14	9	23	15	25	16	32	20	29	15	21	12	18

Figure 5. The distribution of the laterality according to the scores observed from the questions of Q1 and Q2 in age group of 13 to 15 years.

separation are shown in Table 12. The importance of the differences between arithmetic means in tables 12 was assessed by t-test. The results related to the tests are shown in (Table 10). According to the scores taken from Q1, the differences between mean IQ points of the left-, right- and mixed handed subjects in age group from 13 to 15 and in age group from 16 to 18 was found important (p<0.05). According to the mean NRW, the differences between the mean NRW of the subjects in age from 16-18 and ambidextrous subjects in age from 16-18 was found significant

(p<0.05). The differences between means were not found important in other parameters of subjects (p>0.05). According to scores taken from Q2, the differences between mean IQ points of left- and right handed subjects were found important (p<0.05) for the age group from 13 to 15 and from 16 to 18. The differences between means were also not important in comparisons of other parameters of subjects (p>0.05).

In present work, the correlation coefficient between age and NSW was calculated as r=0.003, and the correlation between them was found

insignificant (p>0.05; Table 6). On the other hand, significant between IQ and NRW were investigated in different age groups. Between IQ and NRW there was a correlation coefficients that was calculated for the age group from 13 to 15 (r=0.192) from 16 to 18 n(r=0.29) and from over 18 years (r=527), respectively. To these results an important positive correlation were found between IQ and NRW. However, this correlation was found at highest levels in over 18 years old subjects, but in age group of 16 to 18 years, it shows some decreasing with lowest level in age group of 13 to

The scores of Q1 and Q2 of the questionnaire

Scores	100	95	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	-5
Subjects for Q1	1	0	0	0	1	0	1	0	1	2	1	3	2	1	1	0	0	1	1	0
Subjects for Q2	1	0	0	0	2	0	0	1	1	2	1	1	0	0	2	0	0	0	2	1

Scores	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Subjects for Q1	1	0	2	0	4	4	9	9	13	9	19	22	31	12	29	21	36	17	7	4	19
Subjects for Q2	1	2	3	1	4	10	7	9	14	9	22	16	23	21	28	14	27	10	17	8	24

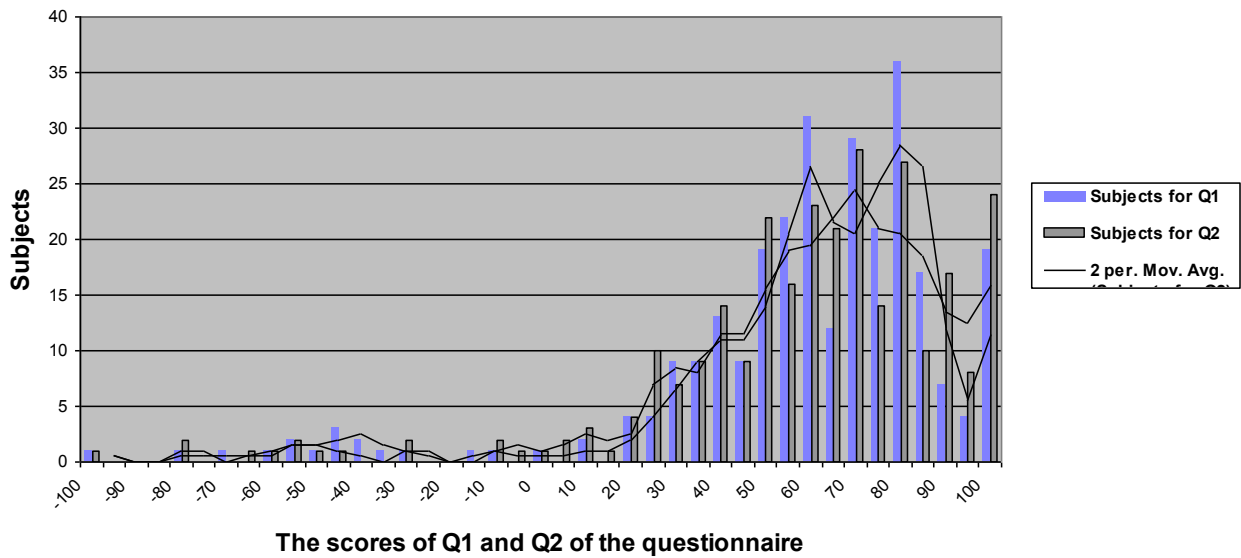**Figure 6.** The distribution of the laterality according to the scores observed from the questions of Q1 and Q2 in age group of 16-18 years.

Table 9. The means of the age, IQ and RW regarding to age groups and sex difference.

Age groups	N	Parameters		
		Mean Age	**Mean IQ**	**Mean RW**
13 to15	310	14.63	79.18	7.69
16 to18	284	16.54	75.01	7.69
18<	18	31	85.55	7.44
13 to15 F	60	14.78	81.43	8.71
13 to15 M	250	14.6	78.62	7.44
16 to18 F	35	16.28	79.51	8.71
16 to18 M	249	16.57	74.38	7.54
18< F	6	34.10	99.50	7.66
18< M	12	29.41	78.57	7.33

F, female; M, male; RW, number of remembered words.

15 (Table 7).

DISCUSSION

The principle objectives of this present study were to investigate the relationship between the functional asymmetry (Glick and Shapiro, 1985; Hellige, 1990) of the one side of the body and nonverbal intelligence and short term visual memory. Another objective of this investigation was to compare the qualitative difference between the education in the classical program and in the religious
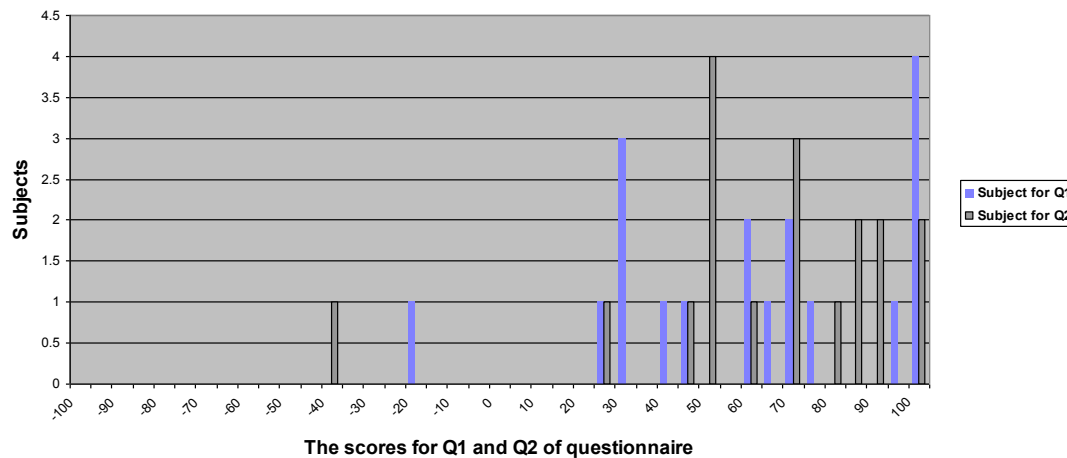
scores	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50
Subject for Q1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	3	0	1	1	0
Subject for Q2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	4	

Figure 7. The distribution of the laterality according to the scores observed from the questions of Q1 and Q2 in age group of over 18 years.

program policy of the national education of Turkey.

This is the first study showing a relationship between the degree of laterality and the effect of the genetics (Previc, 1991; Reeves, 2000) and external environmental factors such as education and hand preference (Napier, 1956; Rothwell, 1994; Simon-Thom et al., 2005). Hand preferences is a significantly example of the human behavioral differences (Phillips, 1986; Previc, 1991; Yetkin, 2002b). Symmetry is also an important phylogenetic feature of the body in biological systems maintaining a physical quantity such as the disposal of energy and balance (Lewis, 1989; Yetkin, 1993). There is an evolutionary relationship between laterality and symmetry (Eccles, 1989;

Jordan, 1999; Tattersall, 1995). Evolution is a fact (Charlesworth and Charlesworth, 2003) and the earth is estimated over 4 billion years old. The theory of evolution is a valid scientific theory which goes a long way to explain the diversity of life that is seen on present planet. It was accepted that these are right process because they were well supported by evidence from a number of scientific disciplines, such as geology, chemistry, physics and biology (Charlesworth and Charlesworth, 2003). The right of continuity is considered a keystone of most scientific theories of learning, memory and knowledge. The fact is that the memory and emotions are closely connected, and it is part of daily activities (Kluweet al., 2003). Neural plasticity (Shaw and McEachern,

2001) adapts functional and structural organization to current requirements. This is known as results from studies in visual and motor systems which were reviewed, and findings were discussed.

Despite the validity of Broca's and Wernicke's observation on the motor, expressive and sensory aphasia, the whole functional lateralization is considerably more complex. At the beginning of 1950s and early 1960s the investigations above mentioned was concluded by Geshwind (1968) correctly. This study provides additional evidence for hemispheric differences in the processing of laterality and voluntary motor and mental tasks. In the view point of the asymmetry, this study also includes the first assaying of parameters such as hand preferences, short-term visual memory,

Table 10. The correlation between scores from Q1 and Q2 and IQ according to the sex, age and education groups.

N	df	Q1	IQ	r	t-value	Significance*
612	610	General Population		-0.037	0.91	-
Sex						
100	98	F	F	-0.05	0.49	-
512	510	M	M	0.062	1.4	-
Age						
310	308	13 to15	13 to15	-0.023	0.4	-
284	282	16 to18	16 to18	0.061	1.02	-
18	16	18<	18<	0.315	1.32	-
Education						
366	364	CEP	CEP	-0.033	0.62	-
232	230	REP	REP	0.113	1.72	-
14	12	OOS	OOS	0.287	1.03	-
Laterality						
25	23	LH	LH	0.204	0.99	-
25	23	MH	MH	-0.239	1.18	-
562	560	RH	RH	0.049	1.16	-
Q2						
612	610	General Population		0.058	1.43	-
Sex						
100	98	F	F	-0.034	0.33	-
512	510	M	M	0.077	1.75	-
Age						
310	308	13 to15	13 to15	-0.034	0.59	-
284	282	16 to18	16 to18	0.073	1.22	-
18	16	18<	18<	0.155	0.62	-
Education						
366	364	CEP	CEP	-0.005	0.09	-
232	230	REP	REP	0.128	1.95	-
14	12	OOS	OOS	0.070	0.24	-
Laterality						
25	23	LH	LH	0.377	1.95	+
25	23	MH	MH	-0.097	0.46	-
562	560	RH	RH	0.078	1.86	-

The abbreviations are same as other tables.

education and nonverbal intelligence excepting common works on the laterality. The method of this work is most probably first investigation on this subject.

CONCLUSIONS

A few different tests have been used by different researchers for the assessment of the hand preferences (Annett 1970; Oldfield 1971; Porac and Coren 1980; Beukelaar and Kronenberg 1983; Tan 1988; Yetkin 1993, 1995, 2001). In present work, the questions composed by Edinburg handedness inventory (Oldfield, 1971) modified by Geshwind and Behan (1982) and Yetkin Handedness Inventory or Yetkin Laterality Questionnaire (YLQ) developed by Yetkin (1993) was used.

There are rather different ideas on the subject of the assessment of the hand preferences; some researchers

Table 11. The assessment according to the distributions of the laterality between age groups: Mean age, IQ and RW as related to the results of Q1 scores.

Age groups	N	Parameters		
		Mean age	Mean IQ	Mean RW
13 to15 LH	11	14.72	83.00	7.09
13 to15 MH	15	14.75	82.90	7.73
13 to15 RH	284	14.62	78.80	7.71
16 to18 LH	14	16.64	70.57	7.57
16 to18 MH	9	16.22	69.00	6.88
16 to18 RH	261	16.60	75.60	7.69

RH, right hand; LH, left hand; MH, mixed hand; NRW, number of remembered words

Table 12. The assessment according to the distributions of the laterality between age groups: Mean age, IQ and RW as related to the results of Q2 scores.

Age groups	N	Parameters		
		Mean age	Mean IQ	Mean RW
13 to15 LH	12	14.66	83.08	7.08
13 to15 MH	19	14.70	77.00	7.47
13 to15 RH	279	14.66	79.16	7.73
16 to18 LH	11	16.54	70.18	7.36
16 to18 MH	14	16.78	73.78	7.78
16 to18 RH	259	16.52	**7**5.28	7.69

RH, right hand; LH, left hand; MH, mixed hand; RW, remembered words.

have put forward an idea that two groups of the hand preference could be presented in any population as left- and right-handed called dichotomy (Beukelaar and Kronenberg, 1983), while some others have put forward (Hardyck and Petronovich, 1977; Oldfield, 1971) that three groups of the hand preferences could be presented as left, right and mixed handed. According to the previous ideas there are two side of everything while according to second idea the side of same thing may be multiple. In a previous study, the rate of right, left and mixed handedness called thricotomy were 66.2, 3.4 and 30.4%, respectively (Yetkin, 1993). However, it was seen in study that the rate of those who prefer their right hands was 96.6% while this was only 3.4% for those who prefer their left hands in dichotomy. In the present study, dichotomy and thrichotomy were assessed separately (Tables 2 and 3). The distribution of different percentages arisen from the result of the using the laterality performed on the different population more before was explained by socio-cultural factors (Annett, 1972; Tan 1988). It is reality that the environment has a certain influence over hereditary tendencies in the developmental process of laterality (Yetkin, 1993). Education has also a great influence over right hand preference.

In the study, the left handedness was 4.08%. This ratio was reported 3.7% by Annett (1972) and 3.4% by Tan (1988). According to the education programs, there was the difference between the percentages of the laterality degrees as related to the CEP and REP (Tables 1 and 2). The graphical distribution of the hand preferences was shown into "J" shape by Annett (1985) and it was supported by the research performed more after (Tan, 1988). In this study, the result of the hand preference was exhibited "J" shape in the age groups of 13 to 15 (Figure 5) and of 16 to18 (Figure 6). The graphical representation of hand preferences was also shown in "J" shape after the separation of male and female according to the sexual differences. In over 18 years, a result was not obtained because of the insufficient subjects (Figure 7). The interactions between hand preferences and intellectual functions were also investigated by different authors (Annett, 1972; Marzke, 1997; Tan, 1989a). There were not any differences between IQ levels of the patient with the lesions of the left hemisphere. Annett (1970) admitted that the right hemisphere involves in same ratios to the development of the intellectual functions. In this work,

there was no relationship between the Geshwind scores from Q1 and Q2 and IQ levels. The result from total sample was found to be similar to the studies performed by Annett (1972) and Tan (1988). For the verbal and nonverbal skills, Annett (1985) reported that the mails were inclined to use the right hemisphere and females were inclined to use the left hemisphere.

The neuro-cognitive systems, including learning and memory, are the special areas for the species. However, some learning methods, for example reading, exhibits cultural differences (Pinker and Bloom, 1990; Witelson, 1987), but the biological factors are widely effective to put into a form the areas of the some contents (Geary, 1995). The learning capacity is related to the complexity of the nervous system. In humans, the learning and memory capacities is related to the development of the speaking language.For this,in the process ofevolution, cultural evolutionis as important asthe previousdegree.(Richard et al, 1988). The biological principle of adaptive specialization applies to learning and memory mechanisms just as much as it applies to other biological mechanisms (Kluwe et al., 2003).

In this study there was not any relationship between age and IQ interactions and between age and NRW in the total sample. However, it was found that there was a positive linear relation between IQ levels and NRWs (Table 2)

Difference between NRWs from the REP and from the CEP was found significantly, and the difference between NRWs from the REP and from the OOS was also found important (Table 1). It was thought that this significant difference may be coming from the absent of the female students in the classesof the religion programs. It was also controlled that whether the difference between male subjects from every two educational program was significant or not, and the difference between them was found significant. This difference may be a result of the cultural practices and educational experiences in the classroom. However, the difference between mean IQ levels of every two subject groups was found insignificant.

In this work, the correlation between the Geshwind scores obtained from different results (Q1 and Q2) was investigated whether there was harmony between them or not. While Q1 questions, as it is known, was only related to the hand preference, Q2 questions was not only on the hand preferences but also about eye, foot , finger and the lateralization of the one side of the body. In general population, there was a positive correlation coefficient (r=0.795) between the laterality degrees observed by different inventories (EHI and YLQ). This correlation can accept a factor analyze for Q2. Thus, it was assessed that the scores from Q1 and Q2 were getting parallel in the ratio of 80 % (Table 2). After the separation according to the different laterality groups of the hand preferences, the harmony between the scores coming from Q1 and Q2 was studied. The correlation for *Q1* were found 95 % (r=0.859), 57 % (r=0.579) and 51 %

(r=0.514) in the left-, mixed and right handed subjects, respectively. In contrast to this findings, the correlation for *Q2* were assessed as 55 % (r=0.559), 51 % (r=0.516) and 50 % (r=0.50) in left, ambidexterous and right handed subjects.

The brain functions have been subjected for numerous neuro-physiologic studies because the brain functions are the basisfor understanding, learning, motor movement and. Tan (1988) has separated (grouped) the lateralization degrees into powerful (strong), middle and weak (poor), and has researched the interactions between laterality degrees and IQ levels; Tanhas also put forward a relationship between IQ and the degree of left hand preference, and has assessed that both higher IQ levels and left hand preference with middle level have been developing together.

In the left handed subjects who use their left hands to write, both powerful and poor hand preference were found to be disadvantage for spatial reasoning: the left hand preference at middle level was found to be related to higher mental ability for spatial reasoning. In the left handed subjects who use their right hands to write, left hand preference showed lower degrees than those use left hands to write. To these results it was put forward that (Tan, 1989a) the relationship between the motor (practice) and cognitive (conceptual) skills may depend on higher motor activities such as writing.

The distribution of left- and right-hand preference in left hander and the relation between learning and IQ were investigated, and motor learning also was found better in higher IQ levels than lower IQ levels (Tan 1989b): in addition, a linear relation between motor learning and testosterone level was a direct relation between IQ levels and testosterone levels. However, according to the results from Q1between the laterality scores and IQ for right, left- and mixed hand groups was not found a positive significantly relationship (p>0.05). In contrast to this, to the results from Q2 a positive significant relationship was assessed between IQ levels and laterality scores for left and right handed, while a significant relation was not assessed in mixed handed. In the assessment of the NRWs, a significantly relationship was not found between NRWs and laterality scores from Q1 in left-and mixed handed. However, there was a negative significant relation between NRW and laterality scores in right hander. Contrarily, an important relation was not found between NRWs and laterality scores in right-hand, mixed-hand and left-handed subjects.

In a comparison of the results obtained from Q1 and Q2 scores, the difference between the mean IQ points in left-and right handed subjects was not found significant. In the same way, the difference between mean NRWs was found insignificant. The results show that it was found that the laterality scores from Q2 was found functional in laterality investigation as well as the scores taken from Q1, and it can be used not only lateralization related to the hand preference but also the relations between

laterality and short term visual memory or other kinds of memory. To put forward the relationship between laterality and IQ levels, it has been found that to evaluate a wider preference group (hand, eye, foot, finger or one side of the body) could have been more available.

Conflict of Interests

The authors have not declared any conflict of interests.

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Full Length Research Paper

The examining of prospective teachers' views about renewable and non-renewable energy sources: A case study of Turkey

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The aim of this study is to determine prospective teachers' views about renewable and non-renewable energy sources. To collect data, a questionnaire with 5 open-ended questions was conveyed to 463 prospective teachers selected from Agri Ibrahim Cecen University. The results showed that almost three fourths of the prospective teachers tend to denote hydroelectric energy sources. Also, the number of students who preferred nuclear power plants was higher than that of thermal power. In these results, some suggestions were made for future studies and implications for learning and practices.

Key words: Environmental education, prospective teachers, renewable energy, non-renewable energy.

INTRODUCTION

Turkey, one of the developing countries in the world, has a high population and economic growth, so its energy needs to increase yearly. This situation has posed overall renewable and non-renewable energy sources. For example, Turkey government is planning to construct several nuclear power plants (example, Akkuyu in Mersin and Sinop) in forthcoming years. This has led to controversial issues, socio-scientific issues or reasonable disagreement (example, Çalik and Coll, 2012; Çalık et al., 2013; Hodson, 2006; Sadler, 2004) on whether nuclear power plants are supposed to be constructed instead of renewable energy sources. Furthermore, many citizens tend to be afraid of science and its impact on daily life (Coll and Taylor, 2004; Coll et al., 2008). This situation calls for development of responsible citizens who are

capable of applying scientific knowledge (Driver et al., 2000; Kolstø, 2001a; Sadler, 2004) as well as helping students to become scientifically oriented (Solomon, 1994; Ültay and Çalik, 2012).

Due to the potential of this energy issue, few studies have been carried out on varied perspectives: energy policy and the situation of energy sources (Gurung et al., 2011), renewable energy education (Chawla et al., 1996; Yumurtaci and Kecebas, 2011), views about renewable energy sources (Kilinc et al., 2009; Liarakou et al., 2009) and/or nuclear power plants (Cooney, 2008; Tsaparlis et al., 2013). Among these studies, Liarakou et al. (2009) examined secondary school teachers' views about renewable energy sources in Greece and found that they were unable to teach the topic in their classes (Liarakouet

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al., 2009). Kilinc et al. (2009) examined 7 to 8 grade Turkish students' (aged 13 to14 years) ideas about renewable power generation. He found out that, about half of the students appreciated the contribution that renewable sources could make a reduction in global warming, and more than half of them thought that such generators would create environmental problems. Tsaparlis et al. (2013) implied that acceptable or partially acceptable answers to nuclear science involving nuclear power plants were provided on the average by 20% of Greek and 11% of Turkish students, while a large proportion (on the average, around 50% of Greek and 27% of Turkish students) refused to participate in answering the questions.

The undergraduate students' views about energy problems in Chinese showed that, they did not appreciate the energy status of China. Araitz et al. (2010) conducted an argumentative study about environmental concepts (including renewable energy sources) with undergraduate students and he found that, they did not relate consumption of resources to economic consequences. The foregoing studies highlight that scientific literacy plays a significant role in constructing knowledge, that is, renewable and non-renewable energy sources. Therefore, any issue about scientific literacy should shed more light on the role of teachers' education or prospective teachers because they have a pivotal role in making students scientific literates. Regarding educational literature, it shapes and trains our future generations (example, Çalık and Aytar, 2013; Çalık et al., 2013). Hence, there is need for further research on prospective teachers' views about renewable and non-renewable energy sources.

Furthermore, with the idea, 'content knowledge is an important indicator of science teaching self-efficacy' (example, Çalık, 2013; Çalık and Aytar, 2013), prospective teachers' views of renewable and non-renewable energy sources should be examined. This study attempts to compensate for a vital deficiency in the current literature. The aim of this study is to determine prospective teachers' views about renewable and non-renewable energy sources (nuclear, hydroelectric and thermal power plants) in terms of nature, human health, security, economy and need of energy

MATERIAL AND METHODS

Sample

The samples of this study consist of 463 prospective teachers selected from the Department of Primary Education, Faculty of Education in Agri İbrahim Çeçen University, Turkey.

Data collection

To develop the questionnaire, unstructured interviews were initially conducted with four prospective teachers who were no part of the sample. Hence, the questionnaire with five open-ended questions was improved (see Appendix 1). A group of expert (three science educators: their majors are educational sciences, science teaching and primary education) checked and confirmed its reliability and content validity.

Data analysis

A group of expert (three science educators) analyzed and categorized the prospective teachers' responses to the questionnaire. Within the descriptive analysis method, the results were presented through basic analysis (frequency and percentage).

RESULTS

As seen in Table 1, nine different positive views appeared; two out of the 9 different views had the highest percentages: "Renewable energy sources have no harmful effect on human health and life and/or natural ecosystem and/or global warming" (40.13 %) and "Renewable energy sources are inexhaustible" (27.1 %). This result is an indication of confidence in renewable energy sources.

As seen in Tables 2 and 3, the prospective teachers' views on nuclear power plants showed both positive and negative dimensions. Two of the positive views were very common: "If precautions are taken, nuclear power plants should be constructed by high-ranking experts" (31.25%) since they contribute to the development of Turkey" (43.75%). Similarly, one of the negative views has a very high percentage: "Nuclear power plants contaminate the environment and/or organisms" (88.98%). That is, trust of authority and economic development of the country seems to have positively shaped the prospective teachers' views whilst perceptions of the environment and organisms and human health underpin their negative views.

As shown in Tables 4 and 5, the prospective teachers held both the pros and cons of the thermal power plants. Two common positive views depicted by the prospective teachers were: "Thermal power plants are low-cost and high-energy efficiency" (36.29%) and "Turkey has enough raw material for use in Thermal power plants" (1800%). For the negative views: "Thermal power plants contaminate the environment and/or damage humans" has the highest percentage (7235%). In a parallel view of nuclear power plants, economic reasons had positive views while environmental reasons had negative views.

As observed in Tables 6, 7 and 8, prospective teachers viewed hydroelectric power plants as an environmentally friendly or unfriendly energy source. For example, most of them stated that hydroelectric power plants do not contaminate the environment (73.37%), while over half of them (60%) implied that hydroelectric power plants use up water sources and deteriorate ecological balance. This shows that, the effect of hydroelectric power plants on the environment confused the prospective teachers and brought about cognitive conflict. Indeed, it is an expected conflict since hydroelectric power plant is still an ill-structured issue in terms of its advantages and

Table 1. Views of prospective teachers about renewable energy sources.

View number	Students' opinions	F	%
1	There is no harmful effect of renewable energy sources	125	27.10
2	They are inexhaustible energy sources	136	29.50
3	They do not threaten human health and life but contribute to them.	38	8.20
4	They are natural sources of energy	32	6.90
5	They are low-cost	23	5.00
6	They eliminate the need for energy	22	4.80
7	They are easily obtained	20	4.30
8	They contribute to the development of our country	15	3.30
9	our country is rich in these resources	15	3.30
10	They don't affect natural balance	12	2.,60
11	They reduce dependence on foreign states in terms of energy	7	1.50
12	To transfer a livable environment for future generations	6	1.30
13	They do not cause global warming	10	2.10
	Total	461	100

Table 2. Views of prospective teachers about nuclear power plants construction.

View number	Nuclear power plants should be constructed	F	%
1	They contribute to the development of our country	22	15.28
2	Their energy efficiency is very high	16	11.11
3	We need them	19	13.19
4	If precautions are taken, they should be constructed	44	30.56
5	They are low-cost and high-energy	10	6.94
6	They should be used since our country has better conditions than other states	21	14.58
7	They are used to produce electrical energy by nucleus power	1	0.69
8	They damage the environment less than other kind of energy sources	3	2.08
9	They should be constructed to reduce the risk of energy-oriented wars	3	2.08
10	They provide job opportunities	2	1.39
11	They should be constructed by experts	1	0.69
12	They should be used because renewable energy sources are insufficient	1	0.69
13	They are essential for economic development	1	0.69
	Total	**144**	**100**

Table 3. Jarring opinions of prospective teachers about nuclear power plants construction.

View number	Nuclear power plants should not be constructed	F	%
1	They should not be constructed because they contaminate the environment	185	50.93
2	They damage organisms	138	38.00
3	They should not be constructed because we don't want radiations	3	0.83
4	They should not be constructed because they have chemical harms	4	1.10
5	Their working life is 40-50 years but their harmful effects are indestructible	2	0.55
6	It can destroy a city when there is the slightest mistake	2	0.55
7	They are expensive to build	21	5.77
8	They should not be constructed because there are no precautions	4	1.,10
9	They should not be constructed because they are used for wars	2	0.55
10	They should not be constructed because our country is in the earthquake zone	2	0.55
	TOTAL	**363**	**100**

Table 4. Views of prospective teachers about thermal power plants construction.

View number	Thermal power plants should be constructed	F	%
1	They should be constructed because they do not threaten human health and life or contribute them.	36	15.18
2	They should be constructed if precautions are taken	24	10.12
3	They should be constructed because their energy efficiency is very high	82	34.,59
4	They should be constructed because they are harmless like other plants	22	9.,00
5	They should be constructed because their raw material is enough	42	18.00
6	They are essential for our development	27	11.00
7	They are low-cost	4	2.00
	Total	**237**	**100**

Table 5. Jarring opinions of prospective teachers about thermal power plants construction.

View number	Thermal power plants should not be constructed	F	%
1	They should not be constructed because they contaminate the environment	103	60.58
2	They should not be constructed because they cause air-pollution	22	12.94
3	They should not be constructed because they damage humans	19	11.22
4	They should not be constructed because our energy sources disappear	12	7.05
5	They lost their importance recently	7	4.11
6	The cost of their construction is very high	6	3.52
7	They should not be constructed because they are causing global warming	1	0.58
	Total	170	100

Table 6. Views of Prospective Teachers about Hydroelectric Power Plants Construction.

View number	Hydroelectric power plants should be constructed	F	%
1	They should be constructed because they don't contaminate the environment	270	73.37
2	Because of geographical locality, our country is appropriate for these plants	75	20.38
3	They contribute to the development of our country	11	2.99
4	They should be constructed because they are an economical energy sources	12	3.26
	Total	**368**	**100**

Table 7. Jarring Opinions of Prospective Teachers about Hydroelectric Power Plants Construction.

View number	Hydroelectric power plants should not be constructed	F	%
1	They should not be constructed because they contaminate the environment and water sources	14	35.00
2	They should not be constructed because water sources will run out and there will be ecological balance deterioration	24	60.00
3	They should not be constructed because they are very expensive	2	5.00
	Total	**40**	**100**

disadvantages. However, most of the prospective tea-chers paid more attention to the use of hydroelectric power plants as compared to nuclear and thermal power plants.

CONCLUSION

The fact that majority of the prospective teachers seem to conceive the advantages and disadvantages of renewable

Table 8. Views of prospective teachers about nuclear, thermal and hydroelectric power plants.

View number	Choice on power plants	F	%
1	Those who choose hydroelectric power plants	351	75.81
2	Those who prefer nuclear power plants	57	12.31
3	Those who prefer thermal power plants	55	11.88
	Total	**463**	**100**

energy gives assurance for our future teachers' capacities, but how will they adapt to these issues in their classes is still unexplored. Overall view of hydroelectric power plants may result from capacity of Turkey's water sources. Also, this may stem from mass media (example, TV, newspaper) effect. That is, they generally refer to negative effects of nuclear and thermal power plants and protest against because Turkish government has just decided to construct new nuclear and thermal power plants. Given an earlier survey study in 2009 by nuclear energy institute in US, they reported that 90% of the participants held a favorable impression of the local nuclear power plant, compared to the ratio of the present study (1231%), which was too low. This may come from perceptions of citizens in developed and developing countries. Likewise, this may also result from their familiarities. For example, USA has 104 active nuclear power plants but Turkey has no active nuclear power. This could generate a fear climate for science in Turkey and influence their prospective teachers' views.

Conflict of Interests

The author have not declared any conflict of interests.

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APPENDIX - Views of Teacher Candidates About Energy Sources
This application is about an investigation. Welcome to read and answer questions will make a more qualified work. Thank you for your contributions.
Class/Department:
❑Female /❑Male
Which precautions should be taken to solve the power shortage foreseen in the future?
(Select one or more of the following.)

1.   Renewable Energy Sources (wind, water, sun etc...) should be used /should not be used.
Because………
……
…………………….

2.   Nuclear Power should be used /should not be used.
Because………
……
………………….

3.   Thermal Power should be used /should not be used.
Because………
……
……………….

4.   Hydroelectric Power should be used /should not be used.
Because………
………
…………………….

5.   Which do you prefer the method of energy production?
● Hydroelectric Power Plants
● Nuclear Power Plants
● Thermal Power Plants
Because………
……………………………………………………………….
……………………………………………………………………………………….

Full Length Research Paper

Which elementary school subjects are the most likeable, most important, and the easiest? Why?: A study of science and technology, mathematics, social studies, and Turkish

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The present study was conducted first to identify which school subjects were most liked, most important, and most difficult, as well as least liked, least important and easiest as perceived by elementary school students and second to explore the reasons why students most/least liked, considered as most/least important, and considered as most difficult/easiest the school subjects identified. The data were collected from 789 fourth through seventh grade students from eight public elementary schools in Edirne, Turkey using three rank-order and six open-ended questions. The study showed that the most-liked subject was science and technology, the most important and also difficult subject was mathematics. Whether classes were amusing, boring and/or linked to daily life experiences was found to be among the most frequently mentioned reasons.

Key words: Attitudes towards school subjects, comparison among school subjects, elementary education, scaling.

INTRODUCTION

The elementary education years are, without a doubt, of great importance in a child's social and academic life. In these years children gain much basic academic knowledge and social skills directly from schools (Sylva, 1994). In that period of time, children begin to develop positive or negative perceptions about schools, school subjects, and other academic agents. As seen from studies regarding school subjects, attitudes towards school in general and particular school subjects impact many aspects of academic life such as achievement (Haladyna et al.,1979; Haladyna et al., 1982; Haladyna et al.,1983; İş, 2003; Ma and Kishor, 1997; Oliver and Simpson, 1988; Papanastasiou and Zembylas, 2002, 2004; Wasike, 2013; Yücel and Koç, 2011), effort put forward to learn subject matters (Li, 2012; Shrigley, 1990), test anxiety (Akman et al., 2007), career preferences related to the subject (Haladyna et al., 1979, 1983, Haladyna et al., 1982), academic self-concept (Çağlar, 2010), and

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resource allocation (Haladyna et al., 1979, Haladyna et al., 1982). As understood from the research above, examining students' attitudes towards school subjects and the factors that determine those attitudes is crucial.

Research on comparison of students' attitudes towards school subjects

Some studies (Chapin, 2006; Dundar and Rapoport, 2012; Goodlad, 1984; Greenblatt, 1962; Haladyna and Thomas, 1979; Herman, 1963; Inskeep and Rowland, 1965; Kılıç Çakmak et al., 2008; McGowan, 1983; Wolters and Pintrich, 1998; Yılmaz and Şeker, 2011) have compared the subjects in terms of attitudes that students hold. Briefly, when social studies, science, mathematics, and language (example English, Turkish, reading, etc.), are taken into consideration (as they are in the present study), with the exception of Yılmaz and Şeker (2011)'s study, math or science were found to be among the most liked, preferred, important, valued and easiest subjects. In contrast, social studies were found to be the least liked, the least preferred, the least important, the least valued, and the most difficult subject by students compared to other core subjects.

In addition to comparing the subjects in terms of students' attitudes, some studies were performed to understand the reasons lying behind students' attitudes. For instance, Schug et al. (1982) interviewed 46 students from 6 and 12 grades. Their research found English to be the most important subject, followed by mathematics, reading, social studies and science, respectively. Moreover, mathematics was the most favored subject, followed by English, social studies, science, art, industrial arts, and reading. As reasons for their favorite, least favorite, and important subject perceptions, students mentioned that social studies was less important because of career concerns; to them, English, mathematics, and reading were providing them with the skills that they would be using in their future careers. Students commented that social studies was boring because of teaching methods and content repetition. Furthermore, students thought mathematics to be important because it effectively develops "life skills".

In a similar study, Stodolsky et al., (1991) interviewed 37 fifth grades. According to the results, when students ranked 10 school subjects in terms of likeability, importance and difficultness results were in line with similar studies. Students liked physical Education (PE) the most, followed by computers, music, math, reading, science, social studies, art, spelling, and foreign languages, respectively. In terms of importance, students put math in the first rank, followed by spelling, social studies, reading, science, foreign languages, computers, music, PE, and arts. As for difficulty, PE was in the first rank as the easiest subject. Music, spelling, reading, foreign language, art, computers, math, social studies,

and science came later in order of increasing difficulty. They also found that students liked mathematics and social studies when they were interesting and easy, had fun activities, and when students were successful in the courses; whereas, students did not like mathematics and social studies when they had boring content and activities, they were hard, and students were unsuccessful. In Chiodo and Byford's (2004) phenomenological study with 48 students, students' favorite subjects were math, science or English because of their value in future careers; social studies came after them in rank order.

Factors associated with attitudes towards school subjects

In addition to comparing school subjects in terms of attitudes, numerous studies have examined students' attitudes towards one particular school subject to shed light on the factors that influence pupils' attitudes, as measured through qualitative and/or quantitative designs. For example, experimental studies have tested a variety of student-centered learning methods on attitudes towards science (Bilgin and Karaduman, 2005; Çıbık, 2009; Gültekin, 2007; Hong et al., 2013; Lou et al., 2011; Ornstein, 2006), mathematics (Gelici, 2011; Şengül and Öz, 2008; Yıldırım and Tarım, 2008), social studies (Ada et al., 2009; Güler, 2011; McGowan, 1983; Yalçınkaya, 2010; Yaşar and Ünlüer, 2011), and Turkish (Çörek, 2006; Kara, 2011; Kayıran, 2007). These studies revealed that student-centered teaching methods have a positive effect on students' beliefs about or attitudes towards school subjects. There are also descriptive studies supporting the positive effects of student-centered teaching methods on opinions about school subjects. For instance, McTeer (1976) found that students favored social studies classes that were not lecture-based, but rather were active and utilized technology.

In the same way, in Goodlad's (1984) study, "regardless of subject, students reported that they liked to do activities that involved them actively or in which they worked with others" (p.114); it was also found that most-liked subjects were the subjects that students were active in, and in which there was "a little less lecture-and textbook-oriented" instruction (Goodlad, 1984, p.115). Similarly, in the study conducted by Russell and Waters (2010) with sixth-eight grades, students stated that they did not like social studies when they were learning through "lecture", "rote memorization and note-taking", "worksheets", "busy work" and "assignments from the textbook", while they stated that they liked social studies when they learned by "cooperative learning activities", "study guides, reviews, and review games to help prepare for exams and tests", "using graphic organizers and foldables", "technology (internet, film, video, etc…)", "hands-on/active learning", "field trips", "student presentations" and "class discussions" (p. 10-11).

In addition to the teaching methods, some other factors such as student, parent, and teacher characteristics, students' subject-matter interest, self-efficacy, self-concept, motivation, and achievement were suggested to be predictors of attitudes towards school subjects (Mohamed and Waheed, 2011). For example, Bayturan (2004) found that high achievers in mathematics held more positive attitudes towards mathematics than lower achievers. In their study examining students' views on social studies, Alkis and Gulec (2006) found that teachers' personal characteristics, history-related subject matter, active learning methods, and technology use positively affected students' attitudes. Further, students stated that memorization and geography-related subject matter were important factors on their negative attitudes. The studies related to science attitudes (Fraser and Kahle, 2007; Papanastasiou and Zembylas, 2002, 2004; Rice et al., 2013; Simpson and Troost, 1982; Talton and Simpson, 1986), mathematics attitudes (Fraser and Kahle, 2007; İş, 2003; Rice et al., 2013), Turkish attitudes (Bölükbaş, 2010) and social studies attitudes (Corbin, 1997; Haladyna et al., 1979) showed that parents have an impact on students' attitudinal outcomes.

Teachers are another important factor that shape students' attitudes toward school subjects, both as curriculum practitioners and as role models. For instance, Mordi (1991) found that home characteristics, student characteristics, teaching and learning variables and school factors predicted students' positive attitudes towards science. However, the teaching methods used by the teacher were the most important factor in the attitudes student expressed towards science (as cited in Akman et al., 2007). Teachers' personal interest in the subject matter and teaching, their attitudes towards the subject matter and students, and their abilities in teaching and designing learning environments are also among many other important teacher characteristics to shape students' perceptions about or attitudes towards school subjects (Haladyna et al., 1982; Hassan et al., 2012; Simpson and Troost, 1982; Talton and Simpson, 1986).

Inskeep and Rowland (1965) found a correlation between students' preferences and students' perceived preferences of the teachers for subjects, suggesting students' preferences might be affected by teachers' preferences. Wentzel (1998) found perceived teacher support to be a predictor of class interest and school interest in the sixth grade. Similarly, positive correlations between student attitudes towards social studies and teacher enthusiasm, reinforcement of students, teacher support (Haladyna et al., 1979), and perceived teacher quality (Haladyna et al., 1982) were reported. İş (2003) found that student-teacher relations influenced student attitudes towards mathematics, suggesting that the more teachers were interested in students, fair to them, gave extra help, etc., the more positive attitude students held towards mathematics. Mata et al., (2012) also found positive correlations between teacher support and mathematics attitudes. Similar results were found in very recent research by Rice et al. (2013), revealing that the more social support students receive from teachers as well as from parents and friends, the more positive their attitudes towards math and science become; additionally, their sense of competence in math and science increases.

As seen from the literature review above, there is an abundance of studies examining the students' attitudes towards school subjects. However, in Turkey, research on attitudes has mostly focused on either the effect of a particular instructional method or students' attitudes towards one particular school subject. That is, there is a dearth of studies attempting to understand students' attitudes towards school subjects holistically. Thus, the first aim of the present study was to identify which school subjects were most liked, most important, and most difficult, as well as least liked, least important and easiest as perceived by elementary school students; the second aim was to explore the reasons for why students most/least liked, considered as most/least important, and considered as most difficult/easiest the school subjects identified.

METHODOLOGY

The present study used mixed model that included both quantitative and qualitative research methods. Mixed method is defined as a research method that requires a researcher to collect data for the same study by using qualitative and quantitative methods. Then, the researcher is expected to analyze, unify and make future predictions (Tashakkori and Creswell, 2007).

Participants

Seven hundred and eighty-nine fourth through seventh grade students from eight public elementary schools in Edirne, Turkey participated in the study. Out of 789 participants, 215 (27.2%) were fourth grade students, 221 (28.0%) were fifth grade students, 187 (23.7%) were sixth grade students, and 166 (21.0%) were seventh grade students. As for gender, 386 (48.9%) were females and 403 (51.1%) were males.

Data collection

In the study, the data was collected by "Students' Opinions on the School Subjects Questionnaire", which was created from previous studies (Goodlad, 1984; Schug et al., 1982). The questionnaire included three rank-order and six open-ended questions. With the rank order questions, students were asked to rank science and technology, mathematics, social studies, and Turkish subjects in terms of liking, *from the most liked (1) to the least liked (4)*, importance, *from the most important (1) to the least important (4)*, and difficulty, *from the most difficult (1) to the easiest (4)*. With the open-ended questions, students were asked to give reasons for their rankings, but only for the subjects that they ranked first and last.

Analysis of data

During the analysis of the data based on student ranking, the rank

Table 1. The frequency matrix related to students' ranking judgments (F)

Ri[a]	Liking				Importance				Difficulty				Total
	SCI	MAT	SOC	TUR	SCI	MAT	SOC	TUR	SCI	MAT	SOC	TUR	
1	290	219	152	128	88	398	62	241	80	494	123	92	789
2	242	151	198	198	257	243	102	187	278	114	190	207	789
3	173	112	253	251	285	58	294	152	240	82	264	203	789
4	84	307	186	212	159	90	331	209	191	99	212	287	789
Total	789	789	789	789	789	789	789	789	789	789	789	789	3156

Note. SCI: Science and Technology; MAT: Mathematics; SOC: Social Studies; TUR: Turkish [a] #1 is the most liked subject, #4 is the least liked subject for liking; #1 is the most important subject, #4 is the least important subject for importance; #1 is the most difficult subject, #4 is the easiest subject for difficulty.

Table 2. The value and ranking of the scale related to students' ranking judgments

Subjects	Liking		Importance		Difficulty	
	Scale values (S_j-Liking)	Ranking[a]	Scale values (S_j-Importance)	Ranking[b]	Scale values (S_j-Difficulty)	Ranking[c]
SCI	0.40	1	0.33	3	0.12	2
MAT	0.03	3	0.91	1	0.77	1
SOC	0.06	2	0.00	4	0.10	3
TUR	0.00	4	0.48	2	0.00	4

Note. SCI: Science and Technology; MAT: Mathematics; SOC: Social Studies; TUR: Turkish
[a] #1 is the most liked subject, #4 is the least liked subject for liking; [b] #1 is the most important subject, #4 is the least important subject for importance; [c] #1 is the most difficult subject, #4 is the easiest subject for difficulty

order judgment scaling was used. The rank order judgment scaling method can be applied for all stimuli that can be assigned to a rank (Guilford, 1954; Turgut and Baykul, 1992), and the internal consistency of the scale values can be calculated (Torgerson, 1958; Turgut and Baykul, 1992). As for the analysis of open-ended questions, content analysis was used. First of all, to create the categories, the answers of the students (about 63% out of 789) were read through for each six question. Then, all answers were coded into these categories by two of the researchers. When a new category came up, it was added to the initially created category list. Finally, results were calculated and presented in tables. To check the reliability of coding, 100 randomly selected questionnaires were coded by an independent coder, and reliability statistics between coders were calculated for each question using the formula (Reliability = number of agreements / total number of agreements + disagreements) presented by Miles and Huberman (1994, p. 64). Inter-coder reliability statistics ranged from 0.82 to 0.88, yielding good results.

RESULTS

The first aim of the present study was to identify which school subjects were most liked, most important, and most difficult, as well as least liked, least important and easiest as perceived by elementary school students. For this aim, students' ranking of science and technology, mathematics, social studies, and Turkish courses by

liking, importance, and difficulty were scaled according to rank-order judgments. Based on these ranking the frequency matrix was formed. Table 1 shows the frequency matrix.

In Table 1 students' rankings based on liking, importance, and difficulty of the subjects are presented. For example, while the number of students assigning the science and technology course to the first rank is 290, the number of students assigning the same course to the fourth rank is 84 in terms of liking. With the help of the frequency matrix, the unified standard was formed in order to compare each stimulus. The finding rates of each stimulus on the unified standard were calculated. The next step was to find the z values that correspond to the rates matrix and find the Z matrix. Finally, Sj values were found. Table 2 shows the Sj values.

As seen in Table 2, the most liked subject by the students is science and technology, followed by social studies, mathematics, and Turkish. Regarding importance of the subjects ranked mathematics as the most important school subject, followed by Turkish, science and technology, and social studies. Lastly, students ranked mathematics as the most difficult subject, followed by science and technology, social studies, and Turkish.

When the proximity of the scale values in relation to the

Table 3. The findings related to the internal consistency of the scale value

	Error	Mean Error	df	χ^2
Liking	0.04	0.00	3	1.37
Importance	0.08	0.01	3	5.01
Difficulty	0.04	0.00	3	1.24

$\chi^2_{(Table\ value)} = 7.82$

Table 4. Reasons for the most liked subjects

Reasons for the most liked subjects[a]	Science (N=290)		Math (N=219)		Soc. Stud. (N=152)		Turkish (N=128)		Total (N=789)	
	f	%	f	%	f	%	f	%	f	%
Topics of this subject are my area of interest	92	31.7	115	52.5	64	42.1	59	46.1	330	41.8
Classes are amusing	124	42.8	81	37.0	48	31.6	44	34.4	297	37.6
This subject is easy	75	25.9	29	13.2	47	30.9	43	33.6	194	24.6
We are active in this class	71	24.5	17	7.8	8	5.3	12	9.4	108	13.7
I like the teacher's teaching style	27	9.3	11	5.0	27	17.8	10	7.8	75	9.5
I am successful in this subject	19	6.6	15	6.8	18	11.8	15	11.7	67	8.5
This subject is related to our daily life	9	3.1	17	7.8	9	5.9	2	1.6	37	4.7
I like the teacher	14	4.8	3	1.4	13	8.6	6	4.7	36	4.6
This subject is important for my future career	17	5.9	9	4.1	3	2.0	2	1.6	31	3.9
We learn new things in this class	16	5.5	3	1.4	4	2.6	8	6.3	31	3.9
Other	32	11.0	40	18.3	19	12.5	27	21.1	118	15.0

Note. Percentages do not add up 100 percent since each student may write more than one reason in their response.
[a] In total, 24 categories were created for the reasons for the most liked subjects; however, 14 categories were grouped as *other* here, and total percentages of reasons in *other* category are ranging from 0.1 to 3.2

four subjects are considered, it can be noted that the liking levels of social studies, mathematics, and Turkish courses are approximately the same. On the other hand, the importance level that the students assign to Turkish and science and technology courses are also approximately the same. The difficulty levels assigned by the students to science and technology and social studies courses are approximately the same as well. When mathematics is considered in terms of importance and difficulty, it has a high scale value compared to other courses. The internal consistency of the scale values obtained from ranking judgments was also calculated. Results were given in Table 3.

When Table 3 is considered, it is evident that the mean error of the scale values for all the three situations is very low [Mean Error$_{Liking}$ = 0.00; Mean Error$_{Importance}$ = 0.01; Mean Error$_{Difficulty}$ = 0.00]. This result displays that the scale values and the student judgments in relation to the three situations are reliable. Since the χ^2 values that were calculated for each three situation is lower than the table values, the scale values have internal consistency. The second aim of the study was to explore the underlying reasons for students' subject ranking. Namely, why did

students select the subjects they most/least liked, they considered as the most/least important, and that they considered most difficult or easiest relative to the other subjects. Findings regarding this aim are presented below in Table 4 to 9.

The results of student responses regarding reasons for why they most liked the subject that they ranked in the first order are presented in Table 4. As seen in Table 4, irrespective of the subject matter, "Topics of this subject are my area of interest (41.8%) ", "Classes are amusing (37.6%)", "This subject is easy (24.6%)", "We are active in this class (13.7%)", and "I like the teacher's teaching style (9.5%)" were mentioned more than other reasons. However, the proportions differ by subjects. For example, "Topics of this subject are my area of interest" was mentioned by the majority of students ranking math or social studies or Turkish in the first order. On the contrary, students liked science most because they thought science classes to be more fun. The results of student responses regarding reasons for why students least liked the subject that they ranked in the last order are given in Table 5.

As seen in Table 5, regardless of the subject matter,

Table 5. Reasons for the least liked subjects

Reasons for the least liked subjects[a]	Science (N=84)		Math (N=307)		Soc. Stud. (N=186)		Turkish (N=212)		Total (N=789)	
	f	%	f	%	f	%	f	%	f	%
This subject is difficult	29	34.5	196	63.8	62	33.3	56	26.4	343	43.5
This subject is boring	34	40.5	96	31.3	67	36.0	104	49.1	301	38.1
Topics of this subject are not my area of interest	9	10.7	40	13.0	39	21.0	33	15.6	121	15.3
I am not successful in this subject	3	3.6	38	12.4	12	6.5	13	6.1	66	8.4
There is memorization in this class	4	4.8	4	1.3	33	17.7	7	3.3	48	6.1
I don't like the teacher's teaching style	7	8.3	35	11.4	3	1.6	2	0.9	47	6.0
This subject is easy	1	1.2	2	0.7	13	7.0	9	4.2	25	3.2
The teacher acts nervously	2	2.4	5	1.6	2	1.1	13	6.1	22	2.8
There are discipline problems in this class	3	3.6	15	4.9	1	0.5	1	0.5	20	2.5
This subject is not related to our daily life	5	6.0	5	1.6	4	2.2	6	2.8	20	2.5
Other	9	10.7	19	6.2	5	2.7	17	8.0	50	6.3

Note. Percentages do not add up 100 percent since each student may write more than one reason in their response.
[a] In total, 21 categories were created for the reasons for the least liked subjects; however, 11 categories were grouped as *other* here, and total percentages of reasons in *other* category are ranging from 0.1 to 1.5.

Table 6. Reasons for the most important subjects

Reasons for the most important subjects[a]	Science (N=88)		Math (N=398)		Soc. Stud. (N=62)		Turkish (N=241)		Total (N=789)	
	f	%	f	%	f	%	f	%	f	%
This subject is related to our daily life	36	40.9	259	65.1	21	33.9	82	34.0	398	50.4
We learn new things in this class	28	31.8	10	2.5	34	54.8	76	31.5	148	18.8
Its contribution to standardized exams and/or grade point average (GPA) is more than other subjects	1	1.1	42	10.6	1	1.6	40	16.6	84	10.6
This subject is difficult	4	4.5	44	11.1	2	3.2	3	1.2	53	6.7
This subject is related to my future career	9	10.2	32	8.0	4	6.5	5	2.1	50	6.3
This subject has an impact on other subjects as well	0	0.0	5	1.3	0	0.0	27	11.2	32	4.1
I like this subject very much	9	10.2	9	2.3	5	8.1	8	3.3	31	3.9
This subject helps my personal development	1	1.1	4	1.0	2	3.2	17	7.1	24	3.0
Classes are amusing	5	5.7	11	2.8	3	4.8	4	1.7	23	2.9
This subject is easy	1	1.1	5	1.3	3	4.8	4	1.7	13	1.6
Other	11	12.5	20	5.0	5	8.1	11	4.6	47	6.0

Note. Percentages do not add up 100 percent since each student may write more than one reason in their response.
[a] In total, 17 categories were created for the reasons for the most important subjects; however, 7 categories were grouped as *other* here, and total percentages of reasons in *other* category are ranging from 0.1 to 1.5

"This subject is difficult (43.5%)", "This subject is boring (38.1%)", "Topics of this subject are not my area of interest (15.3%)", "I am not successful in this subject (8.4%)" were mentioned more than other reasons. However, the proportions differ by the subjects. For example, for science and technology, social studies, and Turkish the most mentioned reason was "This subject is boring", while it was "This subject is difficult" for math. The reasons why students considered subjects to be the most important are given in Table 6.   As seen in Table 6,

regardless of subject matter, "This subject is related to our daily life (50.4%)", "We learn new things in this class (18.8%)", "Its contribution to standardized exams and/or grade point average (GPA) is more than other subjects (10.6%)", and "This subject is difficult (6.7%)" were mentioned more than other reasons. On the other hand, the proportions differ by the subjects. For example, most of the students considered science, mathematics, and Turkish to be related to their daily lives. However, for social studies the most mentioned reason was "We learn

Table 7. Reasons for the least important subjects

Reasons for the least important subjects[a]	Science (N=159)		Math (N=90)		Soc. Stud. (N=331)		Turkish (N=209)		Total (N=789)	
	f	%	f	%	f	%	f	%	f	%
This subject is not related to our daily life	38	23.9	16	17.8	38	11.5	31	14.8	123	15.6
This subject is easy	19	11.9	2	2.2	46	13.9	39	18.7	106	13.4
We don't learn new things in this class	14	8.8	1	1.1	34	10.3	41	19.6	90	11.4
This subject is boring	11	6.9	18	20.0	28	8.5	32	15.3	89	11.3
This subject is difficult	6	3.8	30	33.3	19	5.7	10	4.8	65	8.2
There are useless topics covered in this class.	13	8.2	7	7.8	15	4.5	11	5.3	46	5.8
Its contribution to standardized exams and/or GPA is less than other subjects	3	1.9	2	2.2	35	10.6	1	0.5	41	5.2
Topics of this subject are not my area of interest	10	6.3	2	2.2	24	7.3	4	1.9	40	5.1
I don't like this subject	13	8.2	5	5.6	10	3.0	5	2.4	33	4.2
This subject is not related to my future career	8	5.0	3	3.3	11	3.3	8	3.8	30	3.8
Other	14	8.8	7	7.8	27	8.2	22	10.5	70	8.9

Note. Percentages do not add up 100 percent since each student may write more than one reason in their response.
[a] In total, 19 categories were created for the reasons for the least important subjects; however, 9 categories were grouped as *other* here, and total percentages of reasons in *other* category are ranging from 0.1 to 2.2.

new things in this class". Furthermore, students also thought math to be important because of its contribution to standardized exams and/or GPA, which is also considered an important reason for Turkish but not for science and technology and social studies. The reasons why students considered subjects to be the least important are given in Table 7.

As seen in Table 7, regardless of the subject matter, "This subject is not related to our daily life (15.6%)", "This subject is easy (13.4%)", "We don't learn new things in this class (11.4%)", and "This subject is boring (11.3%)" are among the most mentioned reasons. When examined in detail there seems to be some differences by subjects. For science and technology, "This subject is not related to our daily life", and "This subject is easy" were among the most-mentioned reasons for it to be the least important. As for mathematics, "This subject is difficult", "This subject is boring", and "This subject is not related to our daily life" were among the most-mentioned reasons, respectively. For social studies, "This subject is easy", "This subject is not related to our daily life", and "Its contribution to standardized exams and/or GPA is less than other subjects" were among the most-mentioned reasons, respectively. For Turkish, the most mentioned reasons were "We don't learn new things in this class", followed by "This subject is easy" and "This subject is boring". The reasons why students considered subjects to be the most difficult are given in Table 8.

As seen in Table 8, the most mentioned reasons irrespective of the subjects were "Topics and activities of this subject are complex (65.5%)", "There is memorization in this class (11.3%)", "This subject is boring (8.2%)", and "Topics of this subject are not my area of interest (6.0%)". When examined in detail there seems to be some differences by subjects. For science and technology, math and Turkish, "Topics and activities of this subject are complex" and "This subject is boring" are the most mentioned reasons. However, for social studies, "There is memorization in this class" is the most mentioned reason, followed by "Topics and activities of this subject are complex". The reasons why students considered subjects to be the easiest are given in Table 9.

As seen in Table 9, irrespective of the subjects "My grades are high (29.5%)", "Topics of this subject are not complex (28.8%)", "The classes are amusing (15.8%)", "I like this subject very much (12.0%)", and "Topics of this subject are my area of interest (7.6%)" were among the most mentioned reasons. When percentages were examined of the mostly mentioned reasons, it is important to note that none was more prominent than any others. For science and technology "My grades are high" was the most mentioned reason, which was followed in order by "The classes are amusing", "I like this subject very much", and "Topics of this subject are not complex", among others. Similarly, the most mentioned reason was "My grades are high" for social studies. However, unlike science and technology, "The classes are amusing" came after "Topics of this subject are not complex". For math, "Topics of this subject are not complex" was the most mentioned reason, followed by "My grades are high" and "I like this subject very much" as the top of the list. For Turkish, "Topics of this subject are not complex" and "My grades are high" were among the most mentioned

Table 8. Reasons for the most difficult subjects

Reasons for the most difficult subjects[a]	Science (N=80)		Math (N=494)		Soc. Stud. (N=123)		Turkish (N=92)		Total (N=789)	
	f	%	f	%	f	%	f	%	f	%
Topics and activities of this subject are complex	52	65.0	369	74.7	44	35.8	52	56.5	517	65.5
There is memorization in this class	6	7.5	21	4.3	55	44.7	7	7.6	89	11.3
This subject is boring	8	10.0	35	7.1	8	6.5	14	15.2	65	8.2
Topics of this subject are not my area of interest	2	2.5	36	7.3	5	4.1	4	4.3	47	6.0
I don't like the teacher's teaching style	4	5.0	22	4.5	0	0.0	1	1.1	27	3.4
I don't like this subject	2	2.5	14	2.8	5	4.1	4	4.3	25	3.2
My grades are low	4	5.0	12	2.4	4	3.3	4	4.3	24	3.0
I can not do in exams of this subject	2	2.5	11	2.2	5	4.1	4	4.3	22	2.8
This subject is important	1	1.3	13	2.6	1	0.8	2	2.2	17	2.2
I am scared to make mistakes in this class	0	0.0	1	0.2	1	0.8	3	3.3	5	0.6
Other	1	1.3	10	2.0	3	2.4	2	2.2	16	2.0

Note. Percentages do not add up 100 percent since each student may write more than one reason in their response.
[a] In total, 18 categories were created for the reasons for the most difficult subjects; however, 8 categories were grouped as *other* here, and total percentages of reasons in *other* category are ranging from 0.1 to 0.4.

Table 9. Reasons for the easiest subjects

Reasons for the easiest subjects[a]	Science (N=191)		Math (N=99)		Soc. Stud. (N=212)		Turkish (N=287)		Total (N=789)	
	f	%	f	%	f	%	f	%	f	%
My grades are high	74	38.7	30	30.3	67	31.6	62	21.6	233	29.5
Topics of this subject are not complex	32	16.8	31	31.3	49	23.1	115	40.1	227	28.8
The classes are amusing	43	22.5	13	13.1	29	13.7	40	13.9	125	15.8
I like this subject very much	34	17.8	16	16.2	25	11.8	20	7.0	95	12.0
Topics of this subject are my area of interest	17	8.9	11	11.1	17	8.0	15	5.2	60	7.6
I like the teacher's teaching style	13	6.8	4	4.0	11	5.2	9	3.1	37	4.7
There is memorization in this class	1	0.5	2	2.0	14	6.6	5	1.7	22	2.8
I work hard	7	3.7	3	3.0	4	1.9	3	1.0	17	2.2
What we study in this class are those that we already know	3	1.6	0	0.0	5	2.4	5	1.7	13	1.6
This subject is related to our daily life	4	2.1	0	0.0	3	1.4	6	2.1	13	1.6
Other	5	2.6	6	6.1	8	3.8	6	2.1	25	3.2

Note. Percentages do not add up 100 percent since each student may write more than one reason in their response.[a] In total, 15 categories were created for the reasons for the easiest subjects; however, 5 categories were grouped as *other* here, and total percentages of reasons in *other* category are ranging from 0.3 to 0.9.

reasons as in math.

DISCUSSION

The primary purpose of the present study was to identify which school subjects that were most liked, most important, and most difficult, as well as least liked, least important and easiest as perceived by elementary school students. The secondary goal was to explore the reasons for why students most/least liked, considered as most/ least important, and considered as most difficult/easiest the school subjects identified. The study shows that the most-liked subject by the students is science and technology, followed by social studies, mathematics, and Turkish. However, the liking levels of social studies, mathematics, and Turkish are approximately the same. On the whole, the findings of the study display parallels with several studies that were conducted on the same topic. When all the four school subjects are considered, Herman (1963) and Haladyna and Thomas (1979) found that students liked science the most.

Similar to the current research, the students in McGowan's (1983) study least liked language arts. However, when all the literature is considered, it can be seen that mathematics is the most-liked subject (Chiodo and Byford, 2004; Dundar and Rapoport, 2012; Goodlad, 1984; Greenblatt, 1962; Inskeep and Rowland, 1965; McGowan, 1983; Schug et al., 1982; Stodolsky et al., 1991). On the other hand, science and technology (that is, science), which is the most-liked subject in the current study, is the least-liked one in other studies (Greenblatt, 1962; Schug et al., 1982). Furthermore, the analysis of the open-ended questions show that the interest in the subject matter of the course, the amusement of the subject, and the easiness of the subject were the most pronounced factors irrespective of the school subject.

Likewise, if the students find the subject difficult or boring, or if they have no interest in the subject matter, their level of liking the subject decreases. When all the subjects are considered separately, it was found that students were interested in the subject matters of mathematics, social studies and Turkish. The most mentioned reason for liking science and technology was the amusement of the subject. However, interest in the subject matter was the most mentioned reason for mathematics, social studies and Turkish. The primary reason for not liking social studies and Turkish courses was that students considered it boring. Schug et al.'s (1982) study provides similar findings. They found that their participants liked school subjects when they found the course "enjoyable", were "good at it", had "new learning" experiences, and found the course "challenging". On the other hand, "difficult subject", finding the course "boring" and "disliking teaching methods" caused the participants of their study to consider a subject as least favorite (pp. 18-19). As Chapin (2006) stated, this situation shows that in addition to the interest in the subject matter of the course, amusement is also related to why students like a course more than others. Thus, a teacher needs to develop and apply enjoyable teaching methods in order to make students favor his/her classes.

Students who liked mathematics the least stated that the reason for their dislike was finding this subject difficult. Bayturan (2004) found that there was a relationship between students' mathematics achievement and their attitudes. The participants who were successful in mathematics in his study liked mathematics, found it enjoyable and interesting, participated in the activities, and valued the importance of mathematics achievement more than other students who were less successful. Thus, teachers need to set up close relationships with their students, identify their learning levels, and design activities that can ease the learning processes of their students. As Osborne et al., (2003) stated, teachers and teachers' teaching applications have key roles in influencing students' positive attitudes towards the school subjects. Furthermore, families also affect student perceptions in relation to courses (Kawiak, 2013). Hence, teachers and

families can praise student performances and positively contribute to the formation of their perceptions about the school courses (Rice et al., 2013).

The findings of the present study show that students consider mathematics as the most important school subject, followed by Turkish, science and technology, and social studies. However, the importance level that the students assigned to Turkish and science and technology is approximately equal. This finding overlaps with the former research revealing mathematics as the most important (Chapin, 2006; Dundar and Rapoport, 2012; Goodlad, 1984; Kılıç Çakmak et al., 2008; Schug et al., 1982; Stodolsky et al., 1991; Wolters and Pintrich, 1998;) and social studies as the least important school subject, as perceived by students (Chapin, 2006; Dundar and Rapoport, 2012; Goodlad, 1984; Schug et al., 1982; Wolters and Pintrich, 1998). This study also focused on finding why students consider the school subjects as the most important or least important. Accordingly, the most mentioned factors that caused students to consider courses important were found to be: the usefulness of the subject matters in students' daily lives, learning new topics from the subject, the subject's contribution to standardized exams and/or GPA, and the difficulty of the subject. Similarly, Schug et al. (1982) found that if a course is related to students' "career preparation", "life skills", and if it is "enjoyable" for them, they consider the course as important (p. 17).

The present study showed that students who considered the subjects as important were able to find a connection between the topics of subjects and daily life experiences. On the other hand, the students who found the courses as least important were not able to see a connection between the topics of subjects and daily life experiences. Thus, the usefulness of the course topics in daily life experiences is the chief factor that causes students to see a course as important. In this context, teachers need to give real life examples and establish connections between the course topics and daily life activities. Numerous other studies found that using real life connected teaching methods such as problem-based learning and context-based learning increased student achievement and resulted in making students consider the subjects as more important (Günhan and Başer, 2008; Lou et al., 2011; Yavuz and Kepceoğlu, 2011). Failing to set up real-life connections when explaining the topics of any subject can result in student learning that is "inflexible", "school-bound", and "limited" (Boaler, 1998, p. 60). This finding is of importance that teachers need to take into consideration while planning their lessons.

Another noteworthy finding of the study is that students considered mathematics as the most difficult course, followed by science and technology, social studies, and Turkish. However, the difficulty level assigned by the students to science and technology and social studies courses were nearly indistinguishable. Turkish was considered as the easiest by the participants. Studies by

Goodlad (1984) and Stodolsky et al. (1991) also provide similar findings since they found that students regard the native language course as their easiest course. However, social studies, which the current study identifies as among the easiest subjects, was considered as the most difficult in other studies (Dundar and Rapoport, 2012; Goodlad, 1984). The reasons that students find a subject difficult are: the complexity of the topics of the subject, including memorizing, being boring, and lack of interest in the topics of the subjects. The factors that cause students to consider a course as easy are: having high grades, finding the subject matter as uncomplicated, finding the subject amusing, liking the subject, and being interested in the topics of the subject.

When all the courses are considered separately, "Topics and activities of this subject are complex" is the most frequently indicated reason that students consider science and technology, mathematics, and Turkish to be the most difficult school subject. However, memorization is the most significant factor relative to other reasons that cause social studies to be perceived as the most difficult. Students who found mathematics and Turkish to be the easiest subjects stated that these courses do not include complicated topics. On the other hand, students who get high grades from science and technology and social studies pronounced these subjects as the easiest. This result can be related to the high-stakes testing oriented education system in Turkey. Research on high-stakes testing shows that results obtained from these tests can be misleading (Linn et al., 1990; Shepard, 1990) since they require individuals to maintain extreme focus. In other words, two students who are at the same academic level may not get the same result. Therefore, it is not possible to generalize the results found in these exams (Koretz et al., 1991). Roeser and Lau (2002) stated that high-stakes testing prevent students from displaying their real performances. Supporting these arguments studies by Yalçınkaya (2010) and Kırıkkaya and Vurkaya (2011) show that complementary measurement and evaluation techniques (such as performance assessment, structural communication grid, diagnostic tree and predict-observe-explain activities) increase student achievement and positively aid their attitudes towards the subjects.

Besides getting high grades, teacher-controlled factors such as the level of amusement of the classes and teaching style of the teacher also cause students to see a subject as easy compared to other subjects. Undoubtedly, teachers have a crucial role in directing student attitudes towards and perceptions about the courses since they are the planners, implementers, and role models of the courses (Cronin-Jones, 1991; Fisher and Rickards, 1998; Mata et al., 2012; Mohamed and Waheed, 2011; Simpson and Troost, 1982). Studies conducted show that teacher and text book centered courses that include a significant amount of memorization result in negative student attitudes towards school subjects (Governale, 1997; Haladyna and Shaughnessy, 1981).

Moreover, research reveals that students demand active learning environments (Goodlad, 1984; McTeer, 1976; Russel and Waters, 2010; Schug et al., 1982) that learning environments which are enjoyable, student centered, and not based on memorizing (Ada et al., 2009; Alkis and Gulec, 2006; Bilgin and Karaduman, 2005; Çıbık, 2009; Çörek, 2006; Gelici, 2011; Goodlad, 1984; Güler, 2011; Gültekin, 2007; Hong et al., 2013; Kara, 2011; Kayıran, 2007; Lou et al., 2011; McGowan, 1983; Ornstein, 2006; Ören and Tezcan, 2009; Şengül and Öz, 2008; Yalçınkaya, 2010; Yaşar and Ünlüer, 2011; Yıldırım and Tarım, 2008), and positive teacher attitudes also contribute to developing positive student attitudes for courses (Alkis and Gulec, 2006; Chiodo and Byford, 2004).

CONCLUSION

To conclude, this study compared students' attitudes towards four core school subjects–science and technology, mathematics, social studies, and Turkish–with respect to liking, importance, and difficulty and identified several common points that influence student attitudes in a positive manner. These common factors are enjoying the classes and relating the course content to daily life experiences. Therefore, teachers need to make their classes exciting and relate the course content to daily life practices in order to eradicate negative attitudes towards their courses. In this study, the participants ranked the four core subjects in terms of liking, importance, and difficulty and expressed the reasons for their views by answering open-ended questions. Thus, future research that focuses on the same topic can use the interview technique, incorporate more courses into its data structure, and select different sample groups in order to discover other important findings that were not identified in this study.

Conflict of Interests

The authors have not declared any conflict of interests.

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Full Length Research Paper

Analyzing the value priorities of families, students and teachers

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The purpose of this study is to determine to what extent families and teachers required students to have or not the values and to what extent students give priorities to these values. The study group of the research chosen through random sampling model included 79 teachers, 136 parents of students, and 149 students from 5th, 6th, 7th and 8th grades studying at secondary education schools affiliated to Aksaray Directorate of National Education. In the research, 57-item Schwartz' Value Inventory developed by Schwartz (1992) and adapted into Turkish and studied upon its validity and reliability by Kuşdil and Kağıtçıbaşı (2000) was used as the data collection tool. For the analysis of the data obtained from the study group, One-Way Analysis of Variance (One-Way ANOVA) benefited the random samplings. Consequently, no significant difference was found according to the whole value expressions in Schwartz's Value Inventory between the value priorities of teachers and students and the value priorities the families want a student to have. However, when the items were analyzed one by one, some significant differences were found between parents, teachers, and students in some value expressions.

Key words: Family, teacher, student, value priorities, analysis.

INTRODUCTION

Values are the body of rules that determine the affective and cognitive feeling, thought, belief, attitude, and behavior of each society. Schwartz (1994) and Harcar (2005) defined the concept of value as such. It is the purpose requested in situations that display difference and serve as a lodestar to the life of social formations and individuals, and accepted as "the best," "the most correct," "the most beneficial" and "the most useful" by the society.

In order to adapt and experience the values well, children should be allowed to acquire them. To manage

this, interfamilial education, school and environment are essential (Bolay, 2007). Because the values are learned in the family from childhood, children distinguish the values which are more important for them among the ones they learn together with their social surrounding and school life, and realize social values. Therefore, the education that the children have in their families and schools is essential. Because the families and schools make efforts and insist on making their children acquire value judgments of the society. And if the children resist these values, a conflict is experienced. According to the

broadly accepted perception of recent times, values vary from culture to culture, society to society, family to family, and person to person, and more importantly, those values can contradict with each other. While the children model their families, the society, teachers, and the individuals around them on themselves, they encounter with these confronting values, as well. When considering the recent technological advancement, the dimensions of this conflict can be noticed to be much clearer.

According to Simon et al. (1972: 16), values can be efficient if only they are consistent with the desires of the individual. However, the conditions today's youths confront have to be revised. For example, parents offer a series of "must" and "mustn't," their peer friends offer a different viewpoint, cinema and popular magazines offer a different viewpoint, elementary education teachers offer a different viewpoint, seventh grade teacher offer a different viewpoint, politicians offer a different viewpoint, spokesmen of different cultures offer a different viewpoint, religious beliefs suggest their own values and continues as such. The young individuals who are bombarded with these effects confront a great conflict whose suggestions and values they should take as a choice.

On the other hand, the societies which undergo change and progress on social and economic fields in recent times have witnessed the conflicts of feeling, thought, and values. Financial welfare of individuals provides economic improvement and development of families, schools, and the society, and also changes the life styles and value systems. Because values are re-interpreted together with economic developments, new values appear, and the list of priority between the value systems of the individuals changes.

Consequently, the young individuals who are in afore-mentioned chaos, conflicts, and contradictions cannot compromise values, and also cannot make their own choices. As a result of this, youths and children cannot create their own values, and experience incoherence in adapting the values of the society. Under these circum-stances, these young individuals cannot find a community they belong to, they become isolated, display negative behaviors and are sensitized to social problems, etc. However, as mentioned by Thiroux (1980): "In order for humankind to create and experience love, friendship, happiness, freedom, and peace, and to achieve creativity and coherence at the highest level, they should adapt themselves to ethical values. Human is a living being that thinks, has feelings, is aware of these feelings and shares them. He creates, shares the thing created, can transfer and have common values with the society he lives in. For that reason, the individual should have the broadly accepted values that form the basis of common life (Cited in Akbaba-Altun, 2003: 8-9)." As known, families and schools have a very important place to make individuals acquire these generally accepted values.

Families and schools have important roles to play in

correcting and transferring of values that will help the society and individuals to live happily, peacefully, and healthily. Therefore, educationalists (parents and tea-chers) should transfer values correctly and efficiently to children. In order to transfer values correctly and efficiently, it is essential that the educated ones should respect values, conflicting values should be determined, personal value judgments should not be imposed, finding the least common denominator should be to cooperate with families, school and students. According to Pigozzi (2004), an efficient education of values should cover the society as a whole. The values should be taught fairly and equally (different genders, cultures and beliefs) without distinction and respecting the views of anyone who learns. Learners should be integrated with common values that establish trust.

Teachers do not deal with values and training within a classroom systematically; they do not know how to teach the approaches to value, cannot focus on the required training of values because education is more cognitive process oriented and cannot be role model because students determine different models for themselves from television, internet etc. Families and the society cannot provide adequate support for values and training. Moreover, in some researches (Yalar and YanparYelken, 2011; Gömleksiz and Cüro, 2011), the most important problems of teaching of values were teachers not following the approaches of values teaching syste-matically, not planning the lesson process, families and the society not supporting the training adequately and not accomplishing the activities out of the classroom.

After solving of the problems experienced in teaching of values, the values of individuals should be respected, educationalists should not impose their judgment of values, and the conflicting values should be determined. In order to provide this, it is necessary to find the least common denominator of the values cooperating with families, school, teachers, and students. In order to find the least common denominator, it is necessary for families, teachers and students involved in the process to be aware of their values, and their point-of-views related to these values. In our research, value priorities of fami-lies, teachers, and students are determined and analy-zed. When considering the determined value priorities, this study is considered as an avenue to minimize conflicts.

The purpose of this study is to determine to what extent families and teachers required students to have or not values and to what extent students give priorities to these values.

In accordance with this purpose, the answers to the questions below were looked for:

1. Is there a significant difference between the value priorities the families require the students to have and the value priorities the teachers require the students have?

2. Is there a significant difference between the value priorities the families require the students to have and the value priorities of students?

3. Is there a significant difference between the value priorities the teachers require students to have and the value priorities of students?

METHOD

Research model

This research is a study that uses a screening model.

Study group

The study population included the 5th, 6th, 7th, and 8th grade students studying at secondary schools affiliated to Aksaray Directorate of National Education, parents of these students, and students teachers currently training the students and who will also train in following years. The sample chosen with random sampling method included 149 students who participated voluntarily from 9 secondary schools in Aksaray central district, 136 parents (parents of the students who participated in the research), and 79 teachers (the teachers who have been training the students and the ones who will train in the following years).

Data collection and analysis

For the analysis of the data obtained from the study group, one-way variance of analysis for random samplings (One-way anova) was used. Firstly, whether the data showed a normal distribution or not along the groups (each group) for the practicability of this statistics was analyzed. According to the test results (p=.078; p>0.05), it was noticed that the data showed normal distribution. The 0.05 reliability level was adapted as the level of significance. According to the evaluation results, when whole inventory was analyzed in one dimension, no significant difference was found between the value priorities families and teachers require the students to have and value priorities of students (p=.091; p>0.05). It was found appropriate to evaluate the data obtained for the value expressions in the inventory to be analyzed one by one in order to reveal to what extent families and teachers require students to have value priorities and to what extent students give priority to these values. In this process, the items in the inventory were exposed to analysis one by one in accordance with the purpose of the research, and we tried to reveal which items had difference and which items did not.

In the research, 57-item Schwartz' Value Inventory developed by Schwartz (1992) and adapted into Turkish by Kuşdil and Kağıtçıbaşı (2000) was used as the data collection tool. Because Schwartz's Value Inventory is comprehensive and accepted internationally, it is a tool in line with the purposes of our research. Furthermore, this inventory has been used in different researches in our country, proving its reliability and validity; and its appropriateness for Turkey was determined (Kuşdil and Kağıtçıbaşı, 2000; Uncu, 2008).

During the process of collecting the research data, 1 village secondary school, 2 town secondary schools, and 2 central secondary schools were visited, and the students (5th, 6th, 7th, and 8th grade students) studying at these schools and the teachers were informed about the purpose and importance of the research in interviews. Moreover, via the students the parents who wanted to participate in the study were asked to complete the scale. They

sent the Schwartz's Scale Inventory together with the notes which indicate the purpose and importance of the research. In the scale a direction was provided to parents as "Which value and to what extent (between 7 and 1) you require your child to give priority, please specify? However, please consider that your child cannot give priority to whole value expressions equally while acting this procedure." After this, the students and teachers were asked whether they wanted to participate in this research or not. The ones who wanted to participate in it were requested to read the direction primarily after handing out the Schwartz's Value Inventory. The direction provided to parents in the handed-out scale was, "Which value and to what extent (between 7 and 1) you require your students to give priority, please specify? However, please consider that your student cannot give priority to whole value expressions equally while acting this procedure." In the scale handed out to students, the direction was, "Please specify to what extent (between 7 and 1) you give priority to any values according to the value expressions? You are expected to reflect your real consideration while performing this. You will not write anything that can reflect your identity on the scale. By this means, we will not know to what extent you give priority to any values individually. For that reason, I kindly request you to reflect your own real considerations." After this process, the data were collected by the researchers for analysis.

FINDINGS

In order to determine which values and to what extent families and teachers require students to have and to what extent students want to give priority to these values, Schwartz's Value Inventory was performed and the obtained data were evaluated using Single Factor Variance Analysis (One-Way ANOVA) for Random Sampling method. The data related to evaluation results were presented in details. The findings related to mono-dimensional Variance Analysis (One-Way ANOVA) results of the data obtained from Schwartz's Value Inventory performed to families, teachers and students are presented in Table 1.

When the data in Table 1 were analyzed, it was noticed that there was no significant difference between the value priorities families and teachers require students to have and value priorities of students ($F_{(2,358)}$=2.087; *p>0.05*). In other words, no significant difference was found between the value priorities families and teachers require students to have and value priorities of students according to the whole expressions in Schwartz's Value Inventory. In order to understand whether there was a difference among the units, results of Scheffe test were analyzed, and it was noticed that all found values were over 0.05 level of significance. According to these results, it can be said there was no significant difference between the units (parent-teacher, teacher-student and student-parent).

As it can be seen above, the value priorities families and teachers require students to have and value priorities of students were close to each other in general. How-ever, Schwartz's Value Inventory consisted of items including 57 value expressions. When those items were analyzed one by one, significant differences were found between parents-teacher, teacher-student, and student-

Table 1. One-way variance analysis results of the data obtained from Schwartz's Value Inventory Performed to families, teachers, and students.

Source of variance	Sum of Squares	df	Mean Square	F	p	Significant difference
Intergroup	3.058	2	1.529	2.087	.126	No
Intragroup	262.301	358	.733			
Total	265.360	360				

p>0.05.

Table 2. One-way variance analysis results of the data obtained from the 1st Item of Schwartz's Value Inventory performed with families, teachers, and students.

Source of variance	Sum of squares	df	Mean square	F	p	Significant difference
Intergroup	42.302	2	21.151	6.484	.002	2 – 1, 2 – 3
Intragroup	1167.731	358	.793			
Total	1210.033	360				

p<0.05   (1=Parent, 2=Teacher, 3=Student).

Table 3. One-way variance analysis results of the data obtained from the 3rd Item of Schwartz's Value Inventory performed with families, teachers, and students.

Source of variance	Sum of squares	df	Mean Square	F	p	Significant difference
Intergroup	226.520	2	113.260	29.163	.000	2 – 1, 2 – 3
Intragroup	1390.372	358	3.884			
Total	1616.892	360				

p<0.05   (1=Parent, 2=Teacher, 3=Student).

parents in some value expressions. In these circumstances, no problem was noticed –in accordance with the purpose of the researcher- in value expressions in which parents, teachers and students arrived at a consensus; however, it was needed to determine the value priorities on which no consensus was arrived.

According to analysis results, value expressions in 2nd, 5th, 6th, 7th, 8th, 10th, 11th, 13th, 14th, 15th, 16th, 17th, 19th, 20th, 22nd, 24th, 26th, 28th, 29th, 30th, 31st, 32nd, 36th, 38th, 40th, 42nd, 43rd, 44th, 45th, 46th, 48th, 49th, 50th, 52nd, 54th, 55thand 56th items compromised with the priorities families and teachers require the students to have and own priorities of students. Value expressions in 1st, 3rd, 4th, 9th, 12th, 18th, 21st, 23rd, 25th, 27th, 33rd, 34th, 35th, 37th, 39th, 41st, 47th, 51st, 53rd and 57th items did not compromise with the priorities families and teachers require the students to have and own priorities of students. The analysis results related to parents-teacher, teacher-student, and student-parents disagreement related to these items are presented in Table 2.

In the value of "equality (Item 1)," the analysis results presented that there was a significant difference between the value priorities teachers require students to have, the value priorities families require students to have and value priorities of students ($F_{(2,358)}$=6.484, *p<0.05*). When the interdivisional differences were analyzed according to Scheffe test results, it was noticed that the teachers (M=6.88, SD=0.45) want equality value to be given priority rather than parents and students; and no significant difference was determined between priorities of parents (M=6.08, SD=2.03) and students (M=6.03, SD=2.01) (Table 3).

In the value of "having social power (item 3)," the analysis results presented that there was a significant difference between the value priorities teachers require students to have, the value priorities families require students to have and value priorities of students ($F_{(2,358)}$= 29.163, *p<0.05*). When the interdivisional differences were analyzed according to Scheffe test results, whereas it was noticed that the teachers (M=3.58, SD=2.04) wanted students not to have the value of social power more than the parents and students, no significant difference was found between the priorities of parents (M=5.63, SD=1.97) and students(M=5.31, SD=1.92) (Table 4).

In the value expression of "pleasure (item 4)," the analysis results presented that there was a significant

Table 4. One-way variance analysis results of the data obtained from the 4th Item of Schwartz's Value Inventory performed with families, teachers, and students.

Source of variance	Sum of squares	df	Mean square	F	p	Significant difference
Intergroup	229.275	2	114.67	37.404	.000	1 – 2, 2 – 3
Intragroup	1097.207	358	3.065			1 - 3
Total	1326.482	360				

p<0.05   (1=Parent, 2=Teacher, 3=Student).

Table 5. One-way variance analysis results of the data obtained from the 9th Item of Schwartz's Value Inventory performed with families, teachers, and students.

Source of variance	Sum of squares	df	Mean square	F	p	Significant difference
Intergroup	244.587	2	122.23	29.427	.000	1 – 2, 2 – 3
Intragroup	1487.790	358	4.156			1 - 3
Total	1732.377	360				

p<0.05   (1=Parent, 2=Teacher, 3=Student).

Table 6. One-Way Variance Analysis Results of the Data Obtained from the 12th Item of Schwartz's Value Inventory performed with families, teachers, and students.

Source of variance	Sum of squares	df	Mean square	F	p	Significant difference
Intergroup	151.457	2	75.728	38.996	.000	2 – 1, 2 – 3
Intragroup	695.214	358	1.942			
Total	846.670	360				

p<0.05   (1=Parent, 2=Teacher, 3=Student).

difference between the value priorities teachers require students to have, the value priorities families require students to have and value priorities of students ($F_{(2,358)}$= 37.404, *p<0.05*). When the interdivisional differences were analyzed according to Scheffe test results, whereas the students (M=6.02, SD=1.44) were noticed to give more priority to the value of pleasure more than parents (M=5.33, SD=1.78), parents were noticed to require more than teachers (M=3.91, SD=2.16) (Table 5).

According to the value expression of "an exciting life (item 9)," the analysis results presented that there was a significant difference between the value priorities teachers require students to have, the value priorities families require students to have and value priorities of students ($F_{(2,358)}$=29.427, *p<0.05*). When the interdivisional diffe-rences were analyzed according to Scheffe test results, students (M=5.87, SD=1.53) were noticed to give the value of an exciting life more priority than parents, and the parents (M=4.91, SD=2.33) required this to be given more priority rather than teachers (M=3.70, SD=2.29) (Table 6).

In the value expression of "to be rich (item 12)," the

analysis results presented that there was a significant difference between the value priorities teachers require students to have, the value priorities families require students to have and value priorities of students ($F_{(2,358)}$=38.996, *p<0.05*). When the interdivisional diffe-rences were analyzed according to Scheffe test results, whereas teachers (M=4.86, SD=2.03) required the value of being rich to be given less priority than parents and students, no significant difference was determined bet-ween the priorities of parents (M=6.35, SD=1.19) and students (M=6.47, SD=1.10) (Table 7).

In the value expression of "respect for traditions (item 18)," the analysis results presented that there was a significant difference between the value priorities teachers require students to have, the value priorities families require students to have and value priorities of students ($F_{(2,358)}$=9.688, *p<0.05*). When the interdivisional differences were analyzed according to Scheffe test results, students (M=4.94, SD=2.56) required the value of respect for traditions to be given less priority than parents and teachers, and no significant difference was noticed between the priorities of parents (M=6.05, SD=1.85) and

Table 7. One-way variance analysis results of the data obtained from the 18th Item of Schwartz's Value Inventory performed with families, teachers, and students.

Source of variance	Sum of squares	df	Mean square	F	p	Significant difference
Intergroup	91.791	2	45.895	9.688	.000	3 – 1, 3 – 2
Intragroup	1696.027	358	4.738			
Total	1787.817	360				

p<0.05   (1=Parent, 2=Teacher, 3=Student).

Table 8. One-way variance analysis results of the data obtained from the 21st Item of Schwartz's Value Inventory Performed with families, teachers, and students,

Source of variance	Sum of squares	df	Mean square	F	p	Significant difference
Intergroup	48.287	2	24.144	5.781	.003	2 – 1, 2 – 3
Intragroup	1495.026	358	4.176			
Total	1543.313	360				

p<0.05   (1=Parent, 2=Teacher, 3=Student).

Table 9. One-way variance analysis results of the data obtained from the 23rd Item of Schwartz's Value Inventory performed with families, teachers, and students.

Source of variance	Sum of squares	df	Mean square	F	p	Significant difference
Intergroup	119.088	2	59.544	27.445	.000	2 – 1, 2 – 3
Intragroup	776.436	358	2.169			
Total	895.524	360				

p<0.05   (1=Parent, 2=Teacher, 3=Student).

teachers (M=5.74, SD=1.86) (Table 8).

In the value of "privacy, respect for special rights (item 21)," the analysis results presented that there was a significant difference between the value priorities teachers require students to have, the value priorities families require students to have and value priorities of students ($F_{(2,358)}$=5.781, *p<0.05*). When the interdivisional diffe-rences were analyzed according to Scheffe test results, teachers (M=6.53, SD=1.06) required the value of privacy/respect for special rights to be given more priority rather than parents and students, and no significant difference was found between the priorities of parents (M=5.60, SD= 2.31) and students (M=5.69, SD=2.17) (Table 9).

In the value expression of "social prestige (item 23)," the analysis results presented that there was a significant difference between the value priorities teachers require students to have, the value priorities families require students to have and value priorities of students ($F_{(2,358)}$= 27.445, *p<0.05*). When the interdivisional differences were analyzed according to Scheffe test results, whereas teachers (M=5.20, SD=2.15) required the value of

social prestige to be given less priority rather than parents and students, no significant difference was noticed between the priorities of parents (M=6.70, SD=1.05) and students (M=6.41, SD=1.34) (Table 10).

In the value expression of " a changeable life (item 25)," the analysis results presented that there was a significant difference between the value priorities teachers require students to have, the value priorities families require students to have and value priorities of students ($F_{(2,358)}$=23.926, *p<0.05*). When the inter-divisional differences were analyzed according to Scheffe test results, students (M=6.36, SD=0.99) require the value of a changeable life to be given more priority rather than parents and teachers, and no significant difference was found between the priorities of parents (M=5.00, SD=2.46) and teachers (M=5.07, SD=1.62) (Table 11).

In the value expression of "being an authority (item 9)," the analysis results presented that there was a significant difference between the value priorities teachers require students to have, the value priorities families require students to have and value priorities of students ($F_{(2,358)}$= 29.427, *p<0.05*). When the interdivisional differences

Table 10. One-way variance analysis results of the data obtained from the 25th Item of Schwartz's Value Inventory performed with families, teachers, and students.

Source of variance	Sum of squares	df	Mean square	F	p	Significant difference
Intergroup	51.121	2	77.583	23.926	.000	3 – 1, 3 – 2
Intragroup	1160.834	358	3.243			
Total	1316.000	360				

p<0.05 (1=Parent, 2=Teacher, 3=Student).

Table 11. One-way variance analysis results of the data obtained from the 27th Item of Schwartz's Value Inventory performed with families, teachers, and students.

Source of variance	Sum of squares	df	Mean square	F	p	Significant difference
Intergroup	327.213	2	163.67	43.367	.000	1 – 2, 2 – 3
Intragroup	1415.889	358	3.955			1 - 3
Total	1743.102	360				

p<0.05 (1=Parent, 2=Teacher, 3=Student).

Table 12. One-way variance analysis results of the data obtained from the 33rd Item of Schwartz's Value Inventory performed with families, teachers, and students.

Source of variance	Sum of squares	df	Mean square	F	p	Significant difference
Intergroup	30.571	2	15.286	5.558	.004	3 – 1, 2 – 1
Intragroup	984.542	358	2.750			
Total	1015.114	360				

p<0.05 (1=Parent, 2=Teacher, 3=Student).

Table 13. One-way variance analysis results of the data obtained from the 34th Item of Schwartz's Value Inventory performed with families, teachers, and students.

Source of variance	Sum of squares	df	Mean square	F	p	Significant difference
Intergroup	76.548	2	38.274	20.619	.000	2 – 1, 2 – 3
Intragroup	664.527	358	1.856			
Total	741.075	360				

p<0.05 (1=Parent, 2=Teacher, 3=Student).

were analyzed according to Scheffe test results, whereas parents (M=5.90, SD=1.79) require the students (M=5.18, SD=2.14) to give more priority to the value of being an authority rather than the students, students were noticed to give more priority to this value rather than teachers (M=3.35, SD=1.98) (Table 12).

In the value expression of "being loyal (item 33)," the analysis results presented that there was a significant difference between the value priorities teachers require students to have, the value priorities families require students to have and value priorities of students ($F_{(2,358)}$=

5.558, *p<0.05*). When the interdivisional differences were analyzed according to Scheffe test results, parents (M=5.74, SD=2.06) required the value of being loyal to be given less priority rather than the teachers and students, and no significant difference was found between the priorities teachers (M=6.22, SD=1.07) and students (M=6.39, SD=1.48) (Table 13).

In the value expression of "being ambitious (item 34)," the analysis results presented that there was a significant difference between the value priorities teachers require students to have, the value priorities families require

Table 14. One-way variance analysis results of the data obtained from the 35th Item Schwartz's Value Inventory performed with families, teachers, and students.

Source of variance	Sum of squares	df	Mean square	F	p	Significant difference
Intergroup	95.395	2	47.697	21.038	.000	3 – 1, 3 – 2
Intragroup	811.647	358	2.267			
Total	907.042	360				

p<0.05   (1=Parent, 2=Teacher, 3=Student).

Table 15. One-way variance analysis results of the data obtained from the 37th Item of Schwartz's Value Inventory performed with families, teachers, and students.

Source of variance	Sum of squares	df	Mean square	F	p	Significant difference
Intergroup	461.833	2	230.97	48.983	.000	3 – 1, 3 – 2
Intragroup	1687.691	358	4.714			
Total	2149.524	360				

p<0.05   (1=Parent, 2=Teacher, 3=Student).

Table 16. One-way variance analysis results of the data obtained from the 39th Item of Schwartz's Value Inventory performed with families, teachers, and students.

Source of variance	Sum of squares	df	Mean square	F	p	Significant difference
Intergroup	221.406	2	110.703	32.095	.000	2 – 1, 2 – 3
Intragroup	1234.838	358	3.449			
Total	1456.244	360				

p<0.05   (1=Parent, 2=Teacher, 3=Student).

students to have and value priorities of students ($F_{(2,358)}$= 20.619, $p<0.05$). When the interdivisional differences were analyzed according to Scheffe test results, teachers (M=5.29, SD=1.36) require the value of being ambitious to be given less priority rather than parents and students, and no significant difference was noticed between the priorities of parents (M=6.50, SD=1.23) and students (M=6.26, SD=1.46) (Table 14).

In the value expression of "being open-minded (item 35)," the analysis results presented that there was a significant difference between the value priorities teachers require students to have, the value priorities families require students to have and value priorities of students ($F_{(2,358)}$=21.038, $p<0.05$). When the inter-divisional differences were analyzed according to Scheffe test results, students (M=5.64, SD=2.16) require the value of being open minded to be given less priority rather than parents and teachers, and no significant difference was found between the priorities of parents (M=6.65, SD=0.74) and teachers (M=6.73, SD=0.77) (Table 15).

In the value expression of "being brave/looking for

adventure and risk (item 37)," the analysis results presented that there was a significant difference between the value priorities teachers require students to have, the value priorities families require students to have and value priorities of students ($F_{(2,358)}$=48.983, $p<0.05$). When the interdivisional differences were analyzed according to Scheffe test results, students (M=6.09, SD=1.69) require the value of being brave/looking for adventure and risk to be given more priority rather than parents and teachers, and no significant difference was determined between the priorities parents (M=3.85, SD=2.61) and teachers (M=3.69, SD=2.13) (Table 16).

In the value expression of "being influential (item 34)," the analysis results presented that there was a significant difference between the value priorities teachers require students to have, the value priorities families require students to have and value priorities of students ($F_{(2,358)}$= 32.095, $p<0.05$). When the interdivisional differences were analyzed according to Scheffe test results, teachers (M=4.02, SD=2.21) were noticed to require the value of being influential to be given less priority rather than parents and students, and no significant difference was

Table 17. One-way variance analysis results of the data obtained from the 41st Item of Schwartz's Value Inventory performed with families, teachers, and students.

Source of variance	Sum of squares	df	Mean square	F	p	Significant difference
Intergroup	66.408	2	33.204	15.872	.000	3 – 1, 2 – 1
Intragroup	748.916	358	2.092			
Total	815.324	360				

p<0.05   (1=Parent, 2=Teacher, 3=Student).

Table 18. One-way variance analysis results of the data obtained from the 47th Item of Schwartz's Value Inventory performed with families, teachers, and students.

Source of variance	Sum of squares	df	Mean square	F	p	Significant difference
Intergroup	43.859	2	21.929	9.050	.000	3 – 1, 3 – 2
Intragroup	867.493	358	2.423			
Total	911.352	360				

p<0.05,   (1=Parent, 2=Teacher, 3=Student).

Table 19. One-way variance analysis results of the data obtained from the 51st Item of Schwartz's Value Inventory performed with families, teachers, and students.

Source of Variance	Sum of Squares	df	Mean Square	F	p	Significant Difference
Intergroup	125.623	2	62.811	18.812	.000	1 – 2, 1 – 3
Intragroup	1195.309	358	3.339			
Total	1320.931	360				

p<0.05   (1=Parent, 2=Teacher, 3=Student).

specified between the priorities of parents (M=5.88, SD=1.71) and students (M=5.94, SD=1.76) (Table 17).

In the value expression of "choosing one's own aims (item 41)," the analysis results presented that there was a significant difference between the value priorities teachers require students to have, the value priorities families require students to have and value priorities of students ($F_{(2,358)}$=15.872, *p<0.05*). When the inter-divisional differences were analyzed according to Scheffe test results, parents (M=5.85, SD=2.07) were noticed to require the value of choosing one's own aims to be given less priority rather than teachers and students, and no significant difference was found between the priorities of teachers (M=6.84, SD=0.36) and students (M=6.67, SD=1.06) (Table 18).

In the value expression of "being submissive (item 47)," the analysis results presented that there was a significant difference between the value priorities teachers require students to have, the value priorities families require students to have and value priorities of students ($F_{(2,358)}$= 9.050, *p<0.05*). When the interdivisional differences were analyzed according to Scheffe test results, the students

(M=5.55, SD=1.59) require the value of being submissive to be given less priority rather than the parents and teachers, and so significant difference was found between the priorities of parents (M=6.49, SD=1.50) and teachers (M=6.20, SD=1.59) (Table 19).

In the value expression of "being religious (item 51)," the analysis results presented that there was a significant difference between the value priorities teachers require students to have, the value priorities families require students to have and value priorities of students ($F_{(2,358)}$= 18.812, *p<0.05*). When the interdivisional differences were analyzed according to Scheffe test results, the parents (M=6.73, SD=0.86) require the value of being religious to be given more priority rather than teachers and students, and no significant difference was found between the priorities of teachers (M=5.22, SD=2.36) and students (M=5.78, SD=2.11) (Table 20).

In the value expression of "being curious/being a researcher (item 53)," the analysis results presented that there was a significant difference between the value prio-rities teachers require students to have, the value priorities families require students to have and value

Table 20. One-way variance analysis results of the data obtained from the 53rd Item of Schwartz's Value Inventory performed with families, teachers, and students.

Source of Variance	Sum of Squares	df	Mean Square	F	p	Significant Difference
Intergroup	139.384	2	69.692	23.494	.000	1 – 2, 1 – 3
Intragroup	1061.967	358	2.966			
Total	1201.352	360				

p<0.05 (1=Parent, 2=Teacher, 3=Student).

Table 21. One-way variance analysis results of the data obtained from the 57th Item of Schwartz's Value Inventory performed with families, teachers, and students.

Source of Variance	Sum of Squares	df	Mean Square	F	p	Significant Difference
Intergroup	160.089	2	80.044	23.433	.000	1 – 2, 2 – 3
Intragroup	1222.881	358	3.416			1 - 3
Total	1382.970	360				

p<0.05 (1=Parent, 2=Teacher, 3=Student).

priorities of students ($F_{(2,358)}$=23.494, *p<0.05*). When the interdivisional differences were analyzed according to Scheffe test results, the parents (M=5.03, SD=2.33) require the value of being curious/being a researcher to be given less priority rather than teachers and students, and no significant difference was determined between the priorities of teachers (M=6.51, SD=0.88) and students (M=6.17, SD=1.36) (Table 21).

In the value expression of "one being fond of requests (item 57)," the analysis results presented that there was a significant difference between the value priorities teachers require students to have, the value priorities families require students to have and value priorities of students ($F_{(2,358)}$=37.404, *p<0.05*). When the inter-divisional differences were analyzed according to Scheffe test results, whereas the students (M=6.33, SD=1.30) were noticed to be given more priority to the value of being fond of their requests rather than teachers (M=5.31, SD=1.48), the teachers were also determined to be given more priority to this value rather than parents (M=4.85, SD=2.45).

DISCUSSION AND CONCLUSION

Consequently, no significant difference was found between value priorities teachers require students to have, the value priorities families require students to have and value priorities of students according to the whole value expressions in Schwartz's Value Inventory. However, when the items in the scale were analyzed one by one, some significant differences were found between parent-teacher, teacher-student, and student-parent in some value expressions. As is also understood from this, some

values requested by parents to be in their children primarily are not requested by teachers or children; some values requested primarily by teachers to be in students are not requested by parents or students; and the values given priority by the students are not requested primarily by parents or teachers.

Whether items include difference or not according to the 57 value expressions of the scale were as: The priorities parents require students to have, the priorities teachers requires students to have, and priorities of students correspond to each other in the value expressions such as, inner peace, freedom, a spiritual life, loyalty, social order, a meaningful life, being polite, self-esteem, returning the favor, creativity, a world in peace, love, self-control, family safety, integrity with nature, being virtuous, a beautiful world, social justice, being independent, being moderate, being modest, protecting the environment, esteeming the parents and olds, being healthy, being competent, accepting the world on one's share, being honest, protecting one's appearance in the society, being intelligent, being helpful, enjoying life, being responsible, being forgiving, being successful and being clean. However, according to the rating between 1 and 7 (the highest priority is 7, the lowest priority is 1), these priorities were noticed to be low in some items, and as high in the some others. According to Raths et al. (1978: 31-58), "Priority and indicators of values are determined according to purposes, needs, interests, feelings, beliefs, and worries." With reference to this explanation, it is possible to say that purposes, needs, interests, requests, feelings, beliefs, and worries of parents, teachers, and students are close to each other in the value expressions in items 2nd, 5th, 6th, 7th, 8th, 10th, 11th, 13th, 14th, 15th, 16th, 17th, 19th, 20th, 22nd, 24th, 26th, 28th,

29th, 30th, 31st, 32nd, 36th, 38th, 40th, 42nd, 43rd, 44th, 45th, 46th, 48th, 49th, 50th, 52nd, 54th, 55th and 56th (the item numbers corresponding to aforementioned value expressions) which are all included in Schwartz's Value Inventory.

In value expression in the 1st, 3rd, 4th, 9th, 12th, 18th, 21st, 23rd, 25th, 27th, 33rd, 34th, 35th, 37th, 39th, 41st, 47th, 51st, 53rd and 57th items, the priorities parents required students to have, the priorities teachers required students to have, and priorities of students did not correspond with each other. In this sense, teachers were noticed to require students to have values such as "equality," "privacy/respect for special life," rather than parents and students at a high rate. It was also specified that the parents requested students to have the value of being religious in terms of priority rather than teachers and students. And the students were noticed to give more priority to the values such as "a changeable life," "being courageous, looking for adventure and risk," rather than parents and teachers.

Whereas parents and students were noticed to require the students to have values such as "having a social power," "being rich," "social prestige," "being ambitious," and "being influential" rather than teachers, no significant difference was determined between each other (parent – student). Whereas teachers and students required the students to have values such as being loyal, choosing one's own purposes, being curious/a researcher rather than parents, no significant difference was found between each other (teacher – student). Whereas the parents and teachers were noticed to require the students to have values such as respect for traditions, being open-minded, being submissive at a higher rate rather than students, no significant difference was determined between each other (parent-teacher). Apart from these, students require having the values of "pleasure," "an exciting life," more prior rather than the parents and teachers, and the parents require their children to have these values more than teachers. The parents also require the students to have the value of "having an authority" rather their own priorities and the one which teachers require the students to have. Students required to give more priority to the value of "being keen on their requests" rather than the one which teachers and parents require students to have. Both teachers and students require giving more priority to this value rather than parents.

The values can only be efficient when in a consistency with the requests of the person acquiring them (Simon et al., 1972, p. 16). It cannot be developed through obliging the individuals to memorize the words they do not understand or are not interested in. Therefore, if the learner does not require the aforementioned value or does not accommodate this value, integration with the value cannot be provided (UNESCO, 2005, p. 31-32). From this point of view, in order for the provided values training to achieve its purposes, knowing he requests, needs, and

value priorities of the acquirer is important.

Another important aspect in training of values is family and school cooperation. This is because parents are the primary character trainers of children. Parents should consider schools as partners providing ethical values and strong characters to their children. And this expresses the regular and transparent communication between the school and parents (Bolay, 2007; Ryan, 1995). If this communication cannot be provided, the values acquired at home and the ones acquired in school cannot compromise with each other. And this makes children to experience value conflict.

In this study, the value priorities of parents, teachers, and students within a specific group were revealed. However, in order to pass a more reliable judgment on the subject, the research is suggested to be carried out with different groups in different provinces and schools. Furthermore, whether the revealed value priorities cause a conflict between parents, teachers, and students is also suggested to be researched.

Conflict of Interests

The authors have not declared any conflict of interests.

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