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Multiple Intelligence Distribution of Prospective Teachers: The case at Yıldız Technical University

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Abstract
The aim of this study is to find out whether intelligence distributions differ or not according to gender and departmental variables by determining the dominant intelligence (Multiple Intelligence) distributions of prospective teachers studying at Yıldız Technical University Education Faculty. The population of the research constitutes the prospective teachers majoring at Yıldız Technical University Education Faculty in 2014-2015 academic year. The study group contains a total of 254 prospective teachers selected by random cluster sampling method who have been educated in preschool teaching of primary education department (64 people), mathematics teaching (64 people), science teaching (92 people) and CITE (34 people). In this research conducted based on the screening model, Multiple Intelligence Scale developed by Çeliköz et al. (2008) and composed of 11 different situations and 88 questions was used in order to determine the dominant intelligence areas of the prospective teachers. According to the results obtained from the research, respectively the mathematical-logic, verbal, interpersonal and intrapersonal intelligences of YTU prospective teachers are found to be more dominant and their naturalist and visual intelligence are among the lowest intelligence areas. On the other hand, the sex of prospective teachers is an effective factor on the areas of intelligence and while females have more visual intelligence than males, males are more kinesthetic (bodily). The departments or branches in which the prospective teachers are educated also affect the dominant intelligence areas; Math-logic and bodily-kinesthetic intelligences of prospective teachers in the department of CITE and Mathematics are more dominant than prospective teachers in the department of preschool teaching. On the basis of the results obtained in the research, suggestions have been made for education system, higher education and learning-teaching processes.
Key words: Multiple intelligence theory, prospective teachers

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INTRODUCTION

Education systems have to educate individuals in accordance with the conditions of the time and the needs of the society. These individuals are expected to acquire the basic skills required by the age through the education they receive. Today's accepted skills are the ones that require the use of individuals' intelligence, such as high-level thinking, generating ideas, creating products, causal thinking, and solving the problems that are encountered. Intelligence is considered to be an important factor that determines the differences between individuals and that has the ability to influence learning. Therefore, it has become one of the most studied concepts in education (Oral, 2004). By observing the mental structures and behaviors of individuals, many researchers have put forward ideas on intelligence and tried to explain it. According to this, intelligence is sometimes expressed as a score from a test, sometimes adaptability to the environment, and sometimes the ability to solve problems (Bümen, 2005).

Howard Gardner, with the Multiple Intelligence Theory (MIT) he developed in 1983, introduces a new perspective on intelligence and defines intelligence as the capacity of a person to produce a product valued in one or more cultures, the ability to produce effective and efficient solutions to problems encountered in real life, the ability to discover new or complex structured problems to be solved (Saban, 2002). According to Gardner (1993), intelligence has many dimensions that can not be explained by the classical IQ tests. These dimensions called intelligence areas consist of Verbal-linguistic intelligence, Logical-Mathematical intelligence, Visual-Spatial intelligence, Interpersonal intelligence, Intrapersonal intelligence, Musical-Rhythmic intelligence, Bodily-Kinesthetic intelligence and Naturalist intelligence. According to MIT, all of these intelligence areas are of equal value, one or more of which is no more important than the others. All individuals have all of the eight intelligences. However, they show a tendency to use one or more of these intelligence types. Intelligence areas often work together and in a complex structure. In other words, the areas of intelligence interact with each other and can affect one another. In this case, it is possible to develop weak areas of intelligence to a certain extent when it is given the opportunity to improve (Armstrong, 2009; Saban, 2002; Walters, 1992).

Multiple intelligence can be said to be a theory for explaining individuals' intelligence areas and development, as well as pointing to the learning process with learning styles (Callahan and Ark., 1995; Fasko, 2001). According to this theory, it is possible to reveal and develop the interests, abilities, latent powers of the individuals having different intelligences through alternative educational arrangements. According to the MIT which does not accept ineligible or unsuccessful student qualifications, not every individual has the same interests and abilities. Thus, individuals learn not with the same or a single method but with different and rich methods (Gardner, 1993, Göğebakan, 2003). When educational activities are organized for students' intelligence types, each student can learn and succeed (Ekici, 2003). Therefore, student characteristics should be taken into consideration in the educational activities to be organized. In order to be able to effectively transform the MIT into practice, it is primarily necessary to determine the strengths and weaknesses in the intelligence areas of the individual characteristics of the students.

Identification of dominant and non-dominant intelligence areas of students contributes to better recognition of themselves, their strong, weak and improvable aspects, their ability to correctly identify their specific occupations or professional preferences; it also enables teachers to identify students, direct them, and effectively organize learning-teaching processes and environments. For this reason, determining the intelligence areas of the students is an important practice that should be done at certain stages of the education process. However, it is seen that there is no systematic practice in measuring the intelligence areas of the students in the Turkish national education system. Our country has been giving education based on multiple intelligence since 2005, but efforts to determine students' intelligence areas have been left to the initiative of school administrators and teachers. Thus, with the personal endeavors of teachers and administrators, these practices can or can not be successfully accomplished. It can be said that these efforts are mostly carried out in primary education, partly at the level of secondary education, but they are not common at university level. However, since 2005, all educators have taken into consideration and tried to apply the predictions of MIT based on the educational programs. Educational reflections of these applications constitute the subject of many researches.

The research called "Evaluation of Multiple Intelligence Theory-Based Studies: The Case of Turkey", conducted by Karabay and his colleagues in 2011 using document analysis has identified that 228 master / doctoral thesis on MIT were done in the thesis database of the Higher Education Council between 1998 and 2010 (as of June). According to the research findings of 176 thesis, it has been found that 85 studies related to the courses in the programs in primary education, 22 studies in secondary education and 7 studies in undergraduate education were conducted. Measuring instruments were used for determining the intelligence profiles (48), organizing classroom activities according to intelligence profiles (13), revealing the relationship of intelligence areas to some variables (13), monitoring development / change in multiple intelligence areas (12). While the experimental method was used in 105 of the thesis, screening method was used in 39 of the thesis. According to the research results of Karabay and colleagues (2011), it can be said that the applications of MIT are performed at the primary and secondary level, and the number of researches at the level of higher education is very low. Its reason may be that MIT is perceived as a theory which is usually addressed to the child and adolescent group and is not regarded as essential for the undergraduate level. Hence, it is seen that there are more researches in the literature in which descriptive methods are preferred rather than experimental methods in the studies dealing with MIT at the undergraduate / postgraduate level and in which the relationship between some variables and multiple intelligences of students are examined or in which student profiles are tried to be determined (Akkaya and Memnun, 2015; Aslan and Kara, 2013; Deniş and Genç, 2010; Doğan and Alkış; 2007; Durmaz, 2005; Durmaz and Özyıldırım, 2005; Güneş and Gökçek, 2010; Gürbüzoğlu-Yalmancı, 2011;Hamurcu, Günay and Özyılmaz, 2002; İzci and Sucu, 2014; Kesercioğlu and Serin, 2005; Kocabaş, 2003; Korkmaz, Yeşil and Aydın, 2009; Ocak, Ocak and Leblebiciler, 2005; Okur, Yalçın and Sezer, 2013; Oral, 2001; Yenice and Aktamış, 2010; Yenilmez and Bozkurt, 2006; Yücel, İnce and Oral, 2006).

Among these prospective teachers continuing the teaching programs in the Faculty of Education, intelligence areas of the prospective teachers in the classroom teaching program have been determined the most (Doğan ve Alkış; 2007; Durmaz, 2005; Durmaz ve Özyıldırım, 2005; Gürbüzoğlu-Yalmancı, 2011; Hamurcu, Günay ve Özyılmaz, 2002; Korkmaz, Yeşil ve Aydın, 2009; Ocak, Ocak ve Leblebiciler, 2005; Okur, Yalçın ve Sezer, 2013; Yenice ve Aktamış, 2010),science teaching program (Deniş ve Genç, 2010; Durmaz, 2005; Durmaz ve Özyıldırım, 2005; Gürbüzoğlu-Yalmancı, 2011; Hamurcu, Günay ve Özyılmaz, 2002; Korkmaz, Yeşil ve Aydın, 2009) and Mathematics teaching program followed this (Akkaya ve Memnun, 2015; Ocak, Ocak ve Leblebiciler, 2005; Oral, 2001; Yenilmez ve Bozkurt, 2006).

In the literature reviews, it has been stated that the intelligence areas that are stronger should be identified rather than the deficiencies or failures of the students in the education process, and their weaknesses should be

strenghtened by directing them to activities and studies in which these intelligence areas are at the forefront (Saban, 2002), the intelligence areas of the prospective teachers should be harmonised with their department and their intelligence areas required by the teaching profession (Ekci, 2003, Köse, 2012), teachers should have an acceptable level in all areas of intelligence (Akkaya and Memnun, 2015) and teachers should not only adopt teaching approaches appropriate to their own intelligence. Therefore, it is important to determine the intelligence areas of the prospective teachers and to make educational arrangements in line with this data. It is considered that this research will be able to meet the needs and make all related contributions because of the lack of a multiple intelligence profile study on prospective teachers of pre-school, science, mathematics and computer and instructional technology education programs at Yildiz Technical University Faculty of Education.

Accordingly, the general purpose of the study is to reveal whether dominant intelligence areas differ or not according to gender and department by determining the relationship between dominant intelligence areas of YTU prospective teachers according to the Multiple Intelligences theory. In response to this general objective, answers to the following questions were sought:
1. How are the dominant intelligence distributions of YTU prospective teachers?
2. Do the areas of dominant intelligence differ according to the genders of YTU prospective teachers?
3. Do the areas of dominant intelligence differ according to the departments where YTU prospective teachers study?

METHOD

This research was conducted based on the screening model. In screening models, an existing situation is described as it exists. In this research, the current status of the dominant intelligence areas of YTU prospective teachers was tried to be identified and described as it exists. Their current intelligence areas was not tried to be affected or altered in any way. Because the descriptions are based on the views of the students, the research is descriptive.

The population of the study constitutes the prospective teachers in the department of CITE and elementary departments in the education faculty of YTU in the 2014-2015 academic year. Participants were selected randomly from the population of the study by random cluster sampling method, and their departments were regarded as the cluster. A total of 254 teachers candidates who were in the school on the day of the data collection and wanted to take part in the research voluntarily and complete the measurement tool correctly were included in the sample. 214 (84.25%) of the prospective teachers were females and 40 (15.75%) were males. 64 (25,19%) of the candidates were in preschool teaching program, 64 (25,19%) were in mathematics teaching program, 92 (36,22%) were in science teaching program and 34 (13,39%) were in CITE teaching program.

Data Collection Tool

In the research, " Multiple Intelligence Scale for second Stage of primary education and Over " prepared by Çeliköz et al(2008) was used as a date collection tool. The scale was prepared taking into account the general and widespread behaviors, the certain indicator of multiple intelligences, which include the common living areas and cover most of the lives of all individuals. The scale, consisting of 88 questions, was prepared on a sequential scale type and focused on 11 basic situations. These are; (1) leisure activities, (2) lessons learned during their education, (3) learning methods, (4) skills, (5) tools and materials they use most in daily life, (6) game preferences, (7) professional areas, (8) areas of problems that are most disturbing in life, (9) places to go or visit, (10) the easiest things they can do and (11) environments or situations that they hate or dislike most. The scale identifies the weight of each intelligence area in the whole by comparing and controlling 8 areas of skill with each other for a total of 288 times.

Opinions of 42 experts were taken to determine the scope and face validity of the scale. Principal Component Analysis was used to determine the factors and factor loadings in construct validity of the scale. The explanatory rate of the total variation for measuring the 8 factors of the scale (the intelligence area) is 100%. For the predictive validity, the scale was applied to 228 instructors working at different faculties of universities. According to the results of variance analysis, it was stated that the characteristics of the instructors whose primary skill areas are specific or known can be predicted by 99% by the scale, and it was expressed that the scale has predictive validity. In addition, the contribution of each factor to the total variance is very close to each other and each factor contributes about 12% to the total variance.

For reliability studies, the scale was applied to 737 students who were studying at different education levels of primary and secondary schools. The reliability was examined by test-retest method to determine whether the

scale gave consistent results; and the correlation values among intelligence scores were found to be between 0.90 and 0.98. In addition, to determine the internal consistency of the scale, cronbach alpha and split half reliability were also examined. 0.99 and 0.98 reliability coefficients were reached respectively. Finally, it was researched whether there is a meaningful difference between the lower and upper groups in terms of the eight intelligence areas as another reliability indicator of the scale. It was determined that there is a significant difference between the lower and upper groups at 0.001 level (lowest t = 11.91; p <0.001, highest t = 16.12; p <0.001) in all intelligence areas, and it was stated that the scale has a very distinctive feature and can identify the students with both low and high intelligence (Çeliköz et al., 2008).

Data Analysis

The data collected in the study were transferred to the SPSS program and the profiles of the students were described by calculating frequency, percentage, minimum-maximum scores, arithmetic mean and standard deviation scores in line with the sub-objectives of the research. Independent t-test and one-way analysis of variance were used in the comparison of gender and program types. In interpretation of the data, the level of significance was taken as $\alpha = 0.05$ and interpreted as $\alpha = 0.01$.

FINDINGS AND DISCUSSION

The findings obtained in line with the sub-objectives of the research and the interpretations based on the findings are as follows.

1. How are the dominant intelligence distributions of YTU prospective teachers?

In the study, firstly, the dominant intelligence profiles of prospective teachers were examined, and their low and high intelligence areas and dominant intelligence distributions were tried to be described. Table 1 gives the descriptive statistical results of dominant intelligence areas of YTU prospective teachers.

Table 1.
The descriptive statistical results of dominant intelligence areas of YTU prospective teachers

Intelligence Areas	N	$\bar{x}$	sd	Min.	Max.	∑p	Sequence Number
Verbal	254	55,82	13,11	18,00	81,00	6810,00	2
Mathematical	254	59,11	12,76	24,00	86,00	7211,00	1
Musical	254	44,75	13,67	19,00	86,00	5460,00	5
Visual Spatial	254	43,51	12,46	19,00	77,00	5308,00	7
Intrapersonal	254	52,97	11,65	18,00	79,00	6462,00	4
Interpersonal	254	55,15	9,60	34,00	81,00	6728,00	3
Bodily	254	44,34	12,77	22,00	79,00	5409,00	6
Naturalist	254	40,36	10,32	22,00	66,00	4924,00	8

Very low	(1) 11.00 - 26.40
Low	(2) 26.41 - 41.80
Medium	(3) 41.81 - 57.20
High	(4) 57.21 - 72.60
Very high	(5) 72.61 - 88.00

As shown in Table 1, the primary intelligence area of the YTU prospective teachers in the scope of the research is mathematical-logic, and the lowest intelligence area is the naturalist intelligence. However, it can be said that all the intelligence fields are classified as "medium" level among the prospective teachers, only the naturalist intelligence area is in the "low" category, but this intelligence area is still close to the "medium" level. When all the students are evaluated in terms of total scores, it is seen that the total score ($\Sigma p = 7211.00$) for the logic-mathematical intelligence area is the highest score and the naturalistic intelligence area is the lowest score ($\Sigma p = 4924.00$). When the dominant intelligence areas are studied within the prospective teachers who have the lowest (minimum) and highest (maximum) scores, the lowest scores are "intrapersonal" and "verbal intelligence" (min = 18.00) and the highest scores are "logic-mathematics" and "musical intelligence" (max = 86). When the score averages of the dominant intelligence areas of prospective teachers are examined, it is seen that the logical-mathematical intelligence area (X = 59,11) ranks first, the verbal intelligence area (X = 55,82) ranks second, and interpersonal intelligence area (X= 55,82) ranks third.

The reason why the prospective teachers' verbal and mathematical intelligence area is more dominant than other intelligence areas can be said that these intelligence areas constitute the most basic intelligence areas in the Turkish Education System and that prospective teachers are placed in a higher level with the type of points on

which these intelligences are based. In the education system, the central exams which function as placement according to the success of the students in the transition from the secondary school to the high school or from the high school to the higher education make the students' skills in these two areas the most important in all education stages, and education activities are being carried out to develop these intelligence areas. Continuing to apply traditional methods in education due to central exams which contain all the intelligence areas of individuals and which are considered to be the success indicators of schools and students affect the development of verbal and mathematical intelligence areas positively.

According to the finding obtained in the direction of the first sub-objective of the study, the prospective teachers show a distribution "close to the medium" in the area of naturalist intelligence and a distrubition at "medium" level in all the other areas of intelligence and exhibit a homogeneous structure. In some researches, it is stated that teachers have adopted teaching approaches appropriate to their own intelligence type and they have preferred to use their own dominant intelligence rather than student needs in course activities (Ekici, 2003, Köse, 2012). Yet, prospective teachers must have an acceptable level in all the intelligence areas in order to be able to provide the development of the students and organize environments with the methods, techniques, materials that appeal to all intelligence areas when they become teachers. The finding of the research that the intelligence distributions of prospective teachers are similar, suggests that they are prone to activities that can address all areas of intelligence. This finding which was obtained when researches were examined is consistent with the findings of different researches conducted on prospective teachers. The researches conducted by Deniş and Genç (2010), Doğan and Alkış (2007), Durmaz and Özyildirim (2005), Hamurcu, Günay and Özyıldırım (2002), Ocak, Ocak and Leblebicier (2005) and Yalmancı (2011) have reached the conclusion that the level of students having these types of intelligence is close to each other.

2. Do the areas of dominant intelligence differ according to the genders of YTU prospective teachers?

In the study, secondly, whether the dominant intelligence distributions of the prospective teachers differ according to gender was examined and dominant intelligence distributions regarding comparisons are given in Table 2.

Table 2
T-Test Results regarding Comparison of Dominant Intelligence Areas of YTU Prospective teachers *according to Gender*

Intelligence Areas	Gender	N	$\overline{X}$	sd	t	P
Verbal	Female	214	55,66	12,80	0,350	0,727
	Male	40	56,93	15,61		
Mathematical	Female	214	58,81	11,81	0,484	0,635
	Male	40	61,20	18,59		
Musical	Female	214	45,13	13,54	0,812	0,419
	Male	40	42,07	14,79		
Visual	Female	214	44,20	12,50	2,017	**0,042***
	Male	40	38,60	11,36		
Intrapersonal	Female	214	53,15	12,20	0,708	0,485
	Male	40	51,67	6,70		
Interpersonal	Female	214	55,64	9,68	1,508	0,134
	Male	40	51,67	8,52		
Bodily	Female	214	42,93	12,17	3,304	**0,001***
	Male	40	54,33	12,90		
Naturalist	Female	214	40,49	10,38	0,357	0,722
	Male	40	39,47	10,13		

P<0.05

The (*)sign indicates that the difference between opinions is significant.

When Table 2 is examined, it is understood that there are differences between dominant intelligence levels and distributions of male and female students. According to the t-test results to determine whether these differences are meaningful, there were significant differences between the male and female students in the visual ($t = 2.017$; $p < 0.05$) and bodily-kinesthetic intelligence ($t = 3.304$, $p < 0.05$) areas. It is observed that the scores of females ($X = 44,20$) were higher than males ($X = 38,60$) in the area of visual intelligence, male students ($X = 42,93$) had higher scores than female students ($X = 54,33$) in bodily-kinesthetic intelligence areas.

Bodily-kinesthetic intelligence including the capasity to problem-solve, produce, manipulate materials by using all the body and limbs effectively is an ability of expressing oneself with gestures, using brain and body coordination effectively. It can be said that the development of bodily-kinesthetic intelligence which is reflected as being active in living space (Hoerr, 2002; Yavuz, 2001) and a success in power-force-requiring operations is more supported in boys since childhood. Indeed, many studies on the physical differences between boys and girls have demonstrated the superiority of boys based on strength and physical activity. In his research on children between the ages of 60-72 months, Çifçi (2011) found that girls and boys' game preferences and game activities differ according to sex. According to the results of Çifçi's (2011) research, boys prefer games that require speed, strength and endurance, while girls prefer games that require parental role and interactions within the group. While boys prefer activities in large movement areas with larger groups, girls prefer games that can be played in very small areas with smaller groups. In addition, in his study comparing the physical activity levels of girls and boys aged 9-10 and 11, Taşkınöz (2011) found that boys had a higher level of hand grip strength and power performance, while girls are at a higher level in having flexible structure. On the other hand, in his study titled "Sexually Linked Psychological Differences and a Comparison on Turkish Children", Ünal (1991) points out that boys are more successful in jobs that require strength and muscle strength, and girls are more successful in jobs that require fine motor skills. According to the finding obtained in the research, the reason for the boys' bodily-kinesthetic intelligence to be higher than girls may be mainly due to biological factors. In addition, it can be said that the social roles and expectations attributed to girls and boys, namely the cultural and environmental factors, are influential. It can be said that boys' bodily-kinesthetic intelligence areas are more dominant than girls. Because boys take on the tasks, duties and responsibilities in which they can use the power and muscle movements in society. This finding obtained in the research is in parallel with the results of Ataş's (2011) research on the relationship between university students' data on student selection and placement tests and their dominant intelligence areas, and İzci ve Sucu's (2014) research on the multiple intelligence profiles of university students and Doğan and Alkış's (2007) research on class prospective teachers.

Another area of intelligence that differs among the intelligence areas in the research is visual intelligence. Visual intelligence area is the ability to see shape, color, form and touch with the "mind's eye" and to transform them into concrete representations of painting. This intelligence includes the abilities such as individuals' mental imagination, envisioning, locating and navigating, predicting relations between objects in space correctly, making mental manipulations with images and recognizing similarities and differences between objects (Bumen, 2005). The researches show that the visual intelligence of boys is biologically superior to that of girls because of testosterone hormone in boys (Arıkan, 2011). It is stated that women are not as successful as men especially in finding directions, predicting the relationships between objects in space correctly, parking between two cars, seeing three-dimensionally (Arıkan, 2011; Tüzün, 2012). These findings which claim that boys' visual intelligence areas are more developed do not comply with this research result. It can be argued that girls' visual intelligence areas are more dominant than boys because of cultural and environmental factors. In terms of social roles, expectations and responsibilities attributed to girls, the fact that girls are more neat and precise, girls have higher aesthetic concerns than boys, girls give more importance to details in their living space and clothes than boys may be the reason why their visual intelligences are more developed than boys. This finding that has been reached in the research and shows that sex differs in favor of girls in the area of visual intelligence complies with the findings of Yücel, İnce and Oral (2006), İzci and Sucu (2014), Altınok (2008), Pehlivan (2008) and Ataş (2011) .

3. Do the areas of dominant intelligence differ according to the departments where YTU prospective teachers study?

Thirdly, whether the dominant intelligence areas of the prospective teachers differ according to the departments where they study was examined in the study, and dominant intelligence distributions regarding the comparisons are given in Table 3.

Table 3
ANOVA Results Regarding Comparisons of Dominant Intelligence Areas of YTU Prospective teachers *According to Their Departments*

Intelligence Areas	Score Type	N	$\overline{x}$	sd	F	P
Verbal	Mathematics	64	52,88	12,41	,867	,461
	Preschool	64	58,03	13,30		
	Science	92	56,37	12,54		
	CITE	34	55,67	16,51		
Mathematics	Mathematics	64	64,06	11,27	4,347	**,006***
	Preschool	64	53,44	13,31		
	Science	92	58,72	10,11		
	CITE	34	62,50	18,35		
Musical	Mathematics	64	44,44	12,15	,552	,648
	Preschool	64	46,78	15,27		
	Science	92	44,57	14,10		
	CITE	34	40,92	11,86		
Visual	Mathematics	64	42,09	12,88	1,303	,277
	Preschool	64	47,19	12,77		
	Science	92	42,00	11,99		
	CITE	34	43,25	11,73		
Intrapersonal	Mathematics	64	52,28	10,63	,935	,426
	Preschool	64	55,91	12,76		
	Science	92	51,67	12,18		
	CITE	34	51,92	8,70		
Interpersonal	Mathematics	64	55,34	10,96	,018	,997
	Preschool	64	55,28	9,96		
	Science	92	55,04	8,83		
	CITE	34	54,67	8,70		
Bodily	Mathematics	64	46,38	14,16	2,108	**,040***
	Preschool	64	39,75	11,14		
	Science	92	45,13	11,70		
	CITE	34	48,08	15,10		
Naturalist	Mathematics	64	38,53	9,82	1,137	,337
	Preschool	64	39,56	10,87		
	Science	92	42,52	10,41		
	CITE	34	39,08	9,48		

P<0.05
The (*) sign indicates that the difference between opinions is significant.

When Table 3 is examined, it is observed that there are differences in the areas of logic-mathematics and bodily-kinesthetic intelligence between the dominant intelligence levels and distributions of prospective teachers attending different teaching programs in the Education faculty. Significant differences were found in the areas of logic-mathematics (F = 4,347; p <0.05) and bodily-kinesthetic intelligence (F = 2,108; p <0.05) according to the results of one-way analysis of variance to determine whether these differences were meaningful. In the area of logic-mathematical intelligence, while the scores of departments of Mathematics teaching (X = 64,06), CITE (X = 62,50) and Science Teaching (X = 58,72) are at “high” level, the mean of the pre-school teachers' logic-mathematical intelligence score (X = 53,44) is at "medium" level and this is the source of the difference. A similar result is also observed in the area of bodily-kinesthetic intelligence. According to this, while the mean scores of the departments of the CITE (X = 48,08), Mathematics teaching (X = 46,38) and Science teaching (X = 45,13) are at "medium" level, the mean of the pre-school teachers' score (X=39,75) is at "low" level, and the department of preschool teaching is again the source of the difference.

According to these findings, it can be said that the reason for the difference among the departments of logic-mathematical intelligence is natural. Because the Mathematics, Science and CITE departments consist of the contents that are mainly based on logic-mathematical intelligence and are intended to improve this intelligence.

The pre-school teaching program has a more verbal structure. The prospective teachers' current levels of logic-mathematics intelligence in these departments may have been affected by the education they have received before the university, by improving themselves in areas appropriate for their intelligence for university exams, by being placed in departments appropriate for their intelligence and by the programmes they continued at university. In this case, it can be considered normal that prospective teachers in the pre-school teaching department are at a lower level in the area of logic-mathematical intelligence than Science, Mathematics and CITE departments which have more numerical weight. In fact, although there is no significant difference between them, when the verbal intelligence area of the pre-school compartment is compared to the other departments, the fact that the preschool department is at the "high" level while the other sections are at the "medium" level confirms that the prospective teachers' education they took according to the situation of being numerical or verbal influenced their intelligence areas.

In literature, studies in which intelligence areas of prospective teachers in different departments are addressed also support this research findings. Hamurcu, Günay and Özyılmaz (2002), Yalmancı (2011), Korkmaz, Yeşil and Aydın (2009) concluded that the science prospective teachers; Ocak, Ocak ve Leblebiciler (2005), Abacı ve Baran (2007) found that Mathematics prospective teachers, Okur, Yalçın and Sezer (2013) concluded that the students in numerically weighted departments from different faculties, Oral(2001)concluded that students in the fields of Mathematics and Science(physics, chemistry, biology) in Education, Science and Literature Faculties and Physical Education Academy, İzci ve Sucu (2014)found that the students of Physics, Chemistry, Biology and Mathematics departments in the Science and Literature Faculty have a higher average of logical-mathematical intelligence scores than the students in the other departments.

Another area of intelligence that is determined that there are differences in the dominant intelligence areas of the prospective teachers according to their departments is bodily-kinesthetic intelligence. This difference stems from the Department of pre-school teaching. According to the findings, pre-school prospective teachers' bodily-kinesthetic intelligence is lower than Science, CITE and Mathematics prospective teachers. However, pre-school teachers have to use the body language skillfully, use the body to solve problems, organize drama activities and play animated games with children in order to fulfill their tasks successfully. This is closely related to the development of their bodily-kinesthetic intelligence areas. This finding obtained from the research reflects a negative situation for pre-school teachers. This is because of the fact that the prospective teachers whose area of bodily-kinesthetic intelligence is not sufficiently developed prefer this department at university, that the education system can not fully fulfill the "guidance" function, and that there is no application to improve this intelligence area in the courses of the pre-school teaching program or that the courses are given more theoretically in classes. Furthermore, the fact that preschool prospective teachers are largely composed of women and that the women' s bodily-kinesthetic intelligence is lower than men may have affected this result. Both in this research and in the related literature (Ataş, 2011, Doğan and Alkış, 2007, Scout and Sucu, 2014, Kaur and Chhikara, 2008), the effect of gender on bodily-kinesthetic intelligence is emphasized. In this study, the fact that there are too few male prospective teachers in pre-school department may have caused the average score of the bodily-kinesthetic intelligence area to decrease. When the researches in the literature are examined, in their research Akkaya and Memnun (2015) stated that Mathematics prospective teachers, Deniş and Genç (2010) and Kormaz, Yeşil and Aydın (2009) indicated that Science prospective teachers and Güneş and Gökçek (2010) stated that graduate students in Science and Mathematics have medium and high levels of bodily-kinesthetic intelligence areas. The results obtained from these studies support this research result.

CONCLUSION AND SUGGESTIONS

In this study, the intelligence distributions of the prospective teachers studying in CITE and Pre-school, Mathematics and Science teaching programs in Primary Education Department at Yıldız Technical University are determined and the differences between the intelligence areas of prospective teachers and their gender and departments are revealed. The results achieved in the research:

1. Dominant intelligence areas of prospective teachers are close to the "medium" level in the naturalist intelligence field, and at "medium" level in all other intelligence areas and exhibit a homogeneous structure.
2. Intelligence areas of prospective teachers differ in visual and bodily-kinesthetic intelligence according to their gender. In visual intelligence, females are in higher levels than males, while males are in higher levels than females in bodily-kinesthetic intelligence. There is no gender effect in other areas of intelligence.
3. According to the departments where the prospective teachers are educated, their fields of intelligence differ in the logic-mathematics and bodily-kinesthetic intelligence areas. Prospective teachers of Science, CITE and Mathematics departments are in higher levels than pre-school prospective teachers both in logic-mathematics and bodily-kinesthetic intelligence. There is no effect of the department in other areas of intelligence.

The following suggestions were developed based on these research findings:

- The distribution of teachers' intelligence areas should be at a minimum "medium" level in order to make adjustments that can be addressed to all students. Therefore, firstly, measurements can be performed to determine the intelligence areas of prospective teachers, and opportunities for self-recognition and evaluation can be presented to them by developing individual profiles of prospective teachers. Thus, prospective teachers can make individual efforts to improve their low-level intelligence areas.

- The activities that support the bodily-kinesthetic intelligence of prospective teachers and practice-oriented arrangements can take place in the pre-school teaching program.

- Appropriate environments can be provided for the development of weaker intelligence areas by identifying multiple intelligence areas of prospective teachers on the basis of classroom.

- In placement tests for Education Faculties of Universities, skill exams which measure the multiple intelligence areas required by the teaching profession can be applied for prospective teachers.

- Multiple intelligence distributions of other teaching programs that are not in the scope of this research can be examined.

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