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The relationship between elementary school teachers' personality types and their learning and instructional strategies

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Abstract

This study, considering certain variables, aimed at determining the relationship between elementary school teachers' personality types and the strategies they used in the learning and instructional process. The study designed with the singular and relational survey model was carried out with 580 elementary school teachers and field teachers from the city of Eskisehir in Turkey. The data of the study obtained using three inventories: The MBTI Form G, Learning strategies inventory and Instructional strategies inventory. At the process of data analysis chi-square, individual samples t-test, and one-way ANOVA statistical test were used. Some of the results are as follows: Personality types of the number of teachers are grouped extraversion, sensing, thinking=feeling and judging; teachers use the interpretation and repetition strategies more than other learning strategies; learner-based instruction strategies preferred by teachers and they use the inquiry, project, problem solving, sample event and questioning strategies more than other process strategies. The results showed when the learning and instructional strategies used by teachers are taken into consideration with respect to their personality types; it could be stated that they favor intuiting and thinking while learning and favor intuiting, thinking and feeling while teaching.

Keywords: MBTI profile, personality types, learning strategies, instructional strategies, teacher traits.

1. Introduction

There are some factors influencing the quality of instructional activities. An important majority of these variables are related to curriculum (Lim, 2002; Hirumi, 2002), instructional environments (Şimşek, 2009), students' characteristics (Gagne, 1988; Silver

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& Hanson, 1998; Sankaran & Bui, 2001; Lim & Kim, 2003; Silver, Strong & Perini, 2007; Erişti, 2011) and teachers' qualifications (Bruner, 1966; Ehrman, 1987; Cano & Garton, 1994).

Teachers' ages, gender, instructional skills, perceptions regarding the instructional process (Marzano, 1992, 1998, 2003), intellectual capacities, tendencies, attitudes (Saskatchewan Education, 1991; Kolb, 1996), professional experiences and their cognitive, affective and kinetic characteristics (Marzano, Pickering & Pollock, 2001; Killen, 2007) are among the variables influencing the quality of the instructional process. In addition, research findings have revealed that teachers' personality traits (Bloom, 1995; Silver, Hanson, Strong & Schwartz, 1998; Moore, 2000; Rushton, Morgan & Richard 2007), the learning strategies they use (Derry & Murphy, 1986; Silver & et.al, 1996; Canady & Retting, 1996) and the instructional strategies they use in the instructional process (Woolfolk, 1998; Moore, 2000; Sankaran & Bui, 2001; Simsek, 2009, 2011) all influence the quality of the instructional process directly (Golay, 1982; Lowen, 1982; Kiersey & Bates, 1984; Arraj & Arraj, 1985; James & Woodsmall, 1988; Myers–Briggs & McCaulley, 1993; Myers, 1998; Silver, Hanson, Strong & Schwartz, 1998; Silver, Strong & Perini, 2007).

Personality could be considered in the first place among the individual characteristics mentioned above as it views individuals in all aspects (Jung, 1971; Schultz, 1990; McCaulley, 1993; Myers, 1998; Wyspianski, 1999). One of the basic reasons for this is that the preferences of teachers with different personality types regarding the instructional and learning processes differ to a considerable extent (Kiersey & Bates, 1984; James & Woodsmall, 1988). Myers and Briggs, who conducted studies on personality based on Jung's (1921, 1971) widely accepted the classification of personality types, stated that teachers with different personality types follow different ways in instructional and learning processes and have different preferences.

As mentioned above, another important variable influencing the quality of the instructional process is related to the instructional and learning strategies that teachers use (Moore, 2000; Şimşek, 2009; Sankaran and Bui, 2001). Learning strategies could be defined as a kind of plan used to achieve the learning goals (Woolfolk, 1998) and as the combination of mental tactics acquired by individuals in a special learning situation to facilitate the development of knowledge and the acquisition of skills (Derry and Murphy, 1986). Research findings also demonstrated that effective learning strategies develop learning (Mayer, 1988); that memory supporters have positive effects on the processes of free recall, associative recall and remembering the series (Gardner, 1987; Weinstein, Zimmerman & Palmer, 1988; Weinstein, 1988; Eggen, 1992).

Instructional strategies are planned activities carried out to organize experiences purposefully and guide learning systematically (Şimşek, 2009), to have instructors apply the instructional methods and techniques according to the subject and to the instructors'

teaching tactics (Saskatchewan Education, 1985, 1991; Instructional strategies, 2009), to carry out the activities regarding the organization of the instructional environment (Silver et. al., 1996), and to start, maintain, evaluate and finalize learning (Canady & Retting, 1996) in order to help students achieve the desired change in performance. The changing conditions force instructors to own new perspectives and approaches regarding teaching and learning and to use various instructional strategies that will make the instructional process effective. In instructional environments in which instructional strategies are effectively used, learners avoid sitting on desks quietly, take part in the instructional process as active participants and as effective listeners and observers who manage their own learning, interact with other learners via cooperative learning activities, participate in learning activities sometimes individually or sometimes in groups which have a varying number of members, determine research or project subjects according to their fields of interest and have rich learning experiences by making good use of printed and online sources.

2. Research questions

The purpose of the present study was to determine the relationship between elementary school teachers' personality types (MBTI profiles) and the instructional and learning strategies they use on certain variables. For this purpose, the following research questions were directed:

1. What are elementary school teachers' personality types and the learning strategies and instructional strategies they use with respect to their gender, professional experience, the field of teaching and the type of school they teach in?
2. Do the learning strategies elementary school teachers use differ depending on their personality types?
3. Do the instructional strategies elementary school teachers use in the instructional process differ depending on their personality types?

3. Method

3.1. Population and sample

The universe of the study included 3520 teachers from elementary schools in the city of Eskisehir in Turkey in 2013. The sample was determined by selecting 20% of the universe with the systematic random sampling method (Cochran, 1977; Groves, 2004). Krejcie and Morgan's (1970) method of determining the sample size were taken as a basis for determining the sample size in the study. The research sample was made up of 580 elementary school teachers. Of all the teachers in the sample, 348 of them were female, and 232 of them were male. With respect to their fields of teaching, 51.7% of them were elementary school teachers; 7% of them were foreign language teachers; 6.4% of them

were Turkish Language teachers, and 5.9% of them were science teachers. The professional experiences of the participating teachers ranged between 6 and 25 years. Lastly, of all the teachers, 82.1% of them were teaching at public elementary schools, and 17.9% of them were teaching at private elementary schools.

3.2. Instrumentation

In the study, the Myers-Briggs Type Indicator (MBTI) G form was used to determine the teachers' personality types. On the contrary to Jung's 8 personality types, Briggs and Myers (1980) developed the 4^2=16 personality profile by adding the definitions of *auxiliary*, *tertiary* and *inferior* besides the dominant personality type to Jung's (1921, 1971) theory of "psychological types, personality types" and created the MBTI inventory depending on these 16 personality profiles. The MBTI profile demonstrates individuals' preferences regarding four personality dimensions (Myers, 1997; Wheeler, 2001). These four personality dimensions were focusing the attention, obtaining information, decision making and handling the outer world. Each MBTI profile is shaped on opposite preferences on the four dimensions of personality. For example, it could be stated that a person with an ESTJ profile (extroverted, sensory, thinker, judger) is *extroverted* in focusing his or her attention, *sensory* in obtaining information, *thinker* in making decisions and *judger* in handling the outer world; on the other hand, a person with an INFP profile (introverted, intuitive, feeler, perceiver) could be said to be *introverted* in focusing his or her attention, *intuitive* in obtaining information, *feeler* in making decisions and *perceiver* in handling the outer world.

The relationships between MBTI profiles and teaching and learning are examined under four sub-dimensions within the dimensions of obtaining information and decision making. These are sensory-thinker (ST), sensory-feeler (SF), intuitive-thinker (NT) and intuitive-feeler (NF). It is believed that the dominant dimensions they have are effective on shaping the instructional process of teachers. Teachers with ST profile (mastery) want to reach substantial results, to apply what they have learnt, to be engaged with something at a time, to become active in the instructional process and to know precisely what they are expected to do in the process. In addition, it could be stated that teachers with the ST profile are reformers and providers of realistic information about concepts; that they are inclined to organize or competitive teaching and convergent thinking; and that they tend to put the forward product. Those with the SF profile who give importance to details enjoy instant feedback and rewards while they dislike activities requiring fiction and intuition and activities which are open-ended or ambiguous. Teachers with the SF profile (involvement) give importance to individual teaching and the views and experiences of other teachers and take other teachers' thoughts into consideration while conducting their studies. In addition, it could be stated that the teachers with the SF profile are *educatory*, *supportive*, *emphasizer* apt to socialization and inclined to conduct

group projects, doing verbal narrations and strengthening interpersonal relationships and that they tend to carry out such activities in the instructional process as group research, paired sharings, classroom meetings, mutual learning, team guidance, team games and tournaments. SFs like things that require attention and courage in the instructional process. Competitive instructional activities requiring detailed and obligatory routine jobs are not attractive for them (Silver, Strong & Perini, 2007; Silver & Strong, 1998, Silver & Hanson, 1996).

While learning, teachers with the NT profile (understanding) prefer to study on thoughts in a planned manner, to discuss on a reasonable analysis and to conduct problem-solving activities via data collection, organization and evaluation; on the other hand, while teaching, they demonstrate inductive behavior and tend to become challenger, researcher, concept producer and interrogator. As for the teachers with the NF profile (synthesis), while learning, they become creative, engage with a job at a time and try to find realistic solutions to real problems; on the other hand, in the instructional process, they become modeler, focus on creative thinking, have insights, raise moral and values, tend to think in a distinctive and divergent manner and feel anxious about originality (Silver, Strong & Perini, 2007; Silver & Strong, 1998, Silver & Hanson, 1996).

The MBTI G form is made up of 93 items. The items found in the inventory are grouped under four dimensions including pairs (focusing the attention: Extroverted (E), Introverted (I); obtaining information: Sensory (S), iNtuitive (N); decision making: Thinker (T), Feeler (F); handling the outer world: Judger (J), Perceiver (P)). The characteristic with the highest score among the pairs found in each dimension is considered to be the dominant character of the individual. The four-grouped MBTI profiles are determined by revealing individuals' dominant characteristics in the four dimensions mentioned. The MBTI G form is a common inventory that helps determine individuals' personality types. It is the most comprehensive and updated inventory developed by the theory of typology. This scale is used to determine and evaluate individuals' learning styles (Wahl, 1992; Myers, 1997; Quenk, 2000; Wheeler, 2001; Capparo, 2002). The MBTI G form was preferred in the present study for such reasons as its frequent use in studies conducted in the field of educational sciences and its ease of application and evaluation. The scale in question was adapted into Turkish by Tuzcuoğlu (1996). The validity studies of the scale were conducted via comparisons made with various personality tests, and moderate and high levels of relationships were found. The Cronbach Alpha values calculated to determine its internal consistency were found to be .90 in the dimension of EI, .88 in the dimension of SN, .92 in the dimension of TF and .96 in the dimension of JP. The scale was also tested in the present study before the application process, and an efficient level of reliability was found ($\propto$=.71).

In the study, to determine the learning strategies used by the teachers, the *scale for determining learning strategies* developed by Güven and Özdemir (2004) on the basis of

Weintein and Mayer's (1998,) classification of learning strategies was used. The Cronbach Alpha internal consistency coefficient of the scale was calculated as ∝=.90. The five-point Likert-type scale (1: It never appeals to me, 2: It does not appeal to me at all, 3: It appeals to me to some extent, 4: It appeals to me quite well, 5: It completely appeals to me) made up of 39 items included the sub-scales of repetition, interpretation, organization, monitoring understanding and affective strategies. The scale was also tested for its reliability before the application process, and an efficient level of reliability was found (∝=.91).

The third scale used in the study was the scale for instructional strategies. This scale, which was applied to determine the instructional strategies used by the teachers, was developed by Erişti and Akdeniz (2012). In this five-point Likert-type scale, teachers' levels of use of instructional strategies are determined using the values of 1: never, 2: rarely, 3: sometimes, 4: often and 5: always. The instructional strategies scale was made up of 62 items and two sub-scales. The first subscale was the focus strategies sub-scale that aimed at determining whether teachers place themselves or their students into the center of the instructional process. This subscale included the headings of *teacher-centered and learner-centered instructional strategies* (14 items). The second subscale was the process strategies sub-scale that aims at determining which instructional methods, techniques, tactics and strategies teachers use in the instructional process (48 items). The whole scale was tested for its validity and reliability before the application process. The reliability coefficient was calculated as ∝=.96. The rates of meeting the total variance for the factors in the sub-scales were found as 43.011% in the focus strategies sub-scale and as 61.805 in the process strategies sub-scale. With respect to the item-whole scale correlation consistency, the items in the scale were found to have values ranging between .406 and .816.

3.3. Data collection and analysis

The data collection tools used in the study were applied to the participants in 2013, and the teachers' MBTI profiles and the instructional and learning strategies they used were determined. In the study, to determine the relationship between the teachers' MBTI profiles and the instructional and learning strategies they used, the Pearson correlation coefficient was calculated, and the relationships between the variables were determined via Chi-square, t-test and one-way analysis of variance.

At the analysing process, the data from personality indicator were evaluated in two groups: Types and profiles. The type refers to Jungian classification and includes four dichotomies: focusing attention (extraversion-introversion), obtaining information (sensing – intuiting), decision making (thinking-feeling) and handling the outer world (judging-perceiving). The profile term comes from Myers & Briggs taxonomy. There are sixteen profiles, and they have created from the combination of eight types: E, I, S, N, T,

F, J, P. The profiles are ENFJ, ENFP, ENTJ, ENTP, ESFP, ESFJ, ESTP, ESTJ, INFJ, INFP, INTJ, INTP, ISFJ, ISFP, ISTJ, ISTP.

4. Results

The first research question in the study was directed to determine elementary school teachers' personality types and the instructional and learning strategies they use on their gender, professional experience, the field of teaching and the school they teach in. The findings obtained are presented in Table 1.

Table 1. Elementary school teachers' personality types

Type Dichotomies	Type	(N)	(%)
Focusing attention	Extroverted – E	365	62.9
	Introverted – I	215	37.1
	Total	580	100
Obtaining information	Sensory – S	462	79.7
	Intuitive – N	118	20.3
	Total	580	100
Decision making	Thinker – T	295	50.9
	Feeler – F	285	49.1
	Total	580	100
Handling the outer world	Judger – J	477	82.2
	Perceiver – P	103	17.8
	Total	580	100

The elementary school teachers' personality types were extroverted for the dimensions of *focusing attention*, affective for the dimension of *obtaining information* and judger for the dimension of *handling the outer world*. For the dimension of *decision making* (χ^2 (1, N=580) =12,676, $p<.05$), the teachers had quite similar personality types with respect to the types of thinker and feeler.

The findings obtained about MBTI Profiles are presented in Table 2.

Table 2. Elementary school teachers' MBTI profiles

Profile	Male		Female		Total	
	f	%	f	%	f	%
ESTJ	69	11.9	74	12.8	143	24.7
ESFJ	35	6.0	70	12.1	105	18.1
ISTJ	34	5.9	48	8.3	82	14.1
ISFJ	20	3.4	42	7.2	62	10.7
ESFP	10	1.7	23	4.0	33	5.7
ENFJ	4	.7	25	4.3	29	5.0
ENTJ	13	2.2	12	2.1	25	4.3
INFJ	10	1.7	12	2.1	22	3.8
ISTP	8	1.4	8	1.4	16	2.8
ISFP	8	1.4	7	1.2	15	2.6
ENTP	5	.9	7	1.2	12	2.1
ENFP	3	.5	9	1.6	12	2.1
INTJ	6	1.0	3	.5	9	1.6
INFP	3	.5	4	.7	7	1.2
ESTP	4	.7	2	.3	6	1.0
INTP	0	.0	2	.3	2	.3

When the variable of gender was taken into consideration, it was seen that the female and male teachers' MBTI profiles mostly fell into the groups of ESTJ, ESFJ, ISTJ, and ISFJ. With respect to the variable of professional experience, the MBTI profiles of the teachers with professional experience of 0–5 year(s) were ESFJ; those of the teachers with professional experience of 6-10 years, 11-15 years and 21 years or over were ESTJ; those of the teachers with professional experience of 16-20 years were ESTJ and ISTJ. According to the findings obtained with respect to their fields of teaching, the MBTI profiles of the teachers teaching in the fields of elementary school teaching, mathematics, social studies, foreign language, religion and physical education mostly fell into the ESTJ group, while those teaching in the fields of Turkish Language, visual arts and technology and design fell into the ISFJ group. As for those teaching in the fields of science and technology and music, they were in the ESFJ group, and those teaching the course of the computer were in the ISTJ profile group. Table 3 presents the findings obtained regarding the learning strategies used by the elementary school teachers.

Table 3: Learning Strategies used by the elementary school teachers

Learning strategies	($\bar{x}$)	(std)	item
Repetition strategies	3.84	.59	6
Interpretation strategies	3.92	.49	11
Organization strategies	3.75	.63	7
Strategies for monitoring understanding	3.97	.49	9
Affective strategies	3.75	.50	6

The learning strategies that the elementary school teachers used most ($\bar{x}$=3.97) were the interpretation strategies. These strategies were followed by the strategies for monitoring understanding ($\bar{x}$=3.92), repetition strategies ($\bar{x}$=3.84), organization strategies ($\bar{x}$=3.75), and affective strategies ($\bar{x}$=3.75 respectively. In the next step for repeated measures single factor variance analysis was carried out. The results of the analysis of variance show that the differences between of means are statistically significant (Wilks Lambda: .708; F: 59,425; p<.001). To determine whether the distribution shown in the Table 3 differ by gender (2x5), experience (5x5) and teaching field (12x5) mixed-type ANOVA were conducted. In this topic, the testing of difference between two paired groups was conducted. The results are presented in Table 4.

Table 4: The sources of differences between mean scores of learning strategies subscales

	Repetition	Interpretation	Organizing	Monitoring	Affective
Repetition	-	-.07	.09	-.12	.09
Interpretation		-	.16	-.05	.17
Organizing			-	-.21	.00
Monitoring				-	.22

The results of the t-test and analysis of variance conducted to determine whether the learning strategies used by the teachers differed on their gender, school type, professional experience and fields of teaching revealed that there was no relationship between the learning strategies they used and their individual characteristics (p > .05). The findings obtained regarding the instructional strategies used by the elementary school teachers are presented in Table 5 and Table 6.

Table 5: The focus instructional strategies used by the elementary school teachers

Focus instructional strategies	($\bar{x}$)	(std)	item
Teacher-centered instructional strategies	4.02	.47	5
Learner-centered instructional strategies	4.03	.49	9

The elementary school teachers used the learner-centered instructional strategies ($\bar{x}$=4.03) more than the teacher-centered instructional strategies ($\bar{x}$=4.02). The focus strategies used by the teachers in the instructional process (teacher-centered instructional strategies and learner-centered instructional strategies) did not statistically significantly differ with respect to their gender, professional experience, field of teaching or school type (p > .05).

Table 6: The process instructional strategies used by the elementary school teachers

Process instructional strategies	($\bar{x}$)	(std)	item
Problem-solving, sample case strategies	4.04	.52	7
Discussion, brain storming strategies	3.78	.63	5
Modeling, simulation, role playing strategies	3.50	.73	5
Thinking, interrogation, interpretation strategies	3.85	.57	6
Presentation strategies	3.83	.61	6
Question and answer strategies	4.01	.56	6
Writing, note taking, summarizing strategies	3.50	.80	5
Research, project strategies	3.75	.59	8

The process strategies used most by the elementary school teachers in the instructional process were the problem solving & sample case strategies. These strategies were followed by the strategies of question & answer, thinking-interrogation, interpretation, presentation, discussion-brain storming, research & project, modeling-simulation-role playing and writing-note taking-summarizing, respectively. In the next step for repeated measures single factor variance analysis was carried out. The results of the analysis of variance show that the differences between of means are statistically significant for *process strategies* (Wilks Lambda: .533; F: 71,800; p<.001).

According to the findings obtained as a result of the analyses conducted, the process strategies used by the teachers in the instructional process did not significantly differ on their gender, professional experience or school type. On the other hand, there were significant differences between their fields of teaching and the process strategies they used in the instructional process (p<.05). The results obtained via the analysis of variance conducted demonstrated that the use of such strategies as presentation strategies ($F_{(12,\ 567)} = 1.88$, $p < .05$) did differ depending on the teachers' field of teaching. The results of Tukey HSD test revealed that the difference between the mean scores regarding the presentation strategies resulted from the difference between the mean scores of the science and technology teachers and those of the teachers of technology and design (-.55) and religion (-.11). The science and technology teachers used the presentation strategies more than the teachers of the other fields.

The second research question directed in the study aimed at determining the relationship between the elementary school teachers' personality types, MBTI profiles and the learning strategies they used. The obtained findings are presented in Table 7.

Table 7: The differences between the learning strategies used by the teachers with respect to their MBTI profiles

Process Strategies	Source of Variance	Sum of Squares	Degree of Freedom	Mean Squares	F	Level of Significance
Repetition strategies	Intergroup	10.03	15	.67	1.35	> .05
	Intragroup	280.00	564	.50		
	Total	290.02	579			
Interpretation strategies	Intergroup	5.51	15	.37	1.54	> .05
	Intragroup	134.51	564	.24		
	Total	140.02	579			
Organization strategies	Intergroup	9.79	15	.65	1.66	**< .05***
	Intragroup	221.52	564	.39		
	Total	231.31	579			
Strategies for monitoring understanding	Intergroup	6.60	15	.44	1.89	**< .05***
	Intragroup	131.14	564	.23		
	Total	137.74	579			
Affective strategies	Intergroup	4.43	15	.30	1.19	> .05
	Intragroup	139.43	564	.25		
	Total	143.86	579			

The frequencies of the elementary school teachers' use of such learning strategies did differ with respect their personality types. In the "focusing attention" dichotomy, *extraverts* use interpretation ($t_{(578)}$= 2.03, p< .05), organization ($t_{(578)}$= 2.03, p< .05), and strategies for monitoring understanding ($t_{(578)}$= 2.91, p< .05) more than introverts. In the second dichotomy "obtaining information", *intuitive* teachers use interpretation strategies ($t_{(578)}$= - 2.33, p< .05) more than sensing teachers. In the "decision making" dichotomy, it can be said *feelers* use the repetition strategies (t(578)= - 2.08, p< .05) more than thinkers. In the last dichotomy "handling the outer world", *perceivers* use the interpretation strategies (t(578)= - 2.64, p< .05) more than the judgers.

The frequencies of the elementary school teachers' use of such learning strategies as repetition, interpretation and affective did not differ on their MBTI profiles. On the other hand, their use of organization strategies (F(15, 564) = 1.66, p<.05.) and strategies for understanding monitoring (F(15, 564) = 1.89, p<.05.) significantly differed depending on their MBTI profiles. The findings of sources of the differences between the frequencies of the teachers' use of organization strategies and monitoring understanding strategies are presented in Table 8 and Table 9.

Table 8: The sources of the differences between the frequencies of the teachers' use of organization strategies

	ESTJ	ESFJ	ENTP	ENFJ	ISTP	INTJ	INTP
ESTJ		-0,06	-2,77	-0,25	-0,04	-3,02	4,64
ESFJ	0,06		-2,71	-0,19	0,02	-2,96	4,70
ENTP	2,77	2,71		2,52	2,73	-0,25	7,42
ENFJ	0,25	0,19	-2,52		0,21	-2,77	4,90
ISTP	0,04	-0,02	-2,73	-0,21		-2,98	4,69
INTJ	3,02	2,96	0,25	2,77	2,98		7,67
INTP	-4,64	-4,70	-7,42	-4,90	-4,69	-7,67	

The results of Tukey HSD test demonstrated that the difference between the teachers' frequencies of use of organization strategies resulted from the mean scores of the teachers with the profiles of *INTP,* ESTJ (-4.64), ESFJ (-4.70), ENTP (-7.42), ENFJ (-4.90), ISTP (-4.69) and INTJ (-7.67). In other words, the teachers with the INTP profile used the organization strategies more than the other teachers.

Table 9: The sources of the differences between the frequencies of the teachers' use of strategies for monitoring understanding

	ESFP	ISTJ	ISTP	INTP
ESFP		.09	.06	-.66
ISTJ	-.09		-.03	-.75
ISTP	-.06	.03		-.72
INTP	.66	.75	.72	

The difference between the frequencies of the teachers' use of strategies for monitoring understanding – who had different personality profiles – resulted from the mean scores of the teachers with the profiles of *INTP,* ESFP, ISTJ, and ISTP. The teachers with the profiles of INTP used the strategies for monitoring understanding in the learning process more than the other teachers.

The third research question was directed in the study to determine whether the instructional strategies used by the teachers differed on their personality types and MBTI profiles. The findings obtained are presented Table 10 and Table 11

Table 10: Differences between the instructional strategies used by the teachers with respect to their personality types in the focusing attention dichotomy

Instructional Strategies	Types	(N)	($\bar{X}$)	(Std)	(t)	(df)	(p)
Focus Strategies							
Teacher-centered strategies	Extroverted	365	4.02	.48	.35	578	.73
	Introverted	215	4.01	.45			
Learner-centered strategies	Extroverted	365	4.06	.48	2.15	578	**.03**
	Introverted	215	3.97	.50			
Process Strategies							
Problem solving strategies	Extroverted	365	4.07	.53	1.71	578	.09
	Introverted	215	3.99	.51			
Discussion strategies	Extroverted	365	3.80	.61	1.23	578	.22
	Introverted	215	3.73	.66			
Modeling strategies	Extroverted	365	3.52	.73	.55	578	.58
	Introverted	215	3.48	.73			
Thinking strategies	Extroverted	365	3.87	.56	.94	578	.35
	Introverted	215	3.82	.58			
Presentation strategies	Extroverted	365	3.82	.60	.26	578	.79
	Introverted	215	3.83	.63			
Question and answer strategies	Extroverted	365	4.05	.54	2.04	578	**.04**
	Introverted	215	3.95	.59			
Writing strategies	Extroverted	365	3.53	.79	1.38	578	.17
	Introverted	215	3.44	.80			
Research-project strategies	Extroverted	365	3.78	.59	1.43	578	.15
	Introverted	215	3.70	.60			

The frequencies of the elementary school teachers' use of such instructional strategies did differ with respect their personality types. In the "focusing attention" dichotomy, *extroverts* use learner-based strategies ($t_{(578)}$= 2.15, p< .05) and question and answer strategies ($t_{(578)}$= 2.04, p< .05) more than introverts. On the other dichotomies, the frequencies of the elementary school teachers' use of instructional strategies did not differ with respect their personality types.

Table 11: Differences between the instructional strategies used by the teachers with respect to their MBTI profiles

Instructional strategies	Source of Variance	Sum of Squares	Degree of Freedom	Mean Squares	F	Level of Significance
Teacher-centered strategies	Intergroup	112,65	15	7,51	1,383	>.05
	Intragroup	3062,54	564	5,43		
	Total	3175,19	579			
Learner-centered strategies	Intergroup	219,18	15	14,61	0,753	>.05
	Intragroup	10944,01	564	19,40		
	Total	11163,19	579			
Problem solving strategies	Intergroup	182,47	15	12,17	0,916	>.05
	Intragroup	7489,59	564	13,28		
	Total	7672,06	579			
Discussion strategies	Intergroup	232,66	15	15,51	1,582	<.05*
	Intragroup	5528,60	564	9,80		
	Total	5761,26	579			
Modeling strategies	Intergroup	258,36	15	17,22	1,307	>.05
	Intragroup	7432,53	564	13,18		
	Total	7690,89	579			
Thinking strategies	Intergroup	95,09	15	6,34	0,538	>.05
	Intragroup	6644,94	564	11,78		
	Total	6740,03	579			
Presentation strategies	Intergroup	215,74	15	14,38	1,076	>.05
	Intragroup	7538,19	564	13,37		
	Total	7753,92	579			
Question and answer strategies	Intergroup	172,08	15	11,47	1,008	>.05
	Intragroup	6421,74	564	11,39		
	Total	6593,81	579			
Writing strategies	Intergroup	334,23	15	22,28	1,422	>.05
	Intragroup	8836,77	564	15,67		
	Total	9170,99	579			
Research-project strategies	Intergroup	431,93	15	28,80	1,29	>.05
	Intragroup	12593,06	564	22,33		
	Total	13024,98	579			

The frequencies of the teachers' use of the discussion strategies in the instructional process differed on their MBTI profiles ($F(15, 564) = 1.58$, $p < .05$.). On the other hand, the frequencies of the teachers' use of teacher-centered instructional strategies (p>.05), learner-centered instructional strategies (p>.05), problem-solving and sample case strategies (p>.05), modeling, simulation and role-playing strategies (p>.05), thinking, interrogation and interpretation strategies (p>.05), presentation strategies (p>.05), question and answer strategies (p>.05), writing, note taking and summarizing strategies

(p>.05) and research and project strategies (p>.05) did not statistically differ with respect to their MBTI profiles. The findings of sources of the differences between the frequencies of the teachers' use of discussing strategies are presented in Table 12.

Table 12: The sources of the differences between the frequencies of the teachers' use of discussion strategies

	ENFJ	ENFP	ISTP	INTJ	INFJ	INFP
ENFJ	-	-0,38	-0,22	3,48	2,85	0,32
ENFP	0,38	-	0,17	3,86	3,23	0,70
ISTP	0,22	-0,17	-	3,69	3,07	0,54
INTJ	-3,48	-3,86	-3,69	-	-0,63	-3,16
INFJ	-2,85	-3,23	-3,07	0,63	-	-2,53
INFP	-0,32	-0,70	-0,54	3,16	2,53	-

The results of Tukey HSD test revealed that the difference between the frequencies of the teachers' use of discussion and brainstorming strategies – who had different profiles – resulted from the mean scores of the teachers with the profiles of INTJ, INFJ, ENFJ (-3.48), ENFP (-3.86), ISTP (-3.69) and INFP (-3.16). In short, the teachers with the profiles of INTJ and INFJ used the discussion and brainstorming strategies more than the other teachers.

5. Discussion

The first result obtained in the present study demonstrated that the personality types of the elementary school teachers were mostly Extroversion-E, Sensing-S and Judging-J. This result is consistent with the findings of other studies carried out by Ehrman (1989), Zarafshani et. al. (2011), Cano & Garton (1994) and by Roberts et. al. (2007).

This result could be said to be significant taking the requirements of the teaching profession and the nature of the instructional process into consideration. The extroverted personality type of teachers could help increase students' active participation in the instructional process. The judger and sensory personality types of teachers could be said to be among the personality types that facilitate teaching such skills common in curricula as research, examination, thinking and problem-solving. In addition, the result that the teachers' personality types were quite similar regarding the personality types of thinker and feeler in the dimension of decision making is parallel to the findings of another study carried out by Helen & Thomas (1998). As the dimension of decision making has the potential to become influential on choosing and applying the strategies, methods, techniques, and tactics as well as on structuring the evaluation processes, it could also be influential in the instructional process. According to the findings obtained, the fact that the dimension of decision making had a tendency towards thinker-weighted in a number of fields of teaching and that the types of thinker and feeler in the present study had

similar values could be a result of the fact that almost half of the participants were female.

The elementary school teachers' MBTI profiles mostly fell into the groups of ESTJ (extroverted-sensory-thinker-judger), ESFJ (extroverted-sensory-feeler-judger), ISTJ (introverted-sensory-thinker-judger) and ISFJ (introverted-sensory-feeler-judger). With respect to the teachers' gender, professional experience, field of teaching and school type, their MBTI profiles differed to a certain extent, and the difference was apparent in the groups of ESTJ (extroverted-sensory-thinker-judger), ISTJ (introverted-sensory-thinker-judger), ESFJ (extroverted-sensory-feeler-judger) and ISFJ (introverted-sensory-feeler-judger) with respect to their professional experience and fields of teaching. According to the findings, the teachers' gender and school type were not among the variables considerably influential on their MBTI profiles. The influence of the variable of professional experience on the profiles is likely to result from the fact that the knowledge and skills acquired cause teachers to make different judgments about the instructional process in time. It is important to examine this situation in future studies. In the study, it was seen that the teachers' MBTI profiles differed depending on their fields of teaching. This result is supported by the findings of other studies conducted by Schinn (2004), Hinkle (2007), Rushton, Morgan & Richard (2007), Robert et. al. (2007) and by Gardner (2009) who reported that teachers from different fields of teaching have different profiles with varying rates.

In this study, the findings obtained regarding the elementary school teachers' MBTI profiles are consistent with the findings of other studies conducted in the field (Ehrman, 1989; Cano & Garton, 1994; Rushton, Gracia, 2006; Roberts et. al., 2007; Morgan & Richard, 2007; Zarafshani et. al., 2011). Depending on the elementary school teachers' MBTI profiles, it could be stated that in the instructional process, they will frequently use such activities in decision making as logical analysis, problem-solving, gradual teaching, observation and research (ESTJ) (Cano & Garton, 1994); that they will manage the process with a traditional, organizer and conservator understanding (ISFJ); and that they will tend to become optimistic, active and creative (Rushton, Morgan & Richard, 2007).

In the learning process, elementary school teachers use interpretation strategies and the strategies for monitoring understanding frequently and the organization, repetition and affective strategies less. The strategies teachers used in the learning process did not differ on their gender, professional experience, the field of teaching or school type. Depending on this result, it could be stated that teachers execute the learning process focusing on meaning development, and those ways of learning could be considered independently of their gender, professional experience, and field of teaching. In other words, it could be stated that teachers follow similar ways while structuring the learning process.

The strategies used by the elementary school teachers in the learning process differed with respect to their personality types. This situation could be summarized as follows: For the dimension of extraversion-introversion, teachers with the extroverted personality type use the interpretation and organization strategies and the strategies for monitoring understanding more than other teachers. In addition, teachers with the intuitive profile type in the dimension of sensing-intuiting, those with the feeler profile type in the dimension of thinking-feeling and those with the perceiver profile type in the dimension of judging-perceiving are the teachers who frequently use interpretation strategies. Depending on these results, as the common characteristics of teachers who focus on meaning development while learning, they could be said to have extroverted, intuitive, feeler and perceiver personality types. Based on the results obtained in the study, it could also be stated that the features of the teaching profession made the extroverted personality type dominant while learning; and that the intuitive, feeler and perceiver personality types were dominant because almost half of the participating teachers were female or because almost half of the participating teachers' field of teaching was elementary school teaching.

When the learning strategies were taken into consideration with respect to the teachers' MBTI profiles, it was seen that there were differences between their use of organization strategies and the strategies for monitoring understanding; and that the differences were in favor of the teachers with the INTP profile regarding the organization strategies and favor of the teachers with the INTP, ESTJ, ESFJ, ENTP, ENFJ, ISTP and INTJ profile types regarding the strategies for monitoring understanding. It could be stated that the dominant learning dimension of the teachers with INTP profiles was the intuition-thinking NT; that the teachers with this dimension developed learning processes of intuition and thinking; and that they thus intensively used the organization strategies (Silver, Strong & Perini, 2007).

Considering the results obtained, it could be stated that there are strong relationships between the learning behavior and strategies favored and the personality types; that those who have the thinker and feeler personality types are likely to have different tendencies in making interpretations; that thinkers are objective and analytic in their evaluations while feelers demonstrate more subjective and interpersonal behavior; and that those who have sensory, thinker and judger personality types use new, different and varied learning strategies more positively than those with the introverted, feeler and perceiver personality types (Ehrman, 1989).

In addition, it could also be pointed out that those with INFJ favor both theoretical and applied activities, writing activities (especially technical writing) and learning activities in groups; that those with INTP prefer to behave on logical basis and to carry out problem-solving activities, computer-centered and mathematical activities and individual learning activities; that those with INTJ tend to learn in quiet environments, prefer

activities allowing independent studying as well as purpose-oriented and structured problem-solving activities (Gardner, 2009).

Elementary school teachers use learner-centered instructional strategies more than teacher-centered strategies. Also, the process strategies used by elementary school teachers include a research project, problem-solving, sample case, question and answer, thinking-interrogation-interpretation, presentation and discussion-brain storming. Modeling, simulation, role playing, writing, note taking and summarizing are among the less frequently used strategies. The focus and process instructional strategies used do not differ on gender, professional experience or school type. On the other hand, science and technology teachers use presentation strategies more than teachers from other fields.

In one study, Sedgwick (1998) reported that elementary school teachers use learner-centered instructional strategies frequently, while in another study carried out by De Vito (2008), it was revealed that university faculty members prefer teacher-centered instructional strategies to learner-centered instruction not only due to the structure of the curricula but also due to their individual preferences. Tomcho and her colleagues (2008) demonstrated in their study that discussion, writing, and research activities are favored more. On the other hand, it was found out in the present study that the elementary school teachers used research activities more frequently and discussion and writing activities less frequently. In addition, in the study conducted by Tomcho and her colleagues, it was reported that presentations, role playing, narration, and simulations were moderately used; however, in the present study, it was revealed that presentation activities were moderately used and that role playing, and simulations were among the activities almost least frequently used. This difference could be said to result from the difference in the duration of the activities suggested in the syllabi. When the findings obtained in another study conducted by Burroughs (1999) are examined, it is seen that just as it was in the present study, the instructional strategies regarding thinking and question and answer skills had a moderate level of mean scores among all the instructional strategies. In addition, it is also seen that there is a negative relationship between the findings of the study conducted by Burroughs (1999) and those obtained in the present one. In the sample research the discussion and simulation activities had high scores, while in the present study, these activities had almost the lowest values. Thus, it could be stated that higher education faculty members tend to demonstrate behavior different from elementary school teachers in structuring the instructional process.

When the related literature is examined, it is seen that the instructional strategies used by teachers in the instructional process are likely to differ with respect to the class level, school type, teachers' approaches to instruction and the qualifications of learners. The findings of various studies consistent with those obtained in this study are presented below:

At secondary school level, discussions and simulations are used a little more than other in-class instructional activities (Bailey, 2004). Keeping journals and online discussions conducted in online instructional processes are among the most frequently used instructional strategies, and research and presentation are the least used activities (Cercone, 2006). Although teachers report in survey studies that they prefer learner-centered instruction, observations have revealed that the reality is the opposite (O'Brien, 2005). The findings obtained in a study carried out by Bazan (2007) support O'Brien's thoughts. At secondary school level, teachers frequently use such activities as analysis, synthesis, and evaluation. In addition, multiple-choice tests and problem-solving activities are used in the process to the same extent (Smith, 2002). Students want to see narration activities, cooperative learning activities, computer-supported instruction and individualized instructional activities more in the instructional process (Henton, 2008).

Depending on the findings obtained in the present study, it could be stated that learner-centered instructional strategies, research-project strategies, problem-solving, sample case strategies, question and answer strategies, thinking, interrogation and interpretation strategies and presentation strategies are among the instructional strategies most frequently used by elementary school teachers. As the reasons for more frequent use of these strategies in elementary schools in Turkey, it could be stated that the elementary school programs which have been in use since the beginning of the academic year of 2005–2006, the constructivist approach dominating these programs and the instructional process applied within the scope of this approach all allow using the instructional strategies in question and that the instructional activities to be applied in the process require the use of the instructional strategies in question.

The learner-centered instructional strategies and the question and answer strategies used by elementary school teachers differ depending on their personality types. This difference is seen to be in favor of those with the extroverted personality type in the extraversion-introversion dimension, yet no significant difference was found in the dimensions of sensing-intuiting, thinking-feeling and judging-perceiving. It is also seen that teachers with the extroverted personality type have a higher tendency towards creating learner-centered instructional environments than teachers with other personality types and that they use question and answer strategies more frequently than the other strategies in the instructional process. The fact that question and answer strategies are favored most by teachers with the extraverted profile and that these strategies require paired and multifaceted interaction in the instructional process could be associated with the fact that teachers with the extroverted personality type are more inclined to such an interaction than those with other personality types. In addition, the fact that teachers with extroverted personality type favor learner-centered instruction more than teachers with other personality types could be associated again with their general characteristics of their personality type.

When instructional strategies are considered on MBTI profiles, it is seen that there are differences in teachers' use of discussion and brainstorming strategies and that these differences are in favor of teachers with the INFJ and INTJ profiles. It could also be stated that the dominant instructional dimensions of the teachers with the INFJ and INTJ profiles are intuition-thinking NT and intuition-feeling NF. In addition, because teachers dominated by these dimensions are challenges and researcher who are inclined to critical and creative thinking and who value self-expression and conceptualization, they tend to execute the instructional process giving more importance to intuition, thinking and feeling (Silver, Strong & Perini, 2007) and thus use the discussion and brainstorming strategies more frequently than teachers with the other profiles.

6. Conclusion

Some of the factors are considered to be effective in the instructional process are associated with the teachers' personality profiles and instructional approaches. In the relevant literature on this issue, discussions are carried out for years. In this research, the differentiation level of the use of instructional strategies and learning strategies according to the personality profiles was investigated. According to the findings, differentiation in some areas is observed. Consequently, when the learning and instructional strategies used by teachers are taken into consideration on their personality types, it could be stated that they favor intuiting and thinking while learning and favor intuiting, thinking and feeling while teaching.

7. Recommendation

Further researches which will be done in this field, will contribute to resolving and better understanding the issue. Based on the findings of this study, the following recommendations are with this proffered:

1. Some researches can be conducted on the concepts of "learning type" and "instructional type". Besides, based on the survey data which will be carried out, "instructional type inventory" and "learning type inventory" can be developed.
2. The issue can be examined in two or more dimensions, by involving students in the research process as well as teachers.
3. A research design that uses a combination of qualitative and quantitative research methods (mixed-type) will reveal more detailed perspectives on this issue.
4. For practical instruction, teachers and candidates, in the personality and instruction topic, can be given pre-service and in-service training courses.

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