Educational Research and Reviews

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Full Length Research Paper

Evaluation of fourth-grade primary school students' attitudes and self-efficacy towards physical education course using socio-cultural approach

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Changes in the national education system in Turkey have negative effects on the development of sports. Because, as classroom teachers teach Physical Education courses themselves, instead Physical Education teachers teach the course. This was because of a recent legislation released by the Ministry of National Education related to 4+4+4 compulsory schooling and the last resort for compulsory schooling model was made as 4+4+4 on 2012 to 2013 education season. In this context, the purpose of this research is to evaluate fourth-grade primary school students' attitudes and self-efficacy towards physical education course based on socio-cultural approach. Physical Education Predisposition Scale (BEYÖ in Turkish) was used as the data collection tool and "Explanatory Factor Analysis (EFA)", "Cronbach Alpha Coefficient" and "Item-Total Correlation Analysis" were conducted on fourth-grade students in order to maintain validity and reliability of the data collected. In the normality hypothesis analysis of the collected data, it is thought that "Kolmogorov-Smirnov Test" along with skewness and kurtosis coefficients will contribute to existing literature.

Key words: Attitude, self-efficacy, physical education, primary school.

INTRODUCTION

Franzoi (2003) defines the concept of attitude as "an individual's positive or negative evaluation of an object". When attitudes are categorized as positive or negative; having negative beliefs about ideas or objects, rejecting or disliking them, taking negative actions towards these might be considered as negative attitudes and having positive beliefs about ideas or objects, accepting and liking them might be considered as positive attitudes (Demirhan and Altay, 2001). People have their attitudes as a result of their previous experiences, thus, attitudes are not innate behaviors (Kağıtçıbaşı, 2005). According

to Sakallı (2006), there are various factors that affect our attitudes. Family, environment and direct personal experiences are major factors among these. Kağıtçıbaşı (2005) indicated that the age of a person is also an important factor in terms of attitudes. Many attitudes are formed especially during childhood (between 6 to 12 ages) by imitating parents' behaviors. In the first stage of adulthood (between 21 to 30 ages), these attitudes are reinforced. If an individual forms a positive attitude towards an object or an idea, he approaches to it and supports it; however if an individual forms a negative

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attitude towards an object or an idea, he drifts away from it and even takes negative actions towards it. However, attitudes might change and new attitudes might be formed over time. For that reason, researches related to attitudes might provide useful findings for physical education and sports instructors (Şişko and Demirhan, 2002).

Another important factor which affects attitudes is self-efficacy. "Self-efficacy" is one of the major concepts in Bandura's social learning theory and Bandura (1997) defines self-efficacy as people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives. Self-efficacy beliefs determine how people feel, think, motivate themselves and behave. Such beliefs produce these diverse effects through four major processes. They include cognitive, motivational, affective and selection processes. A strong sense of efficacy enhances human accomplishment and personal well-being in many ways. People with high assurance in their capabilities approach difficult tasks as challenges to be mastered rather than as threats to be avoided. Such an efficacious outlook fosters intrinsic interest and deep engrossment in activities. They set themselves challenging goals and maintain strong commitment to them. They heighten and sustain their efforts in the face of failure. They quickly recover their sense of efficacy after failures or setbacks. They attribute failure to insufficient effort or deficient knowledge and skills which are acquirable. They approach threatening situations with assurance that they can exercise control over them. Such an efficacious outlook produces personal accomplishments, reduces stress and lowers vulnerability to depression (Bandura, 1994).

According to Seçkin and Başbay (2013), self-efficacy is an individual's self-evaluation of his random behaviors. Self-efficacy also affects emotional reactions and ways of thinking of individuals. People who have a high level of self-efficacy might be relatively comfortable and productive in difficult activities and tasks. Physical education is the whole of theoretical and consistent studies conducted in order to contribute to physical and body development of individuals, to prepare them for the conditions of daily life and work life and to enhance their national awareness and citizenship feelings (Yamaner, 2001). Physical education not only develops physical features, but also promotes a sense of self-respect, mutual respect, cooperation and teamwork and supports and enhances leadership abilities (Buck et al., 2004). Young children are leading increasingly sedentary lives, with physical activity frequently displaced by television viewing, Internet surfing, and video gaming (Myers et al., 1996). Much concern has surfaced for this lifestyle change as childhood obesity has risen greatly in the last 10 years (World Health Organization, 2000). Within the school context, incorporating physical activity or fitness training is a likely means to improve the physical health

status of children (Haskell, 1994) as well as cognitive performance (Sibley and Etnier, 2003) and attention and concentration (Hillman et al., 2005; Shephard, 1996; Taras, 2005). Students feel satisfaction when they participate in physical education activities during school. These physical education activities can greatly enhance students' learning experience and positively influence their physical, mental, social and interpersonal wellbeing (Huang, 2007). Physical education course aims to improve individuals' social competence and positive sense of self as well as basic motor skills (Göktaş and Arıkıran, 2007). In this way self-efficacy that students develop might be by means of their participation in physical education courses.

The basic resource which helps countries to develop socially, culturally and artistically is healthy manpower. In order for a country to raise a healthy generation, a modern education approach should be implemented and physical education classes should be integrated to the curriculums, which affect millions of primary and junior high school students are affected. It is of great importance to help contribute to personal development of millions of students through activities in physical education classes. Intra-curriculum and extra-curriculum physical education activities are among the most important activities that help primary and junior high school students, who have a high level of activity to use their energy in a positive way, to be stress free and socialize, adapt to rules, keep away from harmful habits, enhance their knowledge, skills and abilities (Akgün and İnan, 2010). Students generally have a receptive approach towards physical education classes. The findings of this study support this hypothesis. Taşmektepli et al (2006) also had similar findings. Their interpretation of those findings was that students generally show a higher level of interest in physical education classes and they have a receptive attitude.

METHOD

Population and sample

The population of this study includes fourth-grade primary school students. The sample of the study consists of 424 fourth-grade students from the following 12 primary schools: Kurtuluş Primary School located in Rize City Center; Karasu, Ambarlık, Şehit Nedim Çalık, and Dörtyol primary schools located in the Central District; Kıbledağı Şehit Metin Çetin, Başköy, Ulucami, and Adacami primary schools from villages of Güneysu District; İMKB Primary School located in Güneysu District Center; 28 Şubat primary schools located in Off District in Trabzon Province; Zeki Bilge Primary School and Uzungöl primary schools located in Çaykara District in Trabzon.

Data collection tools

"Personal Information Form" (Annex -2) and "Physical Education

Predisposition Scale" (Annex-3) were used as data collection tools in this research.

Personal information form

"Personal Information Form" developed by the researchers aims to collect data from students which constitute the sample of this research. This section includes information related to students' demographic and independent variables: gender, past injuries in PE classes, education level of the mother, education level of the father and location of the school.

Physical education predisposition scale (PEPS)

Physical Education Predisposition Scale (PEPS), which was developed by Hilland et al. (2009) and adapted to Turkish language by Öncü, Gürbüz, Küçükkılıç and Keskin (2015), was used to measure students' self-efficacy and attitudes towards physical education. The scale, which consists of 11 items, includes 2 factors. Factors of the scale are "Attitude" (6 items) and 'Self-efficacy' (5 items). Negative items included in the scale are scored reversely. The scale is a 5-point Likert-type scale with the following scoring system: "I strongly disagree (1)", "I disagree (2)", "I neither agree nor disagree (3)", "I agree (4)" and "I strongly agree (5)" The lowest score that can be achieved in the scale is 11 and the highest one is 55. The lowest and the highest scores of "Attitude" sub-dimension of the scale are 6 and 30, whereas the lowest and the highest scores of "Self-efficacy" sub-dimension of the scale are 5 and 25, respectively.

Statistical methods

Explanatory Factor Analysis (EFA), "Cronbach Alpha Coefficient", and "Item-Total Correlation Analysis" were conducted in order to confirm the validity and reliability of " PEPS" (or BEYÖ in Turkish), which was used on fourth grade students as a data collection tool in this research. Kolmogorov-Smirnov test and coefficient of skewness and kurtosis were used in normality analysis of the collected data. Number of groups was taken into consideration for comparison of attitude and self-efficacy scores of different groups. In accordance with this, "t test for independent groups", which is a parametric statistical method, was used for comparison of the average scores of two independent groups and "one way analysis of variance test (ANOVA)", which is another parametric statistical method, was used for comparison of the average scores of three or more groups. If ANOVA tests proved differences, Tukey multiple comparison test (Post Hoc) was used in order to determine which group is the source of these differences. IBM SPSS package program was used for application of aforementioned statistical methods within the scope of this research.

FINDINGS

Validity and reliability analyses

Factor analysis

Kaiser-Meyer-Olkin coefficient and Bartlett Test of Sphericity were used in order to determine whether conducting an explanatory factor analysis is compatible

with and sufficient for the data collected from the scale which consists of 11 items and is designated for fourth-grade students. The obtained results are given in Table 1. According to the findings listed in the Table 1, the obtained results are perfect since KMO coefficient is 0.868. For that reason, the sample size of the research is sufficient. Another test which determines whether explanatory factor analysis is compatible with a set of data is the sphericity test developed by Bartlett to determine the homoscedasticity of the sample. Factor analysis is conducted to detect high level of correlation between reverse floating variables of regression analysis. In this context, Bartlett test helps us to determine whether there is a significant correlation between variables in the main sample (Nakip, 2006). According to the results listed in the table, it is determined that the data collected are compatible with factor analysis (B=1413. 97; p = 0.000 < 0.05).

Results of factor analysis

After determining that the data collected are compatible with factor analysis, explanatory factor analysis was conducted using Principal Components Analysis and Varimax Rotation methods to determine the factor structure of the scale. Factors collected as a result of conducted explanatory factor analysis and factor weight values of items listed under these factors are listed in Table 2. It is understood that latent values of 2 factors listed in Table 2 are greater than 1. The most significant and prominent method for determining whether a factor should be included in the scale is based on the latent value of the factor (those greater than 1 are included as a factor). (Büyüköztürk, 2002). Variances of these two factors are 37.75 and 14.72% and total variance listed is 52.47%. According to these findings, it is understood that these two factors reflect 0.52% of total variance of the main structure. This value should be deemed acceptable according to Kline since it is over 40% (Ceyhan and Namlu, 2000). According to these results, it might be concluded that the scale proved valid results on fourth grade students and it has a solid factor structure.

Reliability analysis

If internal consistency determinant Cronbach α coefficient is lower than 0.40, the scale is "unreliable"; if it is between 0.40 to 0.59, the scale has a "low level of reliability" and if it is between 0.60 to 0.79, the scale has a "high level of reliability" (Tavşancıl, 2002). In this study, internal consistency of the PEPS (BEYÖ in Turkish) scale was analyzed measuring Cronbach Alpha coefficients of the whole scale and its sub-dimensions separately. Cronbach Alpha coefficients of each factor and the whole

Table 1. Collected data's compatibility with factor analysis.

Kaiser-Meyer-Olkin (KMO) Variance Sufficiency of the Sample		0.868
Bartlett Test	Ki-Square Value	1413.97
	S.d	55
	P	0.000

Table 2. Factor analysis results.

Scale sub-dimension	Items	Factor weight value	Latent Value	Variance (%)	Cumulative Variance (%)
Attitude	Item 1	0.643	4.153	37.75	37.75
	Item 3	0.440			
	Item 6	0.723			
	Item 8	0.614			
	Item 10	0.567			
	Item 11	0.719			
Self-Efficacy	Item 2	0.803	1.619	14.72	52.47
	Item 4	0.758			
	Item 5	0.783			
	Item 7	0.696			
	Item 9	0.770			

Table 3. Internal consistency coefficients of the whole scale and all sub-dimensions.

Factors	Number of items	Cronbach alpha coefficient (α)
Factor 1- Attitude	6	0.700
Factor 2- Self-efficacy	5	0.841
Total	11	0.814

scale are listed in Table 3 accordingly. According to the values listed on the table, Cronbach α reliability coefficient of PEPS (BEYÖ in Turkish) sub dimensions are 0.700 for Factor 1 and 0.841 for Factor 2, respectively. Based on this, it might be concluded that "self-efficacy" factor has an acceptable level of reliability and "attitude" factor has a good level of reliability. Cronbach α reliability coefficient of 11 items listed in the scale is 0.814. Based on this value, it might be suggested that the scale has a good level of reliability.

Item-total score correlation analysis

Item-total score correlation analysis is an objective control mechanism which explains the relation between scores obtained from items and total scores obtained

from the test (Tezbaşaran, 1996). In other words, it displays whether each item of a scale samples similar behaviors or not. In this context, item-total score correlation is expected to be greater than 0.25. Significant correlation coefficients between scale item or sub-dimension scores and total scale scores are deemed as a sign of internal consistency. High correlation coefficients show the high compatibility of the respective item with measured theoretical structure. In case correlation coefficient is lesser than 0.25, it is suggested to remove these items from the scale (Karataş, 2014).

According to the findings listed in Table 4, item-total correlation coefficients of all 11 items are greater than 0.25. Based on this, it might be suggested that all items have a high correlation with the whole of the scale and they move in the same direction with the fundamental structure measured by the scale. In this case, there is no

Table 4. Item-total correlation coefficients.

Parameter	Item-total correlation	Cronbach alpha coef. if there are any Items Deleted
Item 1	0.260	0.813
Item 2	0.498	0.783
Item 3	0.441	0.789
Item 4	0.508	0.783
Item 5	0.547	0.778
Item 6	0.328	0.800
Item 7	0.526	0.780
Item 8	0.603	0.773
Item 9	0.586	0.774
Item 10	0.507	0.782
Item 11	0.380	0.795

Table 5. Statistics related to attitude dimension.

Parameter	N	Mean	ss.	Skewness	Kurtosis	Minimum	Maximum
Attitude	424	23.52	4.50	-0.519	-0.051	6	30

Table 6. K-S normality test results.

Parameter	Kolmogorov-Smirnov		
	Statistics	sd	Sig.(p)
Attitude	0.075	424	0.000

need to remove any items from the scale and it might be suggested that PEPS (BEYÖ in Turkish) maintains the number of items on fourth grade student population Table 5.

Comparison of fourth grade student behaviors based on demographic variables

Kolmogorov-Smirnov test was used to determine whether total attitude score variable obtained from the attitude sub-dimension of the scale has a normal distribution Table 6. According to Kolmogorov-Smirnov Test, total attitude scores of fourth-grades are not distributed evenly (p<0.05). In this case, normality of the data collected using the Likert scale is tested using another criterion commonly accepted in literature whose skewness and kurtosis coefficients are between -1.5 and +1.5 (Fidell et al., 2013). Based on this and taking into account skewness and kurtosis coefficients of attitude variable, it might be considered to be distributed evenly (normal). In this case, parametric methods are used to determine

whether attitude scores have any significant differences based on certain demographic variables.

Comparison of attitude scores based on gender

T test was used in independent groups to determine whether attitude sub-dimension scores of fourth grade students have a significant difference based on gender. The results are presented in Table 7.

Based on the results listed in the Table 7 and Figure 1, fourth-grade students' attitudes towards physical education have a significant statistical difference (t=2.875; p<0.05). Analyzing the average scores of genders, it is understood that female students have a more positive attitude towards physical education compared to males.

Comparison of attitude scores based on past injuries in PE classes

T test was used in independent groups to determine

Table 7. (t) Test results of attitude score averages based on gender.

Gender	N	Mean	ss	T	p
Female	228	24.11	4.04	2.875	0.004
Male	196	22.84	4.90		
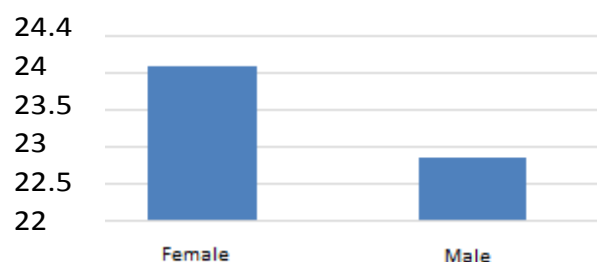
Figure 1. Average attitude scores based on gender.

Table 8. (t) Test results of attitude score averages based on past injuries in PE classes.

Past injuries	N	Mean	ss	t	p
Yes	49	22.69	3.93	-1.365	0.173
No	375	23.63	4.56		
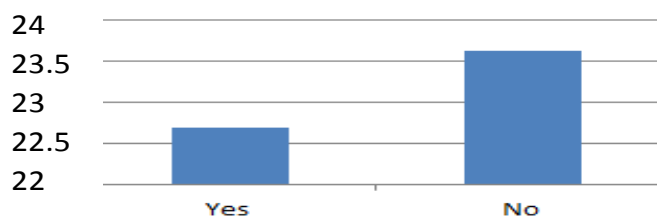
Figure 2. Attitude score averages based on past injuries in PE classes.

whether fourth grade students' past injuries in physical education classes cause a significant difference in their attitudes towards physical education. The results are given in Table 8 and Figure 2. According to t test results on this chart, fourth grade students' attitudes towards physical education classes do not differ significantly based on whether they have past injuries in PE classes (t=-1.365; p>0.05). In this case, fourth grade students' negative past experiences in PE classes do not affect their attitudes towards this class.

Comparison of attitude scores based on education level of mother

One way variance analysis (ANOVA) was used to determine whether education level of mothers of fourth grade students significantly affects their attitude scores towards physical education classes. The test results are as given in Table 9 and Figure 3. According to ANOVA test results on this chart, fourth grade students' attitudes towards physical education classes do not differ significantly based on education level of their mothers (F=2.105; p>0.05).

Comparison of attitude scores based on education level of father

One way variance analysis (ANOVA) was used to determine whether education level of fathers of fourth grade students significantly affects their attitude scores

Table 9. Anova test related to attitude score averages based on education level of mothers.

Education level of mother	N	Mean	ss	F	p
Primary	147	22.97	4.980		
Junior high school	128	23.42	4.534		
High school	93	23.65	3.917	2.105	0.079
Undergraduate	50	25.04	3.779		
Post-graduate	6	24.50	3.728		
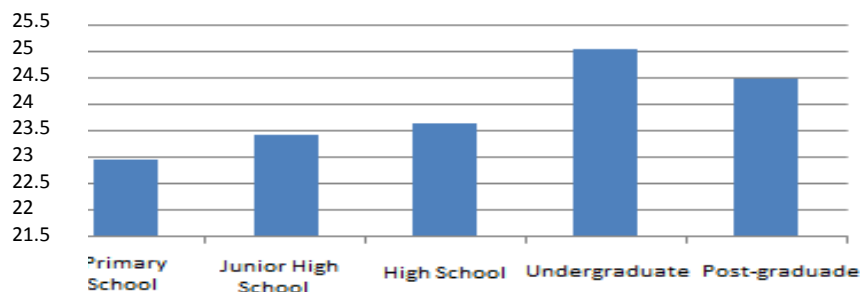
Figure 3. Average attitude scores based on education level of mothers.

Table 10. Anova test related to attitude score averages based on education level of fathers.

Education level of father	N	Mean	ss	F	p
Primary	61	22.61	4.514		
Junior high school	115	22.21	4.545		
High school	134	23.97	3.983	6.603	0.000
Undergraduate	102	24.58	4.723		
Post-graduate	12	26.67	3.473		

Figure 4. Average attitude scores based on education level of fathers.

towards physical education classes. The test results are seen in Table 10 and Figure 4. According to ANOVA test results on this chart, fourth grade students' attitudes towards physical education classes differ significantly based on education level of their fathers (F=6.603; p<0.05). Tukey multiple comparison test (Post Hoc) was used in order to determine which group is the source of difference and the following results were obtained Table 11. According to the findings in this table, there are significant differences between primary-undergraduate,

Table 11. Tukey multiple comparison test results based on education level of fathers.

Parameter		Mean difference	Sig (p)
Primary	Junior high school	0.398	0.979
	High school	-1.364	0.262
	Undergraduate	-1.972*	0.045
	Post-graduate	-4.060*	0.029
Junior high school	Primary	-0.398	0.979
	High school	-1.761*	0.015
	Undergraduate	-2.370*	0.001
	Post-graduate	-4.458*	0.008
High School	Primary	1.364	0.262
	Junior high school	1.761*	0.015
	Undergraduate	-0.608	0.830
	Post-graduate	-2.697	0.249
Undergraduate	Primary	1.972*	0.045
	Junior high school	2.370*	0.001
	High school	0.608	0.830
	Post-graduate	-2.088	0.525
Post-graduate	Primary	4.060*	0.029
	Junior high school	4.458*	0.008
	High school	2.697	0.249
	Post-graduate	2.088	0.525

Table 12. Anova test related to attitude score averages based on locations of schools.

Locations of School	N	Mean	ss	F	p
City center	27	23.63	3.835		
City center village	123	23.07	4.555	5.669	0.001
District center	173	24.51	4.706		
District village	101	22.35	3.905		

primary-postgraduate, junior high school-high school, junior high school-postgraduate groups based on education level of their fathers. In addition, when analyzing the average scores of the groups, students' attitude scores increase as their fathers' education level changes from primary to post-graduate. Therefore, it might be concluded that students' attitudes towards physical education classes increase positively in parallel with education level of their fathers.

Comparison of attitude scores based on locations of schools

One way variance analysis (ANOVA) was used to determine whether school locations of fourth grade students significantly affect attitude scores towards physical education classes. Test results are given in Table 12 and Figure 5. According to ANOVA test results
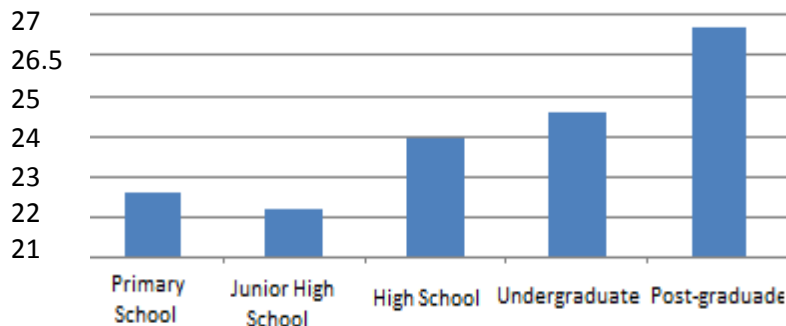
on this chart, fourth grade students' attitudes towards physical education classes differ significantly based on locations of their schools (F=5.669; p<0.05). Tukey multiple comparison tests were used to determine which group is the source of difference and following results were obtained Table 13. According to the findings in Table 14, there are significant differences between city center village-district center and district village-district center location groups. In addition, average scores of groups indicate that the attitudes of fourth grade students attending schools in district centers are more positive towards physical education classes.

Comparison of self-efficacy levels of fourth grade students based on demographic variables

Kolmogorov-Smirnov test was used to determine whether total self-efficacy score variable obtained from the self-
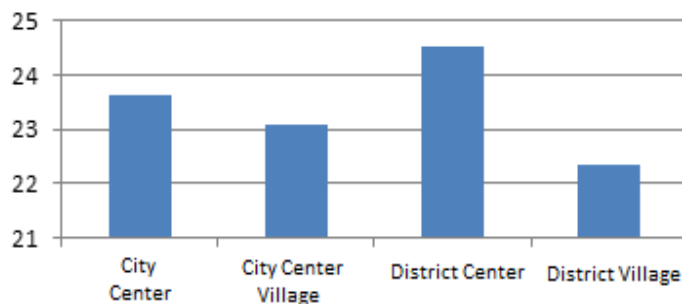
Figure 5. Average attitude scores based on locations of schools.

Table 13. Tukey multiple comparison test results based on locations of schools.

Parameter		Mean difference	Sig. (p)
City center	City center village	0.565	0.932
	District center	-0.879	0.773
	District village	1.283	0.540
City center village	City center	-0.565	0.932
	District center	-1.444[*]	0.030
	District village	0.719	0.622
District center	City center	0.879	0.773
	City center village	1.444[*]	0.030
	District village	2.162[*]	0.001
District village	City center	-1.283	0.540
	City center village	-0.719	0.622
	District center	-2.162[*]	0.001

Table 14. Statistics related to self-efficacy dimension.

Parameter	N	Mean	ss.	Skewness	Kurtosis	Minimum	Maximum
Self-efficacy	424	19.95	4.16	-0.833	0.511	5	25

Table 15. K-S normality test results.

Parameter	Kolmogorov-Smirnov		
	Statistic	sd	Sig.(p)
Self-efficacy	0.113	424	0.000

efficacy sub-dimension of the scale has a normal distribution Table 15. According to Kolmogorov-Smirnov Test, total self-efficacy scores of fourth grades are not distributed evenly ($p<0.05$). In this case, normality of the data collected using the Likert scale is tested using another criterion commonly accepted in literature whose

skewness and kurtosis coefficients are between -1.5 and +1.5 (Fidell et al., 2013). Based on this and taking into account skewness and kurtosis coefficients of attitude variable, it might be considered to be distributed evenly (normal). In this case, just as in attitude sub-dimension, parametric methods are used to determine whether self-

Table 16. (t) test results of self-efficacy score averages based on gender.

Gender	N	Mean	ss	t	p
Female	228	19.82	3.80	-0.708	0.479
Male	196	20.11	4.56		
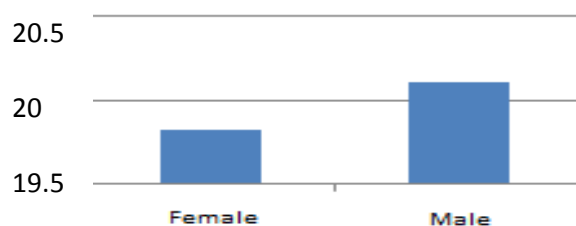
Figure 6. Average self-efficacy scores based on gender.

Table 17. (t) test results of self-efficacy score averages based on past injuries in PE classes.

Past injuries	N	Mean	ss	t	p
Yes	49	19.14	4.64	-1.45	0.194
No	375	20.06	4.09		
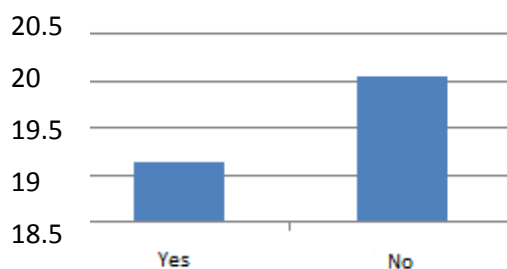
Figure 7. Self-efficacy scores based on past injuries.

efficacy scores have any significant differences based on certain demographic variables.

Comparison of self-efficacy scores based on gender

T test was used in independent groups to determine whether self-efficacy sub-dimension scores of fourth grade students have a significant difference based on gender. The results are given in Table 16 and Figure 6. Based on the results listed on this chart, fourth grade students' self-efficacy perceptions of physical education classes do not have a significant statistical difference (t= -0.708; p>0.05).

Comparison of self-efficacy scores based on past injuries in PE classes

T test was used in independent groups to determine whether fourth grade students' past injuries in physical education classes cause a significant difference in their self-efficacy perceptions of physical education. The results are given in Table 17 and Figure 7. According to t test results on this chart, fourth grade students' self-efficacy perceptions of physical education classes do not differ significantly based on whether they have past injuries in PE classes (t=-1.45; p>0.05). In this case, fourth grade students' negative past experiences in PE classes do not affect their self-efficacy perceptions of

Table 18. Anova test related to self- efficacy score averages based on education level of mothers.

Education level of mother	N	Mean	ss	F	p
Primary	147	19.85	4.350		
Junior high school	128	20.16	3.983		
High school	93	19.49	4.127	0.630	0.641
Undergraduate	50	20.46	4.282		
Post-graduate	6	20.83	3.125		

Figure 8. Self-efficacy scores based on education level of mothers

Table 19. Anova test related to self-efficacy score averages based on education level of fathers.

Education Level of Father	N	Mean	ss	F	p
Primary	61	19.64	4.191		
Junior high school	115	19.14	4.279		
High school	134	20.51	3.805	2.564	0.038
Undergraduate	102	20.08	4.407		
Post-graduate	12	22.00	3.464		

this class.

Comparison of self-efficacy scores based on education level of mother

One way variance analysis (ANOVA) was used to determine whether education level of mothers of fourth grade students significantly affects self-efficacy scores towards physical education classes. Test results are given in Table 18 and Figure 8.

According to ANOVA test results on this chart, fourth grade students' self-efficacy perceptions of physical education classes do not differ significantly based on education level of their mothers (F=0,630; p>0.05).

Comparison of Self-Efficacy Scores Based on Education Level of Fathers

One way variance analysis (ANOVA) was used to determine whether education level of fathers of fourth grade students significantly affects self-efficacy scores towards physical education classes. Test results are given in Table 19 and Figure 9. According to ANOVA test results on this chart, fourth grade students' self-efficacy perceptions of physical education classes differ significantly based on education level of their fathers (F=2.564; p<0.05). In addition, group averages indicate that self-efficacy perceptions of students who have fathers with a highest level of education are the highest.

Comparison of self-efficacy scores based on locations of schools

One way variance analysis (ANOVA) was used to determine whether school locations of fourth grade students significantly affect self-efficacy scores towards physical education classes. Test results are given in Table 20 and Figure 10. According to ANOVA test results
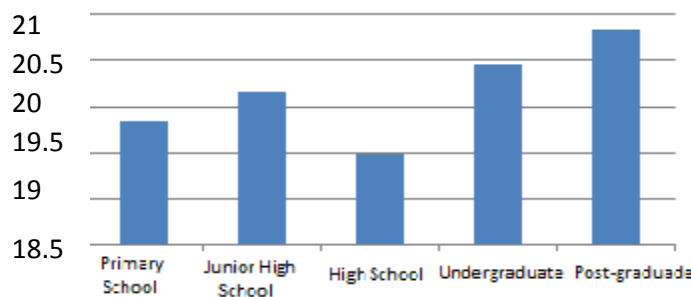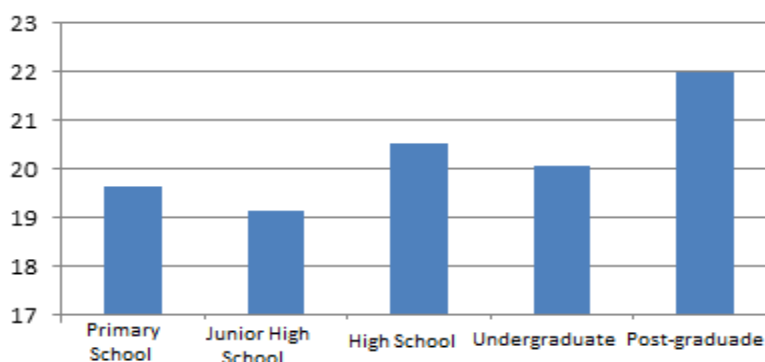
Figure 9. Self-efficacy scores based on education level of fathers.

Table 20. Anova test related to self-efficacy score averages based on locations of schools.

Locations of school	N	Mean	ss	F	p
City center	27	19.78	4.734		
City center village	123	19.79	4.289	3.709	0.012
District center	173	20.66	3.949		
District village	101	18.97	4.046		
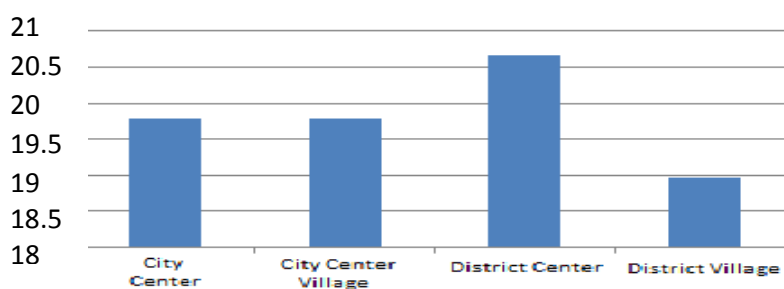
Figure 10. Average self-efficacy scores based on locations of schools.

on this chart, fourth grade students' self-efficacy perceptions of physical education classes differ significantly based on locations of their schools (F=3.709; p<0.05). Tukey multiple comparison test was used to determine which group is the source of the difference and the following results were obtained Table 21. Based on the findings listed in the table, locations of schools cause a significant difference only between villages and city centers.

DISCUSSION AND CONCLUSION

In this study, statistical calculations related to fourth-grade primary school students' attitudes and self-efficacy towards physical education classes were made and the details were included in charts. Summarized interpretation of the collected data shows that students' attitudes and self-efficacy perceptions do not differ greatly in terms of demographic variables. Analysis of average scores indicate that female students show greater interest in physical education classes when compared to male students. According to the findings of the study, fourth-grade students' attitudes and self-efficacy perceptions do not differ greatly based on their past injuries in PE classes. Hence, it might be concluded that past injuries do not change fourth-grade students' attitudes towards physical education classes. Another finding suggests that students' attitudes do not differ greatly based on education level of their mothers. However, education level of fathers creates a significant difference (F=6.603; p<0.05). According to the findings of

Table 21. Tukey multiple comparison test results based on locations of schools.

Parameter		Mean difference	Sig. (p)
City center	City center village	-0.011	1.000
	District center	-0.887	0.727
	District village	0.807	0.803
City center village	City center	0.011	1.000
	District center	-0.876	0.274
	District village	0.818	0.452
District center	City center	0.887	0.727
	City center village	0.876	0.274
	District village	1.694[*]	0.006
District village	City center	-0.807	0.803
	City center village	-0.818	0.452
	District center	-1.694[*]	0.006

this study, there are significant differences between primary-undergraduate and junior high school -post-graduate education level groups. In addition, when group averages are taken into consideration, as fathers' education level increases from primary school to under-graduate, attitude score averages generally increase.

According to this, it might be suggested that the better fathers' education level is the more positive students' attitudes towards the class are. On the other hand, it might also be suggested that locations of schools create a significant difference in attitudes towards PE classes (F=5.669; p<0. 05). According to the results of this research, there are significant differences between villages in city center-district centers and villages in district centers-district centers. In a study conducted by Yıldırım and İlhan (2010), average scores of groups indicated that the attitudes of fourth grade students attending schools in district centers are more positive towards physical education classes and this is also supported by our findings. Moreover, findings of Endler et al. (2001) suggested that gender does not create significant differences in terms of overall self-efficacy. Analyzing the self-efficacy dimension of the study, it is suggested that fourth grade students' self-efficacy perceptions of physical education classes do not have any significant differences. Hence, the results of our study are parallel to the findings of Endler et al. (2001).

In a study of Lorraine B. Robbins et al. (2004), the significant increase for both boys and girls in self-efficacy after completing the exercise task supports the importance of successful performance for enhancing self-efficacy or confidence in a particular behavioral domain. Interventions to increase PA self-efficacy should focus on: (a) providing positive PA experiences that minimize perceptions of discomfort, (b) mobilizing social sources of efficacy enhancement, such as modeling of PA by significant others (Bandura, 1986; e.g., peers, family members, educators, and health professionals), and (c) persuading children and adolescents that regular PA is an important and enjoyable part of everyday life. Research findings of a positive correlation between support for PA from parents and siblings and youth PA involvement (Aarnio et al., 1997; Zakarian et al., 1994) suggest that combining social support, selfefficacy, and positive experiential components in interventions to increase PA may be promising (Robbins et al., 2004).

According to our study, fourth- grade students' past negative experiences do not affect their self-efficacy perceptions of PE classes. It is also understood that self-efficacy perceptions of fourth- grade students do not differ significantly based on education level of their mothers; however, it is based on education level of their fathers. Furthermore, group averages indicate that self-efficacy perceptions of students who have fathers with a highest level of education are the highest. It is understood that self-efficacy perceptions of physical education classes do not differ significantly based on locations of schools (F=3.709; p<0.05). In conclusion, primary school students are accompanied by other branch teachers such as English teachers and religious culture and moral knowledge teachers in addition to guidance counselors after the second grade. Physical Education and Sports classes have a vital importance on children's personal and moral development as suggested earlier. In this context, if Physical Education specialists instruct children's PE classes as a requirement of a more professional approach. This will help children have a healthier education life and it will also contribute to the development of sports in the country; also, increased weekly hours of Physical Education and Sports classes will provide students with the opportunity to participate in sports activities more frequently.

Conflict of interests

The author has not declared any conflict of interest.

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Prospective teachers' conceptions of teaching and learning and their attitudes towards multicultural education

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This study aims to analyze the conceptions of the senior students at the faculty of education along with their attitudes towards multicultural education according to gender and department variables, and to identify degree to which their conception of teaching and learning predicts their attitudes towards multicultural education. A total of 278 prospective teachers, including 190 female and 88 male, who are attending the Faculty of Education of Cumhuriyet University participated in the study, which was conducted using a relational screening model. Data were collected using the Teacher Multicultural Attitude Survey (TMAS) and the Teaching and Learning Conceptions Questionnaire (TLCQ). Data obtained in the study was analyzed using One-Way Anova, Scheffe Test and Multiregression analysis. According to the findings of these analyses, the prospective teachers' conceptions of teaching and learning, and their multicultural educational attitudes varied significantly depending on the variables of department and gender. The prospective teachers' conceptions of teaching and learning predicted their attitudes towards multicultural education at a significant level. The obtained results were discussed in the light of the relevant literature, and were made for future studies.

Key words: Conceptions of teaching and learning, multicultural education, prospective teachers.

INTRODUCTION

Teachers' pedagogical and content knowledge, as well as their specific characteristics, influence classroom behavior, instructional practices and the learning environment that they create. In the late 1980s, there were an increasing number of studies aimed at teachers' beliefs, including their beliefs on education, teaching-learning beliefs, and self-efficacy beliefs (Chan and Elliott, 2004).

Knowing the belief structures of teachers and prospective teachers is crucial in improving their

education and professional readiness (Pajares, 1992). In addition, these beliefs related to teaching and learning affect how they learn, and how they interpret pedagogical knowledge, how they conceptualize instructional tasks, their teaching decisions, as well as classroom practices (Uzuntiryaki and Boz, 2007).

Conceptions of teaching and learning refer to the beliefs that the teachers have regarding the methods of teaching and learning that they prefer. These beliefs include the meaning of teaching and learning, and the

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roles of teachers and students. There are two main approaches towards teaching and learning: namely, traditional and constructivist (Clements and Battista, 1990; Chan and Elliott, 2004).

Teaching and learning approaches are classified by some authors as teacher-centered/content-oriented or student-centered/learning-oriented (Entwistle et al., 2000; Cheng et al., 2009). In the traditional approach, the teacher-student interaction is limited, transfer of knowledge is one-way from the teacher to the student, and it includes the use of teacher-centered teaching strategies. The traditional approach takes the teacher as the source of knowledge, and students as passive recipients. This approach particularly emphasizes the acquisition of knowledge from the teacher and textbook (Chan and Elliott, 2004; Cheng et al., 2009). Learning in teaching-learning environments with a traditional approach is encouraged by the use of such factors as reward, punishment, repetition etc. An environment is created where everything is determined, presented and controlled by the teacher (Açıkgöz, 2011).

Constructivism is a learning approach in which students acquire the necessary knowledge on their own, as part of active learning that the teacher establishes and under the guidance of the teacher, and in which they construct and interpret this knowledge based on their previous experiences (Doğanay and Sarı, 2012). The views of Piaget, Dewey, Vygotsky, Bruner and von Glassersfeld were influential in the development of the constructivist learning approach (Açıkgöz, 2011; Demirel, 2011). According to the notions that forms the basis of constructivism, the learner should individually discover and transform complex knowledge in order to integrate what they learn within themselves (Slavin, 2012). Constructivist conception emphasizes creating active learning environments that support critical thinking, research and cooperation (Chan and Elliott, 2004).

Student-centered teaching strategies are used and it is emphasized that, in student-centered teaching strategies, learning takes place in a reflective and interactive process in which teachers have a guiding role (Cheng et al., 2009). What the teacher is required to do is to act as an intermediary between the student and the curriculum, to facilitate the students' knowledge construction process (Açıkgöz, 2011). In the constructivist approach, the basic components of the learning environment is the learner, and constructivist teachers recognize and promote the students' autonomy and initiative, ensuring that they think freely, communicate with each other, act inquisitively by asking open-ended questions, construct links relating to the content, and create metaphors (Brooks and Brooks, 1999).

According to the constructivist approach, the learners integrate what they have just learnt with their gains from previous experiences to create their own constructs of meaning. Therefore, the individual is not a passive

recipient, but an active subject or participant (Karadağ and Korkmaz, 2007). The teaching and learning conceptions that teachers adopt affect the various characteristics they show during the teaching process. Studies related to the conceptions of teaching and learning show that there is a direct relationship between these conceptions, teaching approaches and learning products. For example; Gow and Kember (1993) found a relationship between the teaching conceptions of instructors and the learning approaches of students (Boulton-Lewis et al., 2001).

In a study conducted by Trigwel and Prosser (1996), a strong relationship was between teaching conceptions and teaching approaches. Baş and Beyhan (2013) studies on the relationship between prospective teachers' teaching and learning conceptions and student control ideologies found a significant negative relationship between prospective teachers' constructivist teaching and learning conceptions and student control ideologies, and a significant positive relationship between traditional teaching-learning conceptions and student control ideologies. A study conducted by Baş (2015) on the relationship between teachers' educational philosophy beliefs and their teaching-learning conceptions found a relationship between constructivist teaching-learning conception and progressivism, existentialism, and reconstructionism; and also between traditional teaching-learning conception and essentialism and perennialism. Oğuz (2011) found significant relationships between prospective teachers' democratic values and their teaching-learning conceptions.

New approaches towards learning and teaching highlight the importance of supporting the student's autonomy and individual differences during the learning process. Teaching needs to be constructed according to students' individual differences. It can be said that the experiences that students gain from their cultures constitute a significant aspect of the individual differences that are reflected in the teaching environment. For various reasons, many people have to migrate within their own country or to other countries. These migrations reveal multicultural demographical structures of indivi-duals, families and groups belonging to diverse cultures and subcultures across the world. This new fabric, composed of social differences, is conceptualized as multiculturalism (Haas, 2008; Hatton, 2003); therefore, with its wide range of aspects, this concept is currently a subject for various disciplines ranging from sociology to political science, and from philosophy to pedagogy (Yazıcı et al., 2009). The concept of multiculturalism expresses a sensitiveness on race, ethnicity, language, sexual orientation, gender, age, disabilities, social class, education, religious preference, and other cultures (Kaya and Aydın, 2014).

Multicultural education, on the other hand, refers to the educational aspect of multiculturalism. Multicultural

education is an educational reform arguing that all students, irrespective of their gender, social class, race, ethnicity, and culture, should have the same educational opportunities at school (Banks, 2013). Parekh (2002) states that multicultural education involves intellectual curiosity, self-criticism, independent decision-making by considering opinions and evidences, respect for others, sensitivity for other ways of thinking and living, and activities aimed at moving away from ethnocentrism (Başbay and Bektaş, 2009). When the definitions on multicultural education are evaluated in a holistic manner, it is seen that respecting human rights, tolerating cultural differences, equality of opportunities in education, adjusting educational environments reflecting the cultural varieties, and analyzing the different perspectives and ideas are listed (Cırık, 2008). Banks (2013) states that multicultural education aims to reduce cultural prejudice, offer various cultural options to students, and provide them with the knowledge, skills and approaches that they need in order to communicate with different cultures in their own communities.

Banks (2008) discussed five significant dimensions of multicultural education: content integration, knowledge construction, prejudice reduction, equity pedagogy, and empowering school culture (Banks, 1993; Banks, 2013; Slavin, 2012). Content integration enables the teacher to explain key concepts, principles, generalizations and theories by making use of examples, data and knowledge from various cultures and groups. *Knowledge construction* is a dimension that helps children understand how knowledge is constructed, and how individuals and groups are affected by their race, ethnicity and social class. *Prejudice reduction* is the most important objective of multicultural education, and means that teachers use classes and activities that will help students develop positive attitudes towards different racial, ethnic and cultural groups. *Equity pedagogy* is the use of teaching techniques that facilitate the academic success of students from different ethnicities and social classes. *Empowering school culture* requires structural changes in the school environment, in order to perceive the school as a part of the change and for students from all groups to have an equal opportunity for success.

Teachers assume a primary role in teaching concepts such as equity, respect and peace, which form the basis of multicultural education, and offer equal opportunities of success to all students (Fong and Sheets, 2004; cited in Kaya and Aydın, 2014). Banks (2013) addressed the necessity for teachers and all staff working in schools to have knowledge concerning respect for different identities, democratic attitudes and values, as well as the implementation of a multicultural education program, in order to realize the multicultural education conception.

Teachers need to create a suitable classroom environment for reaching students with distinct qualities and characteristics; they should also see individual differences not as a problem, but as a component that enriches the learning environment. Designing such as process is a basic professional skill for teachers. It is therefore critical for teachers to be able to understand the effects of culture on education, multiculturalism and the concept of equality during the learning and teaching process (Başbay, 2014).

Studies on the features required by a multicultural educational environment show a similarity with the views proposed by new teaching and learning approaches. For example, the constructivist approach in teaching and learning is seen as a key component of transformative and multicultural education (Banks, 2013). That is because, in sociocultural constructivism, the interaction of the individual with their culture and their experiences play a significant part in the learning process. As stated by Başbay and Bektaş (2009), it is of vital importance for teachers to have a constructivist perspective with regards to multicultural education. The knowledge which students bring to school based on their personal and cultural experiences forms the basis of their learning. Disregarding this source means the denial of the students' knowledge construction process.

The fact that multicultural education requires teachers to have various points of view with regards to teaching-learning processes makes it vital to study prospective teachers' conceptions on teaching and learning, as well as their attitudes towards multicultural educational.

The purpose of this study is to examine prospective teachers' conceptions of teaching and learning and their multicultural educational attitudes based on the variables of gender and department, and to determine the relationship between conceptions of teaching-learning and multicultural educational attitudes. In line with the abovementioned aim, answers were sought to the following questions:

1. What is the level of the prospective teachers' attitudes towards multicultural education and their conceptions of teaching and learning?
2. Do the prospective teachers' attitudes towards multicultural education and their conceptions of teaching and learning differ significantly by gender?
3. Do the prospective teachers' attitudes towards multicultural education and their conceptions of teaching and learning differ significantly by department?
4. Do the prospective teachers' conceptions of teaching and learning significantly predict their attitudes towards multicultural education?

METHODOLOGY

The relational screening model was used in this study. Relational screening models are research models that aim to identify the existence and/or degree of covariance between two or more variables (Karasar, 2006).

Table 1. Demographic data for sampling.

Variable		N	Percentage
Gender	Female	190	68.3
	Male	88	31.7
	Total	278	100
Department	Preschool teaching	66	23.7
	Social sciences teaching	38	13.7
	Science education	36	12.9
	Classroom teaching	40	14.4
	Turkish education	32	11.5
	Secondary school mathematics education	35	12.6
	Primary school mathematics education	31	11.2
	Total	278	100

Study sample

The study sample comprised senior university students from the Departments of Preschool Teaching, Classroom Teaching, Primary School Mathematics Education, Secondary School Mathematics Education, Turkish Education, Social Sciences Education, and Science Education. Demographic data for the study sample are given in Table 1.

Data collection tool and the collection of data

Data were collected using the teaching and learning conceptions questionnaire and teacher multicultural attitude survey.

Teacher multicultural attitude survey (TMAS)

The teacher multicultural attitude survey (TMAS) was developed by a group of researchers led by Ponterotto (1998) and adapted into Turkish by Yazıcı et al. (2009). Reliability score of the scale is 0.75. The scale was originally one-dimensional, but did not emerge as one-dimensional in the analysis of key components for the reliability of the scale performed by Yazıcı et al. (2009). Yazıcı et al. (2009) reported this to be due to the scale for quantifying multiculturalism having a theoretically difficult structure in the original study. The reliability score of the scale was found to be 0.71.

Teaching and learning conceptions questionnaire (TLCQ)

This scale was developed by Chan and Elliot (2004) to determine the teaching-learning conceptions of prospective teachers and was adapted by Aypay (2011) into Turkish. The scale is a five-point Likert type scale consisting of two dimensions, which are the constructivist conception (12 items) and traditional conception (18 items). Cronbach's Alpha coefficient calculated for the whole scale is 0.71, while subscale reliability values are 0.88 and 0.83 (Aypay, 2011). In this study, the reliability score for the constructivist subscale and traditional subscale were determined as 0.84 and 0.78, respectively.

Data analysis

Mean scores and standard deviations were calculated to determine the prospective teachers' teaching-learning conceptions and their multicultural educational attitudes. Since both were rated as 5-point Likert scale and had four intervals, the interval was accepted as 0.8. The value obtained based on the mean scores was interpreted according to the following levels: 1-1.8= strongly disagree; 1.8-2.6= disagree; 2.6 -3.4=neither agree nor disagree; 3.4-4.2=agree and 4.2-5.0=strongly agree. The normality of distribution was first tested using the Kolmogorov-Smirnov test and, based on analyses allowing for the extreme values to be rearranged in a way that would not influence the distribution, the distribution was found to be normal. Thus, an independent t test was conducted to determine the difference of teaching-learning conception and multicultural educational attitude levels, while a One-Way Anova test was conducted based on the department variable. Multiregression analysis was carried out to establish whether the prospective teachers' teaching-learning conceptions significantly predicted multicultural educational attitudes.

RESULTS

This section includes the results concerning the sub-problems of the study.

1. What is the level of the prospective teachers' attitudes towards multicultural education and their conceptions of teaching and learning?

Mean scores and standard deviations were calculated to reveal the level of multicultural attitude questionnaire and teaching-learning conception survey scores, and these acquired data are included in Table 2.

As can be seen in Table 2, the prospective teachers' multicultural attitude survey mean scores were $\bar{X} = 3.65$, at a level of agreement. It was seen that the constructivist teaching-learning conception subscale score was $\bar{X} = 4.17$ and standard deviation was 0.61 at a level of agreement, while traditional teaching-learning conception mean score was 2.69 and standard deviation was 0.64, at a level of neither agreement nor disagreement. Based on these results, it can be said that the prospective teachers'

Table 2. Mean scores and standard deviations of multicultural education and teaching-learning conception scores.

Scales	$\bar{X}$	SD
Multicultural educational attitude	3.65	0.45
Constructivist teaching-learning conception	4.17	0.61
Traditional teaching-learning conception	2.69	0.64

Table 3. t Test results for multicultural educational attitude and teaching-learning conceptions based on gender.

Scales	Gender	N	$\bar{X}$	t	p
Multicultural education	Female	190	3.73	4.13*	0.00
	Male	88	3.49		
Constructivist	Female	190	4.26	3.37*	0.00
	Male	88	3.98		
Traditional	Female	190	2.57	4.54*	0.00
	Male	88	2.96		

multicultural educational attitudes are positive, and that they mainly adopt a constructivist teaching-learning conception.

An answer was sought to the second sub-problem of the second study, that is, "Do the prospective teachers' attitudes towards multicultural education and their conceptions of teaching and learning differ significantly by gender?" The t test results to determine whether prospective teachers' multicultural educational attitudes and teaching-learning conceptions differed by gender are given in Table 3.

According to Table 3, the prospective teachers' multicultural educational attitudes and their teaching-learning conceptions significantly differed according to gender in the constructivist and traditional conception subscales (p<0.05). Considering multicultural education attitude scores, it was found that the female prospective teachers ($\bar{X}$=3.73) had a significantly higher mean score than the male ($\bar{X}$=3.49) ($t_{278=}$4.13, p<0.05). It was also found that, with regards to the constructivist teaching-learning conception, the female prospective teachers had significantly higher ($\bar{X}$=4.26) mean scores than the male ($\bar{X}$=3.98) ($t_{278=}$3.37, p<0.05), while in the traditional teaching-learning conception, male prospective teachers had significantly higher ($\bar{X}$=2.96) mean scores than the female ($\bar{X}$=2.57) ($t_{278=}$-4.54, p<0.05). In accordance with these findings, it can be said that the female prospective teachers' multicultural educational attitude was more positive and that they adopted a constructivist teaching-learning conception; while the male prospective

teachers adopted a traditional conception.

A One-Way ANOVA test was used to determine whether the prospective teachers' multicultural educational attitudes and their teaching-learning approaches differed by the departments in which they worked, in seeking an answer to the third sub-problem of the study, that is, "Do the prospective teachers' attitudes towards multicultural education and their conceptions of teaching and learning differ significantly by department?" Results are given in Table 4.

As can be seen in Table 4, the prospective teachers' multicultural educational attitudes (F=9.31; p=0.00<0.05) and their teaching-learning conceptions significantly differed significantly according to department in the constructivist (F=6.91; p=0.00<0.05) and traditional (F=3.58; p=0.02<0.05) subscales. The Scheffe test was used as a post-hoc test to determine the source of difference. According to the results of the Scheffe test, in multicultural educational attitude, the mean scores of the students in the social sciences teaching department were significantly higher than the mean scores of the students in preschool, primary mathematics, Turkish education and science educational departments. The multicultural education scores of the students in the classroom teaching department were significantly higher than the students in the science education department. With regards to teaching-learning conceptions, the constructivist teaching-learning conception mean scores of students in social sciences education department are higher than those of the students in science education

Table 4. ANOVA results for multicultural educational attitude and teaching-learning conceptions based on department.

Scales	Department	N	$\bar{X}$	SD	Source of variance	Sum of squares	Df	Mean square	F	p	Significant difference
Multicultural education	Preschool	66	3.6	0.44	Between groups	9.76	6	1.62	9.31	0.000	2-1,3,5,7; 4-3
	Social S.	38	4.0	0.53							
	Science	36	3.3	0.50							
	Classroom teaching	40	3.7	0.26	Within groups	47.35	271	0.17			
	Turkish	32	3.6	0.31							
	Secondary math	35	3.4	0.33	Total	57.11	277	-			
	Primary math	31	3.6	0.41							
Constructivist	Preschool	66	4.1	0.66	Between groups	13.83	6	2.30	6.91	0.000	2-3,7; 4-3,7
	Social S.	38	4.5	0.52							
	Science	36	3.8	0.65							
	Classroom teaching	40	4.8	0.36	Within groups	90.35	271	0.33			
	Turkish	32	4.2	0.36							
	Secondary math	35	4.2	0.60	Total	104.19	277				
	Primary math	31	3.8	0.68							
Traditional	Preschool	66	2.7	0.57	Inter-group	8.37	6	1.39	3.58	0.002	3-4
	Social S.	38	2.5	0.52							
	Science	36	3.0	0.55							
	Classroom teaching	40	2.4	0.63	Intra-group	105.56	271	0.39			
	Turkish	32	2.8	0.79							
	Secondary math	35	2.8	0.76	Total	113.93	277	-			
	Primary math	31	2.7	0.50							

Table 4. Relationship between constructivist and traditional teaching-learning conceptions.

Variable	MEA	CTL	TTL
Multicultural educational attitude	1	0.641**	-0.363**
Constructivist teaching-learning	1	1	-0.389**
Traditional teaching-learning	1	1	1

**p<0.01.

Table 5. Regression results regarding the predictiveness of constructivist and traditional teaching-learning conception scores concerning multicultural educational attitude (Predicted variable: Multicultural educational attitude).

Variable	B	Shb	β	t	p
Constant	2.088	0.21	-	9.92	0.000
Constructivist	0.43	0.037	0.58	11.88	0.000
Traditional	-0.09	0.035	-0.13	-2.68	0.008
R=.653	R^2=0.426	-	-	-	-
F=102.13	P=.000	-	-	-	-

and primary mathematics education departments. The mean scores of the students in the classroom teaching department were significantly higher than those of the students in the science and primary mathematics teaching departments. In terms of traditional teaching-learning conception, the mean scores of the students in the science teaching department were higher than those of the students in the classroom teaching department.

The Pearson correlation coefficient was first used to find an answer to the fourth sub-problem of the study, which was "Do the prospective teachers' conceptions of teaching and learning significantly predict their attitudes towards multicultural education?", and a multi-regression analysis was then performed. The Pearson correlation coefficients are given in Table 4, while the results of the multi-regression analysis are given in Table 5.

As can be seen in Table 4, there is a medium level positive relationship between the prospective teachers' attitudes towards multicultural education and their constructivist teaching-learning conceptions (r=0.641), and a medium level negative relationship between traditional teaching-learning conceptions (r=0.363).

Both constructive and traditional teaching-learning conceptions significantly predict the prospective teachers' multicultural educational attitude (R=0.653, R^2=0.426, p<0.05). The two sub-scales of the teaching-learning conception questionnaire explained approximately 43% of the level of multicultural educational attitude. According to the standardized regression coefficient (*β*), constructivist conception has primary significance (*β=.58*) while traditional has secondary significance (*β=0.13*) as predictive variables. When the p values are examined for the significance of the relationship, it can be seen that both dimensions are significantly influential in explaining the levels of the students' multicultural educational attitude (p<0.05).

DISCUSSION

This study examined the teaching-learning conceptions and attitudes towards multicultural education of senior education faculty students, and a number of recommendations were proposed by discussing the

results of the study in light of other studies in the literature.

The first finding of the study indicates that the prospective teachers' level of attitude towards multicultural educational as well as their level of constructivist teaching-learning conception are good, while their traditional teaching-learning conception is at a medium level. It has been reported by Baş (2014) and Engin and Daşdemir (2015) who found that teachers have constructivist teaching-learning conception, while Baş and Beyhan (2013), Aydın et al. (2015), Aypay (2011), Yılmaz and Şahin (2011) and Oğuz (2011) found that prospective teachers have constructivist teaching-learning conception. These findings are thought to be related to the implementation of curricula in Turkey that target constructivism, and frequently laying emphasis on the importance and requirement of constructivism in teachers' and prospective teachers' education.

The study found that prospective teachers' attitudes towards multicultural education are positive. In the studies of Marangoz et al. (2015) and Söylemez and Kaya (2014) on the multicultural educational attitude of teachers; of Çoban et al. (2010) and Türkan et al. (2016) on those of prospective teachers; of Demircioğlu and Özdemir (2014) on those of students who go through pedagogical formation; and of Polat (2012) in a study regarding school principals, it was determined that the attitudes were generally positive. It can be seen that the results of this study are in agreement with those of the related study results. It can be said that prospective teachers' constructivist teaching-learning conceptions influence their positive attitudes towards multicultural education. That is because multicultural education requires educational environments to be arranged according to individuals differences, and in a way that enables students to construct their knowledge differently (Türkan et al., 2016). One characteristic that is necessary for teachers with a positive attitude towards multicultural education is the ability to guide students when they are structuring information.

In the study, it was found that the prospective teachers' teaching-learning conceptions differed significantly by gender. It was determined that the female prospective

teachers had a more constructive understanding, while the male prospective teachers had a more traditional understanding. This finding fully matches with the results of the study of Aypay (2011). In the study conducted by Baş (2014), it was also observed that there was significant difference in favor of male teachers in traditional teaching-learning conception, although the difference in constructive conception was not significant. No significant difference was found in the study carried out by Engin and Daşdemir (2015) in the teaching-learning conceptions of classroom teachers. It can be seen that the results of studies examining the teaching-learning conceptions based on gender then to differ from one another.

In the current study, it was found that the prospective teachers' attitudes towards multicultural education differed according to gender, with female students having a higher level. This finding is in agreement with the results of the studies conducted by Demircioğlu and Özdemir (2014) and Türkan et al. (2016). On the other hand, in a study by Tortop (2014), prospective teachers' attitudes towards multicultural education did not show any significant difference according to gender.

Another finding of the current study was that multicultural educational attitudes and teaching-learning conceptions of faculty of education students differed according to their department. In the multicultural attitude survey, the mean scores of the students in the social sciences education department were significantly higher than those of the other departments, with the exception of the classroom teaching department. This result is considered to be associated with the content and structure of the social sciences class. As stated by Duman and İkiel (2002), the social sciences class is pivotal in terms of allowing students to understand and perceive themselves as well as their community, society, country and world from socioeconomic, environmental, cultural, local and global perspectives, and to solve problems relating to perception. In addition, it was found that the students in the classroom teaching department had a much more positive attitude towards multicultural education than the students in the science and primary mathematics department. This result is believed to be associated with the variety of classes taught in this department.

The prospective teachers' conceptions of teaching and learning differed significantly by department. It was recognized that, with regards to constructivist teaching-learning conception, students from the social sciences department had higher scores than students in the science and primary mathematics departments. This result is believed to be due to the structure and content of social sciences class. The teaching-learning process in the social sciences class should be arranged in a way that will allow students to discover, carry out activities involving analysis and evaluation, gain knowledge from

the actual source, and to interpret and develop a new meaning from what they learn. This requires making use of prior knowledge in learning, and effectively building subsequent learning experiences on prior learning experiences (Jadallah, 2000; cited in Gömleksiz and Öner, 2013).

Additionally, it was found that students in the classroom teaching department adopted constructivist teaching-learning conception more than the students in the science education and primary mathematics teaching departments, while students in the science education department adopted traditional conception more than those of students in classroom teaching. This finding is in agreement with the findings associated with multicultural educational attitudes. It was observed that in departments with higher attitudes towards multicultural education, the mean score for the constructivist teaching and learning concept was also higher.

Another finding of the study is that the prospective teachers' conceptions of teaching and learning significantly predicted attitudes towards multicultural education. The emphasis in the literature on the need for a constructivist approach in multicultural reinforces this finding in the study. Banks (2013) describes that the constructivist approach in teaching and learning is a key component of multicultural education. As stated by Başbay and Bektaş (2009), it is of vital importance for multicultural education that teachers adopt a constructivist perspective. The knowledge which students bring to school based on their personal and cultural experiences forms the basis of their learning. Disregarding this source means the denial of the students' knowledge construction process.

In a study conducted by Türkan et al. (2016) on prospective teachers' attitudes towards multicultural education and their epistemological beliefs, it was found that prospective teachers' beliefs on knowledge construction increased with higher multicultural educational attitude scores. Based on these results and descriptions, it can be said that teachers cannot implement constructivism without having a positive attitude towards multicultural education, or, inversely, implement a multicultural education without a constructivist conception.

CONCLUSION AND RECOMMENDATIONS

Ever increasing multiculturalism in many societies today makes it necessary to generate solutions on this issue. This situation signifies the importance of multicultural education and the necessity that teachers should be qualified for multicultural education. Including the multicultural education in the whole educational life of teachers as well as the in-service educations in the framework of the constructivist approach may increase the knowledge, skills and attitudes of teachers and

prospective teachers against multicultural education, and therefore allow the constructivism to be better applied. Furthermore, it is considered that inclusion of courses relevant to multicultural education in the teacher education programs and increasing the exchange of students of education faculties across countries may allow the teachers gain multicultural education qualifications. Teachers' and prospective teachers' teaching-learning conceptions and their multicultural educational attitudes could be studied by focusing on different characteristics. It may be possible to obtain better results in these studies by using qualitative research methods. Studies could be performed to assess teachers' teaching-learning conceptions and their attitudes towards multicultural education based on the opinions of students. It is believed that investigating the effects of teachers' teaching-learning conception on students' learning products could also make a certain contribution.

Conflict of Interests

The authors have not declared any conflict of interests.

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Full Length Research Paper

Analysis of students' school engagement in terms of friendship and teachers' behavior

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The main goal of this study is to analyze "Students' school engagement in terms of friendship and teacher behaviors". The population of the study is all students at 4th grade within the boundaries of İstanbul Metropolitan Municipality. The data of the study were gathered from 2066 students from 62 schools. "School Engagement Scale", "Peer Attachment Scale" and "Perceived Teacher Behaviors Scale" were used apart from an information form developed by the researcher. Multiple Regression Analysis, T-test and one-way analysis of variance were used to analyze the data. Results show that; *students' relationship with their friends predicts school engagement most.* Female students have a higher level of school engagement. Students who do cultural and sports activities, those who get support from counseling service and those who do not have a problem with transportation have a higher level of school engagement. Students in crowded classrooms have a lower level of school engagement. It is reckoned that this study is significant in terms of presenting negative variables affecting students' engagement in school which has an important role in their personal and social lives and in terms of taking necessary precautions.

Key words: Engagement, friendship, teacher behavior.

INTRODUCTION

School is a corporal and psychological environment in which education is carried out. Schools are institutions where students are shaped and made to prosper in cognitive, physical, psychomotor, emotional and moral terms and where students can socialize apart from their families. In this sense, school takes an important place in an individual's life in terms of healthy progress of children and acquisition of the qualities mentioned above.

School engagement is defined differently by many scientists. However, the term "school engagement" is first used by Hirschi. According to Hirschi (1969), the basic determiner of crime factor is low engagement with social values and norms. In this regard, crime and violence will decrease if school engagement increases (cited in Kızmaz, 2006). Finn (1993) defines school engagement as students' feeling of belonging to school and adopting its aims. According to Maddox and Prinz (2003), school engagement is students' relation with their schools and various aspects of their academic experience. Broadly, school engagement means students' relation with their schools, school personnel and the ideals which are aimed to be achieved. Cernkovich and Giordano (1992)

approached school engagement from different perspectives based on Hirschi's theory of social control and stated that school engagement is shaped under four basic subcategories (Hirschi,1969). They are school engagement, engagement to school personnel, taking responsibilities at school and joining activities at school. Newmann (1992) defines school engagement as students' psychological investment on learning. Finn et al. (1993) define school engagement as students' feeling of belonging to school and adopting its aims. According to Willms (2003, 18), school engagement has two aspects: affective aspect and behavioral aspect. Affective aspect emphasizes students' feeling of belonging to school, how much they value educational outcomes and how they identify themselves with these outcomes. Behavioral aspect emphasizes students' attendance to academic and non-academic activities. According to Jimerson et al. (2003), school engagement has three aspects. They are cognitive, affective and behavioral aspects. According to this, affective aspect involves students' feelings about school, teachers and their peers. Cognitive aspect involves students' believes and perceptions about school, students and their peers. Behavioral aspect involves students' attendance to extracurricular activities like sport, dance and theatre and so their observable behaviors and performance.

According to the definitions above, school engagement is students' feeling of belonging to school, adopting the aims and values of their schools, and consequently, adopting their duties and responsibilities about school and intense wish for academic success. There are a lot of factors which affect school engagement such as family, school environment, friendship and teacher behaviors. Friendship and teacher behaviors are mostly emphasized in this research.

According to Connell and Klem (2004), students feel more satisfied with school and develop more positive academic attitude and values in schools where there are supportive and caring group of friends.

According to Silins and Mulford (2004, 449), teachers' school engagement will increase students' school engagement and attendance. Similarly, Skinner and Bellmont (1993) assert that teachers' attendance is highly correlated with students' school engagement and students' high level of engagement yields teachers' high level of school engagement. Research reveals that teachers' social support behaviors towards students have positive impact on affective and behavioral aspects of school engagement (Brewster and Bowen, 2004). According to Schlechty (2001), the activities that can bind students to each other increase school engagement. Shin et al. (2007) however found out that positive peer norms and peer support enhance students' school engagement. In a study conducted abroad by Leonard (2000), it has been presented that students who regard school as an unpleasant place have negative feelings towards it in all aspects of quality of life at school. In a study conducted by Green et al. (???), students who are accepted by their peers have a higher level of school engagement (cited **in** Osterman, 2000, 52). Murray and Greenberg (2000) have tried to find the correlation between students' relationship with their teachers and school engagement. The results of the study indicate that there is a positive correlation between student-teacher interaction and school engagement. In a study by Marks (2000) it has been found that students_who are supported by their friends and teachers have a high level of school engagement. As it can be seen in the explanations above, friendship and teachers' attitude contribute to developing school engagement among students.

Why is it important to have school engagement? There are a lot of answers to this question. There is no doubt it is expected that school engagement has positive effects on students' acquisition of good attitude and healthy progress. Manlove (1998) states that high degrees of school engagement lead to decrease in school drop-out and teenage pregnancy. On the other hand, the state of lack of school engagement leads to isolation, alienation and separation. Studies conducted demonstrate that school engagement has a lot of benefits. For instance, students who have positive attitude towards school and actively participate in activities at school are more likely to finish school and become independent learners. There is positive correlation between school engagement and other educational results like increase in academic success, school attendance, and high academic expectations. However, it has been confirmed that lack of school engagement among teenagers brings in serious results such as substance abuse, teenage pregnancy, getting involved in crime and school drop-out (Finn and Rock, 1997; Caraway et al., 2003; Thompson, 2005).

Absence at school, not participating in academic activities and as a result of this; failure, damaging school property, littering the school inside and outside etc. cause loss of money and energy spent on these students. There may be many reasons for this situation, yet it is considered to be related to school disengagement. This study is believed to be a guiding light for taking necessary precautions about school engagement / disengagement. Besides, this study is very important in that there is limited research on school engagement in Turkey and this study has a huge sample which is 2066. The fact that İstanbul, where the study has been carried out, is a cosmopolitan city shows that it can represent the whole Turkey more or less. Therefore, these facts make this study important.

Based on the explanations above, the main issue of this study is "Analyzing students' school engagement in terms friendship and teacher behaviors".

In accordance with this purpose, answers to the questions below have been sought:
1) Do the points on Peer Attachment Scale and Teacher

Behaviors Scale meaningfully predict the level of students' school engagement?

2) Do the points on Students' School Engagement Scale yield meaningful results with respect to students' gender, their mothers' being alive or dead, the distance between their houses and schools and the number of students in their classrooms?

3) Do the points on Students' School Engagement Scale yield meaningful results with respect to students' participation in cultural and sports activities, getting support from the counseling service, efforts to keep the class clean and grades on their transcripts?

METHOD

The main goal of this study is to analyze students' school engagement in terms of teacher behaviour and friendship. In this regard, it is possible to assert that this study is an example of correlational model.

Population and sample

The population of this study is 4th grade students of all primary schools within the boundaries of Istanbul Metropolitan Municipality. The data were gathered from 2066 students, 30 schools from Asian side and 32 schools from European side. The study was carried out at schools where İstanbul Sabahattin Zaim University MA students work. Due to the fact that only 4th grade students were included in the study, homogeneous sampling, a type of purposive sampling, was used. In this study 1032 (50%) of the students are females and 1034 (50%) are males. 1868 (92%) of the students in the sample are in the age range of 9-10, while 163 (8%) of them are in the age range of 11-12.

Instrument

"School Engagement Scale" was used in this study to present students' school engagement. This scale was developed by Cernkovich and Giardona and was adapted to Turkish by Can in 2008. SES (School Engagement Scale) is a five point Likert scale. Each positive item is worth 5 points if is replied as "totally agree". They are worth 1 point if they are replied as "totally disagree". Other replies in between the two above are worth 4, 3 and 2 points. Negative items (1st, 2nd, 5th, 8th, 9th, 10th items) are graded negatively. The results of the first confirmatory factor analysis of School Engagement Scale are as follows: Normed Fit Index (NFI) = .80, Comparative Fit Index (CFI) = .86 and Root Mean Square Error of Approximation (RMSEA) = 0.076. Hu and Bentler (1999) indicated the critical values of the standards used for cohesiveness of items as CFI>.90; RMSEA<.05 and NFI>.90. In accordance with these findings, correction indexes yielded by LISREL were examined. The most important four corrections yielded on chi-square value were done and analyzed, and so the results are as follows: Normed Fit Index (NFI)= .93 , Comparative Fit Index (CFI)= .94 and Root Mean Square Error of Approximation (RMSEA)= .049. According to the compatibility statistics, the model used was confirmed. As a result, the findings attained from factor analysis are proof for the construct validity of School Engagement Scale.

The reliability co-efficient of the scale is .55 for "School Engagement" sub dimension, .71 for "Teacher Attachment" sub dimension, .76 for "School Responsibility" sub dimension, .64 for "Attending Activities at School" sub dimension, .72 for "Family Communication" sub dimension, .60 for "Perceived Opportunities" sub dimension. As a result of the calculations, there is no factor below .50 (Can, 2008). The alpha values of School Engagement Scale were recalculated and it is concluded that the scale is proved to be reliable in this study, as well [Alpha value for school engagement subscale= .63, alpha value for teacher attachment subscale= .70, alpha value for school responsibility subscale= .58, alpha value for attending activities at school subscale= .55, alpha value for family communication subscale= .60, alpha value for perceived opportunities= .58].

"Peer Attachment Scale" was developed by Armsden and Greenberg and adapted to Turkish by Hortaçsu and Oral (1991). Peer Attachment Scale is a five point Likert scale made up of 25 items. The range of total point is 25-125. High points attained on the scale designate strong peer attachment. In Löker's study of validity-reliability (1999), Croanbach-Alpha reliability co-efficient of this scale was found to be .92. The correlation of the items on the scale varies between .51 and .75. Akkapulu (2005) found internal consistency reliability co-efficient as .91, two halves reliability co-efficient as .95, test-retest reliability as .71. Total item point co-efficient varies between .9 and .67 (cited in Saçar, 2007:40). The alpha value of Peer Attachment Scale was recalculated in this study and the reliability co-efficient is .90. The correlations of the items vary between .63 and .88.

"Perceived Teacher Behaviours Scale" was developed by Erdoğdu (2006). The scale is a three point Likert scale made up of options: Yes, No, Sometimes. In total, there are 29 questions on the scale. The high points on the scale show that the teacher is regarded as democratic. Test-retest reliability co-efficient has been found to be .70; two halves reliability co-efficient has been found to be .79. The item analysis of the scale and average distinctiveness value were calculated as distinctiveness value (rjx=38). At the end of the reliability study for this scale, it was observed that the scale is made up of two factors. The alpha value of democratic attitude, one of the factors, is .79 and explains 44.59% of the variance. The alpha value of "Authoritative Attitude", the other factor, is .75 and explains 17.77% of the variance (Erdogdu, 2006).

Statistical analysis

SPSS Windows 16.0 was used to analyze the data gathered for the study. Multiple Linear Regression Analysis Technique was used for predicting the dependent variable with the help of two or more independent variables. Furthermore, One Way ANOVA was used for the meaningful variance between the averages of multiple independent variables. Independent Samples T-Test was used for the meaningful variance of the averages between two variables.

Procedure

The data of the study were gathered with the help of teachers studying Educational Administration and Supervision at İstanbul Sabahattin Zaim University as MA students. As the aim of the study is to measure how students perceive their teachers' behaviors (authoritative, democratic), only volunteers from 4th grade primary school participated in this study. Applying the questionnaire and assessment instruments took almost two course hours.

FINDINGS

The descriptive statistics of points that students got from

Table 1. The descriptive statistics of points that students got from school engagement, friendship and perceived teacher behavior.

Scales	N	Mean	Std. deviation	Min.	Max.
School engagement	2066	80.43	12.81	8.00	122.00
Friendship	2066	201.00	16.52	15.00	201.00
Teacher Behavior	2066	71.62	8.05	26.00	121.00

Table 2. The result of multiple regression analysis on regression of students' school engagement.

Variables	B	Standard error	ß	T	p	Dual r	Partial r
Constant	32.92	2.41		13.655	.000		
Friendship	.207	.017	.267	12.421	.000	.355	.264
Teacher behavior	.377	.034	.237	11.206	.000	.336	.236

R=0.49 R²=0.24; F(2,2061)=218,16 P=.000.

School Engagement, Friendship and Perceived Teachers Behavior scales is shown in Table 1.

As it can be seen in Table 1, the average of students' points on School Engagement Scale was calculated as 80.43. There are 19 items on the scale. The rate of average and item number is (80.43/19=4.22). It can be inferred that students' school engagement is high in general.

Are the average points of students' school engagement, friendship and teacher behavior really predictive of friendship, teacher behavior and school engagement together?

Multiple regression analysis was used to answer this question. That means analyzing multiple correlations. In this context, the correlation between independent variables (friendship and teacher behavior) is below .70. Since variance inflation factor is below 10, there is multiple correlation between the variables. When homoscedasticity of independent variables is considered, the data are found to range close to normal. As a result, the data from the statistics show that multiple regression analysis can be used for the study variables (Table 2).

Friendship and perceived teacher behavior are highly correlated with students' school engagement (R=0.49, R²=0.24, p<0.001). The two variables mentioned above explain only 24% of the variance in school engagement level.

According to standardized regression co-efficient (ß), the relative order of importance of predictor variables on students' school engagement is as follows: friendship and teacher behavior. When the results of t-test about the meaningfulness of regression co-efficient are analyzed, friendship and teacher behavior are significant predictors on school engagement.

The results of t-test on the relation between students' school engagement and gender, parents being alive or not, the distance of the school to their home and students' perception of crowd in their classrooms are shown in Table 3.

As it can be seen in Table 3, students' school engagement shows significant variance according to gender [t(2060) =2.78, p<.01]. Female students' level of school engagement ($\overline{x}$=81.22) is higher than that of male students ($\overline{x}$=79.66). In other words, female students have a higher level of school engagement compared to male students.

Students' level of school engagement varies according to their mothers being alive or not [t(2053) =2.50, p<.05]. Students whose mothers passed away ($\overline{x}$=80.55) have a higher level of school engagement than those whose mothers are alive ($\overline{x}$=77.63). In other words, students whose mothers have passed away are more engaged in school. There is no significant relation between fathers' being alive or not and school engagement.

Students' school engagement indicates significant variance according to the distance between students' school and home [t(2053) =2.32, p<.05]. Students who live close to school ($\overline{x}$=80.68) have higher levels of school engagement than those who live far from school ($\overline{x}$=78.72).

Students' school engagement shows significant variance according to the number of students in the classroom [t(2050) =3.70, p<.00]. Students who perceive their class as crowded ($\overline{x}$=79.61) have lower levels of school engagement compared to those who do not ($\overline{x}$=81.77) (Table 4).

According to analysis results, points on "School Engagement" scale show meaningful variance as to whether students attend sports activities or not [f (2-2050) =20.13, p<.01]. The level of school engagement for

Table 3. T-Test results of students' school engagement according to some dual variables.

Variables		N	X̄±S	sd	t	p
Gender	Female	1030	81,22±13,35			
	Male	1032	79,66±12,21	2060	2.78*	.000
Is your mother alive?	Yes	1990	77,63±12,62			
	No	65	80,55±12,82	2053	2.50**	.030
Is your home close to school?	Yes	1791	80,68±12.82			.020
	No	264	78,72±12.65	2053	2.32**	
Is your class crowded?	Yes	1276	79,61± 13,19			
	No	776	81,77± 12,11	2050	3.70*	.000

*p<.01;**p<.05.

Table 4. Anova results of students' responses on school engagement scale according to school variables.

Variables		N	X̄ ± S	Source of variance	Sum of squares	sd	Quadratic mean.	f	P
Attending sports activities	Yes	146	81.97± 13,04	Between groups	6499.6	2	3249.8		
	Sometimes	449	79.20± 12,63	Within groups	330913.1	2050	161.4	20.13	.000
	No	1468	77.49 ± 12,5	Total	337412.8	2092			
Attending cultural activities	Yes	1377	81,74 ± 12,9	Between groups	8035.1	2	4017.5		
	Sometimes	445	78,39 ± 11,7	Within groups	329940.3	2046	161.2	24.91	.000
	No	227	76,33 ± 13,1	Total	337975.5	2048			
Getting support from counseling service	Yes	894	81,95 ±11,99	Between groups	3788.2	2	1894.1		
	Sometimes	422	78,62±13,11	Within groups	325902.5	2035	160.1	11.82	.000
	No	722	79,74 ±13,16	Total	329690.7	2037			
grade	Mediocre	146	73,89 ±13,04	Between groups	12275.8	2	6137.9		
	Good	449	77,86 ±12,63	Within groups	326426.5	2060	158.4	38.73	.000
	Very good	1468	81,87 ±12,52	Total	338702.3	2062			
Trying to keep the class clean	Yes	1413	81,54±12.62	Between groups	6307.9	2	3153.9		
	Sometimes	614	78,22±12.94	Within groups	331803.6	2053	161.6	19.51	.000
	No	29	73,10±12.01	Total	338111.6	2055			

students who always attend sport events (x̄=81.97) is meaningfully higher than those who sometimes or never attend them (x̄=77.49). LSD test has been used to determine if there is significant variance within the groups and variance has been found to be significant.

According to results of the analysis, the points on "School Engagement" scale show meaningful variance as to whether students attend cultural activities or not [f(2-2035)=11.82, p<.01]. The level of school engagement for

students who always attend cultural activities (x̄=81.74) is meaningfully higher than those who sometimes or never attend them (x̄=78.39). LSD test has been used to determine if there is significant variance within the groups and variance has been found to be significant.

According to analysis results, the points on "School Engagement" scale show meaningful variance as to whether students get support from counseling service or not [f(2-2060) = 38.73, p < .01]. The level of school

engagement for students who always get support from counseling service is (x̄=81.95) meaningfully higher than those who sometimes or never benefit from it (x̄=79.74). LSD test has been used to determine if there is significant variance within the groups and it has been determined that only students who always get support from counseling service show variance from those who sometimes or never benefit from it.

According to analysis results, the points on "School Engagement" scale show meaningful variance as to students' school marks [f (2-2060) =38.73, p<.01]. The level of school engagement for students who were "very good" students previous year (x̄=81.87) is meaningfully higher than those who were "good" (x̄=78.86) and who were "mediocre" (x̄=73.89). LSD test was used to determine if there is significant variance within the groups and variance has been found to be significant.

According to analysis results, the points on "School Engagement" scale show meaningful variance as to students' effort to keep the class clean [f(2-2053)=19.51, p<.01]. The level of school engagement for students who always attend classroom cleaning (x̄=81.54) is meaningfully higher than those who sometimes (x̄=78.22) and those who never attend it (x̄=73.10). LSD test was used to determine if there is significant variance within the groups and all variances have been found to be significant.

DISCUSSION

Results of this study show that students' level of school engagement is generally high. According to the analysis results, being on good terms with friends is more predictive of high school engagement than democratic behavior of teachers. According to the data, it is possible to claim that friendship has a positive effect on school engagement in terms of spending time with their friends inside and outside school more frequently, taking part in activities together, being in the same age range. Furthermore, it is thought that regarding the teacher as an authority figure makes friendship more important in the sense of students' school engagement.

The results of the study show that students who perceive their teacher as positive and emotionally supportive have a higher level of school engagement. Apart from this, having healthy friendship and teachers' positive attitude enable students to have positive feelings towards school.

Another finding of the present study is female students' level of school engagement is meaningfully higher than male students. Studies conducted in Turkey and abroad have yielded similar results. In studies conducted abroad, female students have higher level of school engagement compared to male students (Jenkins, 1995; Simons et al., 1999; Osterman, 2000; McNeely et al., 2002). However,

in a study conducted by Eith (2005) and Bonny et al. (2000), male students' level of school engagement was found to be higher than that of female students.

Studies conducted in Turkey indicate that female students' level of school engagement is higher than male students' (Arastaman, 2006; Can, 2008). A study conducted by Ocak (2004) presented that male students' sense of belonging to school is lower than that of female students'.

There may be many reasons for female students to be more engaged in school. But especially these reasons are emphasized: female students take more responsibilities at school, are more motivated for success and have more sense of belonging because of cultural values. Besides, female students feel more engaged in school because they perceive school as social surroundings and they perceive it as a way to get out of house as females have more problems about going out compared to males and they are worried about not being sent to school if they are unsuccessful.

One of the most important findings of the study is that students whose mothers passed away have a higher level of school engagement than those whose mothers are alive. It can be interpreted as the fact that students perceive their teachers as their mothers and as their confidant and feel lonely at home. There is no other research on the correlation between school engagement and loss of mother either in Turkey or abroad. However, there is no meaningful correlation between having both parents alive or loss of father and school engagement. No meaningful correlation between school engagement and having divorced parents in a study conducted by Can (2008).

Another finding of the present study is perceiving their house is close to school increases students' school engagement. Transportation is expensive and difficult in big municipalities like Istanbul for both students and parents. In this sense, students will have a higher level of school engagement if they can go to school easily. There is, also, no research on students' perception of the distance between their house and school.

Another finding of the present study is there is a correlation between students' school engagement and their perception of crowded classrooms. According to the research findings, the degree of students' school engagement shows meaningful difference with respect to their perception of crowd in the class. According to this, the students who perceive that their class is crowded have a low level of school engagement. There is no research on the correlation between the features of class and school engagement. However, Lindsay (1982) found that high school students at lower grades have fewer absentees and join extracurricular activities more. Also, high school students who tend to drop out join intraclass activities less (cited from Arastaman, 2006). According to Purkey and Smith (1983, 445), students do not learn in

noisy, distracting and unsafe classrooms. When the rules are applied equally and consistently, not only behavioral problems decrease but also students' school engagement increase.

According to research results, students who attend sports, social and cultural activities have been found to have a high level of school engagement. They get bored especially on academic subjects. On the other hand, sports and social activities which take an important place in their physical, social and psychomotor development make students pleased; therefore, school engagement increases.

A study by Sang Min and Sondra (2005) reveals that there is a positive correlation between female students' school engagement and their attendance in processes about school life from secondary school until high school. According to Finn (1989), students' identification with school affects their school engagement; so, this increases their academic success, school attendance and their sense of valuing school. Identification with school is related to their attendance in activities relevant to school (Fredricks et al., 2004). For Finn, students who attend extracurricular social activities regularly develop school engagement and school becomes an indispensable part of their lives.

According to research findings, the level of school engagement for students who always get support from counselling service has been found to be favorable. It is, also, remarkable in the sense that 722 students (35%) never get support from counselling service and it has been detected that their psychological development is affected negatively. It is considered that counselling service should work more actively in terms of students' personal and emotional development. There is no research on school engagement and benefiting from counselling service. Lee and Smith (1999) mentioned the significance of factors affecting school engagement like supplying students with their school materials, solving their catering problems, providing security and making the counselling service active apart from teacher support (cited from Ataman, 2006).

The degree of students' school engagement shows meaningful difference according to their academic achievement. In this context, students who are successful are more affiliated to school than those who are less successful. Definitely, successful students have more sense of responsibility. Studies applied abroad indicate similar results (Finn et al., 1997; Fredrick et al., 2004). According to a study by Camp, successful students attend various activities and so they are engaged in school more (cited in Lee and Smith, 1995).

Suggestions

It is not possible to crown education activities with success unless the affiliation level of students, the building blocks of education, is on top and unless it is kept on top. Thus, depending on research results, implementations to foster friendship, more social and sports activities and attendance to them are considered to be important. Physical circumstances of schools, students' easy transportation to school and familial conditions are the factors which affect school engagement. In this context, those concerned should be sensitive about the factors mentioned above. This research has been conducted in schools within the borders of Istanbul Metropolitan Municipality. Broader research should be done in this field and it should raise awareness for both students and for those concerned.

Conflict of Interests

The author has not declared any conflicts of interest.

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An analysis of teachers' questioning strategies

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Questioning has been utilized as a critical assessment tool for centuries. It has been thought that there is a relationship between asking good questions and effective teaching. In order to analyze teachers' questioning strategies from various aspects, this study was conducted during the 2014-2015 academic year with 170 primary school teachers working in the schools located in the center of Gaziantep Province in Turkey. Data were collected through a semi-structured questionnaire prepared by the researchers, and were examined via content analysis. Explanatory mixed method design was used to analyze the research problem. The findings of this study revealed that: (1) Teachers asked divergent questions to draw attention and interest (2) Teachers have misunderstanding of divergent and convergent questions (3) Teachers mostly ask questions to entire class than individual (4) Teachers asked most frequently questions aimed at uncovering operational knowledge and least frequently questions whose goal was to uncover metacognitive knowledge (5) Teachers generally used probing questions, prolonged waiting time and did not ask vague questions (6) Teachers did not use questions as a punishment tool. This study revealed that asking good questions must be considered more important in pre-service education and teachers must be supported with in-service trainings to be more effective in asking questions.

Key words: Questioning strategies, teacher education, quality instruction.

INTRODUCTION

Questions are stimulants which activate students' cognitive skills and they have functioned as a primary educational tool for centuries (Aydemir and Çiftçi, 2008). Teaching with questions began with Socrates and has maintained its importance and validity until today. Using this method, Socrates had asked questions to his students, and responded to each question with other questions instead of giving direct information or responses (Filiz, 2009).

The famous scientist Einstein emphasizes the importance of asking questions when he states that "the most important thing is to not stop asking questions"

(Sternheimer, 2014). Considering the founders of leading technology companies such as Facebook, Amazon and Google as individuals who ask eligible questions, the importance of questioning can be revealed (Berger, 2014). These individuals, capable of utilizing questions critically, have contributed to discoveries in new technologies in today's competitive environment. The ability to ask eligible questions will become much more important in the future. Entrepreneurs in the U.S.'s Silicon Valley have asserted that "questions are new answers," and the critical use of questioning is crucial in the field of education, as well (Berger, 2014).

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Interrogation contributes especially to effective teaching. After analyzing over 100 studies in a meta-analytical method, Marzano et al. (2001) included "clues, questions, and preparation" among their nine effective teaching strategies. In fact, asking questions is one of the most important aspects of teaching, and can be highly effective when used appropriately. Motivating students and ensuring their active participation (Gall, 1984; Cotton, 1988), leading students to think (Costa, 2001) and develop their own problem solving skills (Hu, 2015); storing knowledge (Dos and Demir, 2013); improving academic achievement as well as developing meta-cognitive thinking (Tanner, 2012); and enabling students to form critical thinking skills (Cotton, 1988) are some of the benefits of asking questions to students. Teachers ensuring the effectiveness of themselves and their classes positively affect the preparation and homework habits of students (Hu, 2015). In addition to improving students' critical thinking skills, high-level questioning stimulates students' active participation and facilitates learning (Redfield and Rousseau, 1981). Furthermore, asking questions triggers and interrelates students' prior knowledge with new information and assists them in reconstructing knowledge (Penick et al., 1996).

It is important to realize that the earlier-mentioned benefits of asking questions depend on the teachers' ability to use this method effectively. Depending on personal characteristics, teachers' questioning methods may also vary. Teachers' questioning goals, the level of their questions, question types, use of probing questions, waiting time for follow-up questions, to whom they direct their questions (individual, group, whole class, etc.), and their reactions after asking questions demonstrate this variance in strategy.

One dimension of teachers' questioning strategies involves motive. The awareness of the aim and results of asking questions seems to be important. Therefore the aim of this study was to analyze the questioning strategies of the teachers. The analysis of teachers' questioning strategies is considered important because it is believed to reveal much information about asking questions. This is a unique study in terms of proffering a detailed analysis of teachers' questioning strategies. This study will enable the determination of whether teachers have sufficient and efficient information about questioning strategies. In this respect, the realization of training teachers on questioning strategies and focusing on this issue in both education faculties and in-service teacher education programs will be helpful. The overall goal of this study is to analyze the classroom teachers' questioning strategies. To do this we developed these sub-questions:

1. What is the aim of the teachers for asking questions?
2. To whom teachers ask their questions?
3. In which Bloom Taxonomy level teachers ask their questions?

4. What is the average wait time for teachers?
5. Are the teacher's aware of using questioning strategies?

LITERATURE REVIEW

The questions teachers ask can be classified according to the Revised Bloom Taxonomy in Cognitive Field as 'remembering, understanding, applying, analyzing, evaluating and creating (synthesizing)'. Remembering, understanding and applying steps are considered lower level, while analyzing, evaluating and creating steps are considered higher-level. Teachers are expected to ask higher-level questions for higher-level learning. However, most studies indicate that teachers generally ask lower-level questions (Barker and Hapkiewicz, 2001; Aydemir and Çiftçi, 2008; Özcan and Akcan, 2010; Tanık and Saraçoğlu, 2011; Özdemir and Dikici, 2012).

Inability in higher-level questioning is not a new or unique problem to Turkey. According to a study conducted by Stevens (1912), two-thirds of the questions posed by teachers were found to be merely on remembering (Barker, 1974). In his study, Gall (1970) found that 80% of teachers' questions aimed at remembering, and only 20% made students to think. Today, teachers generally ask simple questions intended for remembering and revising (Akyol et al., 2013; Güler et al., 2012; Aslan, 2011; Tanık and Saraçoğlu, 2011; Ateş, 2011; Ayvacı and Türkdoğan, 2010; Aydemir and Çiftçi, 2008).

There are two main classifications of questioning based on student response. Generally, questions with a single correct answer, short, and intended to recall acquired information are called *convergent questions*. These questions are also referred to as closed-ended questions as students are not expected to contribute to an original idea. For example, after teaching about animals that change color, the teacher then ask "Which animals are chatoyant?"; this question is a convergent question. On the other hand, questions which students answer by analysis, synthesis, or evaluation using their related knowledge of a question, a problem or a situation are referred to as *divergent questions*.

Divergent questions are open-ended questions and may have multiple answers. For example, "What kinds of problems chatoyant animals might face if they lost this characteristic?" is a divergent question. For such a question, students are supposed to know the chatoyant animals and their characteristics, know about their wild-life conditions and contribute original opinions. When and in what cases should convergent and divergent questions be asked? According to McComas and Abraham (2005), if you want your students to recall and remember certain knowledge, ask them low-level convergent questions (Bloom Taxonomy); however, if you want to see if students understand and be able to transfer knowledge,

then ask them divergent questions. Similarly, they indicated that low-level divergent questions should be asked to see if students can make inferences, find the causes and effects of an issue, and make generalizations; on the other hand, to make them speculate, make evaluations, and think creatively, they should be asked high-level divergent questions.

An important aspect of teacher questioning is wait time, a period of time during which the teacher and other students wait silently so that the student to whom the question was addressed answers the question. Mary Bud Rowe was the first, in 1972, to reveal the relationship between wait time and student achievement. According to studies, teachers tend to wait about 0.7-1.4 seconds after they ask a question to a student (McComas and Abraham, 2005). The studies further suggest that teachers give less waiting time to students whom they consider to be low-level (Cotton, 1988). The ideal time for low-level questions was found to be 3 s. A lower or higher waiting time leads to unsuccessful student responses (Cotton, 1988). The most appropriate waiting time was determined by Rowe (1986). According to her, it is best to wait for 3 to 5 s. This duration ensures students' success, helps them keep the topic in mind, raises the quality and length of their responses, provides more students the opportunity to answer, and encourages them to ask more questions (Cotton, 1988).

Although asking questions is important, its effectiveness depends on how intentionally teachers choose their questions to accomplish certain goals (Strother, 1989). If the purpose of a question is not pre-determined, it might result in chaos, disorder and eventually the inability to learn. The appropriateness of a question depends on the extent to which pre-determined goals are achieved (Crespo, 2002). For instance, convergent questions are most appropriate for a teacher who is performing inductive teaching. A language teacher may ask convergent questions to reveal students' vocabulary and spelling knowledge or to motivate them. Divergent questions are mostly used for responses with application, analysis and synthesis levels. In order to use this, it requires a good preparation process, as well (Epstein, 2003).

Asking appropriate questions and developing questioning skills is a process that might take weeks (even months); thus, this process should be performed systematically (Streifer, 2001). There are many studies on the questioning strategies of teachers. However, the reasons why teachers cannot ask eligible questions have hardly been investigated. Research indicates that most studies are based on the classification of teacher's written and oral questions through observation and/or other data collection tools (Filippone, 1998; Baykul, 1989; Çepni and Azar, 1998; Çepni, Ayvacı and Keleş, 2001; Ayvacı and Türkdoğan, 2010). There are also studies which analyze the questions according to Bloom Taxonomy (Stano, 1981: cited in Filippone, 1998). There

are further experimental studies on training to develop teachers' questioning skills (Aslan, 2011). Some other studies have tried to classify the questions of High School Placement Tests (SBS exams) according to PISA proficiency scale (İskenderoğlu et al., 2013). Dalak (2015) analyzed a national exam questions called TEOG for entering high school in relation with Bloom Taxonomy. As can be understood from the literature, the studies are mostly in the form of analysis of oral and written questions used by teachers during exams, the success of questioning trainings, and the classification of questions in national examinations in terms of certain criteria. It can clearly be seen that teachers' questioning techniques have not been analyzed with a holistic approach. This study tried to reveal the holistic view about teachers' questioning skills. Therefore it is very important to understand the reasons why teachers cannot use effective questions in their classes. The questions of this study created with the help of a frame published in Borich (2014) effective teaching methods book.

METHODOLOGY

In this section sample, data collection, procedure and data analysis were presented.

Sample and data collection

This is a mixed method design study that attempts to identify teachers' strategies for asking questions in the classroom using a combination of quantitative and qualitative data. In mixed methods research, investigators use both quantitative and qualitative data because they work to provide the best understanding of a research problem (Creswell, 2003).

In this study, the aim of using mixed method design is to find out the quantity of using some questioning strategies as well as the reason for using these strategies. Thus the researchers can compare the quantitative and qualitative data to understand the phenomenon. The data were collected through semi-structured questionnaire prepared by the researchers. The questionnaire includes 10 quantitative and 10 qualitative questions such as "What kind of questions do you use? 1-Divergent, 2-Convergent" and it follows a qualitative question "Why?" By asking why quesitons we collected qualitative data to understand the consistency of the data as well as comparison of the questioning strategies. So this study used triangulation design of mixed method, because qualitative and quantitative methods are given equal priority and all data are collected simultaneously (Fraenkel et al., 2012).

The study was conducted on 170 classroom teachers who work in primary schools in the District of Şahinbey, Gaziantep. Homogeneous sampling method was used in this study. Homogeneous sampling, one in which all of the members possess a certain trait or characteristic (e.g., a group of high school students all judged to possess exceptional artistic talent). The data about participants are shown in Table 1.

There is a balanced distribution in terms of gender in the research (53 female, 47 male). The majority of teachers are under graduates (%87), while others have master's degrees (%13). The distribution of the group was balanced in terms of experience (about %20, each group). In this sense, the representability of all groups in the study is high in terms of gender and seniority.

Table 1. Data for study groups.

Characteristics	Type	f	%
Gender	Female	89	53.3
	Male	78	46.7
Graduation	Undergraduate	146	87.4
	Graduate	21	12.6
Experience	1-5	29	17.4
	6-10	37	22.2
	11-15	38	22.8
	16-20	34	20.4
	20 or more	29	17.4

The questionnaire used in the study consisted of open- and closed-ended questions, and it was developed by the researchers based on the objectives of the study. Prepared as a draft, the questionnaire was first analyzed by three education experts in terms of scope and nature, necessary corrections were made and then it was applied to 10 teachers as a pilot study. The pilot questionnaire was finalized after the necessary adjustments were applied to the survey again. We changed some of the questions in terms of its grammar and understanding.

The questionnaire consists of 10 items to determine teachers' questioning strategies. It contained open- and closed-ended questions regarding the reasons why teachers use questions as well as their use of convergent-divergent and probing questions. Sample questions from the questionnaire are presented in Table 2.

In the questioning strategies questionnaire, teachers' questions were diversified with probing questions and they were allowed spaces to make explanations. They were also allowed to choose more than one option on the questionnaire. The developed inquiry was applied to the determined sample group by the researchers.

Procedure and analysis of the data

The quantitative data regarding closed-ended questions on the questionnaire were analyzed on SPSS. Frequency and percentage calculations were made in the analysis of this data. Content analysis was applied to the responses to open-ended questions. Content analysis involves drawing conclusions from the current context of data (Krippendorf, 2004). In this sense, codes and themes were formed by deriving inferences from teachers' thoughts about the questions they asked in the classroom. Two researchers separately encoded data obtained and the coding reliability between them was found to be over 80%. Within the study, the responses submitted to other sets of questions by those who answered a specific set were also revealed by cross-tabulation analysis. The reason for making such tabulation was an attempt to draw a pattern besides revealing the consistency of teacher responses to the questions addressed to them. Results were presented firstly on quantitative data and then qualitative data explained the reasons why teachers scored higher in some questions. Also cross-table analyses were performed to explain the nature of asking questions in the classroom.

FINDINGS

The analysis of data obtained is submitted below:

Findings regarding teachers' aims in asking questions

The initial purpose of the study was to determine the reasons for which teachers ask questions. The results obtained are presented in Table 3.

The findings of Table 3 indicate that teachers mostly ask questions "to draw interest and attention" (26.3%) and subsequently "to promote higher-level thinking" (14.8%) as well as "to allow the expression of feelings" (14.1%). It can also be seen that teachers rarely use questions "to manage students" (4.8%). One participant stated the reason for asking questions *"I ask questions to draw the calssroom attention and make students actively participate to the discussions".* One of the participant emphasized "*I ask questions to promote higher–order thinking*".

Findings regarding teachers' use of convergent and divergent questions in their courses

The study secondly investigated the amounts and reasons why teachers used convergent and divergent questions. The obtained data is provided in Table 4.

Table 4 demonstrates that teachers mostly used divergent questions (67%; f=120). The use of convergent questions was found to be 33% (f=57). Convergent question types were mostly used by teachers to reinforce and summarize topics as well as to motivate the students. On the other hand, divergent questions were used in order to encourage students to think, make judgments, and draw inferences and to develop multi-dimensional thinking, imagination and different perspectives. Regarding teacher motivation for utilizing convergent and divergent questions, two basic problems can be observed. First of all, the teachers confuse convergent and divergent question types; secondly, they believe that students' levels are so low that they will be unable to answer divergent questions. For example one teacher stated *"I use divergent question type to get the*

Table 2. Sample questions from questionnaire

Which of these target audiences do you generally direct your questions toward?
a) the individual
b) a certain group
c) the whole class
because………………………………………………………………………….

Which of the following do you do after you ask questions in your classes?
a) I expect the students to give only the response I expect to get.
b) I use probing questions to get the right answer when the students cannot provide the correct answer.
c) I provide the correct answer after I ask a question.
d) Other………………………………………………………………………

For what reasons do you mostly use questions in your classes? Tick at most three options below.
a) To draw students interest and attention (What would you first realize if you went to the moon?)

Table 3. The frequencies and percentages for teachers' aims in asking questions.

Aims for asking questions	f	%
To draw interest and attention	126	26.3
To promote higher-level thinking	71	14.8
To allow the expression of feelings	68	14.1
To remind certain facts and information	65	13.5
To construct and redirect learning	65	13.5
To diagnose and control	61	12.7
To manage	23	4.8
Total	**479**	**100**

Table 4. The analysis of frequency and percentage values regarding teachers' use of convergent and divergent questions and their purposes for asking these questions.

Convergent Questions F=57; 33%	Divergent Questions F= 120; 67%
1. Appropriate to the level of students	1. Promoting students to develop high-level skills of thinking, and making judgments
2. Remembering and making comparisons	
3. Making comparisons with concrete examples	2. Initiating learning
4. Summarizing the topic	3. Ensuring the use of cognitive processes
5. Not to bore students with detail	4. Developing students' thoughts and feelings
6. Ensuring easy learning	5. Promoting students to active thinking
7. Reinforcing the topic	6. Ensuring that students do reflective and creative thinking
8. Revealing similarities and differences	7. Making comparisons and determining the level of knowledge
9. Increasing the self-confidence of students (by asking easy and known questions)	
10. Directing students to multi-dimensional thinking	8. Encouraging the students to do research and learn
11. Revealing student creativity	9. Determining if they are using information or not
12. Deriving genuine ideas from students	10. Determining if certain concepts are understood
13. Encouraging students to think rather than memorization	11. Activating their prior knowledge
	12. Ensuring that students can express themselves

Table 5. The frequencies and percentages of target audience in teacher questions.

Target audience	f	%	Purpose of the question
Whole class	154	87.1	Ensuring the participation of the whole class, Ensuring that the whole class hear and think about the question, Initiating whole-class learning, Allowing emergence of different ideas, Drawing interest, Determining the level of the class,
Individual	16	9.0	Unable to get a response from a particular group or class, Differences in developmental characteristics, Higher participation of some students.
Certain group	7	3.9	Showing the weak students who the teachers believe not to understand the lesson that they can do and motivate them, Providing a better understanding of the rest of the class by asking the student group who know well
Total	**177**	**100**	

answer directly, not indirect". This means students do not need to think different focus. Another teacher stated "*I use convergent questions to think differently and make a research*". As we can see teachers have no idea what type of questions they are using for different purposes. The teachers have misconceptions about the kinds of mental processes to which convergent and divergent questions might lead to. It can be said that they use convergent questions with divergent questions in mind and vice versa.

Findings about the target audience of teacher questions

The findings regarding the target audience of teacher questions are presented in Table 5. The table indicates that teachers mostly ask questions to the class (87.1%; f=154) and subsequently to individuals (9%; f=16) and to certain groups (3.9%; f=7). It can be understood that teachers ask questions to the entire class for such reasons as ensuring the participation of all students in a class, identifying the extent to which learning is initiated by a class, and drawing attention. One participant stated "*I ask the whole class question because I want them to be active* in classroom discussions".

Findings regarding teacher questions in terms of cognitive processes in revised Bloom Taxonomy

The findings about types of teachers' questions used in terms of cognitive processes in revised Bloom Taxonomy and dimensions of knowledge are presented in Table 6.

According to Table 6, teachers mostly use the question types in level groups on Bloom Taxonomy; 21.1% in terms of application and subsequently 19.9% in terms of evaluation, 18.1% in terms of analysis, 16.5% in terms of remembering, 15.7% in terms of understanding and lastly, 8.5% in creating dimensions. The findings indicate that teachers mainly use operational knowledge (39.2%) and subsequently cognitive knowledge (25.2%), factual knowledge (19.2%) and metacognitive knowledge (16.2%).

Findings concerning the use of probe questions

Research findings regarding the teachers use of probe questions in their courses are given in Table 7. The majority of teachers stated that they used probe questions (94.6%). These are questions that measure the comprehensive subject knowledge of students their response. In this sense, the use of these questions is important for teaching in the classroom. When asked why they used probe questions, teachers indicated that they used such questions respectively from most frequently to the least to reconstruct knowledge, to express answers using alternative wording, and to elicit new information. Teachers also reported that they used these questions to increase their preparedness.

Waiting time

The findings on teachers' waiting time following a question they addressed to students are given in Table 8.
It can be seen that teachers wait mostly for 9 to 12 and

Table 6. The findings related to the questions asked in terms of Bloom's Taxonomy.

Cognitive process of Bloom Taxonomy	f	%
Applying	102	21.1
Evaluating	96	19.9
Analysis	87	18.1
remembering	80	16.5
Understanding	76	15.7
Synthesizing	41	8.5
Total	482	99.8
Dimension of knowledge	f	%
Operational knowledge	118	39.2
Conceptual knowledge	76	25.2
Factual knowledge	58	19.2
Metacognitive knowledge	49	16.2
Total	301	100

Table 7. The frequencies and percentages regarding teachers' use of probing questions.

Yes (F=158. 94.6%)	No (F=9; 5.4%)
Reconstructing (f=67. 38.7%)	
Repeating the answer in other words (f=52. 30.1%)	
Seeking for new information (F=51. 29.4%)	
Others (F=3. 1.7%)	

Table 8. Frequencies and Percentages for teachers' wait time after questions addressed to students.

Wait time	f	%	Reason
9-12 s	53	31.7	Individual differences
13-15 s	53	31.7	Giving an opportunity to think
6-8 s	44	26.3	Concentrating on an opinion
3-5 s	17	10.1	Overcoming anxiety
			Getting to the right answer
Total	**167**	**99.8**	

13 to 15 s (31.7%); following this, they wait for 6 to 8 s (26.3%) and 3 to 5 s (10.1%). Teachers made the following statements pertaining to why they gave a long wait for a response after asking questions: students are given a long time primarily due to individual differences among them, and they are also given time as an opportunity to think, as a space to concentrate on what they would like to say, as a period to recall their prior knowledge, and as a phase to overcome their anxiety and get the correct answer.

The teachers provided the following reasons for why they give a short period of waiting time: the belief that 3 to 5 s would be enough for a student who already knows, the abundance of subjects in comparison with the short length of lessons, the importance of the first belief that comes to mind, and that waiting would not stimulate favorable results.

Findings regarding complex, ambiguous and erroneous questions

Research findings regarding complex, ambiguous and erroneous questions by teachers are presented in Table

Table 9. Frequencies and percentages regarding complex, ambiguous and erroneous questions the teachers asked.

Erroneous questions	f	%
I never ask	62	32.2
Double Questions	51	26.5
Complicated Questions	40	20.8
Ambiguous Questions	39	20.3
Total	192	99.8

Table 10. Frequencies and percentages regarding teachers' reactions after questions they ask.

Reactions	f	%
If the correct answer is not given, I help students find the right answer with probing questions	148	83.6
After asking the question, I give the right answer myself	10	5.6
Other	10	5.6
I want my students to give only the right answer I expect	9	5.0
Total	177	99.8

Table 11. Frequencies and percentages concerning the use of questions as a means of punishment by teachers.

As a means of punishment	f	%
No	121	72.5
Yes	46	27.5
Total	167	100

9.

The findings in Table 9 indicate that 32.2% of the teachers never ask erroneous questions, 26.5% ask double questions, 20.8% ask complicated questions and 20.3% ask ambiguous questions. Complex, ambiguous and double questions make it difficult for students to understand, thus doing more harm than good. It is important that teachers claimed they do not use such questions.

Findings regarding the reactions given by teachers after questions

The findings concerning the reactions given by the teachers after they ask questions are presented in Table 10.

According to Table 10, 83.6% of teachers attempt to elicit the correct answer by posing probe questions when they do not receive an answer, and following this, 5.6% of the teachers answer the question themselves or find another way when there is no response, and 5.0% seek only the answer in their mind.

Findings regarding use of questions as a means of punishment

Research findings on the use of questions as a means of punishment are presented in Table 11.

According to Table 11, 72.5% of teachers do not ask questions to punish their students. The teachers who use questions as a punishment tool stated that they generally ask questions to the students who do not voluntarily participate, to punish those who do not fulfill their homework responsibilities, and to warn those who become distracted during the lesson and do something else during the class. On the other hand, the teachers who do not use questions as a means of punishment believe that questions might have an adverse effect on students, harm their self-confidence, alienate them from class, and limit independent thinking.

Findings regarding the correlation between questioning levels, types of questions and waiting time

In this research question, teachers' questioning levels, the type of questions based on Revised Bloom Taxonomy and waiting time were compared. For those who stated that they use divergent questions, the areas of Bloom Taxonomy on which they mostly focused are important because according to this taxonomy, such questions require analysis, synthesis and evaluation level questions. For this reason, the levels of these questions

were presented with cross-tabulation (Figure 1).

The questions at the "remembering" stage are mostly used for divergent question types. The waiting time for divergent and convergent questions is 13 to15 s at most. On the other hand, the questions at the "understanding" stage are mostly divergent ones. While the waiting time posed for divergent questions at the understanding level is 9 to 12 s at most, the maximum time for convergent questions at the same level is 13 to 15 s.

Regarding the "application" level, the most frequently used question types are divergent questions. Although the preferred waiting time for divergent questions is 9 to12 s, for convergent questions it is 13 to 15 s. At the analyzing stage, divergent questions are the most commonly addressed and the appropriate waiting time for these questions is 9 to 12 s, the same as that for convergent questions.

Divergent questions are most frequently favored at the evaluation stage. While the waiting time posed for divergent questions is 9 to 12 s, the period of time ideally accepted for convergent questions is 13 to 15 s at this stage.   Finally, divergent questions are the most commonly used question types at the creating stage and the appropriate waiting time for them is 13 to 15 s, as for convergent questions.

Findings regarding purpose of questions, type of questions, and the target audience

In this research question, the reasons of teacher questions, the types of questions they asked and their target audiences were compared (Figure 2).

In order to attract students' interest and attention, divergent questions are the most commonly used. Divergent questions are posed to attract interest and attention while convergent questions are mostly addressed to the entire class and minimally to specific groups.

To check and control students' learning, mostly divergent types of questions are used. These questions are mostly posed to the class as a whole and at a minimum level to the groups. The convergent questions posed to check and control students' learning are also posed most frequently to the entire class and least frequently to specific groups. Divergent questions are further used to remind students of certain facts and knowledge; similar to convergent questions, most of these questions are addressed to the entire class. Another use of divergent questions is to manage the class and most of them, as with convergent ones, are directed to the entire class.

Encouraging high-level thinking processes generally requires divergent questions and these questions are mostly asked to the class as a whole. However, convergent questions are always posed to the entire class. Furthermore, to construct and re-direct learning, generally divergent questions are used and almost all of these divergent questions are addressed to the class. Finally, in order to express emotions, divergent questions are used and generally these types of questions are asked to the class. The divergent question types are also generally directed to the class.

DISCUSSION AND CONCLUSION

In this study, the teachers proved to be asking questions mostly in order to attract students' interest and attention. From the cross-tabulation analysis, it was revealed that divergent questions were frequently used by addressing the entire class. Furthermore, to assist students in remembering specific facts and knowledge, the teachers also use divergent questions and generally posed these questions to the class. The findings from cross analysis demonstrated that teachers make use of convergent questions mostly to attract students and minimally to manage the class. On the other hand, divergent questions were posed mostly in order for students to recall certain facts and knowledge while minimally used to manage the class. Teachers were found to ask convergent questions to a great extent (Korinek, 1987; Filippone, 1998; Mutlu et al., 2003; Ülger, 2003; Güfta and Zorbaz, 2008; Aydemir and Çiftçi, 2008). Both divergent and convergent questions can be used to attract students' interest and attention, but it might be more reasonable to use convergent questions which can easily be prepared to direct students' attention toward a specific point. While convergent questions are posed to remind students of certain facts and information, divergent questions are used to induce higher-level thinking.

In this sense, it can be claimed that teachers have misconceptions about convergent and divergent questions. Wrong questions for wrong aims might lead to wrong results. In addition, teachers' statements that they ask questions mostly to attract students' interest and attention might provide information about how the lesson is taught. Convergent questions should be used mostly to make students do critical and creative thinking for problem solving.

The teachers stated that they mostly used divergent questions to improve students' higher-level thinking skills such as consideration and reasoning, to perform learning, and to improve active learning, creative thinking, emotions and thoughts. Although all these mentioned indicate correct uses, teachers further stated that they use divergent questions to determine whether students comprehend certain concepts, to activate their prior knowledge and to ensure that students express themselves. However, using convergent questions for the previously-mentioned purposes is easier and more reasonable.

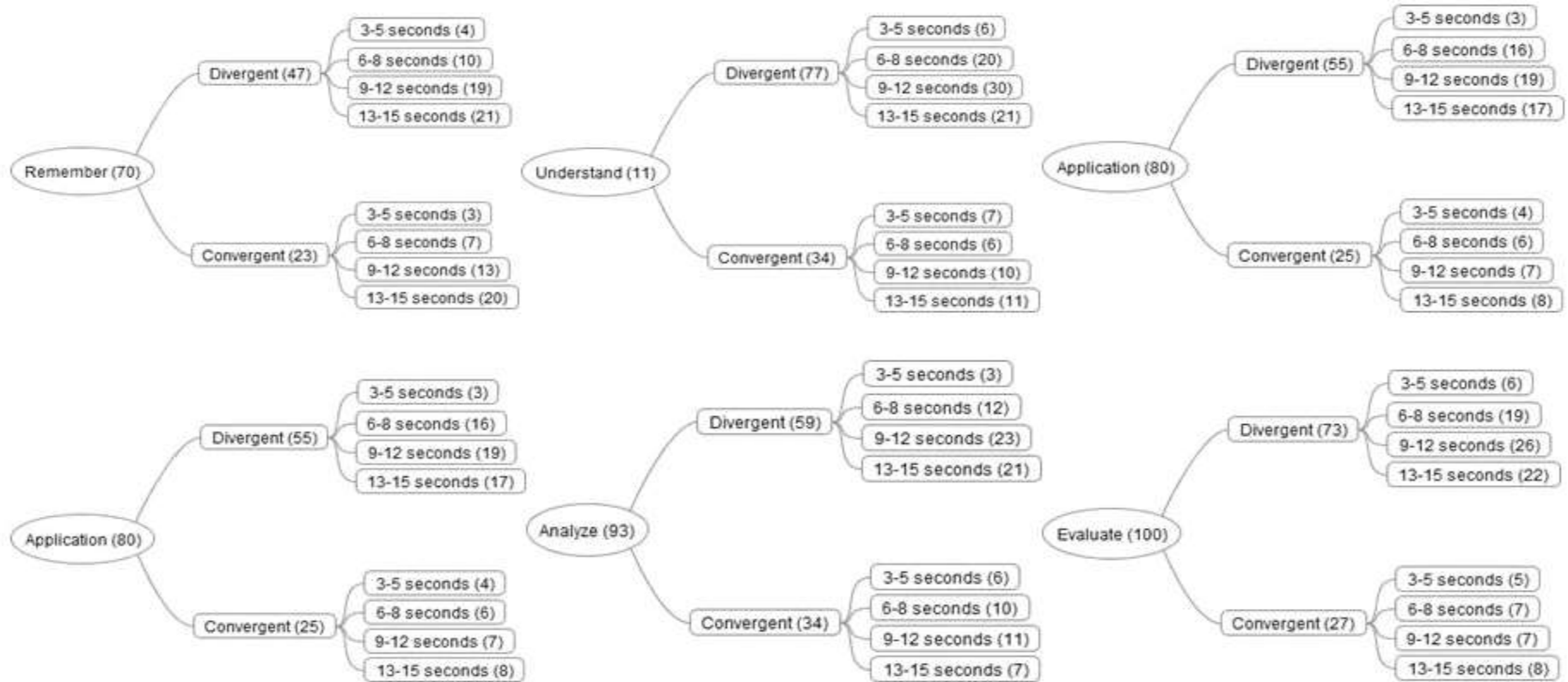The teachers also indicated that they asked convergent

Figure 1. Cross analysis based on Bloom's Taxonomy.

questions to register whether students were able to think creatively, to reveal an original idea, and to encourage students for multi-dimensional thinking, as can be seen from the cross-analysis diagram in Figure 1. Teachers more frequently use divergent questions at remembering and understanding stages, where convergent questions are expected to be more appropriate. There are also teachers who stated that they used convergent questions at evaluation and creating

stages. In this sense, as it would be difficult to fulfill these skills with convergent questions and it would be unreasonable to use divergent questions for low-level thinking skills, it can be said that teachers have misconceptions about convergent and divergent question types, and the types of questions to be asked depend on specific purposes.

Teachers reported that they prefer to address their questions to the whole class audience. They

stated that their purpose in doing so was to ensure the participation of whole class, to stimulate student thinking and to determine class level. Only a few of these teachers stated that they addressed questions to individuals or groups in the class. According to cross-analysis, individuals were mostly addressed divergent questions aimed at diagnosis and control. The most frequent questions directed to groups were divergent questions to attract interest and

attention. On the other hand, the question types directed toward the entire class were found to be divergent questions aimed at reminding students of certain facts and information. Addressing the questions to the whole class may cause active students with high self-confidence to be more dominant in the class and others to be withdrawn from participation. Hence, it is vital for in-class teaching to have a balanced distribution questions addressed to the individuals, groups or entire class.

Asking questions to the whole class in the initial stage, then addressing a certain group and lastly directing questions to the students individually is a more reasonable method in the actualization of teaching (Bezukladnlkov et al., 2013). In this sense, there needs to be a balanced distribution of individual, group and whole-class questions. From the cross-analysis in Figure 2, it can be noticed that only one teacher was observed to have used divergent and convergent questions to perform high-level thinking skills. Under-addressing individual questions might hinder ensuring whether or not actual learning takes place for all of the students.

When the teachers were asked about the stages of their questions according to Bloom Taxonomy, they reported that most of the questions they used were at a stage requiring high-level thinking such as application, evaluation, and analysis stages. However, the review of the literature indicates that teachers mostly ask low-level questions at remembering and understanding stages (Stano, 1981; Korinek, 1987; Ülger, 2003; Barker and Hapkiewicz, 2001; Aydemir and Çiftçi, 2008; Güfta and Zorbaz, 2008; Özcan and Akcan, 2010; Güler, Tanık and Saraçoğlu, 2011; Özdemir and Dikici, 2012).

Teachers' perceptions might be based on a sense that they ask high-level questions; however, as can be seen from experimental studies, these questions remain at a low-level. Although some attribute this inability in asking high-level questions to primary or secondary education (Aydemir and Çiftçi, 2008), others attribute this to professional education from university (Özdemir and Baran, 1999). Still, others attribute this inability to conventional habits of questioning and being questioned (Tanık and Saraçoğlu, 2011). When the teachers are unaware of the cognitive processes that take place in students' minds, the quality of addressed questions as well as the variety is limited; consequently, students' attainment is reduced.

According to research findings, teachers initially pose questions to uncover operational knowledge and subsequently to seek conceptual, factual, and meta-cognitive knowledge. The questions posed demonstrate a balanced distribution. As a significant indicator of higher-level thinking skills, metacognitive awareness and knowledge plays an important role in students' achievement (Bağçeci et al., 2011). Conceptual, factual, and generalization knowledge is an important factor in education as it helps to determine whether newly learned items are exactly acquired, and ensures an effective learning process. Probe questions are also important in an educational context as they reveal whether students possess detailed knowledge on a certain topic. Moreover, 94% of teachers reported that they posed these questions in order to reconstruct a question, to paraphrase a response, and to demand new information. Reconstructing a question is method which contains hints that can help students understand a question more clearly.

Waiting time is one of the most important factors affecting students' correct response. This study has revealed that teachers generally give students a long waiting time. Individual differences among students, anxiety, and allowing time to remember are the main causes of long waiting times. Those who give short waiting times expressed that the lesson time was short, the subject topics were numerous, and that long waiting times would not make any change. From cross-analysis, teachers were found to allot either the same length of waiting time for both convergent and divergent question types or a longer time for convergent questions. This also indicates that teachers do not have favorable awareness of the use of divergent and convergent question types in the class.

Moreover, most of the teachers reported that they waited for 9 to 12 and/or 13 to 15 s after asking questions. However, studies have revealed that teachers wait for about 0.7 to 1.4 s following questions (McComas and Abraham, 2005).

From this study, it can be concluded that teachers are not aware of how long they wait after asking questions. They must be educated about the nature of asking good questions and waiting time and feedback. The relationship between waiting time and students' achievement was first revealed by Mary Bud Rowe in 1972. When students are provided with appropriate waiting time, they respond to questions more successfully. Rowe (1986) discovered that waiting quietly for three seconds has a positive effect on children. Furthermore, waiting for 3 to 5 s after questions has important consequences for students (Harris and Swick, 1985). Such waiting times stimulate students' achievement, retention of subject knowledge; improve the quality and length of responses; increase participation with correct responses; and encourage students to ask more questions (Cotton, 1988). According to Cotton (1988), teachers permit less waiting time for the students they consider to be at low-level.

Teachers stated that they do not pose erroneous, complex and/or ambiguous questions to students. When pre-planned, ambiguous and complicated questions are applied in the classroom, they might ensure enriched student learning and assist students in exploring their thoughts. On the other hand, unstructured, complex and ambiguous questions might distract students from understanding the subject. The study further revealed that two-thirds of teachers do not pose questions as a means of punishment. However, one-third of teachers
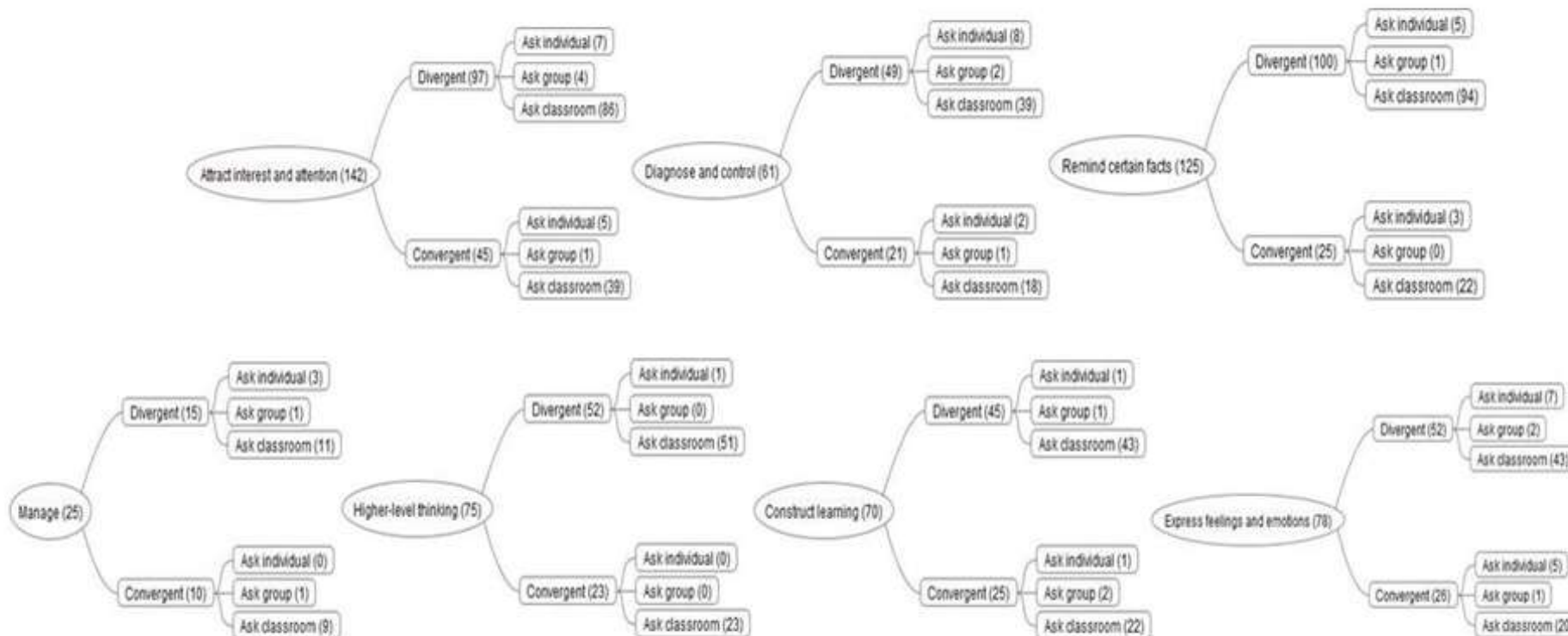
Figure 2. Cross analysis according to purpose of questions.

reported that they used questions as a tool of punishment in order to ensure classroom participation, to punish those who do not fulfill their homework responsibilities, and to warn those who become distracted and do something else during the class. Asking eligible questions is an important skill that requires long training and experience. In 1974, Lewis Lee Barker provided training for pre-service school teachers during his PhD study and obtained favorable results. Moreover, Aslan (2011) asserted that teachers posed more eligible questions after questioning training. Consequently, questioning strategies can be taught.

Eligible questioning skills can be obtained with long training and experience. Thus, such kind of training should be provided to teacher candidates both during pre-service teacher education as an individual subject or course subject and during in-service teacher education. Critical learning theory and constructivist learning theory state the importance of questioning skills (Young, 2009). Asking good questions could be emphasized more importantly in Teaching Principles and Methods and/or Classroom Management courses to the pre-service teacher candidates. Further-

more, teacher candidates can gain experience by practicing these strategies in their Teaching Practice course. Teachers might acquire new knowledge and skills regarding questioning strategies by attending other teachers' classes.

Further studies containing a detailed analysis of questioning strategies can be conducted using various methods and techniques with different tools in different teaching contexts. Studies involving the analysis of reasons why teachers cannot ask eligible questions have stood out as a shortcoming.

Studies on the teaching of questioning

strategies may hold an important place in the field. In addition, studies devoted to modeling for questioning strategies are considered to occupy an important place in the field.

Conflict of Interests

The authors have not declared any conflicts of interest.

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Educational Research and Reviews

Full Length Research Paper

A perception scale on the use of webquests in mathematics teaching: A study of scale development

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This study was aimed to develop a valid and reliable perception scale in order to determine the perceptions of pre-service teachers towards the use of WebQuest in mathematics teaching. The study was conducted with 115 junior and senior pre-service teachers at Balıkesir University's Faculty of Education, Computer Education and Instructional Technologies Department in the spring semester of the academic year 2013 to 2014. The data analysis was carried out with statisitical package for social sciences (SPSS) 17. The construct validity of the scale was tested with factor analysis, while the Cronbach Alpha reliability coefficient was employed to determine the reliability of the scale. The distinguishability of the items was determined by adjusted item-total correlation and the calculation of t values between groups lower and higher than 27%. These analyses generated a scale of 38 items aggregated under 5 factors. The Cronbach's Alpha reliability (internal consistency) coefficient was found to be 0.91, and the t test revealed a significant difference for all items in the groups lower and higher than 27%.

Key words: Perception on the use of WebQuests, reliability and validity, scale development, computer education and instructional technologies, mathematics education.

INTRODUCTION

Nowadays, we are living in the age of technology; computers are having a significant impact on peoples' learning and their behaviors (Martinovic and Zhang, 2012). The internet has become the platform to enable people to communicate as well as to access and share information. Although, a wide range of valuable information is accessible on the internet, the fact that it also has numerous web sites with deficient, inaccurate and useless information (Halat, 2007) leads learners into incomprehensibility and causes them to face difficulties in organizing information and accessing accurate information. The quest to distinguish which sites are

adequate for the purpose of learning distracts the subject and wastes time (Faichney, 2002). There have been various attempts to develop an approach towards the use of internet in educational and instructional activities that would eliminate these challenges. One of these attempts is WebQuest, developed in 1995 by Bernie Dodge.

WebQuest overview

WebQuest is a research-oriented and research-based activity designed to enable students to use their time

more effectively, to encourage interactive study and to obtain all or most of the necessary information from internet resources (Dodge, 1997; Dodge, 2002). March (2003a) has been contributed significantly to the enrichment and diversification of WebQuest. Dodge (2002) defines it as: "a graded learning model which build links between the necessary resources on the internet and the real world, and that encourages students to participate in group-processes in their basic researches, open-ended questions, and the development of personal expertise as well as the transformation of the newly obtained knowledge into elaborate learning."

WebQuests are composed of at least six sections: introduction, task, process, information resources, evaluation and conclusion. In the introduction, the activity is presented to the students in the form of a scenario, a story or in any other format that will make the problem appear more attractive and interesting as contextualized within a real situation, thereby allowing the students to use their prior knowledge of the subject. In addition, both the instructor and the student are provided with the knowledge of the steps to be taken during the instruction process (Halat, 2007; Kurtuluş and Kılıç, 2009; Öksüz and Uca, 2010a). The task is the most important section in WebQuest, since it expresses the learning acquisitions in a concrete manner (Dodge, 2002).

Students are provided with a brief and clear account of activities that will be meaningful, viable, interesting and entertaining, and these activities are organized in order to support higher order thinking abilities (Halat, 2007; Kurtuluş and Kılıç, 2009; Öksüz and Uca, 2010a). The process section includes instructions to guide the students in each step of the activity (Halat, 2007; Öksüz and Uca, 2010a).

Information resources offer a list of resources prepared or chosen by the instructor to help the students accomplish their tasks. These resources should be adequate enough for the student and to the task at hand, easily accessible and supportive of learning (Halat, 2007; Öksüz and Uca, 2010a). The list consists of internet based resources as well as activity books, PowerPoint presentations, rhymes or puzzles. The resources can also be provided in the process section (Chatel and Nodell, 2002; Kılıç, 2007; Öksüz and Uca, 2010a). The criteria to be followed in evaluation are given in the evaluation section (Kurtuluş and Kılıç, 2009). The conclusion includes the presentation of all that has been accomplished or learnt by the student; the student may also be encouraged to extend their experiences to other fields (Dodge, 1997). Naturally, this section is usually closely related to the introduction (Akçay and Şahin, 2013).

WebQuest and learning

WebQuest was developed using the constructive learning approach. It should not be seen as only a method to encourage the use of internet in education, but also a way to develop a variety of abilities, to explore subjects and to achieve educational goals. This is why WebQuests should be structured effectively (March, 2000). Below are the requirements for a well prepared WebQuest:

1. The first thing to be taken into account in the preparation of WebQuest should be the learning acquisitions to be attained. The resources should be determined from the standpoint of these acquisitions; students should not be permitted to waste their time on useless subjects.
2. Tasks should be related and applicable to the real world, and organized in order to arouse the interest and curiosity of students.
3. The activity should include open-ended questions that require higher order thinking.
Information resources should be appropriate to the age and abilities of the students.
4. To attract the attention of students, WebQuests should use images, maps, animations, audio and visual resources.
5. An effective WebQuest pairs the tasks to be accomplished by the students with a variety of related evaluation mechanisms (March, 2003a, March, 2003b; Wooster and Lemcool, 2004; URL 1).

Recently, the rapid development of technology creates new opportunities for meaningful mathematics teaching, and makes it necessary to reconsider the equipment used in schools. In fact, under The increasing opportunities and improvement of technology movement project in Turkey, the Ministry of Education (2011) has tried to provide the schools with computer, interactive whiteboard and internet network infrastructure in all levels of the elementary, primary and high schools; it has started given out tablets (computers) to all teachers to effectively administer courses, train and aid students' learning process (URL 2). The internet is now available to students at any time.

However, the accessible websites should be filtered in order to prevent access to bad websites, which can adversely affect the students development (Kamacı and Durukan, 2012). WebQuest is an important teaching model to solving this problem, to select the useful internet websites for students and to prevent the students' direction to malicious internet sites (Kobak, 2013).

The internet is integrated in the educational and teaching environment using WebQuest in mathematics teaching. It improves the academic achievement in mathematics aspects, increasing the students' attitudes towards mathematics by manipulating the mood for the course and the effectiveness and persistence of learning through high level of cognitive activities. In addition, it

helps the students to adopt their mathematical knowledge to daily life by converting gained knowledge to a product (Kılıç, 2007). According to the Halat (2007), WebQuest is an effective method because it enables the students to self-learn and become active.

Perceptions of WebQuests

The value of technology depends on how effective school teachers use it to support teaching in the classroom because only effective use of technology can improve students' learning (Fulton et al., 2004). In addition, prior studies have revealed that WebQuest activities have a positive effect on the academic success and attitudes of the students (Kobak, 2013).

Although new information and communication technologies are very significant and useful in contemporary education, the fact remains that: "it is the instructor who provides education its meaning, and makes it functional, effective and productive." This implies that the efficiency and functionality of the possibilities provided by the current technology are still dependent on the capacities of educated humans. It should never be forgotten that only teachers can manage the information technologies to build ties with students (Aktepe, 2011). Undoubtedly, another important aspect of effectively integrating technology into instruction is individuals' perspectives on technology (Paraskeva et al., 2008).

Indeed Geer et al. (1998) emphasize that individuals using technologies need to be proficient and feel safe in order to be effective. This case reveals the importance of the individuals' perception towards to technology. The perception is the process of understanding the surrounding objects, events and relations through the sensory organs (Yanık, 2010). The previous experience, psychological and physical structure and requirements of each individuals are different. Therefore, their perceptions will be different (Erkuş, 2012). For this reason, it is important to have a valid and a reliable scale to reveal the general situation.

The internet is a new technology compared to other traditional information technology; it offers a richer environment to meet various personal needs (Gömleksiz and Erten, 2013). Prior studies show that the internet is used mostly for communication (Akkoyunlu, 2008), entertainment, education (Scherer, 1997), games, music and chatting (Huang, 2008).

However, WebQuests is used commonly for the purposes of education and training activities. The perception of using WebQuest in teaching is individuals' awareness of its characteristics and importance in learning and teaching environment (Ersoy and Türkkan, 2009). This study will make an important contribution due to the absence of a valid and reliable developed scale to reveal the perceptions of the use of WebQuests in mathematics instruction.

In this study, we develop a valid and reliable perception scale to determine the perceptions of pre-service teachers towards the use of WebQuest in mathematics instruction.

METHODOLOGY

This section presents the stages of the development of the scale as well as the properties of the study group.

Study group

In the research, a purposive sampling method, one of the non-random sampling methods, which allow an in-depth study on the states having richer knowledge was used (Patton, 2002). Three basic criteria were used by the researchers for sample selection:

1. The senior pre-service teachers selected have adequate training in the field and education
2. The pre-service teachers have previously designed WebQuests for teaching
3. The pre-service teachers have previously been informed about using WebQuests in teaching.

In order to get realistic scale responses, it is important that the participants prepared WebQuests. For this reason, only students who had once designed WebQuests were used as study group. The study was carried out with 142 junior and senior pre-service teachers in the 2014 spring semester at Balıkesir University, Necatibey Faculty of Education, Computer Education and Instructional Technologies Department. After eliminating inaccurate or deficient scale questionnaires, the resulting number of the participants was 115 (55 women and 60 men). Among them, 49 were juniors (23 women and 26 men), and 66 were seniors (32 women and 34 men).

The development of the scale

The first step in the development of the scale was the preparation of the scale items, which were identified based on the findings on WebQuest (Akçay, 2009; Akçay and Şahin, 2013; Çığrık, 2009; Dodge, 1997; Faichney, 2002; Halat and Jakubowski, 2001; Halat 2008a, 2008b, 2007; Kelly, 2000; Kobak, 2013; Kurtuluş and Kılıç 2009; March, 2000, 2003a, 2003b; Öksüz and Uça, 2010b; Summerville, 2000; Wooster and Lemcool, 2004; Zencirci and Asker, 2009; Zheng et al., 2005).

In the process development scale, the pre-pilot applications was carried out with 85 pre-service teachers. In this stage, the pre-service teachers were grouped to design WebQuests; additional items were obtained during observation and interviews. The basic features of WebQuests, as well as the advantages and the limitations of use were also considered.

To ensure the content validity of the scale, designed using a Likert type five point scale, the study resorted to the views of the academic experts in Computer Education and Instructional Technologies as well as Mathematics Education. Miles-Huberman reliability formula was calculated to check the compliance between the experts. The value is considered sufficient if the compliance value is greater than 70% (Miles & Huberman, 1994). In this study, this calculated value was 82%; this result was acceptable for the content validity of the scale. The scale took its final form in line with

the views of the experts.

Data analysis

The construct validity of the scale was tested by means of a factor analysis in the statistical program SPSS 17. Cronbach's Alpha reliability coefficient was employed to identify the reliability of the scale. The distinguishability of the items was measured using adjusted item-total correlation and the calculation of t values between groups lower and higher than 27%.

FINDINGS

Findings on validity

Factor analysis was used to collect data on the construct validity of the scale. The adequacy of the data to the factor analysis was determined using the Kaiser-Meyer-Olkin coefficient and the Barlett Sphericity test. To determine whether the data and the size of the sample were sufficient, the Kaiser-Meyer-Olkin test was employed (Büyüköztürk, 2010). In factor analysis, the size of the sample is considered sufficient if its KMO score is equal to or greater than 0.7(Can, 2013).

However, Büyüköztürk suggests that a KMO score of 0.6 or above is sufficient for factor analysis. In this study, the KMO score was calculated to be 0.787; the size of the sample was taken to be sufficient based on literature and the views of the experts (Murphy and Davidshofer, 1991). Factor analysis is based on parametric data (Şencan, 2005); this data display a normal distribution. This is why the Barlett Sphericity test was employed to test the normality of the data, and it produced a significant result ($\chi^2=2285,19$; p<0.05). Thus, the factor analysis is appropriate for the variables (Aiken, 1996).

To generate a significant construct for the perception of pre-service teachers towards the use of WebQuest in mathematics lectures and to reveal the construct of the factors, principal components analysis and the varimax vertical rotation technique were employed. Büyüköztürk (2010) suggests that a factor loading point equal to or greater than 0.45 should be used for the selection of items. Besides, in order to decide the factor under which an item related to other items is to be placed, the difference between the levels of relation of these cyclical items with various factors should be above 0.1. If it is below 0.1, then the item must be excluded from the scale. In this study, the inclusion of any item into a factor is conditioned by a loading point of at least 0.45; the difference between the loading point of the item in the factor it is placed and its loading points in other factors is required to be 0.1 or above. Finally, a scale of 38 items was constructed after the items found to be redundant by these conditions were eliminated. The number of the factors in the scale obtained by means of the factor

analysis, the factor loading points of the items and the common variance are shown in Table 1.

The results of the factor analysis of scale show that 38 items in the scale are gathered under 5 factors. The first factor consists of 9 items; where their factor loading points range between 0.482 and 0.801. This factor by itself explains 11.819% of the total variance in the scale. In the second factor, including 6 items, the factor loading points vary between 0.604 and 0.913, which explains 11.669% of the total variance. The loading points of the third factor vary between 0.339 and 0.745. This factor of 10 items explains 10.123% of the total variance. The forth factor with 8 items explains 8.851% of the total variance, and the fifth factor of 5 items 8.309%. The loading points of the items in the fourth factor vary between 0.438 and 0.624, while the loading point of the items in the fifth factor vary between 0.548 and 0.712. The explained total variance in the scale is 50.501%. Çokluk et al. (2010) suggest that an explained total variance of 40 to 60% is acceptable for multi-factor scales. The scree plot related factors' eigen value is presented in Figure 1.

The reliability of the scale

The internal consistency among the items of the scale was calculated using Cronbach's Alpha Reliability Coefficient. In cases where the number of responses given to the test items is 3 or more, Cronbach's α coefficient is used (Büyüköztürk, 2010). Özdamar (1999) suggests that a reliability coefficient between 0.90 and 1.00 is an indicator of high level reliability (Tavşancıl, 2006).The number of the items loaded with factors, the average per each factor, the standard deviation, the highest and lowest points as well as the Cronbach's alpha internal consistency coefficient are all presented in Table 2.

As shown in Table 2, the reliability coefficients of the factors are 0.85 for the first factor, 0.88 for the second, 0.80 for the third, 0.78 for the forth and finally, 0.74 for the fifth. The Cronbach's Alpha reliability coefficient for the scale as a whole is 0.91, which indicates a high level of reliability and internal consistency among the scale items.

To be able to measure the distinguishability of the items in the scale, the adjusted item correlations were calculated; the t test was applied to determine the significance of the differences in the average item points between groups lower and higher than 27% (Büyüköztürk et al., 2004). The results of these calculations are presented in Table 3.

As shown in Table 3, the adjusted item-total correlations range between 0.32 and 0.60. The items whose item-total correlations are 0.30 or above represent a greater distinguishability (Büyüköztürk, 2010). As a result of the comparisons between the higher 27% and

Table 1. The results of the principal components analysis rotated by means of the varimax method.

Item number	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
M1	0.801	-	-	-	-
M2	0.801	-	-	-	-
M3	0.686	0.367	-	-	-
M4	0.630	-	-	-	-
M5	0.547	0.346	-	-	-
M6	0.534	-	0.336	-	-
M7	0.522	-	-	-	-
M8	0.492	-	-	-	-
M9	0.482	-	-	-	-
M10	-	0.913	-	-	-
M11	-	0.852	-	-	-
M12	-	0.825	-	-	-
M13	-	0.657	-	-	-
M14	-	0.643	-	-	-
M15	-	0.604	-	-	-
M16	-	-	0.745	-	-
M17	-	-	0.699	-	-
M18	-	-	0.649	-	-
M19	-	-	0.632	-	-
M20	-	-	0.520	-	-
M21	-	-	0.504	-	-
M22	-	-	0.484	-	-
M23	-	-	0.466	-	-
M24	-	-	0.449	-	-
M25	-	-	0.339	-	-
M26	-	-	-	0.624	-
M27	-	-	-	0.590	-
M28	-	-	-	0.553	0.397
M29	-	-	-	0.535	-
M30	0.416	-	-	0.530	-
M31	-	-	-	0.512	-
M32	-	-	-	0.475	-
M33	-	-	-	0.438	-
M34	-	-	-	-	0.712
M35	-	-	-	-	0.645
M36	-	-	-	-	0.639
M37	-	-	-	-	0.576
M38	-	-	-	-	0.548
Eigenvalues	9.772	3.394	2.685	1.743	1.596
Explained variance	11.819%	11.669%	10.123%	8.581%	8.309%
Explained total variance			50.501%		

*Factor loading points below 0.30 are excluded from the table to make it easier to interpret.

the lower 27%, it was understood that the difference between the groups for each item is significant (p<0.001). Based on these results, it may be argued that the scale items exemplify similar behaviors and their distinguishability as well as reliability is high.

The factors obtained at the end of the analysis are: "Using WebQuests effectively", "the technology, software, material etc. necessary for preparing WebQuests", "using WebQuest in mathematics instruction for students", "the characteristics of WebQuests to be used in mathematics
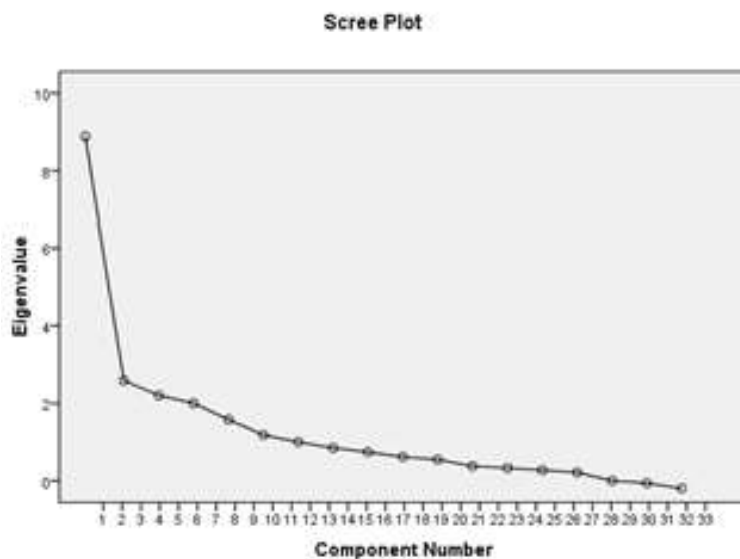
Scree Plot

Figure 1. Plot related factors' Eigen value.

Table 2. Cronbach's alpha internal consistency coefficient.

Factors	The number of items in the factor	$\overline{X}$	sd	The lowest-highest points	Cronbach's Alpha Coefficient
Factor 1	9	38.22	4.13	15-45	0.85
Factor 2	6	25.71	2.90	19-30	0.88
Factor 3	10	39.70	4.44	27-50	0.80
Factor 4	8	35.06	3.07	27-40	0.78
Factor 5	5	20.08	2.40	15-25	0.74
Total	38	158.80	12.50	136-190	0.91

instruction", and "using WebQuest in mathematics instruction for teachers". These factors are described below:

Using WebQuests effectively

The items under this factor is relevant to determine the necessity of the students and teachers' ICT information and skills, infrastructure of the schools, the quality of the WebQuests to be used and the awareness of the parents and teachers about using WebQuest effectively.

Technology, software, material etc. necessary for preparing WebQuests

This factor composed of 6 items is a factor including the technologies such as visual elements, picture/animation/maps, mathematical software (geogebra, cabri, sketchpad etc.), internet based sources, models prepared on the web (algebra tiles, integer visual material etc.), and 3D animations prepared on the web.

Using WebQuets in mathematics instruction for the students

This factor is composed of 10 items including the benefits of using WebQuests in mathematics instruction. Some items under this factor are: it increases the opportunities of their learning practice, it develops the higher-order thinking skills, it allows the students to inidividually construct the knowledge.

The characteristics of WebQuests to be used in mathematics instructions

This factor is related to features required to have a good WebQuest. There are 8 items in the factor. They are

Table 3. The adjusted item-total correlation of the scale factors and the irrelevant t test results between groups lower and higher than 27%.

Factor	Item number	The adjusted item-total correlation [1]	t (lower %27-higher %27) [2]
	M1	0.40	5.47*
	M2	0.48	6.87*
	M3	0.46	7.16*
	M4	0.45	4.36*
Factor 1	M5	0.50	5.19*
	M6	0.52	6.23*
	M7	0.60	7.73*
	M8	0.37	3.30*
	M9	0.35	3.47*
	M10	0.50	8.12*
	M11	0.55	8.77*
Factor 2	M12	0.49	7.06*
	M13	0.45	6.17*
	M14	0.44	5.42*
	M15	0.46	6.09*
	M16	0.41	4.49*
	M17	0.49	5.22*
	M18	0.46	5.39*
	M19	0.46	4.93*
Factor 3	M20	0.46	5.05*
	M21	0.39	3.66*
	M22	0.44	5.97*
	M23	0.49	5.39*
	M24	0.32	2.02*
	M25	0.48	7.35*
	M26	0.42	5.89*
	M27	0.35	3.59*
	M28	0.56	6.29*
	M29	0.47	6.06*
Factor 4	M30	0.56	6.73*
	M31	0.44	5.36*
	M32	0.40	5.45*
	M33	0.46	5.86*
	M34	0.48	5.12*
Factor 5	M35	0.54	4.98*
	M36	0.36	3.61*

[1] n=115,   [2] $n_1 = n_2$=31, *p<0.001.

related characteristics to feasibility of tasks, activities included open-ended questions related to everyday life, supported to higher thinking level, provided the discovery of learning opportunities and wake up curiosity.

Using WebQuests in mathematics for the teachers

The items included in this factor composed of the 5 items

providing information to the teachers about students' readiness, the level of the knowledge, the ability of using technology.

CONCLUSIONS AND SUGGESTIONS

The study was aimed to develop a valid and reliable

perception scale used to determine the perception of pre-service teachers towards the use of WebQuest in mathematics teaching. Factor analysis was conducted to collect data about the construct validity of the scale. Factor analysis generated a construct with 5 factors; the explained total variance was found to be 50.501%. Since an explained variance of 40 to 60% is accepted as reasonable for multi-factor scales (Çokluk et al., 2010), it was established that the scale obtained has the required construct validity.

To determine the reliability of the scale, Cronbach's Alpha Reliability Coefficient (internal consistency coefficient) was calculated. The reliability coefficients of factors were found to be 0.85 for the first factor, 0.88 for the second, 0.80 for the third, 0.78 for the forth and finally, 0.74 for the fifth. The Cronbach's Alpha reliability coefficient in the entire scale was 0.91, which indicates a high level of reliability of the scale and internal consistency among the scale items.

To measure the distinguishability of the items in the scale, the adjusted item correlations were calculated, which were found to range between 0.32 and 0.60. In addition, the t test was applied to determine the significance of the differences in the average item points between the groups lower and higher than 27%. As a result of the comparisons between the groups lower and higher than 27 %, it was observed that the difference between the groups for each item is significant ($p<0.001$). Based on these results, it is concluded that the scale items exemplify similar behavior and are characterized as a sufficient reliability and distinguishability. It may be concluded that the scale is valid and reliably determines the perceptions towards the use of WebQuest in mathematics instruction.

There is only a study on developing perception scale using WebQuests. Öksüz and Uca (2010b) made similar study. They developed a perception scale on the use of WebQuests in the study carried out with 200 pre-service teachers and 30 teachers; they developed a scale including 41 items.

To reveal the construct of the factors, principal components analysis and the varimax vertical rotation technique were employed in this study; four factors were obtained. Five factors explained the 50.501%, while Öksüz and Uca (2010b) reported 50.7% of the variance for four factors. They also found the reliability coefficient in the entire scale as 0.93.

The determining the perception on using WebQuests is especially important to use this technology effectively in a teaching environment. This study was carried out with the preservice teachers.

However, this scale can be used to determine the teachers' perceptions on using WebQuests as a teaching aid. The scale used for mathematics teaching may also be developed for chemistry, physics and language teaching.

Conflict of Interests

The authors have not declared any conflict of interests.

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Educational Research and Reviews

Full Length Research Paper

Favouring new indigenous leadership: Indigenous students attending higher education in Mexico

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The opportunities to attend higher education in Mexico have traditionally been offered to the middle class population since around 30% of students who finish high school are able to attend higher education. The main reason for this low attendance is the poverty in which much of the population lives and the lack of higher education institutions in rural areas. Low attendance to higher education is accentuated in marginalised indigenous groups. Migration from the rural areas to the cities over the years has enabled that recently, some indigenous students pursue higher education as a way to improve their social and economic opportunities. Indigenous students attending higher education in urban areas have to face additional challenges given that they speak their own native language, they come from a different culture, usually have a history of poor academic achievement, and face discrimination. In the Autonomous University of Ciudad Juarez (UACJ), an urban university on the Mexico-US border, was implemented a programme to support indigenous students attending the UACJ to favour their academic success. This programme also aims to increase the number of indigenous students attending the UACJ to develop them as professionals and leaders to impact positively their communities. This paper presents the findings of a qualitative study using participant observation and semi-structured interviews as the data collection methods to explore the implementation of the programme. Findings of collected data were grouped in two main themes: *progresses* and *challenges* of this programme.

Key words: Indigenous leadership, higher education, Mexico.

INTRODUCTION

Indigenous peoples of Mexico constitute about 11% of the country's population (Hall and Patrinos 2005), and it is the largest in Latin America representing a third of the continent's total indigenous population (Rivera-Salgado, 2014). Indigenous people in Mexico are poorer than non-

indigenous peoples since 80% of indigenous peoples live in poverty, while only half of non-indigenous people live below the official poverty line (Ramirez, 2006). This reality has limited the access to higher education for indigenous peoples in Mexico. However, in recent years,

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the access to higher education for students of indigenous groups is an aspect that is being addressed by institutions offering higher education. Several universities across the country have established programmes to favour the access and academic success of this type of population, and in some states, have been created intercultural universities to serve the indigenous population. Educational policy also mandates that their inclusion to higher education should respect their cultural practices and traditions.

The UACJ implemented a programme aiming to increase the number of indigenous students attending the university, and offer them the needed support for their success as university students. Likewise, the university intends to have more connection with the indigenous communities living in Ciudad Juarez to favour their social and economic development. The university created an initiative in 2015 to increase the number of these students attending the university, and offer support for those already registered in different academic pro-grammes. The aim of this programme is to develop the first generations of lawyers, doctors, teachers, scientists, engineers, or other indigenous professionals whom in the long run would develop their leadership potential and become leaders in their communities. The approach adopted for their leadership development is gradual in which they develop professionally in their academic programme, and strengthen their individual indigenous identity. Parallel to their academic programmes these students will take a practical and theoretical two-semester course in leadership that the university is designing specifically for them. This course will be offered to these students with the assumption that they will be the first generation of indigenous professionals who could set an example for younger generations, and it is also expected that they assume leadership roles within their communities. Besides, this programme pursues to coordinate the isolated efforts being done by specific academic programmes or researchers currently working with indigenous communities, and to have a deeper connection with the migrant indigenous community established in Ciudad Juarez. The UACJ senior administration commissioned the department of social sciences of the Institute of Administration and Social Sciences (ICSA) to create this initiative. This paper presents the findings of qualitative research on the creation, progresses and challenges of the programme to support students from indigenous origin and their communities in Ciudad Juarez.

LITERATURE REVIEW

Indigenous communities in Ciudad Juarez

Ciudad Juarez is a city of nearly 1.5 million inhabitants located in the north of Mexico in the state of Chihuahua just across El Paso in Texas. Over the past three decades, the city has based its economic development by its strategic position offering low-wage labour to attract manufacturing enterprises worldwide. The growth of the manufacturing industry as well as displacement from the land and a decrease in livelihood opportunities in rural areas of other parts of Mexico particularly in the southern states has helped drive migration among indigenous communities to the city (Grant, 2015). This researcher also found that this has driven rapid urban growth and led to a diversity of minority groups, with different ethnic, linguistic, cultural and religious backgrounds. The National Institute of Statistics, Geography and Informatics (INEGI) reported in 2012 based on the population and housing census that approximately 14,606 people from several indigenous groups are living in Ciudad Juarez representing a 74% increase over the 2000's census. According to the INEGI, 42 indigenous languages are spoken in Ciudad Juarez, being the most important, the Chinateca, Nahuatl, Raramuri, Mixteca, Zapoteca, Popoluca, Huave, Huichol, and Tzotzil. In the case of the Raramuri tribe, the only group native of the state, its migration to Ciudad Juarez has increased steadily since the 1990s and spiked between 2010 and early 2015 with a 30% increase in the population, driven in part by poverty and environmental disasters such as the drought of 2014 and 2015 and an exceptionally cold winter of 2014 (Grant, 2015). The difficult reality for indigenous people living in urban areas as in Ciudad Juarez can be identified in many different aspects. For instance, Yanes (2007) in his research reported the social reality of indigenous groups living in urban areas in which illiteracy rates among the urban indigenous population are four times higher than non-indigenous city-dwellers. Furthermore, indigenous people living in cities have been found to drop out of school to seek employment earlier than their non-indigenous counterparts which leads to a pattern of working in poorly paid, low-skilled jobs. And finally, that urban indigenous generally live in lower quality housing, with more than one-third of indigenous homes having only one room.

Indigenous people and formal education

In Mexico, the opportunities for indigenous people to participate in formal education have historically been low. For instance, adults in municipalities composed mostly by indigenous population have completed on average 3 years of schooling while adults in municipalities composed mainly by non-indigenous people have completed 8 years of schooling (Jacob et al., 2015). In the case of compulsory education, indigenous pupils tend to score lower on reading and mathematics than non-indigenous pupils. This reality was first exposed in 2003

by an achievement test administered by the National Institute for Assessment of Education (INEE) aiming to measure competency levels on reading and mathematics. In non-indigenous schools 45 and 15% of the sixth graders achieved satisfactory competency levels for reading and mathematics, respectively; while for indigenous students in the same test the satisfactory level was only achieved by 12 and 4%. In more recent published data by the ministry of education (SEP) in 2015 in the National Plan (exam) for Learning Assessment (PLANEA) measured students in language and communi-cation and in mathematics. In the case of indigenous students 80% obtained an unsatisfactory level of competency for language and communication, and also 83% of them got an unsatisfactory level for mathematics. This put them at a disadvantage academically when they emigrate to the cities and need to compete for a space in further levels of education because acceptance and entrance to the better public high schools and universities is based on an entrance exam.

In higher education, the attendance to this level is low not only for minority and disadvantaged groups but also for mainstream population, since only 3 out of every 10 people between the ages of 19 and 23 are able to attend higher education. According to the ministry of education, the general coverage in 2013 had attained a level of 29.2% (SEP, 2013). However, for indigenous population the under representation in higher education is much more evident due to the poverty in which rural and urban indigenous live, and also specifically for the rural indigenous communities due to the isolation and dispersion of these communities. The National Council for the Prevention of Discrimination (CONAPRED) reported that in 2010 just 3% of individuals between the ages of 15 and 29 who are part of an indigenous group attended higher education. In more recent data, Schmelkes (2013) confirmed that the percentage of indigenous people enrolled in Mexican higher education institutions remain between 1 to 3% being the lowest in the rural areas. The main cause is the poverty in which indigenous population live since 80% of them live below the poverty line.

Leadership development

The literatures on leadership points out that leaders set a direction, align people, motivate and inspire (Kotter, 2001). "Leadership reflect the assumption that it involves a process whereby intentional influence is exerted by one person over other people to guide, structure and facilitate and relationships in a group or organisation" (Yukl, 2002, p. 2). Effective leaders are open-minded, ready to learn, flexible and persistent, and their success depends on their ability to apply leadership practices appropriately in their context (NCLSCS, 2009). Leadership practice has

been evolving and there has been a shift to more democratic and participative approaches as distributed leadership (Gronn, 2002; Spillane et al., 2004), shared leadership (Lambert, 2002), democratic leadership (Starratt, 2001; Moller, 2002). This has enabled an evolution in the conceptualisation of leadership from the charismatic leader portrayed as super talented individual with exceptional gifts that transform groups as solo performer to alternative and shared approaches to face current demands in organisations or groups. It is expected that these students develop their identity as leaders for their community as a new generation of young indigenous. The development of a leader identity and leadership learning is a gradual process. To enact the characteristics expected of a leader, it first has to come the strengthening of their indigenous identity and an awareness of their role in their community as professional indigenous.

METHODOLOGY

Data collection was carried out through semi-structured interviews and the methodology of participant observation. There were interviewed two university professors members of the planning team, four indigenous students, and three community leaders. In the case of participant observation, the researcher is part of the planning team so that it was possible to observe the progression of this initiative proposed aiming to increase the enrolment of indigenous students to the UACJ, their academic success, and the connection with the migrant indigenous communities living in Ciudad Juarez. This methodology enabled to document the social interaction of the planning team consisting of ten indigenous students, six teaching faculty, five indigenous community leaders, and in some meetings, the senior administration of the university. The observations were recorded using the meetings' minutes and notes that taken of all relevant activities, conversations and the environment and context that they occurred in. Thematic analysis was used to process the data originated from the semi-structured interviews, the notes, and from the meetings' minutes. Each transcript, meeting minute, and note taken was read in detail while using a marker to highlight main points, phrases, patterns and common terms. In the margins of the printed documents were coded the emergent themes. The emergent themes were discussed with participants individually for their feedback, recommendations, and validation. Seven overarching themes were generated dived in two main categories: progresses and challenges. The research was carried out to the highest ethical standards in educational research with anonymity, confidentiality, consent, and respect for the participants observed at all times.

FINDINGS AND DISCUSSION

Data collected from the semi-structured interviews, observations, and the meetings' minutes enabled to identify four emerging *progresses* and two main *challenges*: institutional awareness, potential economic support, culturally collaborative planning, latent deeper connection with the indigenous community, operational, and academic support, respectively. The emerging themes

will be presented and analysed individually with illustrative quotations from the participants.

Progresses

Institutional awareness

The intention to create a programme to give attention and support to indigenous students was originated when in a meeting at state level with the ministry of education the UACJ officials were asked about what the university was doing to address the attention to indigenous population. The university had not established an initiative yet to address this aspect. The university was doing some isolated efforts but not systematically coordinated. For instance, there existed a fellowship specifically for this type of students that enabled them not to pay tuition fees although, not much disseminated and well known. Furthermore, previous to the creation of the programme, there were already few indigenous students attending the university. To create the programme, the UACJ senior administration commissioned the department of social sciences of the Institute of Administration and Social Sciences (ICSA) to design an initiative aiming to increase the number of indigenous students attending the UACJ, offer them the needed support for their success as university students, and to have more connection with the migrant indigenous community living in Ciudad Juarez to favour their social and economic development. The department of social sciences identified key professors across other departments in the institute and the university that had contact, interest, conducted research or activities with indigenous populations. The initiative was welcomed and the team enthusiastically designed the programme and an action plan to submit it to the university council, the governing body of the University for its Approval.

After its approval, the team responsible for the creation of the proposal had two meetings with the university president and his staff to present the programme and ask for their support to implement it. These two meetings were special in the sense that the senior administration was informed of the projects and actions proposed with the intention to obtain the needed resources and support for the programme operation. This first category of analysis is called institutional awareness because, throughout the meetings with the team responsible to design the programme, the members of the university council, and the senior leadership staff of the university celebrated and received with enthusiasm the proposal. There seems to be acknowledgment and awareness in the University of the Social Responsibility of higher educational institutions in contributing that the members of socially excluded communities obtain professional preparation to be leaders in their communities. The

following comment expressed by a university professor during an interview makes evident this institutional enthusiasm: Universities and higher education institutions have a historical debt with the indigenous groups. Higher education in Mexico has been a privilege only for non-indigenous people. I am really happy that the university administration is offering all the needed support for these students to succeed, and that we as institution are truly committing with a population that has not economic means and has been denied the access to this kind of education (University Professor).

Potential economic support

Often a limitation for indigenous communities to access high levels of education has been the accentuated poverty in which they live. Another observed progress has been the existence of economic support in the form of specific fellowships for indigenous students and also other fellowships offered to all students by the university and the local and federal governments. In the case of the specific support, the university had established, previously to the implementation of the support programme, a fellowship called *beca compartir* (share fellowship) that exempt the payment of tuition fees for indigenous students. However, this fellowship is not well known since some indigenous students already attending the university at an advanced stage in their academic programme mentioned that they did not know that such a fellowship existed. Other problem identified with this fellowship is the paperwork burden for students since each semester they have to present a letter of identity issued by the local, state, or federal government in which it is indicated that they belong to an indigenous community. There have been students that do not get their letter on time and they have to pay full tuition. In the case of this specific fellowship to avoid these problems the committee has advised to present this letter of identity only one time when the student register for the first time at the university and do not require this letter in the subsequent semesters. There are also other fellowships that the university offer to general students and that indigenous students could benefit from them.

An example of these fellowships is the *beca trabajo* (job fellowship) in which students are offered a formal job within the university to be carried out during their free time assigning them usually administrative tasks or assisting researchers within the university. Other fellowships offered by the federal government for students coming from a disadvantaged social background such as the *Pronabes* fellowship. In addition, the university has the opportunity to apply for federal funding that is available for higher educational institutions that address the professional preparation of indigenous population. As mentioned in the beginning of this theme,

usually an issue for the existence of few indigenous professionals has been the poverty in which these communities live. There seems that this university has the conditions to overcome these problems since a combination of fellowships could enable that indigenous students have all the economic support needed to be in better economic conditions during their time as university students. A comment shared by a university professor makes evident this point:

I see positive that the university has implemented several mechanisms to support financially its students in need in the form of fellowships. Indigenous students do not pay tuition fees and can also benefit from other fellowships that the university has established (University Professor).

Culturally collaborative planning

Usually there have been complaints in Mexico from minority populations, that someone else decides for them what they need for their progress. This has usually been the traditional approach of governmental agencies when designing projects to implement with indigenous communities. The commission tried to avoid designing a programme based just on the vision of university professors of what indigenous university students need during their courses and what the indigenous communities living in Ciudad Juarez also need to improve their social condition. During the planning stage, the committee invited some of the indigenous students already attending the university to consider their experiences and perspectives. In the meetings were invited ten students representing four different ethnic groups and enrolled in six different undergraduate programmes. They also come from three provinces or states Oaxaca, Chiapas, and Chihuahua. Another important indigenous voice was a university professor of the university who is recognised in the state to be the first indigenous with a doctoral degree. In the planning stage emerged the following aspects as key to enable better support for indigenous students attending the UACJ: the academic, economic, personal, community linkage, and inclusion aspects. In each aspect there were designed specific actions to give attention to the concerns and needs raised in each of them. To design the possible interventions and linkage with the community, contact, visits, and meetings were also conducted with the indigenous communities to take into consideration their perspective. Visits and meetings were conducted with the Raramuri community, the most numerous ethnic group living in Ciudad Juarez. In the case of other groups, leaders of these communities were contacted. This perspective enabled a co-creation of this programme between the indigenous students, the community and the university. The following opinion of a

student points out the importance of their participation:

It is satisfactory the university invited us to participate in these sessions. A project of this kind to be successful needs the insights and perspectives of all involved. The university is creating a project for us as indigenous students so that it is necessary our vision (Indigenous Student).

Latent deeper connection with the indigenous community

The fundamental goal of preparing professional indigenous is the impact in the wider community to enable its social development. This category of analysis is called latent connection with the migrant indigenous community because there have also been previous efforts usually by university professors doing research and social projects in the community. The university has been present in the community and this is an advantage because it will enable faster and deeper partnership to identify more prospective students and also to contribute in solving the community's problems. This presence also favoured the previous mentioned collaborative planning and the creation of a programme that includes the indigenous vision. Some university professors have already developed ties with leaders of the communities, which facilitates cooperation. Another important aspect to mention here is that the university has infrastructure, knowledge, social services, professional internships, cultural events, research projects and expertise in different areas and fields of knowledge that could be implemented and shared by the university with the indigenous community. This does not mean that the university has to focus and redirect all its research and teaching activities to the indigenous communities. However, there are academic programmes with close relevance for these communities such as education, nutrition, medicine, law, and others, and a closer work with the indigenous communities would be beneficial for the university in the form of generation and application of knowledge and also for these communities. The already presence of the university in some communities could be strengthened more. This is why this research identified this presence as a strength and progress because it will enable a deeper connection and cooperation with the indigenous communities. The view expressed by a community leader shows the benefits of this cooperation:

The university is visiting us much more often. They conducted a meeting with us last week and as a result there was an agreement to conduct a workshop on healthy diet and growing vegetables at small scale, a campaign for dental health, and also the creation a food bank (Raramuri Community Leader).

Challenges

Implementation

A first identified challenge has been the operation of the programme. Initially, the department of social sciences was just asked to coordinate the proposal of the programme. The department assumed the coordination responsibility for getting approval from the university council to later pass the responsibility of implementation to another area of the university. A first difficulty was that the planning and approval of the proposal took two semesters. This discouraged some members of the team responsible to generate the proposal because much of time was used for planning with seemingly a slow progress in the implementation. A seemingly reason for this slow progress in planning was that most members of the committee representing the university sometimes missed meetings for the difficulty to establish a common timetable in which all the committee members could attend due to their research and teaching responsibilities. In the case of the delay in the implementation a possible reason for this was that the team did not feel total ownership of the project given that they knew from the beginning that they were just responsible to create the programme but not implement it. Another situation that delayed the initiation of the programme was the initial design of the organisational and implementation structures. The planning team took as base the already existing organisational structures, projects and programmes of the university and assigned the responsibilities and inserted specific activities pertaining to indigenous students throughout these structures. A problem with this model was that people responsible from different areas were not contributing much with the actions and petitions required and needed for the proper implementation of the programme. The planning team recently recognised that the project was not progressing as expected so that the team started to carry out the first activities planned.

These activities were a first meeting of indigenous students already attending the university, a competition of indigenous poetry, invitation for a talk with a recognised international researcher currently doing a project in the state of Oaxaca with indigenous populations. Currently, the team is organising the invitation for a talk of an indigenous origin politician of the O'oba group of Chihuahua and a young native American of the Mescalero Apaches of New Mexico, and also the team is doing the needed paperwork to get a physical space to locate the programme's office and to get administrative staff and also designing a logo and website. The main challenge for implementation and operation seems to be the ownership of the project. The planning team has enthusiastically participated in the creation of the initiative, and the senior administration of the university show interests in offering the best conditions for indigenous students to thrive as university students. The university has to decide how the programme should be implemented and operated. The possibilities to do so are the following: the planning team assumes the responsibility, the programme is disseminated and included in the already existing organisational university structures, specific staff is designated to operate the programme, or a combination of the mentioned possibilities. The following opinion expressed by a university professor shows one of the problems described: An issue we have identified is the slow progress in the implementation of the actions proposed. I believe an important reason is our academic load because our teaching and research responsibilities do not allow that we directly operate the programme (University Professor).

Academic support

Another challenge to truly advance towards equity and equality of indigenous students attending the university is the academic aspect. Indigenous communities come from the most remote and isolated rural areas of the country. This has favoured their historical abandonment from the governmental agencies responsible to offer public services to put them in equal conditions as the non-indigenous communities. Education is not the exception; for instance, in compulsory education indigenous students usually obtain the lowest academic achievement when compared with nonindigenous students. These communities usually lack of teachers for several months because newly graduated teachers do not want to teach in these communities for the lack of services and the transportation distances. Teachers in these communities usually have just high school preparation and a two-month induction course for teaching compared with the four years of professional preparation of teachers attending non-indigenous communities. In very small communities, the government do not appoint a teacher graduated from a university or a teachers' preparation school, and also, teachers that have graduated from a four year programme usually do not want teach in these communities. Another aspect limiting their achievement in receiving classes in Spanish is because most teachers do not speak the native language of the community. Indigenous students gradually lose their language and cultural heritage through the formal educational system, even though the efforts to, offer bilingual education. In addition, the small proportion that continue to high school experience a similar situation of low quality education since their education is mostly offered under the model of distance education through the *telebachillerato*, a television based model.

This academic background of the few indigenous

students that make it to higher education from preschool to high school put them in disadvantage academically. The UACJ does not condition the entrance to the university based on social, economic, religious, political, origin, or any other reasons. However, students must compete for a space in all the programmes based on an entrance exam. The educational reality of indigenous students described in the previous paragraph put them in disadvantage with non-indigenous students when competing for a space within the university. The planning team has intervened in favour of indigenous students that have been denied a space in an academic programme in the university because they did not get the required score in the entrance exam. Entrance to the university is a first challenge they have to overcome; however, their struggles and difficulties usually continue throughout their academic programmes in their first and second semesters. As manifested by the indigenous students attending the planning meetings, they have struggled with the use of technology and specialised software, advanced mathematics, foreign language, and academic writing given that the university do not spend much time in classes acquiring this knowledge or mastering these skills. It is assumed that students already bring this knowledge and skills from the previous educational levels. Another issue is that there seems to be academic programmes traditionally denied to indigenous students such as the case of medicine and engineering related degrees. These programmes usually require entrance deep knowledge in subjects as science and mathematics, and it has been already pointed out the limitations of the previous educational levels. This denial in entrance to such programmes contributes with institutional discrimination as manifested by one of the participants in this research.

The UACJ advancing truly for the inclusion of indigenous origin students to higher education needs to address the realities described. In the case of the academic support required for these students, the commission has proposed the creation of specific mentoring and advising programme. In the university already exists a general mentoring programme; however, the proposed by the commission is more specific, has much more contact with the students and offers them more feedback and support. To address the manifested academic problems it has been proposed an introductory remedial course in the areas that the new students have more deficiencies. Another action proposed by the commission to advance for a genuine inclusion is the incorporation of indigenous cultures in the contents and courses of academic programmes of the university. There are departments that have indicated the intention to redesign their curriculum. For instance, the law department wants to offer a compulsory course in indigenous laws. Other acknowledged initiative is to teach the native languages of the state in the language centre of the

university that traditionally teaches foreign languages. The advancement towards making the academic programmes more inclusive and addressing the needs of minority groups as the indigenous community is a slow process. The positive aspect in this regard is the willingness of some departments to make changes in their academic programmes to include topics and courses that address the multicultural reality of Mexico. The following comment expressed by a student addresses some of the points described: I wanted to pursue my degree in medicine; however, I did not pass the entrance exam, so I waited another semester to apply again but this time I did it for a degree on education. I have made my point clear in the meetings of this programme of support: In the university there is institutional discrimination given that we as indigenous students compete for a space in unequal conditions. Education for urban students is much better than education for rural communities (Indigenous Student).

Conclusion

Education seems to be a powerful catalysis for indigenous communities to improve their social and economic difficult realities. Education will enable that the indigenous community take ownership of their own development. Previous to the UACJ launched this programme there were several indigenous students already enrolled at the university developing themselves professionally as a new generation of indigenous leaders despite the obstacles they had to overcome to attend higher education. This make evident that in these communities, it is also well regarded as the role of education. The university is contributing greatly to improving the conditions in the long run of these communities by making more accessible higher education in a supportive environment for populations that have been traditionally denied this level of education, and also by strengthening the university presence in the indigenous community. This paper presented the findings of a participant observation research and identified progresses and challenges of a programme implemented in the university aiming to support indigenous students already attending the university, increase their number, and strengthen the presence of the university in these communities. The university has the potential by means of economic resources, organisational structures, projects, willingness by the senior leadership administration, and professors with experience working in indigenous communities that could favour the success of this programme even though so far one of the limitations has been the total implementation of the programme. Once the university overcomes the limitation of the total implementation, the programme will be a meaningful benefit for the indigenous students attending the university and for their

communities.

Conflict of interest

The author has not declared any conflict of interest.

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